# Moreno Valley Logistics Center

## NOISE IMPACT ANALYSIS

### CITY OF MORENO VALLEY

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# LIST OF ABBREVIATED TERMS

| | |
|---|---|
| (1) | Reference |
| ADT | Average Daily Traffic |
| ANSI | American National Standards Institute |
| ARB | Air Reserve Base |
| Calveno | California Vehicle Noise |
| CEQA | California Environmental Quality Act |
| CNEL | Community Noise Equivalent Level |
| dBA | A-weighted decibels |
| EPA | Environmental Protection Agency |
| FHWA | Federal Highway Administration |
| FTA | Federal Transit Administration |
| I-215 | Interstate 215 |
| INCE | Institute of Noise Control Engineering |
| Leq | Equivalent continuous (average) sound level |
| Lmax | Maximum level measured over the time interval |
| Lmin | Minimum level measured over the time interval |
| MM | Mitigation measure |
| mph | Miles per hour |
| MVIAP | Moreno Valley Industrial Area Plan |
| OPR | Office of Planning and Research |
| PPV | Peak particle velocity |
| Project | Moreno Valley Logistics Center |
| RCNM | Roadway Construction Noise Model |
| REMEL | Reference Energy Mean Emission Level |
| RMS | Root-mean-square |
| Sf | Square feet |
| STC | Sound Transmission Class |
| VdB | Vibration Decibels |

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# EXECUTIVE SUMMARY

Urban Crossroads, Inc. has prepared this noise study to determine the noise exposure and the necessary noise mitigation measures for the proposed Moreno Valley Logistics Center development ("Project"). The Project site is located south of Krameria Avenue between Heacock Street and Indian Street in the City of Moreno Valley. The Project is proposed to consist of 1,351,770 square feet (sf) of high-cube warehouse use/distribution center within a single building (Building 1) and 385,748 square feet of general light industrial use. Building 2, located on the southwest corner of Cosmos Street and Krameria Avenue, is proposed to consist of 122,516 sf of general light industrial use; Building 3, located at the eastern terminus of Cardinal Avenue, is proposed to consist of 97,222 sf of general light industrial use; and Building 4, located on the east of Heacock Street and south of Krameria Avenue (North), is proposed to consist of 166,010 sf of general light industrial use. This study has been prepared to satisfy the City of Moreno Valley noise standards and to ensure that adequate noise abatement measures are incorporated into the Project's development.

## OFF-SITE TRAFFIC NOISE ANALYSIS

Traffic generated by the proposed Project will influence the traffic noise levels in surrounding off-site areas. To quantify the off-site traffic noise increases on the surrounding off-site areas, the changes in traffic noise levels on 24 roadway segments surrounding the Project site were estimated based on the change in the average daily traffic (ADT) volumes. The traffic noise levels provided in this analysis are based on the traffic forecasts found in the *Moreno Valley Logistics Center Traffic Impact Analysis* prepared by Urban Crossroads, Inc. (1) To assess the off-site noise level impacts associated with the proposed Project, noise contour boundaries were developed for Existing (without and with Indian Street Bridge), Opening Year (2020), and General Plan Buildout (2035) conditions. The off-site traffic noise analysis indicates that the Project's contributions to roadway noise levels at adjacent land uses will be *less than significant* under Existing (without and with Indian Street Bridge), Opening Year (2020), and General Plan Buildout (2035) conditions.

The Project-related increases must be compared with the cumulative noise level increases without the Project to determine if the Project noise level increases represent a *cumulatively considerable* impact. The Project's actual contribution to the cumulative noise level increases will approach 0.3 dBA CNEL, and will not exceed the significance thresholds for the adjacent land uses on the study area roadway segments. Therefore, since the Project-related off-site traffic noise level increases represent a *less than significant* contribution to the overall cumulative noise impacts at the adjacent land uses, the Project-related traffic noise level increases are *less than cumulatively considerable*.

## OPERATIONAL NOISE ANALYSIS

Using sample reference noise levels to represent the noise sources from the Moreno Valley Logistics Center site, this analysis estimates the Project-related operational stationary-source noise levels at nearby sensitive receiver locations. The normal activities associated with the proposed Moreno Valley Logistics Center are anticipated to include idling trucks, delivery truck activities, parking, backup alarms, refrigerated containers or reefers, as well as loading and unloading of dry goods. The operational noise analysis shows that the stationary-source noise levels due to the idling trucks, delivery truck activities, parking, backup alarms, refrigerated containers or reefers, as well as loading and unloading of dry goods will not exceed the City of Moreno Valley Municipal Code noise level standards at a distance of 200 feet from the property line of the noise source (Project site). This analysis accounts for the noise associated with cold storage (refrigeration) as a worst-case scenario since it includes the additional noise from the refrigerated containers/reefers on trucks within the Project site, and may conservatively overstate the actual noise levels due to tenant operations at the Project site. Currently the proposed Project could not use more than 10% of the Project for cold storage. This noise analysis has assumed the possibility of more than 10% of cold storage only for the purposes of over-estimating as opposed to under-estimating potential noise impacts. As proposed, no more than 10% of the Project could be used for cold storage.

Although the Project-related operational noise levels are shown to be less than significant based on the City of Moreno Valley Municipal Code standards at 200 feet, some receiver locations are located within 200 feet from the Project site boundaries. Therefore, to determine the potential Project-related operational noise impacts at each receiver location, the Project-related noise level contribution is evaluated at each receiver location based on the magnitude of the Project-related increase on the ambient noise levels. This analysis demonstrates that the Project will not contribute an operational noise level impact to the existing ambient noise environment at any of the sensitive receiver locations. Therefore, the operational noise level impacts associated with the proposed 24-hour, seven days per week Project activities, such as the idling trucks, delivery truck activities, parking, backup alarms, refrigerated containers or reefers, as well as loading and unloading of dry goods, will be *less than significant*.

### OPERATIONAL NOISE ABATEMENT MEASURES

The routine operation of the Project will not exceed the City of Moreno Valley standards for stationary noise impacts. To further reduce potential operational noise levels received at adjacent residential land uses, it is recommended that the Lead Agency require the following as Project Conditions of Approval:

- All on-site operating equipment under the control of the building user that is used in outdoor areas (including but not limited to trucks, tractors, forklifts, and hostlers), shall be operated with properly functioning and well-maintained mufflers. The City of Moreno Valley may conduct periodic inspection at its discretion.
- Maintain quality pavement conditions on the property that are free of vertical deflection (i.e. speed bumps) to minimize truck noise. The City of Moreno Valley may conduct periodic inspection at its discretion.

- Consistent with Mitigation Measure AQ-6 of the *Moreno Valley Logistics Center Air Quality Impact Analysis*, and enforced by the California Air Resources Board (CARB), the truck access gates and loading docks within the truck court on the Project site shall be posted with signs which state:
    - Truck drivers shall turn off engines when not in use;
    - Diesel trucks servicing the Project shall not idle for more than five (5) minutes; and
    - Telephone numbers of the building facilities manager and the CARB to report violations.

## OPERATIONAL VIBRATION IMPACTS

The operation of the Project site will include heavy trucks transiting on site to and from the loading dock areas. Truck vibration levels are dependent on vehicle characteristics, load, speed, and pavement conditions. Typical vibration levels for heavy trucks at normal traffic speeds do not exceed 65 VdB, and therefore, will be below the FTA vibration threshold of 80 VdB at nearby sensitive receiver locations. Since truck deliveries transiting on site will be travelling at very low speeds it is expected that delivery truck vibration impacts at nearby homes will be *less than significant*.

## CONSTRUCTION NOISE ANALYSIS

Construction noise represents a short-term increase on the ambient noise levels. Construction-related noise impacts are expected to create temporary and intermittent high-level noise conditions at receivers surrounding the Project site when certain activities occur at the Project site boundary. Using sample reference noise levels to represent the planned construction activities of the Moreno Valley Logistics Center site, including Phase 1 (Buildings 1 and 2) and Phase 2 (Buildings 3 and 4) activities, this analysis estimates the Project-related construction noise levels at nearby sensitive receiver locations.

The construction noise analysis shows that the unmitigated daytime construction activities may exceed the City of Moreno Valley Municipal Code 65 dBA Leq noise level threshold at 200 feet during Phase 1 (Buildings 1 and 2) grading and paving activities at receiver location R8. The construction of a 6-foot high temporary noise barrier, as shown on Exhibit ES-A, is required within 280 feet of receiver location R8 to satisfy the 65 dBA Leq noise level threshold during the Phase 1 (Buildings 1 and 2) grading and paving activities. With the recommended construction noise mitigation measures identified in this report, the daytime construction noise level impacts at all noise-sensitive receiver locations will be *less than significant*.

In addition to the daytime construction activities, the Project may pursue a temporary use or special event permit to allow for nighttime concrete pour activities during the building construction and paving stages of Project construction. Nighttime concrete pours are typically conducted during the summer months due to the warmer daytime weather conditions. While Section 11.80.030 (7) of the City of Moreno Valley Municipal Code currently prohibits nighttime construction activities, Section 11.80.030 (E) (8) allows for a temporary use or special event permit (Section 11.80.040). (2) The temporary use or special event permit shall be submitted to the City of Moreno Valley Planning Department for approval and meet the provisions Municipal Code Section 11.80.040.

To estimate the nighttime construction noise levels at the nearby receiver locations, sample reference noise level measurements were collected during nighttime concrete pour activities at a similar industrial development site. Based on the reference concrete pour noise measurements, the noise levels at the nearby sensitive receiver locations are expected to approach 59.3 dBA Leq during Phase 1 and 49.6 dBA Leq during Phase 2. If the Project pursues nighttime concrete pours during the building construction and paving stages of Project construction due to the weather conditions, this analysis demonstrates that these activities will not exceed the City of Moreno Valley 60 dBA Leq nighttime noise level standards. The construction noise analysis shows that nighttime concrete pour noise levels for Phases 1 and 2 of Project construction will satisfy the City of Moreno Valley 60 dBA Leq nighttime noise level standard at all receiver locations representing a *less than significant* noise impact.

## CONSTRUCTION VIBRATION ANALYSIS

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. This analysis shows the construction vibration levels are expected to approach 68.8 VdB at the eight receiver locations. Based on the FTA vibration standards for annoyance and building damage of 80 VdB and 90 VdB, respectively, the proposed Project construction activities will not include or require equipment, facilities, or activities that would result in a *barely perceptible* human response (annoyance) or building damage at the nearby residential homes, and therefore, impacts due to vibration are considered *less than significant.*

### CONSTRUCTION MITIGATION MEASURES

Though construction noise is temporary, intermittent and of short duration, and will not present any long-term impacts, the following practices would reduce any noise level increases produced by the construction equipment to the nearby noise-sensitive residential land uses:

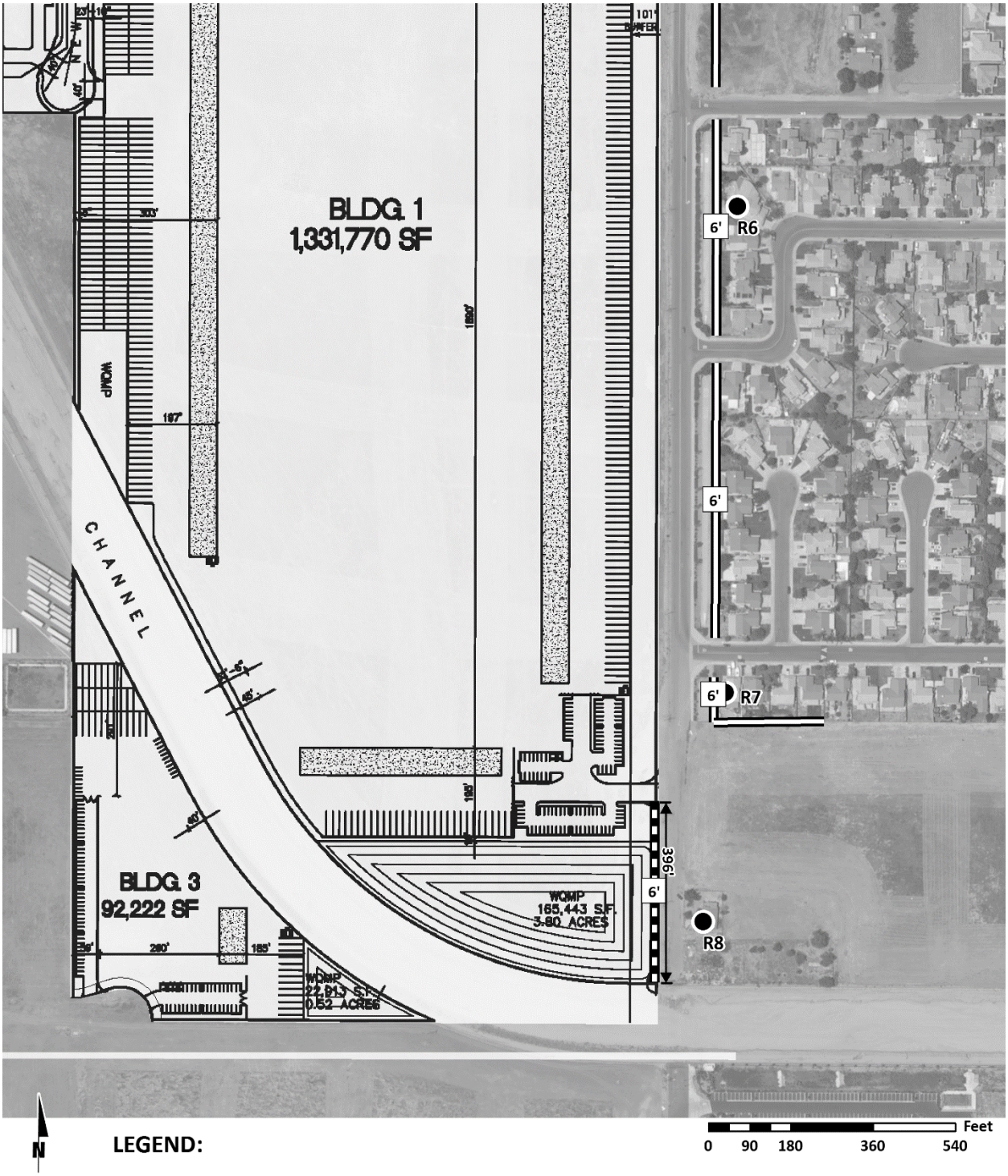
- Prior to approval of grading plans and/or issuance of building permits, plans shall include a note indicating that noise-generating Project construction activities that would create noise levels of greater than 60 dBA Leq at sensitive receivers shall only occur between the permitted hours of 7:00 a.m. to 8:00 p.m. on any day. Grading operations shall be limited to between the hours of 8:00 a.m. to 6:00 p.m. weekdays, and 8:00 a.m. to 4:00 p.m. on weekends and holidays, or as otherwise approved by the City Engineer. The Project construction supervisor shall ensure compliance with the note and the City shall conduct periodic inspection at its discretion.
- Install 6-foot high temporary noise control barrier for a length of approximately 400 feet as shown on Exhibit ES-A at the Project site boundaries when Phase 1 grading and paving construction activities occur within 280 feet of receiver location R8. Alternatively, with the approval of the homeowner at receiver location R8, the 6-foot high temporary noise barrier can be installed at the property line of the residential home. The noise control barrier must present a solid face from top to bottom. The noise control barrier must be a minimum height of 6-feet.
    - The noise barrier may be constructed using an acoustical blanket (e.g. vinyl acoustic curtains or quilted blankets) attached to the construction site perimeter fence or equivalent temporary fence posts.

  - The noise barriers must be maintained and any damage promptly repaired. Gaps, holes, or weaknesses in the barrier or openings between the barrier and the ground shall be promptly repaired.
  - The noise control barriers and associated elements shall be completely removed and the site appropriately restored upon the conclusion of the construction activity.
- During all Project site construction, the construction contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturers' standards. The construction contractor shall place all stationary construction equipment so that emitted noise is directed away from the noise sensitive receptors nearest the Project site.
- The construction contractor shall locate equipment staging in the vicinity of the intersection of Cosmos Street and Krameria Avenue to create additional distance between construction-related noise sources and noise-sensitive receivers nearest the Project site during all stages of Building 1 construction.
- The construction contractor shall limit haul truck deliveries to the same hours specified for construction equipment (between the hours of 7:00 a.m. to 8:00 p.m. on any day). The contractor shall prepare a haul route exhibit for review and approval by the Public Works Department, Land Development Division, and shall design delivery routes to minimize the exposure of sensitive land uses or residential dwellings to delivery truck-related noise (City of Moreno Valley Municipal Code, Section 8.21.050 (H) (7)).
- Any nighttime construction activity requires an exemption from the City of Moreno Valley Municipal Code as indicated in Section 11.80.030 (E) (8) for a special event permit (Section 11.80.040). The special event permit application shall be submitted to the City of Moreno Valley Planning Department for approval and meet the requirements of Municipal Code Section 11.80.040.

## ALTERNATE SITE PLAN COMPARISON

This noise study evaluates the Project's worst-case condition based on the four-building Project site plan which consists of: 1,351,770 square feet (sf) of high-cube warehouse use/distribution center within a single building (Building 1) and 385,748 square feet of general light industrial use within Buildings 2 to 4. If the alternate site plan with a 166-space truck parking lot in lieu of Building 2 is implemented, the operational and construction noise levels would be reduced. The removal of Building 2 would reduce the total loading dock areas and potential operational noise sources within the Project site, in addition to reducing the amount of construction activity required on-site.

**EXHIBIT ES-A: PHASE 1 GRADING AND PAVING TEMPORARY CONSTRUCTION NOISE BARRIER**



# 1 INTRODUCTION

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

## 1.1 SITE LOCATION

The proposed Moreno Valley Logistics Center site is located south of Krameria Avenue between Heacock Street and Indian Street in the City of Moreno Valley, as shown on Exhibit 1-A. The Project site is currently vacant. Under existing conditions, the Project site is surrounded to the north and south by a mixture of industrial warehouse buildings and a few undeveloped and underutilized parcels that are designated by the Moreno Valley Industrial Area Plan (MVIAP) for future industrial development; to the west by March Air Reserve Base, and to the east by a single-family residential neighborhood. The Perris Valley Storm Drain Channel transects the Project site in a northwest to southeast direction. Approximately 15.3 acres of the Project site are located west of the Perris Valley Storm Drain Channel and approximately 74.1 acres of the Project site are located east of the Perris Valley Storm Drain Channel. (3) The Interstate 215 (I-215) Freeway is located approximately 1.3 miles west of the Project site.

## 1.2 PROJECT DESCRIPTION

The Project is proposed to consist of 1,351,770 square feet (sf) of high-cube warehouse use/distribution center within a single building (Building 1) and 385,748 square feet of general light industrial use. Building 2, located on the southwest corner of Cosmos Street and Krameria Avenue, is proposed to consist of 122,516 sf of general light industrial use; Building 3, located at the eastern terminus of Cardinal Avenue, is proposed to consist of 97,222 sf of general light industrial use; and Building 4, located on the east of Heacock Street and south of Krameria Avenue (North), is proposed to consist of 166,010 sf of general light industrial use, as shown on Exhibit 1-B. For the purposes of this analysis, the Project is anticipated to have an Opening Year of 2020.

The Project also includes an Alternate Site plan that would omit Building 2 and construct a 166-space truck trailer parking lot in its place. In the event the alternate site plan is implemented, the truck trailer parking lot will be utilized as overflow parking for Building 1. The alternative site plan would not involve any changes to the intensity of use, size, location, configuration, or design of proposed Buildings 1, 3, or 4.

To present the potential worst-case noise conditions, this analysis assumes all tenants within the Project building would be operational 24 hours per day, seven days per week. This analysis accounts for the noise associated with cold storage (refrigeration) as a worst-case scenario as it

accounts for the additional noise from the refrigerated containers/reefers on trucks within the Project site, and may conservatively overstate the actual noise levels due to tenant operations at the Project site. Currently the proposed Project could not use more than 10% of the Project for cold storage. This noise analysis has assumed the possibility of more than 10% of cold storage only for the purposes of over-estimating as opposed to under-estimating noise impacts. As proposed, no more than 10% of the Project could be used for cold storage.

Business operations would primarily be conducted within the enclosed buildings, with the exception of traffic movement, parking, and the loading and unloading of trucks at designated loading bays. The on-site Project-related noise sources are expected to include: idling trucks, delivery truck activities, parking, backup alarms, refrigerated containers or reefers, as well as loading and unloading of dry goods. This noise analysis is intended to describe noise level impacts associated with the expected typical warehouse and distribution storage activities at the Project site.

## EXHIBIT 1-A: LOCATION MAP

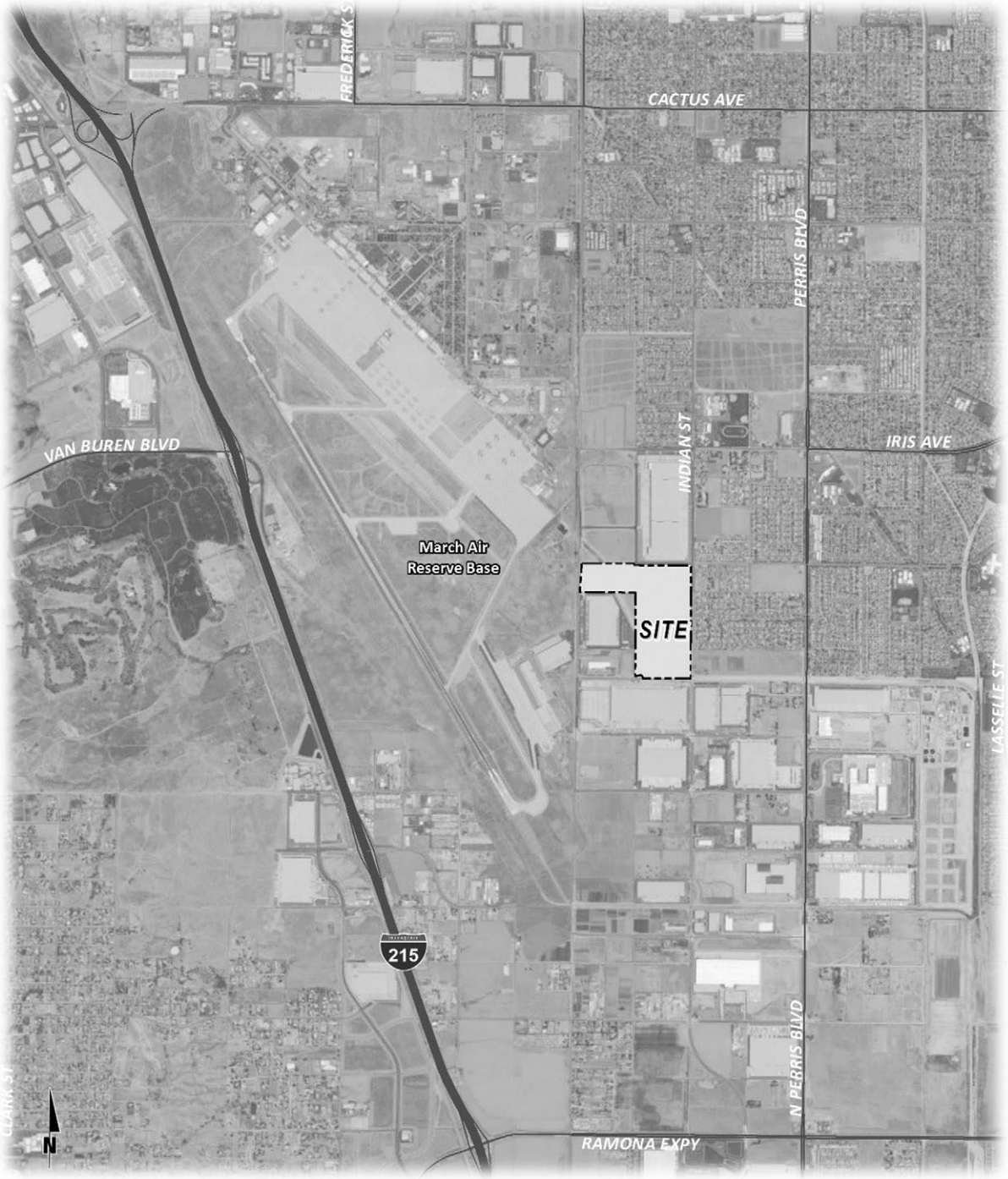
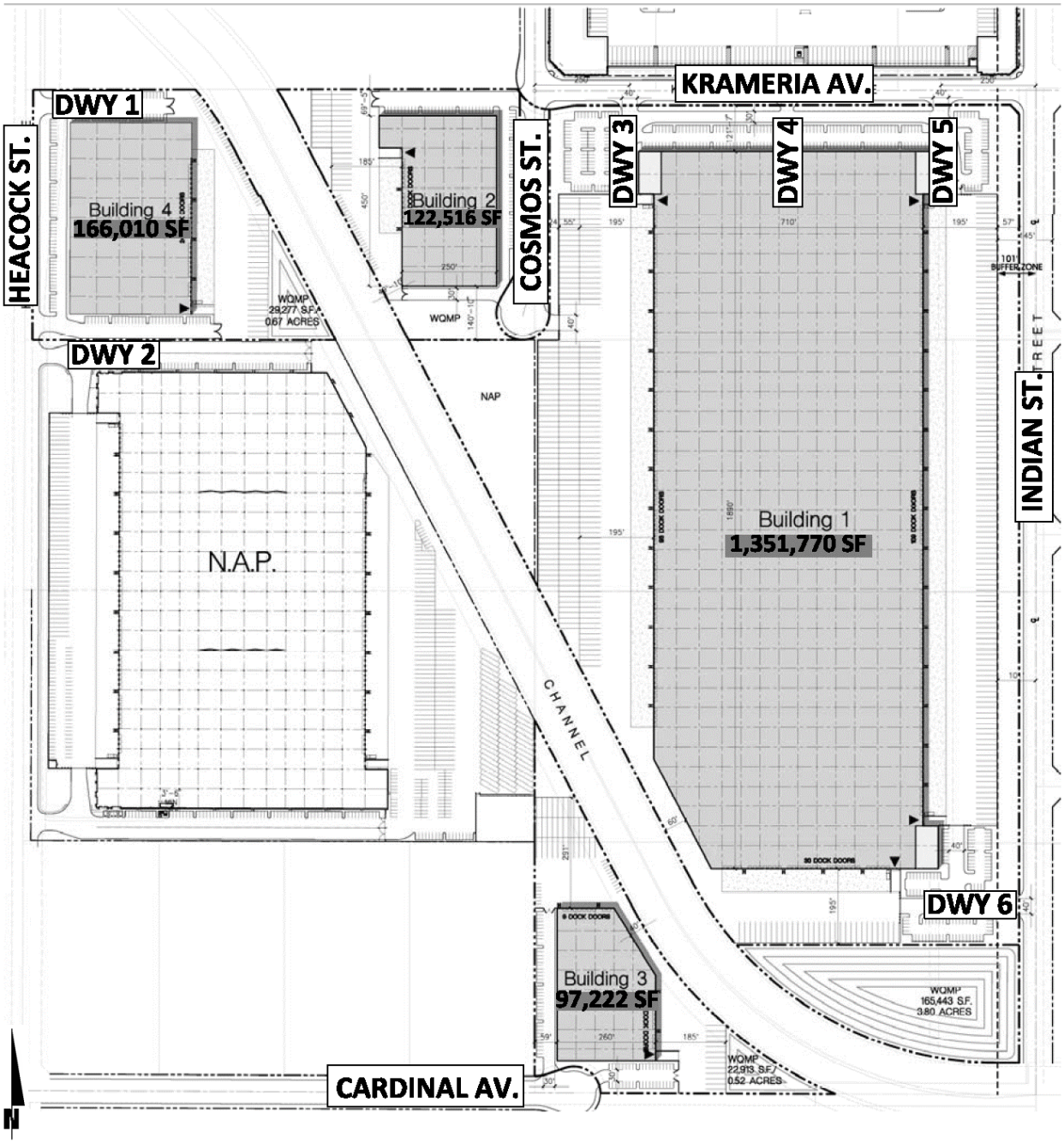


**EXHIBIT 1-B: SITE PLAN**



# 2 FUNDAMENTALS

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

**EXHIBIT 2-A: TYPICAL NOISE LEVELS**

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

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

## 2.1 RANGE OF NOISE

Since the range of intensities that the human ear can detect is so large, the scale frequently used to measure intensity is a scale based on multiples of 10, the logarithmic scale. The scale for measuring intensity is the decibel scale. Each interval of 10 decibels indicates a sound energy ten times greater than before, which is perceived by the human ear as being roughly twice as loud. (4) The most common sounds vary between 40 dBA (very quiet) to 100 dBA (very loud). Normal conversation at three feet is roughly at 60 dBA, while loud jet engine noises equate to 110 dBA

at approximately 100 feet, which can cause serious discomfort. (5) Another important aspect of noise is the duration of the sound and the way it is described and distributed in time.

## 2.2 NOISE DESCRIPTORS

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

Peak hour or average noise levels, while useful, do not completely describe a given noise environment. Noise levels lower than peak hour may be disturbing if they occur during times when quiet is most desirable, namely evening and nighttime (sleeping) hours. To account for this, the Day-Night Average Noise Level (LDN) and the Community Noise Equivalent Level (CNEL), representing a composite 24-hour noise level is utilized. The LDN and CNEL are weighted averages of the intensity of a sound, with corrections for time of day, and averaged over 24 hours. The LDN time of day corrections include the addition of 10 decibels to dBA Leq sound levels at night between 10:00 p.m. and 7:00 a.m. The CNEL time of day corrections require the addition of 5 decibels to dBA Leq sound levels in the evening from 7:00 p.m. to 10:00 p.m., in addition to the corrections for the LDN. These additions are made to account for the noise sensitive time periods during the evening and night hours when sound appears louder. LDN and CNEL do not represent the actual sound level heard at any particular time, but rather represent the total sound exposure. The City of Moreno Valley relies on the 24-hour CNEL level to apply the more conservative evening hour corrections to the 24-hour noise levels.

## 2.3 SOUND PROPAGATION

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

### 2.3.1 GEOMETRIC SPREADING

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

### 2.3.2 GROUND ABSORPTION

The propagation path of noise from a highway to a receptor is usually very close to the ground. Noise attenuation from ground absorption and reflective wave canceling adds to the attenuation

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

### 2.3.3 ATMOSPHERIC EFFECTS

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

### 2.3.4 SHIELDING

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

## 2.4 TRAFFIC NOISE PREDICTION

Vehicle noise is a combination of the noise produced by the engine, exhaust, and tires on the roadway. According to the *Highway Traffic Noise Analysis and Abatement Policy and Guidance,* provided by the Federal Highway Administration (FHWA), the level of traffic noise depends on three primary factors: the volume of the traffic, the speed of the traffic, and the vehicle mix within the flow of traffic. Generally, the loudness of traffic noise is increased by heavier traffic volumes, higher speeds, and a greater number of trucks. (6) A doubling of the traffic volume, assuming that the speed and vehicle mix do not change, results in a noise level increase of 3 dBA. The vehicle mix on a given roadway may also have an effect on community noise levels. As the number of medium and heavy trucks increases and becomes a larger percentage of the vehicle mix, adjacent noise level impacts will increase.

## 2.5 NOISE CONTROL

Noise control is the process of obtaining an acceptable noise environment for a particular observation point or receptor by controlling the noise source, transmission path, receptor, or all

three. This concept is known as the source-path-receptor concept. In general, noise control measures can be applied to any and all of these three elements.

## 2.6 NOISE BARRIER ATTENUATION

Effective noise barriers can reduce noise levels by 10 to 15 dBA, cutting the loudness of traffic noise in half. A noise barrier is most effective when placed close to the noise source or receptor. Noise barriers, however, do have limitations. For a noise barrier to work, it must be high enough and long enough to block the path of the noise source. (6)

## 2.7 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. (7)

## 2.8 COMMUNITY RESPONSE TO NOISE

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

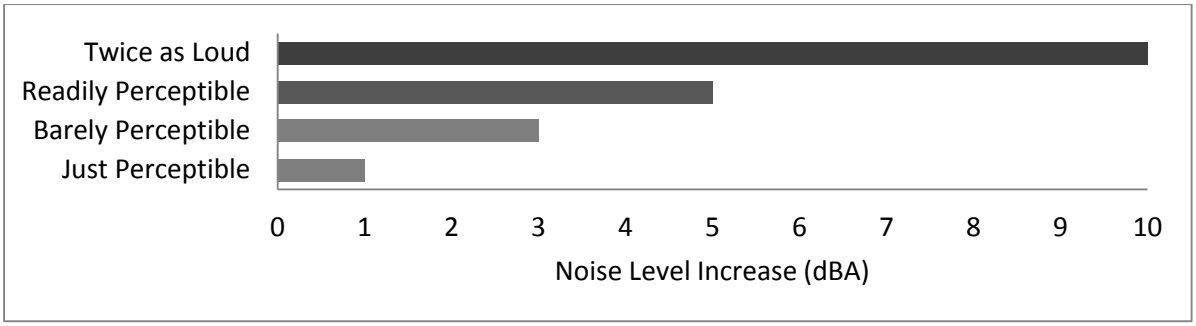
- Fear associated with noise producing activities;
- Socio-economic status and educational level;
- Perception that those affected are being unfairly treated;
- Attitudes regarding the usefulness of the noise-producing activity;
- Belief that the noise source can be controlled.

Approximately ten percent of the population has a very low tolerance for noise and will object to any noise not of their making. Consequently, even in the quietest environment, some complaints will occur. Another twenty-five percent of the population will not complain even in very severe noise environments. Thus, a variety of reactions can be expected from people exposed to any given noise environment. (8) Surveys have shown that about ten percent of the people exposed to traffic noise of 60 dBA will report being highly annoyed with the noise, and each increase of one dBA is associated with approximately two percent more people being highly annoyed. When traffic noise exceeds 60 dBA or aircraft noise exceeds 55 dBA, people may begin to complain. (8)

Despite this variability in behavior on an individual level, the population as a whole can be expected to exhibit the following responses to changes in noise levels as shown on Exhibit 2-B. An increase or decrease of 1 dBA cannot be perceived except in carefully controlled laboratory

experiments, a change of 3 dBA are considered *barely perceptible*, and changes of 5 dBA are considered *readily perceptible*. (6)

**EXHIBIT 2-B: NOISE LEVEL INCREASE PERCEPTION**




## 2.9 VIBRATION

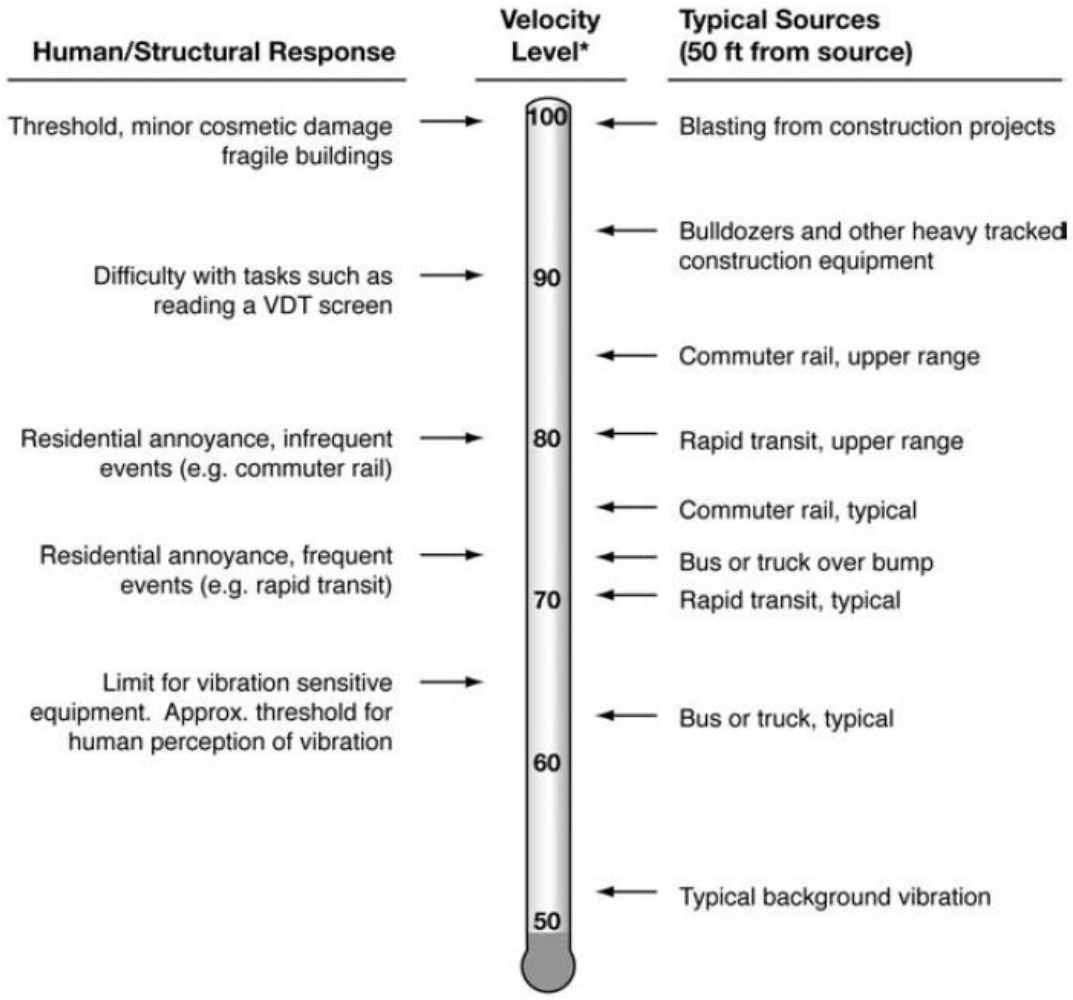
According to the Federal Transit Administration (FTA) *Transit Noise Impact and Vibration Assessment* (9), vibration is the periodic oscillation of a medium or object. The rumbling sound caused by the vibration of room surfaces is called structure borne noise. Sources of ground-borne vibrations include 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.

Vibration is usually expressed in peak particle velocity (PPV) in inches per second (in/sec) and discussed in decibel (dB) units in order to compress the range of numbers required to describe vibration. Vibration impacts are generally associated with activities such as train operations, construction and heavy truck movements. Although PPV is appropriate for evaluating the potential for building damage, it is not always suitable for evaluating human response (annoyance). It takes some time for the human body to respond to vibration signals. In a sense, the human body responds to 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 1-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.

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

threshold where minor damage can occur in fragile buildings. Exhibit 2-C illustrates common vibration sources and the human and structural response to ground-borne vibration.

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




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

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

# 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 fairly constant with time. Air and rail traffic, and commercial and industrial activities are also major sources of noise in some areas. Federal, state, and local agencies regulate different aspects of environmental noise. Federal and state agencies generally set noise standards for mobile sources such as aircraft and motor vehicles, while regulation of stationary sources is left to local agencies.

## 3.1 STATE OF CALIFORNIA NOISE REQUIREMENTS

The State of California regulates freeway noise, sets standards for sound transmission, provides occupational noise control criteria, identifies noise standards and provides guidance for local land use compatibility. State law requires that each county and city adopt a General Plan that includes a Noise Element which is to be prepared according to guidelines adopted by the Governor's Office of Planning and Research. (10) The purpose of the Noise Element is to *limit the exposure of the community to excessive noise levels*.

## 3.2 STATE OF CALIFORNIA GREEN BUILDING STANDARDS CODE

The 2014 State of California's Green Building Standards Code contains mandatory measures for non-residential building construction in Section 5.506 on Environmental Comfort. (11) These noise standards are applied to new construction in California for the purpose of controlling interior noise levels resulting from exterior noise sources. The regulations specify that acoustical studies must be prepared when non-residential structures are developed in areas where the exterior noise levels exceed 65 dBA CNEL, such as within a noise contour of an airport, freeway, railroad, and other areas where noise contours are not readily available. If the development falls within an airport or freeway 65 dBA CNEL noise contour, the combined sound transmission class (STC) rating of the wall and roof-ceiling assemblies must be at least 50. For those developments in areas where noise contours are not readily available and the noise level exceeds 65 dBA Leq for any hour of operation, a wall and roof-ceiling combined STC rating of 45, and exterior windows with a minimum STC rating of 40 are required (Section 5.507.4.1).

## 3.3 CITY OF MORENO VALLEY GENERAL PLAN NOISE ELEMENT

The City Noise Element typically provides the standards for land use compatibility for community noise exposure. However, the City of Moreno Valley General Plan does not include a noise element or specific transportation related noise standards. Rather, noise is considered in the Environmental Safety section of the General Plan Safety Element. (12) While the General Plan provides background and noise fundamentals, it does not identify criteria to assess the impacts associated with off-site transportation related noise impacts. Therefore, for the purpose of this analysis, the transportation noise criteria are derived from standards contained in the General Plan Guidelines, a publication of the California Office of Planning and Research (OPR). The OPR land use/noise compatibility standards are used by many California cities and counties and specify the maximum noise levels allowable for new developments impacted by transportation noise sources

The purpose of the transportation noise criteria is to protect, create, and maintain an environment free from noise and vibration that may jeopardize the health or welfare of sensitive receptors, or degrade quality of life. City General Policies (City of Moreno Valley General Plan, pp.9-31, 9-32) act to ensure that when exterior noise levels exceed 65 dBA CNEL at sensitive receptors, mitigation is provided to ensure that interior noise levels of 45 dBA CNEL are maintained. General Plan Policies in this regard are consistent with, and support, the California Building Code interior noise standards.

## 3.4 OPERATIONAL NOISE STANDARDS

To analyze noise impacts originating from a designated fixed location or private property such as the Moreno Valley Logistics Center Project, stationary-source (operational) noise such as the expected idling trucks, delivery truck activities, parking, backup alarms, refrigerated containers or reefers, as well as loading and unloading of dry goods are typically evaluated against standards established under a City's Municipal Code. Therefore, this analysis presents the City of Moreno Valley Municipal Code stationary-source noise standards, provided in Appendix 3.1.

The City of Moreno Valley Municipal Code, Chapter 11.80 *Noise Regulation*, provides performance standards and noise control guidelines for determining and mitigating non-transportation or stationary-source noise impacts from operations at private properties. The City of Moreno Valley Municipal Code defines *Maximum Sound Levels (in dB(A)) for Source Land Uses* in Table 11.80.030-2 for *Residential* and *Commercial* land uses. As defined by the Municipal Code, Section 11.80.020 *Definitions*, *Commercial* land use *means all uses of land not otherwise classified as residential,* and *Residential* land use *means all uses of land primarily for dwelling units, as well as hospitals, schools, colleges and universities, and places of religious assembly.* (2) For the purpose of this analysis, the Moreno Valley Logistics Center Project is considered *Commercial* land use since it is not classified as residential. Based on this standard, the operational noise level limits for commercial land use, from Table 11.80.030-2, of 65 dBA Leq during the daytime (8:00 a.m. to 10:00 p.m.) hours and 60 dBA Leq during the nighttime (10:01 p.m. to 7:59 a.m.) hours shall apply to the operational noise from the Project.

Further, Section 11.80.030 (C) *Prohibited Acts*, *Nonimpulsive Sound Decibel Limits*, states: *No person shall maintain, create, operate or cause to be operated on private property any source of sound in such a manner as to create any nonimpulsive sound which exceeds the limits set forth for the source land use category (as defined in Section 11.80.020) in Table 11.80.030-2 when measured at a distance of two hundred (200) feet or more from the real property line of the source of the sound, if the sound occurs on a privately owned property…* (2) Therefore, at a distance of 200 feet from the property line, the Project's operational noise levels shall not exceed the 65 dBA Leq daytime and 60 dBA Leq nighttime noise level standards for commercial land uses, as shown on Table 3-1.

**TABLE 3-1: OPERATIONAL NOISE STANDARDS AT 200 FEET FROM THE SOURCE**

| Jurisdiction | Source Land Use | Time Period | Maximum Noise Level For Source Land Uses @ 200' (dBA Leq)[2] |
|---|---|---|---|
| City of Moreno Valley[1] | Commercial | Daytime (8:00 a.m. - 10:00 p.m.) | 65 |
| | | Nighttime (10:01 p.m. - 7:59 a.m.) | 60 |

[1] Source: City of Moreno Valley Municipal Code, Chapter 11.80 Noise Regulation, Table 11.80.030-2 Maximum Sound Levels (in dB(A)) for Source Land Uses when measured at a distance of 200 feet from the property line of the source land use (Appendix 3.1).
[2] Leq represents a steady state sound level containing the same total energy as a time varying signal over a given sample period.

## 3.5 CONSTRUCTION NOISE STANDARDS

To analyze noise impacts originating from the construction of the Moreno Valley Logistics Center Project, noise from construction activities are typically limited to the hours of operation established under a City's Municipal Code. The Municipal Code noise standards for construction are described below for the City of Moreno Valley to determine the potential noise impacts at nearby sensitive receiver locations. As a subset of its stationary-source noise regulations, the City Municipal Code establishes additional restrictions on construction-source noise. More specifically, Municipal Code Section 11.80.030 (D) (7), *Construction and Demolition*, provides the following:

> *No person shall operate or cause operation of any tools or equipment used in construction, drilling, repair, alteration or demolition work between the hours of eight p.m. and seven a.m. the following day such that the sound there from creates a noise disturbance, except for emergency work by public service utilities or for other work approved by the city manager or designee.*

A *noise disturbance*, as defined by the City of Moreno Valley Municipal Code, means any sound which:

- *Disturbs a reasonable person of normal sensitivities;*
- *Exceeds the sound level limits set forth in this chapter [Table 11.80.030-2];*

- *Is plainly audible as defined in this section. Where no specific distance is set forth for the determination of audibility, references to noise disturbance shall be deemed to mean plainly audible at a distance of two hundred (200) feet from the real property line of the source of the sound, if the sound occurs on a privately owned property, or from the source of the sound, if the sound occurs on public right, public space or other publicly owned property.*

Therefore, based on the Section 11.80.030 (D) (7) construction regulations, a construction-related *noise disturbance* occurs when the noise levels exceed the *commercial* land use criteria of 65 dBA Leq during the daytime hours and 60 dBA Leq during the nighttime hours at a distance of 200 feet from the property line of the source (Project site). In addition, grading operations shall be limited to the hours identified in Section 8.21.050 (O) of 7:00 a.m. to 6:00 p.m., Monday through Friday, and 8:00 a.m. to 4:00 p.m. on weekends and holidays or as approved by the City Engineer. The City of Moreno Valley construction noise standards are shown on Table 3-2 and included in Appendix 3.1.

**TABLE 3-2: CONSTRUCTION NOISE STANDARDS**

| Jurisdiction | Permitted Hours of Construction Activity | Construction Noise Level Standard at 200 Feet (dBA Leq)[2] | |
|---|---|---|---|
| | | Daytime | Nighttime |
| City of Moreno Valley[1] | General Activity: 7:00 a.m. to 8:00 p.m. on any day. Grading is limited to 7:00 a.m. to 6:00 p.m. Monday to Friday; 8:00 a.m. to 4:00 p.m. on weekends and holidays. | 65 | 60 |

[1] Source: City of Moreno Valley Municipal Code, Section 11.80.030 (D) (7) and Section 8.21.050 (O) (Appendix 3.1).
[2] Acceptable threshold for determining the relative significance of short-term Project construction noise levels, based on the City of Moreno Valley stationary noise standards shown on Table 3-1.
"Daytime" = 8:00 a.m. to 10:00 p.m.; "Nighttime" = 10:01 p.m. to 7:59 a.m.

## 3.6 VIBRATION STANDARDS

The City of Moreno Valley has not identified or adopted vibration standards. However, the United States Department of Transportation Federal Transit Administration (FTA) provides guidelines for maximum-acceptable vibration criteria for different types of land uses. These guidelines allow 80 VdB as an annoyance threshold for residential uses and buildings where people normally sleep. (13) To assess the potential for building damage due to Project-related vibration sources, the FTA identifies a level of 90 VdB for *buildings extremely susceptible to vibration damage*, such as residential homes.

Operational and construction activities can result in varying degrees of ground-borne vibration, depending on the equipment and methods used, distance to the affected structures and soil type. Construction vibration is generally associated with pile driving and rock blasting. Other construction equipment such as air compressors, light trucks, hydraulic loaders, etc., generates little or no ground vibration. Occasionally large bulldozers and loaded trucks can cause perceptible vibration levels at close proximity. While not enforceable regulations within the City of Moreno Valley, the FTA vibration threshold of 80 VdB for annoyance and 90 VdB for building

damage at sensitive land uses provide the basis for determining the relative significance of potential Project-related vibration impacts due to on-site operational and construction activities.

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# 4 SIGNIFICANCE CRITERIA

The following significance criteria are based on guidance provided by Appendix G of the California Environmental Quality Act (CEQA) Guidelines. For the purposes of this report, impacts would be potentially significant if the Project is determined to result in or cause:

A. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;

B. Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels.

C. A substantial permanent increase in ambient noise levels in the Project vicinity above existing levels without the proposed Project; or

D. A substantial temporary or periodic increase in ambient noise levels in the Project vicinity above noise levels existing without the proposed Project.

E. For a project located within 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, expose people residing or working in the Project area to excessive noise levels.

F. For a project within the vicinity of a private airstrip, expose people residing or working in the Project area to excessive noise levels.

While the CEQA Guidelines and the City of Moreno Valley General Plan Guidelines provide direction on noise compatibility and establish noise standards by land use type that are sufficient to assess the significance of noise impacts under the first threshold, they do not define the levels at which increases are considered substantial for use under the second, third and fourth threshold. The fifth and sixth thresholds apply to nearby public and private airports, if any, and the Project's land use compatibility, as discussed below.

A CEQA Initial Study was prepared for the Moreno Valley Logistics Center which addresses the E and F thresholds of the noise-related CEQA Guidelines related to the Project site. (14) The Initial Study indicates that the Project site is located within two miles of a public airport, the March Air Reserve Base (ARB). Based on General Plan Figure 5.4-1, *March Air Reserve Base Noise Impact Area*, the Project site is located outside of the 60 dBA CNEL noise contour and would not be subjected to excessive noise levels due to operations at the March ARB. Further, since the Project site is not located within the March ARB noise contours, the Project would not expose people residing or working in the Project area to excessive noise levels due to its location within two miles of a public airport. Therefore, the Initial Study concludes that the Project site will experience a *less than significant* impact due to airport operations at the March ARB, and no further analysis is required. (14)

## 4.1 NOISE-SENSITIVE RECEIVERS

Noise level increases resulting from the Project are evaluated based on the Appendix G CEQA Guidelines described above at the closest sensitive receiver locations. Under CEQA, consideration must be given to the magnitude of the increase, the existing ambient noise levels and the location of noise-sensitive receivers in order to determine if a noise increase represents a significant adverse environmental impact. This approach recognizes *that there is no single noise increase that renders the noise impact significant.* (15)

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

In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will typically be judged. With this in mind, the Federal Interagency Committee on Noise (FICON) (16) developed guidance to be used for the assessment of project-generated increases in noise levels that take into account 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 (i.e., CNEL).

For example, if the ambient noise environment is quiet (<60 dBA) and the new noise source greatly increases the noise levels, an impact may occur if the noise criteria may be exceeded. Therefore, for the purpose of this analysis, FICON identifies a *readily perceptible* 5 dBA or greater project related noise level increase is considered a significant impact when the noise criteria for a given land use is exceeded. According to the FICON, in areas where the without project noise levels range from 60 to 65 dBA, a 3 dBA *barely perceptible* noise level increase appears to be appropriate for most people. When the without project noise levels already exceed 65 dBA, any increase in community noise louder than 1.5 dBA or greater is considered a significant impact if the noise criteria for a given land use is exceeded, since it likely contributes to an existing noise exposure exceedance. Table 4-1 below provides a summary of the potential noise impact significance criteria, based on guidance from FICON.

**TABLE 4-1: SIGNIFICANCE OF NOISE IMPACTS AT NOISE-SENSITIVE RECEIVERS**

| Without Project Noise Level | Potential Significant Impact |
|---|---|
| < 60 dBA | 5 dBA or more |
| 60 - 65 dBA | 3 dBA or more |
| > 65 dBA | 1.5 dBA or more |

Federal Interagency Committee on Noise (FICON), 1992.

## 4.2 NON-NOISE-SENSITIVE RECEIVERS

The City of Moreno Valley General Plan Safety Element does not identify specific exterior noise level standards for non-noise sensitive land uses such as the industrial use of the Project site. Therefore, the land use compatibility criteria for non-noise sensitive land uses is derived from standards contained in the *General Plan Guidelines*, a publication of the California Office of Planning and Research (OPR) prepared in October, 2003. (10) The OPR guideline for the *normally acceptable* exterior noise level for non-noise-sensitive land use, such as industrial use, is 70 dBA CNEL. Noise levels greater than 70 dBA CNEL are considered *conditionally acceptable*.

To determine if Project-related traffic noise level increases are significant at off-site non-noise-sensitive land uses, a *readily perceptible* 5 dBA and *barely perceptible* 3 dBA criteria are used. When the without Project noise levels at the non-noise-sensitive land uses are below the *normally acceptable* 70 dBA CNEL compatibility criteria, a *readily perceptible* 5 dBA or greater noise level increase is considered a significant impact. When the without Project noise levels are greater than the *normally acceptable* 70 dBA CNEL land use compatibility criteria, a *barely perceptible* 3 dBA or greater noise level increase is considered a significant impact since the noise level criteria is already exceeded. The noise level increases used to determine significant impacts for non-noise-sensitive land uses is generally consistent with the FICON noise level increase thresholds for noise-sensitive land uses but instead rely on the OPR *General Plan Guidelines* exterior noise level criteria.

Noise impacts shall be considered significant if any of the following occur as a direct result of the proposed development. Table 4-2 shows the significance criteria summary matrix.

**OFF-SITE TRAFFIC NOISE**

- When the noise levels at existing and future noise-sensitive land uses (e.g. residential, etc.):
    - are less than 60 dBA and the Project creates a *readily perceptible* 5 dBA or greater Project related noise level increase; or
    - range from 60 to 65 dBA and the Project creates a *barely perceptible* 3 dBA or greater Project noise level increase; or
    - already exceed 65 dBA, and the Project creates a community noise level impact of greater than 1.5 dBA (FICON, 1992).
- When the noise levels at existing and future non-noise-sensitive land uses (e.g. business park, industrial, etc.):
    - are less than the OPR General Plan Guidelines *normally acceptable* 70 dBA and the Project creates a *readily perceptible* 5 dBA or greater Project related noise level increase; or
    - are greater than the OPR General Plan Guidelines *normally acceptable* 70 dBA and the Project creates a *barely perceptible* 3 dBA or greater Project noise level increase.

**OPERATIONAL NOISE**

- If Project-related operational (stationary source) noise levels exceed the 65 dBA Leq daytime or 60 dBA Leq nighttime noise level standards at a distance of 200 feet from the property line of the noise source (City of Moreno Valley Municipal Code, Table 11.80.030-2).

- If the existing ambient noise levels at the nearby noise-sensitive receivers near the Project site:
    - are less than 60 dBA and the Project creates a *readily perceptible* 5 dBA or greater Project-related noise level increase; or
    - range from 60 to 65 dBA and the Project creates a *barely perceptible* 3 dBA or greater Project-related noise level increase; or
    - already exceed 65 dBA, and the Project creates a community noise level impact of greater than 1.5 dBA (FICON, 1992).
- If long-term Project generated operational source vibration levels could exceed the FTA maximum acceptable vibration standard of 80 vibration decibels (VdB) at sensitive receiver locations (Federal Transit Administration, Transit Noise and Vibration Impact Assessment, May 2006).

**CONSTRUCTION NOISE AND VIBRATION**

- If Project-related construction activities:
    - occur at any time other than between the permitted hours of 7:00 a.m. to 8:00 p.m. on any day. Grading operations shall be limited to between the hours of 8:00 a.m. to 6:00 p.m. weekdays, and 8:00 a.m. to 4:00 p.m. on weekends and holidays, or as otherwise approved by the City Engineer (City of Moreno Valley Municipal Code, Sections 11.80.030 (D) (7), and 8.21.050 (O)) and would create noise levels of greater than 60 dBA Leq at sensitive receivers; or
    - create noise levels at sensitive residential receivers in the City of Moreno Valley which exceed the short-term construction noise level limit of 65 dBA Leq during the daytime hours or 60 dBA Leq during the nighttime hours at 200 feet from the Project site (City of Moreno Valley Municipal Code, Section 11.80.030 (D) (7)).
- If short-term Project generated construction-source vibration levels could exceed the FTA maximum acceptable vibration standard for annoyance assessment of 80 vibration decibels (VdB) or for building damage of 90 VdB at sensitive receiver locations (Federal Transit Administration, Transit Noise and Vibration Impact Assessment, May 2006).

**TABLE 4-2: SIGNIFICANCE CRITERIA SUMMARY**

| Analysis | Land Use | Condition(s) | Significance Criteria | |
|---|---|---|---|---|
| | | | Daytime | Nighttime |
| Off-Site | Noise-Sensitive[1] | if ambient is < 60 dBA CNEL | ≥ 5 dBA CNEL Project increase | |
| | | if ambient is 60 - 65 dBA CNEL | ≥ 3 dBA CNEL Project increase | |
| | | if ambient is > 65 dBA CNEL | ≥ 1.5 dBA CNEL Project increase | |
| | Non-Noise-Sensitive[2] | if ambient is < 70 dBA CNEL | ≥ 5 dBA CNEL Project increase | |
| | | if ambient is > 70 dBA CNEL | ≥ 3 dBA CNEL Project increase | |
| Operational[3] | Noise-Sensitive | At 200' from the property line of the source | 65 dBA Leq | 60 dBA Leq |
| Construction[4] | Noise-Sensitive | General Activity: 7:00 a.m. to 8:00 p.m. on any day. Grading is limited to 7:00 a.m. to 6:00 p.m. Monday to Friday; 8:00 a.m. to 4:00 p.m. on weekends and holidays. | | |
| | | At 200' from the property line of the source | 65 dBA Leq | 60 dBA Leq |
| Vibration[5] | Sensitive | Operational & Construction | 80 VdB | 80 VdB |

[1] Source: FICON, 1992.
[2] Source: Office of Planning and Research, General Plan Guidelines, October 2003.
[3] Source: City of Moreno Valley Municipal Code, Table 11.80.030-2.
[4] Source: City of Moreno Valley Municipal Code, Section 11.80.030 (D) (7) and Section 8.21.050 (O).
[5] Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment, May 2006.
"Daytime" = 8:00 a.m. - 10:00 p.m.; "Nighttime" = 10:01 p.m. - 7:59 a.m.

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# 5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, nine 24-hour noise level measurements were taken at sensitive receiver locations in the Project study area. The receiver locations were selected to describe and document the existing noise environment within the Project study area. Exhibit 5-A provides the boundaries of the Project study area and the noise level measurement locations. To fully describe the existing noise conditions, noise level measurements were collected by Urban Crossroads, Inc. from Monday, March 9th to Tuesday, March 10th, 2015. Appendix 5.1 includes study area photos.

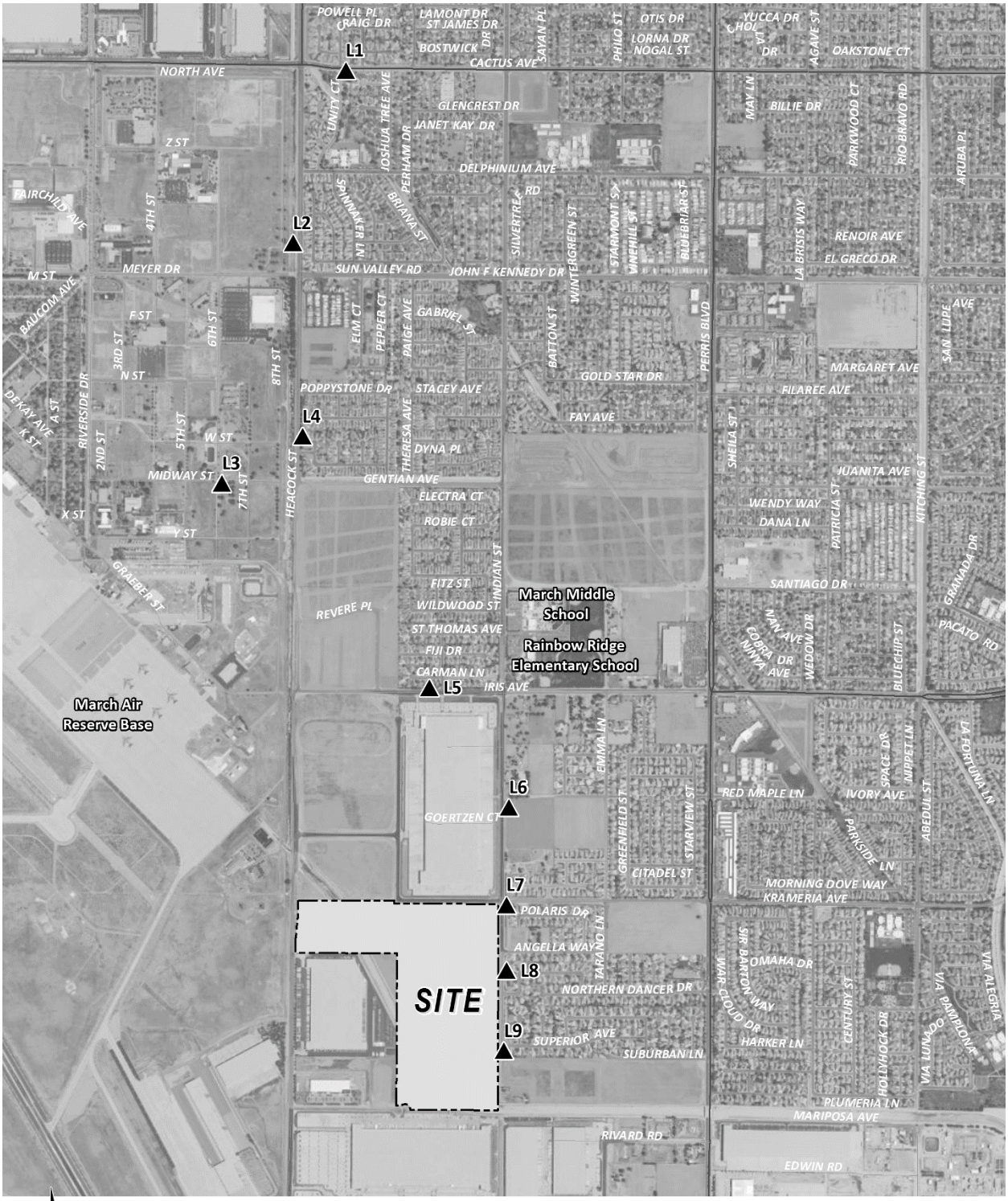
## 5.1 MEASUREMENT PROCEDURE AND CRITERIA

To describe the existing noise environment, the hourly noise levels were measured during typical weekday conditions over a 24-hour period. By collecting individual hourly noise level measurements, it is possible to describe the daytime and nighttime hourly noise levels and calculate the 24-hour CNEL. The long-term noise readings were recorded using Piccolo Type 2 integrating sound level meter and dataloggers. The Piccolo sound level meters were calibrated using a Larson-Davis calibrator, Model CAL 150. All noise meters were programmed in "slow" mode to record noise levels in "A" weighted form. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (17)

## 5.2 NOISE MEASUREMENT LOCATIONS

The 24-hour noise level measurements were positioned at the nearest sensitive receiver locations to assess the existing ambient hourly noise levels surrounding the Project site. To describe the existing noise environment, 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. 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 cumulative noise impacts.

## EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS




*09303_Measurements_v.MV* *10/9/201*

## 5.3 NOISE MEASUREMENT RESULTS

The noise measurements presented below focus on the average or equivalent sound levels (Leq). The equivalent sound level (Leq) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period. Table 5-1 identifies the hourly daytime (8:00 a.m. to 10:00 p.m.) and nighttime (10:01 p.m. to 7:59 a.m.) noise levels at each noise level measurement location. Appendix 5.2 provides a summary of the existing hourly ambient noise levels described below:

- Location L1 represents the noise levels at the southeast corner of Cactus Avenue and Unity Court adjacent to existing residential homes. The noise level measurements collected show an overall 24-hour exterior noise level of 79.7 dBA CNEL. The hourly noise levels measured at location L1 ranged from 73.0 to 77.2 dBA Leq during the daytime hours and from 68.2 to 76.5 dBA Leq during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 75.3 dBA Leq with an average nighttime noise level of 73.0 dBA Leq.
- Location L2 represents the existing noise levels on Heacock Street north of Meyer Drive near existing residential homes. The noise level measurements collected show an overall 24-hour exterior noise level of 72.1 dBA CNEL. The hourly noise levels measured at location L2 ranged from 64.3 to 68.0 dBA Leq during the daytime hours and from 61.3 to 68.3 dBA Leq during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 65.9 dBA Leq with an average nighttime noise level of 65.6 dBA Leq.
- Location L3 represents the noise levels at the southeast corner of 6$^{th}$ Street and Midway Street near an existing baseball diamond and park. The 24-hour CNEL indicates that the overall exterior noise level is 58.9 dBA CNEL. At location L3 the background ambient noise levels ranged from 44.8 to 53.4 dBA Leq during the daytime hours to levels of 46.7 to 56.7 dBA Leq during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 50.2 dBA Leq with an average nighttime noise level of 52.9 dBA Leq.
- Location L4 represents the existing noise levels on Heacock Street north of Gentian Avenue adjacent to an existing residential community. The noise level measurements collected show an overall 24-hour exterior noise level of 74.7 dBA CNEL. The hourly noise levels measured at location L4 ranged from 65.9 to 70.6 dBA Leq during the daytime hours and from 62.0 to 72.2 dBA Leq during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 68.8 dBA Leq with an average nighttime noise level of 68.1 dBA Leq.
- Location L5 represents the noise levels on Iris Avenue west of Indian Street and the Rainbow Ridge Elementary School. An existing logistics warehouse is located south of this location across Iris Avenue. The noise level measurements collected show an overall 24-hour exterior noise level of 73.1 dBA CNEL. The hourly noise levels measured at location L5 ranged from 62.6 to 68.0 dBA Leq during the daytime hours and from 55.6 to 72.8 dBA Leq during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 66.2 dBA Leq with an average nighttime noise level of 67.0 dBA Leq.

- Location L6 represents the existing noise levels north of the Project site on Indian Street near an existing residential home. The noise level measurements collected show an overall 24-hour exterior noise level of 68.8 dBA CNEL. The hourly noise levels measured at location L6 ranged from 56.5 to 67.1 dBA Leq during the daytime hours and from 51.8 to 67.6 dBA Leq during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 61.5 dBA Leq with an average nighttime noise level of 62.5 dBA Leq.
- Location L7 represents the noise levels on Indian Street south of Krameria Avenue near existing residential homes located northeast of the Project site. The 24-hour CNEL indicates that the overall exterior noise level is 67.2 dBA CNEL. At location L7 the background ambient noise levels ranged from 59.6 to 67.9 dBA Leq during the daytime hours to levels of 50.8 to 66.0 dBA Leq during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 64.1 dBA Leq with an average nighttime noise level of 60.6 dBA Leq.
- Located east of the Project site, location L8 represents the existing noise levels on Indian Street near existing residential homes. The noise level measurements collected show an overall 24-hour exterior noise level of 66.4 dBA CNEL. The hourly noise levels measured at location L8 ranged from 57.8 to 62.9 dBA Leq during the daytime hours and from 50.7 to 65.0 dBA Leq during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 60.8 dBA Leq with an average nighttime noise level of 60.2 dBA Leq.
- Location L9 represents the noise levels at east of the Project site on Indian Street, south of Superior Avenue near existing residential homes. The 24-hour CNEL indicates that the overall exterior noise level is 58.2 dBA CNEL. At location L9 the background ambient noise levels ranged from 47.7 to 56.5 dBA Leq during the daytime hours to levels of 45.1 to 55.6 dBA Leq during the nighttime hours. The energy (logarithmic) average daytime noise level was calculated at 53.1 dBA Leq with an average nighttime noise level of 51.7 dBA Leq.

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. The energy average noise levels are used to describe the ambient noise levels during the daytime (8:00 a.m. to 10:00 p.m.) and nighttime (10:01 p.m. to 7:59 a.m.) hours, and to determine the potential Project impacts as they relate to the daytime and nighttime noise level standards of the City of Moreno Valley Municipal Code. In addition, the energy average noise levels provide an ambient baseline noise level for estimating the Project-related noise level increases at receiver locations. While the use of the highest ambient noise level during the daytime and nighttime periods may describe the worst-case ambient noise level conditions, their use for describing the potential Project-related noise level increases would diminish the Project noise level contributions to the ambient noise conditions. Therefore, the energy average noise levels are used to describe the existing ambient conditions during each timeframe, consistent with the daytime and nighttime noise level standards identified in the City of Moreno Valley Municipal Code.

Appendix 5.2 provides a summary of the noise levels for each hour as well as the minimum, maximum, $L_1$, $L_2$, $L_5$, $L_8$, $L_{25}$, $L_{50}$, $L_{90}$, $L_{95}$, and $L_{99}$ percentile noise levels observed during the daytime and nighttime period. The background ambient noise levels in the Project study area are dominated by the transportation-related noise associated with the arterial roadway network. This includes the auto and heavy truck activities near the noise level measurement locations on Cactus Avenue, Heacock Street, Iris Avenue, and Indian Street. In addition, noise due to the March Air Reserve Base aircraft operations is included in the ambient noise level measurements due to aircraft flyovers. Secondary background ambient noise is also included in the noise level measurements from existing stationary noise sources in the Project study area such as existing truck loading activities north of the Project site, however, these impacts are generally overshadowed by vehicular traffic noise levels.

Since Project truck traffic is expected to travel north on Heacock Street near existing residential homes, noise level measurement locations L1 to L4 were chosen to present the existing ambient noise levels without any Project-related truck trips on the study area roadway segments. The 24-hour existing noise level measurements shown on Table 5-1 present the worst-case existing unmitigated ambient noise conditions.

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

| Location[1] | Distance To Project Boundary (Feet) | Description | Hourly Noise Level (dBA Leq)[2] | | CNEL |
|---|---|---|---|---|---|
| | | | Daytime | Nighttime | |
| L1 | 10,500' | Located at the southeast corner of Cactus Avenue and Unity Court adjacent to existing residential homes. | 75.3 | 73.0 | 79.7 |
| L2 | 8,330' | Located on Heacock Street north of Meyer Drive near existing residential homes. | 65.9 | 65.6 | 72.1 |
| L3 | 5,360' | Located at the southeast corner of 6th Street and Midway Street near an existing baseball diamond and park. | 50.2 | 52.9 | 58.9 |
| L4 | 5,880' | Located on Heacock Street north of Gentian Avenue adjacent to an existing residential community. | 68.8 | 68.1 | 74.7 |
| L5 | 2,740' | Located on Iris Avenue west of Indian Street and the Rainbow Ridge Elementary School. An existing logistics warehouse is located south of Iris Avenue. | 66.2 | 67.0 | 73.1 |
| L6 | 1,250' | Located north of the Project site on Indian Street near an existing residential home. | 61.5 | 62.5 | 68.8 |
| L7 | 90' | Located on Indian Street south of Krameria Avenue near existing residential homes and northeast of the Project site. | 64.1 | 60.6 | 67.2 |
| L8 | 100' | Located east of the Project site on Indian Street near existing residential homes. | 60.8 | 60.2 | 66.4 |
| L9 | 75' | Located east of the Project site on Indian Street, south of Superior Avenue near existing residential homes. | 53.1 | 51.7 | 58.2 |

[1] See Exhibit 5-A for the noise level measurement locations.
[2] Energy (logarithmic) average hourly levels. The long-term 24-hour measurement printouts are included in Appendix 5.2.
"Daytime" = 8:00 a.m. to 10:00 p.m.; "Nighttime" = 10:01 p.m. to 7:59 a.m.

# 6 METHODS AND PROCEDURES

The following section outlines the methods and procedures used to model and analyze the future traffic noise environment.

## 6.1 FHWA TRAFFIC NOISE PREDICTION MODEL

The estimated roadway noise impacts from vehicular traffic were calculated using a computer program that replicates the Federal Highway Administration (FHWA) Traffic Noise Prediction Model- FHWA-RD-77-108. (18) 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, which are used in this analysis to describe the off-site transportation noise levels. (19) Adjustments are then made to the REMEL to account for: the roadway classification (e.g., collector, secondary, major or arterial), the roadway active width (i.e., the distance between the center of the outermost travel lanes on each side of the roadway), the total average daily traffic (ADT), the travel speed, the percentages of automobiles, medium trucks, and heavy trucks in the traffic volume, the roadway grade, the angle of view (e.g., whether the roadway view is blocked), the site conditions ("hard" or "soft" relates to the absorption of the ground, pavement, or landscaping), and the percentage of total ADT which flows each hour throughout a 24-hour period.

## 6.2 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 24 study area roadway segments, the distance from the centerline to adjacent land use based on the functional roadway classifications according to the City of Moreno Valley General Plan Circulation Element, and the posted vehicle speeds. For the purpose of the off-site analysis, soft site conditions were used to analyze the traffic noise impacts on each roadway segment in the Project study area. Soft site conditions are typically used to describe off-site traffic noise level impacts. In addition, Caltrans research has shown that the use of soft-site conditions is more appropriate for the application of the Federal Highway Administration (FHWA) traffic noise prediction model used in this analysis. (20)

The Existing (without and with Indian Street Bridge), Opening Year (2020), and General Plan Buildout (2035) conditions ADT volumes used for this study are presented on Table 6-2 and were provided by the *Moreno Valley Logistics Center Traffic Impact Analysis* prepared by Urban Crossroads, Inc. (1) Table 6-3 provides the time of day (daytime, evening, and nighttime) vehicle splits.

**TABLE 6-1: OFF-SITE ROADWAY PARAMETERS**

| ID | Roadway | Segment | Adjacent Planned Land Use[1] | Distance from Centerline to Nearest Adjacent Land Use (Feet)[2] | Posted Vehicle Speed (mph) |
|---|---|---|---|---|---|
| 1 | Graham St. | n/o Cactus Av. | Light Industrial | 44' | 45 |
| 2 | Graham St. | s/o Cactus Av. | March Air Reserve Base | 44' | 45 |
| 3 | Heacock St. | n/o Cactus Av. | Residential | 50' | 45 |
| 4 | Heacock St. | s/o Cactus Av. | Residential | 50' | 45 |
| 5 | Heacock St. | s/o John F. Kennedy Dr. | Residential | 50' | 50 |
| 6 | Heacock St. | s/o Gentian Av. | Business Park | 50' | 50 |
| 7 | Heacock St. | s/o Iris Av. | Business Park | 50' | 50 |
| 8 | Heacock St. | s/o Krameria Av. (North) | Business Park | 50' | 50 |
| 9 | Heacock St. | n/o Cardinal Av. | Business Park | 50' | 40 |
| 10 | Heacock St. | s/o Cardinal Av. | Business Park | 50' | 40 |
| 11 | Heacock St. | s/o San Michele Rd. | Business Park | 50' | 50 |
| 12 | Heacock St. | s/o Nandina Av. | Open Space | 50' | 25 |
| 13 | Indian St. | n/o Krameria Av. | Residential | 44' | 50 |
| 14 | Indian St. | s/o Krameria Av. | Residential | 44' | 50 |
| 15 | Cactus Av. | w/o Elsworth St. | Business Park | 44' | 50 |
| 16 | Cactus Av. | e/o Elsworth St. | Business Park | 44' | 50 |
| 17 | Cactus Av. | e/o Frederick St. | Light Industrial | 44' | 50 |
| 18 | Cactus Av. | e/o Graham St. | Light Industrial | 44' | 50 |
| 19 | Cactus Av. | e/o Heacock St. | Residential | 44' | 45 |
| 20 | John F. Kennedy Dr. | e/o Heacock St. | Residential | 50' | 45 |
| 21 | Krameria Av. | e/o Indian St. | Residential | 44' | 40 |
| 22 | Harley Knox Bl. | w/o Patterson Av. | March Air Reserve Base | 50' | 45 |
| 23 | Harley Knox Bl. | w/o Webster Av. | March Air Reserve Base | 50' | 45 |
| 24 | Harley Knox Bl. | e/o Webster Av. | Business Park | 50' | 45 |

[1] Source: City of Moreno Valley General Plan Land Use Map, Figure 2-2.
[2] Distance to adjacent land use is based upon the right-of-way distances for each functional roadway classification provided in the General Plan Circulation Element.

## TABLE 6-2: AVERAGE DAILY TRAFFIC VOLUMES

| ID | Roadway | Segment | Average Daily Traffic Volumes[1] | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Existing | | | Opening Year Cumulative (2020) | | General Plan Buildout (2035) | |
| | | | | With Project | | | | | |
| | | | Without Project | Without Indian Bridge | With Indian Bridge | Without Project | With Project | Without Project | With Project |
| 1 | Graham St. | n/o Cactus Av. | 6,000 | 6,000 | 6,000 | 9,300 | 9,300 | 13,000 | 13,500 |
| 2 | Graham St. | s/o Cactus Av. | 7,300 | 7,300 | 7,300 | 12,600 | 12,600 | 20,000 | 22,900 |
| 3 | Heacock St. | n/o Cactus Av. | 14,600 | 15,110 | 15,110 | 15,600 | 16,110 | 18,600 | 19,110 |
| 4 | Heacock St. | s/o Cactus Av. | 24,800 | 28,560 | 27,750 | 26,700 | 30,460 | 28,100 | 31,050 |
| 5 | Heacock St. | s/o John F. Kennedy Dr. | 21,300 | 25,160 | 24,350 | 24,400 | 28,260 | 27,200 | 30,250 |
| 6 | Heacock St. | s/o Gentian Av. | 17,100 | 20,960 | 20,150 | 19,800 | 23,760 | 24,000 | 27,050 |
| 7 | Heacock St. | s/o Iris Av. | 9,100 | 12,960 | 12,150 | 17,300 | 21,260 | 23,300 | 26,350 |
| 8 | Heacock St. | s/o Krameria Av. (North) | 8,500 | 10,760 | 9,700 | 19,600 | 21,760 | 23,900 | 25,100 |
| 9 | Heacock St. | n/o Cardinal Av. | 8,900 | 11,000 | 10,800 | 20,000 | 22,100 | 23,900 | 25,700 |
| 10 | Heacock St. | s/o Cardinal Av. | 7,400 | 9,730 | 9,430 | 18,400 | 20,630 | 23,900 | 25,830 |
| 11 | Heacock St. | s/o San Michele Rd. | 3,400 | 3,400 | 3,400 | 4,300 | 4,300 | 12,500 | 14,430 |
| 12 | Heacock St. | s/o Nandina Av. | 200 | 200 | 200 | 200 | 200 | 8,100 | 10,030 |
| 13 | Indian St. | n/o Krameria Av. | 4,100 | 4,500 | 4,500 | 6,000 | 6,300 | 13,400 | 13,800 |
| 14 | Indian St. | s/o Krameria Av. | 1,900 | 2,100 | 2,100 | 2,000 | 2,200 | 18,900 | 19,100 |
| 15 | Cactus Av. | w/o Elsworth St. | 34,200 | 37,060 | 36,140 | 55,800 | 58,660 | 68,400 | 70,340 |
| 16 | Cactus Av. | e/o Elsworth St. | 32,600 | 35,460 | 34,540 | 56,800 | 59,560 | 60,600 | 62,540 |
| 17 | Cactus Av. | e/o Frederick St. | 36,000 | 38,860 | 37,940 | 57,900 | 60,060 | 59,600 | 61,540 |
| 18 | Cactus Av. | e/o Graham St. | 35,800 | 38,660 | 37,740 | 47,600 | 50,460 | 50,800 | 52,740 |
| 19 | Cactus Av. | e/o Heacock St. | 19,400 | 19,900 | 19,900 | 31,200 | 31,700 | 43,600 | 44,100 |
| 20 | John F. Kennedy Dr. | e/o Heacock St. | 8,800 | 8,900 | 8,900 | 10,600 | 10,700 | 15,500 | 15,600 |
| 21 | Krameria Av. | e/o Indian St. | 3,700 | 4,200 | 4,200 | 4,900 | 5,500 | 8,100 | 8,600 |
| 22 | Harley Knox Bl. | w/o Patterson Av. | 13,900 | 15,830 | 16,750 | 27,300 | 29,230 | 35,500 | 38,350 |
| 23 | Harley Knox Bl. | w/o Webster Av. | 9,100 | 11,230 | 12,150 | 22,000 | 24,130 | 39,300 | 42,350 |
| 24 | Harley Knox Bl. | e/o Webster Av. | 9,200 | 11,330 | 12,250 | 21,700 | 23,830 | 39,600 | 40,720 |

[1] Source: Moreno Valley Logistics Center Traffic Impact Analysis, Urban Crossroads, Inc., September 2015.

**TABLE 6-3: TIME OF DAY VEHICLE SPLITS**

| Vehicle Type | Time of Day Splits | | | Total of Time of Day Splits |
|---|---|---|---|---|
| | Daytime | Evening | Nighttime | |
| Autos | 67.67% | 6.10% | 26.23% | 100.00% |
| Medium Trucks | 86.87% | 2.02% | 11.11% | 100.00% |
| Heavy Trucks | 78.67% | 10.43% | 10.90% | 100.00% |

[1] Source: Based on existing 24-hour classification counts by vehicle type taken on 4/28/2015 on Heacock Street south of Cardinal Avenue (Moreno Valley Logistics Center Traffic Impact Analysis, Urban Crossroads, Inc., September 2015).
"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.

According to the *Moreno Valley Logistics Center Traffic Impact Analysis* prepared by Urban Crossroads, Inc., the Project is expected to generate a net total of approximately 4,960 trip-ends per day (actual vehicles) with 504 AM peak hour trips and 536 PM peak hour trips. (1) The net Project trip generation includes 1,441 truck trip-ends per day with 117 AM peak hour truck trips and 133 PM peak hour truck trips. To determine the off-site traffic noise impacts on the study area roadway segments, this analysis uses the net total of 1,411 trip-ends per day to evaluate the Project-related off-site noise level increases. While the traffic volumes presented in the *Moreno Valley Logistics Center Traffic Impact Analysis* are expressed as Passenger Car Equivalent (PCE) trips, the Moreno Valley Logistics Center Noise Impact Analysis relies on the net Project trips to accurately account for the effect of individual truck trips on the study area roadway network.

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.

The 1,411 daily Project truck trip-ends trucks were assigned to the 24 individual off-site study area roadway segments based on the estimated Project truck trip distribution percentages. Using the Project truck trips in combination with the Project trip distribution, it is possible to calculate the number of additional Project truck trips and vehicle mix percentages for each of the study area roadway segments. Tables 6-4 to 6-7 describe the distribution of traffic flow by vehicle type (vehicle mix) by roadway segment for each of the off-site Project traffic conditions.

**TABLE 6-4: EXISTING WITHOUT PROJECT CONDITIONS VEHICLE MIX**

| Classification | Total % Traffic Flow | | | Total |
|---|---|---|---|---|
| | Autos | Medium Trucks | Heavy Trucks | |
| All Segments | 89.71% | 3.29% | 7.00% | 100.00% |

Based on existing 24-hour classification counts by vehicle type taken on 4/28/2015 on Heacock Street south of Cardinal Avenue (Moreno Valley Logistics Center Traffic Impact Analysis, Urban Crossroads, Inc., September 2015).

**TABLE 6-5: EXISTING WITH PROJECT WITHOUT INDIAN STREET BRIDGE CONDITIONS VEHICLE MIX**

| ID | Roadway | Segment | With Project Without Indian Bridge[1] | | | |
|---|---|---|---|---|---|---|
| | | | Autos | Medium Trucks | Heavy Trucks | Total[2] |
| 1 | Graham St. | n/o Cactus Av. | 89.71% | 3.29% | 7.00% | 100.00% |
| 2 | Graham St. | s/o Cactus Av. | 89.71% | 3.29% | 7.00% | 100.00% |
| 3 | Heacock St. | n/o Cactus Av. | 89.99% | 3.19% | 6.81% | 100.00% |
| 4 | Heacock St. | s/o Cactus Av. | 90.86% | 2.91% | 6.23% | 100.00% |
| 5 | Heacock St. | s/o John F. Kennedy Dr. | 91.05% | 2.85% | 6.10% | 100.00% |
| 6 | Heacock St. | s/o Gentian Av. | 91.32% | 2.76% | 5.92% | 100.00% |
| 7 | Heacock St. | s/o Iris Av. | 92.31% | 2.44% | 5.25% | 100.00% |
| 8 | Heacock St. | s/o Krameria Av. (North) | 91.31% | 2.75% | 5.93% | 100.00% |
| 9 | Heacock St. | n/o Cardinal Av. | 91.68% | 2.66% | 5.67% | 100.00% |
| 10 | Heacock St. | s/o Cardinal Av. | 91.87% | 2.58% | 5.55% | 100.00% |
| 11 | Heacock St. | s/o San Michele Rd. | 89.71% | 3.29% | 7.00% | 100.00% |
| 12 | Heacock St. | s/o Nandina Av. | 89.71% | 3.29% | 7.00% | 100.00% |
| 13 | Indian St. | n/o Krameria Av. | 90.63% | 2.99% | 6.38% | 100.00% |
| 14 | Indian St. | s/o Krameria Av. | 90.69% | 2.97% | 6.34% | 100.00% |
| 15 | Cactus Av. | w/o Elsworth St. | 90.34% | 3.08% | 6.58% | 100.00% |
| 16 | Cactus Av. | e/o Elsworth St. | 90.37% | 3.07% | 6.56% | 100.00% |
| 17 | Cactus Av. | e/o Frederick St. | 90.31% | 3.09% | 6.60% | 100.00% |
| 18 | Cactus Av. | e/o Graham St. | 90.32% | 3.09% | 6.60% | 100.00% |
| 19 | Cactus Av. | e/o Heacock St. | 89.97% | 3.20% | 6.83% | 100.00% |
| 20 | John F. Kennedy Dr. | e/o Heacock St. | 89.83% | 3.25% | 6.92% | 100.00% |
| 21 | Krameria Av. | e/o Indian St. | 90.94% | 2.89% | 6.17% | 100.00% |
| 22 | Harley Knox Bl. | w/o Patterson Av. | 90.78% | 2.94% | 6.29% | 100.00% |
| 23 | Harley Knox Bl. | w/o Webster Av. | 91.40% | 2.73% | 5.87% | 100.00% |
| 24 | Harley Knox Bl. | e/o Webster Av. | 91.38% | 2.74% | 5.88% | 100.00% |

[1] Source: Moreno Valley Logistics Center Traffic Impact Analysis, Urban Crossroads, Inc., September 2015. Values are rounded to the nearest one-hundredth.

[2] Total of vehicle mix percentage values rounded to the nearest one-hundredth.

**TABLE 6-6: EXISTING WITH PROJECT WITH INDIAN STREET BRIDGE CONDITIONS VEHICLE MIX**

| ID | Roadway | Segment | With Project With Indian Bridge[1] | | | |
|---|---|---|---|---|---|---|
| | | | Autos | Medium Trucks | Heavy Trucks | Total[2] |
| 1 | Graham St. | n/o Cactus Av. | 89.71% | 3.29% | 7.00% | 100.00% |
| 2 | Graham St. | s/o Cactus Av. | 89.71% | 3.29% | 7.00% | 100.00% |
| 3 | Heacock St. | n/o Cactus Av. | 89.99% | 3.19% | 6.81% | 100.00% |
| 4 | Heacock St. | s/o Cactus Av. | 90.62% | 2.99% | 6.39% | 100.00% |
| 5 | Heacock St. | s/o John F. Kennedy Dr. | 90.79% | 2.93% | 6.27% | 100.00% |
| 6 | Heacock St. | s/o Gentian Av. | 91.02% | 2.86% | 6.12% | 100.00% |
| 7 | Heacock St. | s/o Iris Av. | 91.88% | 2.58% | 5.54% | 100.00% |
| 8 | Heacock St. | s/o Krameria Av. (North) | 90.98% | 2.88% | 6.14% | 100.00% |
| 9 | Heacock St. | n/o Cardinal Av. | 91.52% | 2.71% | 5.77% | 100.00% |
| 10 | Heacock St. | s/o Cardinal Av. | 91.61% | 2.66% | 5.73% | 100.00% |
| 11 | Heacock St. | s/o San Michele Rd. | 89.71% | 3.29% | 7.00% | 100.00% |
| 12 | Heacock St. | s/o Nandina Av. | 89.71% | 3.29% | 7.00% | 100.00% |
| 13 | Indian St. | n/o Krameria Av. | 90.63% | 2.99% | 6.38% | 100.00% |
| 14 | Indian St. | s/o Krameria Av. | 90.69% | 2.97% | 6.34% | 100.00% |
| 15 | Cactus Av. | w/o Elsworth St. | 90.15% | 3.14% | 6.71% | 100.00% |
| 16 | Cactus Av. | e/o Elsworth St. | 90.17% | 3.13% | 6.69% | 100.00% |
| 17 | Cactus Av. | e/o Frederick St. | 90.13% | 3.15% | 6.72% | 100.00% |
| 18 | Cactus Av. | e/o Graham St. | 90.13% | 3.15% | 6.72% | 100.00% |
| 19 | Cactus Av. | e/o Heacock St. | 89.97% | 3.20% | 6.83% | 100.00% |
| 20 | John F. Kennedy Dr. | e/o Heacock St. | 89.83% | 3.25% | 6.92% | 100.00% |
| 21 | Krameria Av. | e/o Indian St. | 90.94% | 2.89% | 6.17% | 100.00% |
| 22 | Harley Knox Bl. | w/o Patterson Av. | 91.16% | 2.81% | 6.03% | 100.00% |
| 23 | Harley Knox Bl. | w/o Webster Av. | 91.88% | 2.58% | 5.54% | 100.00% |
| 24 | Harley Knox Bl. | e/o Webster Av. | 91.86% | 2.58% | 5.55% | 100.00% |

[1] Source: Moreno Valley Logistics Center Traffic Impact Analysis, Urban Crossroads, Inc., September 2015. Values are rounded to the nearest one-hundredth.

[2] Total of vehicle mix percentage values rounded to the nearest one-hundredth.

**TABLE 6-7: OPENING YEAR 2020 CONDITIONS TRAFFIC FLOW BY VEHICLE TYPE (VEHICLE MIX)**

| ID | Roadway | Segment | With Project[1] | | | |
|---|---|---|---|---|---|---|
| | | | Autos | Medium Trucks | Heavy Trucks | Total[2] |
| 1 | Graham St. | n/o Cactus Av. | 89.71% | 3.29% | 7.00% | 100.00% |
| 2 | Graham St. | s/o Cactus Av. | 89.71% | 3.29% | 7.00% | 100.00% |
| 3 | Heacock St. | n/o Cactus Av. | 89.97% | 3.20% | 6.82% | 100.00% |
| 4 | Heacock St. | s/o Cactus Av. | 90.78% | 2.94% | 6.28% | 100.00% |
| 5 | Heacock St. | s/o John F. Kennedy Dr. | 90.90% | 2.90% | 6.20% | 100.00% |
| 6 | Heacock St. | s/o Gentian Av. | 91.17% | 2.81% | 6.02% | 100.00% |
| 7 | Heacock St. | s/o Iris Av. | 91.35% | 2.75% | 5.90% | 100.00% |
| 8 | Heacock St. | s/o Krameria Av. (North) | 90.46% | 3.04% | 6.51% | 100.00% |
| 9 | Heacock St. | n/o Cardinal Av. | 90.69% | 2.97% | 6.34% | 100.00% |
| 10 | Heacock St. | s/o Cardinal Av. | 90.68% | 2.97% | 6.35% | 100.00% |
| 11 | Heacock St. | s/o San Michele Rd. | 89.71% | 3.29% | 7.00% | 100.00% |
| 12 | Heacock St. | s/o Nandina Av. | 89.71% | 3.29% | 7.00% | 100.00% |
| 13 | Indian St. | n/o Krameria Av. | 90.20% | 3.13% | 6.67% | 100.00% |
| 14 | Indian St. | s/o Krameria Av. | 90.65% | 2.99% | 6.37% | 100.00% |
| 15 | Cactus Av. | w/o Elsworth St. | 90.11% | 3.15% | 6.73% | 100.00% |
| 16 | Cactus Av. | e/o Elsworth St. | 90.09% | 3.16% | 6.75% | 100.00% |
| 17 | Cactus Av. | e/o Frederick St. | 89.98% | 3.20% | 6.82% | 100.00% |
| 18 | Cactus Av. | e/o Graham St. | 90.18% | 3.13% | 6.69% | 100.00% |
| 19 | Cactus Av. | e/o Heacock St. | 89.87% | 3.23% | 6.89% | 100.00% |
| 20 | John F. Kennedy Dr. | e/o Heacock St. | 89.81% | 3.26% | 6.94% | 100.00% |
| 21 | Krameria Av. | e/o Indian St. | 90.83% | 2.93% | 6.24% | 100.00% |
| 22 | Harley Knox Bl. | w/o Patterson Av. | 90.29% | 3.10% | 6.62% | 100.00% |
| 23 | Harley Knox Bl. | w/o Webster Av. | 90.50% | 3.03% | 6.48% | 100.00% |
| 24 | Harley Knox Bl. | e/o Webster Av. | 90.51% | 3.03% | 6.47% | 100.00% |

[1] Source: Moreno Valley Logistics Center Traffic Impact Analysis, Urban Crossroads, Inc., September 2015. Values are rounded to the nearest one-hundredth.

[2] Total of vehicle mix percentage values rounded to the nearest one-hundredth.

**TABLE 6-8: GENERAL PLAN BUILDOUT CONDITIONS TRAFFIC FLOW BY VEHICLE TYPE (VEHICLE MIX)**

| ID | Roadway | Segment | With Project[1] | | | |
|---|---|---|---|---|---|---|
| | | | Autos | Medium Trucks | Heavy Trucks | Total[2] |
| 1 | Graham St. | n/o Cactus Av. | 90.09% | 3.16% | 6.74% | 100.00% |
| 2 | Graham St. | s/o Cactus Av. | 91.01% | 2.87% | 6.12% | 100.00% |
| 3 | Heacock St. | n/o Cactus Av. | 89.93% | 3.21% | 6.85% | 100.00% |
| 4 | Heacock St. | s/o Cactus Av. | 90.53% | 3.02% | 6.45% | 100.00% |
| 5 | Heacock St. | s/o John F. Kennedy Dr. | 90.58% | 3.00% | 6.42% | 100.00% |
| 6 | Heacock St. | s/o Gentian Av. | 90.69% | 2.97% | 6.35% | 100.00% |
| 7 | Heacock St. | s/o Iris Av. | 90.71% | 2.96% | 6.33% | 100.00% |
| 8 | Heacock St. | s/o Krameria Av. (North) | 90.20% | 3.13% | 6.67% | 100.00% |
| 9 | Heacock St. | n/o Cardinal Av. | 90.43% | 3.06% | 6.51% | 100.00% |
| 10 | Heacock St. | s/o Cardinal Av. | 90.36% | 3.07% | 6.56% | 100.00% |
| 11 | Heacock St. | s/o San Michele Rd. | 90.88% | 2.90% | 6.22% | 100.00% |
| 12 | Heacock St. | s/o Nandina Av. | 91.39% | 2.73% | 5.87% | 100.00% |
| 13 | Indian St. | n/o Krameria Av. | 90.01% | 3.19% | 6.80% | 100.00% |
| 14 | Indian St. | s/o Krameria Av. | 89.82% | 3.25% | 6.93% | 100.00% |
| 15 | Cactus Av. | w/o Elsworth St. | 89.94% | 3.21% | 6.85% | 100.00% |
| 16 | Cactus Av. | e/o Elsworth St. | 89.97% | 3.20% | 6.83% | 100.00% |
| 17 | Cactus Av. | e/o Frederick St. | 89.97% | 3.20% | 6.83% | 100.00% |
| 18 | Cactus Av. | e/o Graham St. | 90.01% | 3.19% | 6.80% | 100.00% |
| 19 | Cactus Av. | e/o Heacock St. | 89.83% | 3.25% | 6.92% | 100.00% |
| 20 | John F. Kennedy Dr. | e/o Heacock St. | 89.78% | 3.26% | 6.96% | 100.00% |
| 21 | Krameria Av. | e/o Indian St. | 90.31% | 3.09% | 6.60% | 100.00% |
| 22 | Harley Knox Bl. | w/o Patterson Av. | 90.35% | 3.08% | 6.58% | 100.00% |
| 23 | Harley Knox Bl. | w/o Webster Av. | 90.33% | 3.08% | 6.58% | 100.00% |
| 24 | Harley Knox Bl. | e/o Webster Av. | 89.95% | 3.21% | 6.84% | 100.00% |

[1] Source: Moreno Valley Logistics Center Traffic Impact Analysis, Urban Crossroads, Inc., September 2015. Values are rounded to the nearest one-hundredth.

[2] Total of vehicle mix percentage values rounded to the nearest one-hundredth.

## 6.3 VIBRATION ASSESSMENT

This analysis focuses on the potential ground-borne vibration associated with vehicular traffic and construction activities. Ground-borne vibration levels from automobile traffic are generally overshadowed by vibration generated by heavy trucks that roll over the same uneven roadway surfaces. However, due to the rapid drop-off rate of ground-borne vibration and the short duration of the associated events, vehicular traffic-induced ground-borne vibration is rarely perceptible beyond the roadway right-of-way, and rarely results in vibration levels that cause damage to buildings in the vicinity.

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 6-9. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the human response (annoyance) 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: $L_{VdB}(D) = L_{VdB}(25\text{ ft}) - 30\log(D/25)$

**TABLE 6-9: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT**

| Equipment | Vibration Decibels (VdB) at 25 feet[1] |
|---|---|
| Small bulldozer | 58 |
| Jackhammer | 79 |
| Loaded Trucks | 86 |
| Large bulldozer | 87 |

Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment, May 2006.

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# 7 OFF-SITE TRANSPORTATION NOISE IMPACTS

To assess the off-site transportation CNEL noise level impacts associated with development of the proposed Project, noise contours were developed based on the *Moreno Valley Logistics Center Traffic Impact Analysis*. (1) Noise contour boundaries represent the equal levels of noise exposure and are measured in CNEL from the center of the roadway. Noise contours were developed for the following traffic scenarios:

- Existing Without Project: This scenario refers to the existing present-day noise conditions without the proposed Project.
- Existing With Project: This scenario refers to the existing present-day noise conditions with the proposed Project, under the following two conditions:
    - Without Indian Street Bridge: This scenario refers to the existing present-day noise conditions without the Indian Street Bridge over the Perris Valley Storm Drain.
    - With Indian Street Bridge: This scenario refers to the existing present-day noise conditions with the Indian Street Bridge over the Perris Valley Storm Drain.
- Opening Year (2020) Without / With Project: This scenario refers to the background noise conditions at future Year 2020 without and with the proposed Project. This scenario corresponds to 2020 conditions, and includes all cumulative projects identified in the Traffic Impact Analysis.
- General Plan Building (2035) Without / With Project: This scenario refers to the background noise conditions at future Year 2035 without and with the proposed Project. This scenario corresponds to 2035 conditions, and includes all cumulative projects identified in the Traffic Impact Analysis.

## 7.1 TRAFFIC NOISE CONTOURS

To quantify the Project's traffic noise impacts on the surrounding areas, the changes in traffic noise levels on 24 roadway segments surrounding the Project were calculated based on the changes in the average daily traffic volumes. Based on the noise impact significance criteria described in Section 4, a significant off-site traffic noise level impact occurs:

- When the noise levels at existing and future noise-sensitive land uses (e.g. residential, etc.):
    - are less than 60 dBA and the Project creates a *readily perceptible* 5 dBA or greater Project related noise level increase; or
    - range from 60 to 65 dBA and the Project creates a *barely perceptible* 3 dBA or greater Project noise level increase; or
    - already exceed 65 dBA, and the Project creates a community noise level impact of greater than 1.5 dBA (FICON, 1992).
- When the noise levels at existing and future non-noise-sensitive land uses (e.g. business park, industrial, etc.):
    - are less than the OPR General Plan Guidelines *normally acceptable* 70 dBA and the Project creates a *readily perceptible* 5 dBA or greater Project related noise level increase; or
    - are greater than the OPR General Plan Guidelines *normally acceptable* 70 dBA and the Project creates a *barely perceptible* 3 dBA or greater Project noise level increase.

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 take into account the effect of any existing noise barriers or topography that may affect ambient noise levels. In addition, since the noise contours reflect modeling of vehicular noise on study area roadways, they appropriately do not reflect noise contributions from the surrounding stationary noise sources within the Project study area. Tables 7-1 through 7-7 present a summary of the unmitigated exterior traffic noise levels for the 24 study area roadway segments analyzed from the without Project to the with Project conditions in each of the three timeframes: Existing (without and with Indian Street Bridge), Opening Year (2020), and General Plan Buildout (2035) conditions. Appendix 7.1 includes a summary of the traffic noise level contours for each of the seven traffic scenarios.

**TABLE 7-1: EXISTING WITHOUT PROJECT CONDITIONS NOISE CONTOURS**

| ID | Road | Segment | Adjacent Planned Land Use[1] | CNEL at Nearest Adjacent Land Use (dBA)[2] | Distance to Contour from Centerline (Feet) | | |
|---|---|---|---|---|---|---|---|
| | | | | | 70 dBA CNEL | 65 dBA CNEL | 60 dBA CNEL |
| 1 | Graham St. | n/o Cactus Av. | Light Industrial | 64.8 | 45 | 97 | 209 |
| 2 | Graham St. | s/o Cactus Av. | March Air Reserve Base | 65.7 | 51 | 111 | 239 |
| 3 | Heacock St. | n/o Cactus Av. | Residential | 68.8 | 83 | 178 | 384 |
| 4 | Heacock St. | s/o Cactus Av. | Residential | 71.1 | 118 | 254 | 547 |
| 5 | Heacock St. | s/o John F. Kennedy Dr. | Residential | 71.3 | 122 | 264 | 568 |
| 6 | Heacock St. | s/o Gentian Av. | Business Park | 70.2 | 103 | 223 | 480 |
| 7 | Heacock St. | s/o Iris Av. | Business Park | 67.5 | 68 | 146 | 315 |
| 8 | Heacock St. | s/o Krameria Av. (North) | Business Park | 67.2 | 65 | 140 | 301 |
| 9 | Heacock St. | n/o Cardinal Av. | Business Park | 65.6 | 51 | 110 | 237 |
| 10 | Heacock St. | s/o Cardinal Av. | Business Park | 64.8 | RW | 97 | 209 |
| 11 | Heacock St. | s/o San Michele Rd. | Business Park | 63.2 | RW | 76 | 163 |
| 12 | Heacock St. | s/o Nandina Av. | Open Space | 45.2 | RW | RW | RW |
| 13 | Indian St. | n/o Krameria Av. | Residential | 64.1 | RW | 87 | 187 |
| 14 | Indian St. | s/o Krameria Av. | Residential | 60.7 | RW | 52 | 112 |
| 15 | Cactus Av. | w/o Elsworth St. | Business Park | 73.3 | 166 | 357 | 769 |
| 16 | Cactus Av. | e/o Elsworth St. | Business Park | 73.1 | 160 | 346 | 744 |
| 17 | Cactus Av. | e/o Frederick St. | Light Industrial | 73.5 | 171 | 369 | 795 |
| 18 | Cactus Av. | e/o Graham St. | Light Industrial | 73.5 | 171 | 368 | 792 |
| 19 | Cactus Av. | e/o Heacock St. | Residential | 69.9 | 99 | 213 | 458 |
| 20 | John F. Kennedy Dr. | e/o Heacock St. | Residential | 66.6 | 59 | 127 | 274 |
| 21 | Krameria Av. | e/o Indian St. | Residential | 61.6 | RW | 60 | 128 |
| 22 | Harley Knox Bl. | w/o Patterson Av. | March Air Reserve Base | 68.6 | 80 | 172 | 372 |
| 23 | Harley Knox Bl. | w/o Webster Av. | March Air Reserve Base | 66.6 | 59 | 127 | 274 |
| 24 | Harley Knox Bl. | e/o Webster Av. | Business Park | 66.6 | 59 | 128 | 276 |

[1] Source: City of Moreno Valley General Plan Land Use Map, Figure 2-2.

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

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

**TABLE 7-2: EXISTING WITH PROJECT WITHOUT INDIAN STREET BRIDGE NOISE CONTOURS**

| ID | Road | Segment | Adjacent Planned Land Use[1] | CNEL at Nearest Adjacent Land Use (dBA)[2] | Distance to Contour from Centerline (Feet) | | |
|---|---|---|---|---|---|---|---|
| | | | | | 70 dBA CNEL | 65 dBA CNEL | 60 dBA CNEL |
| 1 | Graham St. | n/o Cactus Av. | Light Industrial | 64.8 | 45 | 97 | 209 |
| 2 | Graham St. | s/o Cactus Av. | March Air Reserve Base | 65.7 | 51 | 111 | 239 |
| 3 | Heacock St. | n/o Cactus Av. | Residential | 68.8 | 84 | 180 | 388 |
| 4 | Heacock St. | s/o Cactus Av. | Residential | 71.4 | 123 | 265 | 572 |
| 5 | Heacock St. | s/o John F. Kennedy Dr. | Residential | 71.7 | 129 | 279 | 601 |
| 6 | Heacock St. | s/o Gentian Av. | Business Park | 70.7 | 111 | 239 | 514 |
| 7 | Heacock St. | s/o Iris Av. | Business Park | 68.3 | 77 | 166 | 357 |
| 8 | Heacock St. | s/o Krameria Av. (North) | Business Park | 67.8 | 71 | 153 | 330 |
| 9 | Heacock St. | n/o Cardinal Av. | Business Park | 65.9 | 54 | 115 | 249 |
| 10 | Heacock St. | s/o Cardinal Av. | Business Park | 65.3 | RW | 105 | 227 |
| 11 | Heacock St. | s/o San Michele Rd. | Business Park | 63.2 | RW | 76 | 163 |
| 12 | Heacock St. | s/o Nandina Av. | Open Space | 45.2 | RW | RW | RW |
| 13 | Indian St. | n/o Krameria Av. | Residential | 64.2 | RW | 89 | 192 |
| 14 | Indian St. | s/o Krameria Av. | Residential | 60.9 | RW | 53 | 115 |
| 15 | Cactus Av. | w/o Elsworth St. | Business Park | 73.5 | 170 | 367 | 791 |
| 16 | Cactus Av. | e/o Elsworth St. | Business Park | 73.3 | 165 | 356 | 767 |
| 17 | Cactus Av. | e/o Frederick St. | Light Industrial | 73.7 | 176 | 379 | 817 |
| 18 | Cactus Av. | e/o Graham St. | Light Industrial | 73.7 | 175 | 378 | 814 |
| 19 | Cactus Av. | e/o Heacock St. | Residential | 70.0 | 99 | 214 | 461 |
| 20 | John F. Kennedy Dr. | e/o Heacock St. | Residential | 66.6 | 59 | 128 | 275 |
| 21 | Krameria Av. | e/o Indian St. | Residential | 61.8 | RW | 61 | 132 |
| 22 | Harley Knox Bl. | w/o Patterson Av. | March Air Reserve Base | 68.8 | 83 | 180 | 387 |
| 23 | Harley Knox Bl. | w/o Webster Av. | March Air Reserve Base | 67.0 | 63 | 136 | 293 |
| 24 | Harley Knox Bl. | e/o Webster Av. | Business Park | 67.0 | 63 | 137 | 295 |

[1] Source: City of Moreno Valley General Plan Land Use Map, Figure 2-2.

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

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

**TABLE 7-3: EXISTING WITH PROJECT WITH INDIAN STREET BRIDGE NOISE CONTOURS**

| ID | Road | Segment | Adjacent Planned Land Use[1] | CNEL at Nearest Adjacent Land Use (dBA)[2] | Distance to Contour from Centerline (Feet) | | |
|---|---|---|---|---|---|---|---|
| | | | | | 70 dBA CNEL | 65 dBA CNEL | 60 dBA CNEL |
| 1 | Graham St. | n/o Cactus Av. | Light Industrial | 64.8 | 45 | 97 | 209 |
| 2 | Graham St. | s/o Cactus Av. | March Air Reserve Base | 65.7 | 51 | 111 | 239 |
| 3 | Heacock St. | n/o Cactus Av. | Residential | 68.8 | 84 | 180 | 388 |
| 4 | Heacock St. | s/o Cactus Av. | Residential | 71.3 | 122 | 263 | 567 |
| 5 | Heacock St. | s/o John F. Kennedy Dr. | Residential | 71.6 | 128 | 276 | 594 |
| 6 | Heacock St. | s/o Gentian Av. | Business Park | 70.6 | 109 | 235 | 507 |
| 7 | Heacock St. | s/o Iris Av. | Business Park | 68.1 | 75 | 162 | 349 |
| 8 | Heacock St. | s/o Krameria Av. (North) | Business Park | 67.4 | 67 | 145 | 312 |
| 9 | Heacock St. | n/o Cardinal Av. | Business Park | 65.9 | 53 | 115 | 248 |
| 10 | Heacock St. | s/o Cardinal Av. | Business Park | 65.3 | RW | 105 | 225 |
| 11 | Heacock St. | s/o San Michele Rd. | Business Park | 63.2 | RW | 76 | 163 |
| 12 | Heacock St. | s/o Nandina Av. | Open Space | 45.2 | RW | RW | RW |
| 13 | Indian St. | n/o Krameria Av. | Residential | 64.2 | RW | 89 | 192 |
| 14 | Indian St. | s/o Krameria Av. | Residential | 60.9 | RW | 53 | 115 |
| 15 | Cactus Av. | w/o Elsworth St. | Business Park | 73.4 | 169 | 364 | 784 |
| 16 | Cactus Av. | e/o Elsworth St. | Business Park | 73.2 | 164 | 353 | 760 |
| 17 | Cactus Av. | e/o Frederick St. | Light Industrial | 73.6 | 175 | 376 | 810 |
| 18 | Cactus Av. | e/o Graham St. | Light Industrial | 73.6 | 174 | 375 | 807 |
| 19 | Cactus Av. | e/o Heacock St. | Residential | 70.0 | 99 | 214 | 461 |
| 20 | John F. Kennedy Dr. | e/o Heacock St. | Residential | 66.6 | 59 | 128 | 275 |
| 21 | Krameria Av. | e/o Indian St. | Residential | 61.8 | RW | 61 | 132 |
| 22 | Harley Knox Bl. | w/o Patterson Av. | March Air Reserve Base | 68.9 | 85 | 183 | 395 |
| 23 | Harley Knox Bl. | w/o Webster Av. | March Air Reserve Base | 67.2 | 65 | 140 | 302 |
| 24 | Harley Knox Bl. | e/o Webster Av. | Business Park | 67.2 | 65 | 141 | 303 |

[1] Source: City of Moreno Valley General Plan Land Use Map, Figure 2-2.

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

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

**TABLE 7-4: OPENING YEAR (2020) WITHOUT PROJECT CONDITIONS NOISE CONTOURS**

| ID | Road | Segment | Adjacent Planned Land Use[1] | CNEL at Nearest Adjacent Land Use (dBA)[2] | Distance to Contour from Centerline (Feet) | | |
|---|---|---|---|---|---|---|---|
| | | | | | 70 dBA CNEL | 65 dBA CNEL | 60 dBA CNEL |
| 1 | Graham St. | n/o Cactus Av. | Light Industrial | 66.7 | 60 | 130 | 281 |
| 2 | Graham St. | s/o Cactus Av. | March Air Reserve Base | 68.0 | 74 | 159 | 343 |
| 3 | Heacock St. | n/o Cactus Av. | Residential | 69.1 | 86 | 186 | 401 |
| 4 | Heacock St. | s/o Cactus Av. | Residential | 71.4 | 124 | 267 | 574 |
| 5 | Heacock St. | s/o John F. Kennedy Dr. | Residential | 71.9 | 134 | 289 | 622 |
| 6 | Heacock St. | s/o Gentian Av. | Business Park | 70.9 | 114 | 246 | 529 |
| 7 | Heacock St. | s/o Iris Av. | Business Park | 70.3 | 104 | 224 | 484 |
| 8 | Heacock St. | s/o Krameria Av. (North) | Business Park | 70.8 | 113 | 244 | 525 |
| 9 | Heacock St. | n/o Cardinal Av. | Business Park | 69.1 | 88 | 189 | 406 |
| 10 | Heacock St. | s/o Cardinal Av. | Business Park | 68.8 | 83 | 178 | 384 |
| 11 | Heacock St. | s/o San Michele Rd. | Business Park | 64.2 | RW | 89 | 191 |
| 12 | Heacock St. | s/o Nandina Av. | Open Space | 45.2 | RW | RW | RW |
| 13 | Indian St. | n/o Krameria Av. | Residential | 65.7 | 52 | 112 | 241 |
| 14 | Indian St. | s/o Krameria Av. | Residential | 61.0 | RW | 54 | 116 |
| 15 | Cactus Av. | w/o Elsworth St. | Business Park | 75.4 | 230 | 494 | 1065 |
| 16 | Cactus Av. | e/o Elsworth St. | Business Park | 75.5 | 232 | 500 | 1078 |
| 17 | Cactus Av. | e/o Frederick St. | Light Industrial | 75.6 | 235 | 507 | 1092 |
| 18 | Cactus Av. | e/o Graham St. | Light Industrial | 74.7 | 206 | 445 | 958 |
| 19 | Cactus Av. | e/o Heacock St. | Residential | 72.0 | 135 | 292 | 629 |
| 20 | John F. Kennedy Dr. | e/o Heacock St. | Residential | 67.4 | 67 | 144 | 310 |
| 21 | Krameria Av. | e/o Indian St. | Residential | 62.8 | RW | 72 | 155 |
| 22 | Harley Knox Bl. | w/o Patterson Av. | March Air Reserve Base | 71.5 | 126 | 270 | 583 |
| 23 | Harley Knox Bl. | w/o Webster Av. | March Air Reserve Base | 70.4 | 106 | 229 | 493 |
| 24 | Harley Knox Bl. | e/o Webster Av. | Business Park | 70.3 | 105 | 227 | 489 |

[1] Source: City of Moreno Valley General Plan Land Use Map, Figure 2-2.

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

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

**TABLE 7-5: OPENING YEAR (2020) WITH PROJECT CONDITIONS NOISE CONTOURS**

| ID | Road | Segment | Adjacent Planned Land Use[1] | CNEL at Nearest Adjacent Land Use (dBA)[2] | Distance to Contour from Centerline (Feet) | | |
|---|---|---|---|---|---|---|---|
| | | | | | 70 dBA CNEL | 65 dBA CNEL | 60 dBA CNEL |
| 1 | Graham St. | n/o Cactus Av. | Light Industrial | 66.7 | 60 | 130 | 281 |
| 2 | Graham St. | s/o Cactus Av. | March Air Reserve Base | 68.0 | 74 | 159 | 343 |
| 3 | Heacock St. | n/o Cactus Av. | Residential | 69.1 | 87 | 188 | 405 |
| 4 | Heacock St. | s/o Cactus Av. | Residential | 71.7 | 129 | 278 | 599 |
| 5 | Heacock St. | s/o John F. Kennedy Dr. | Residential | 72.2 | 141 | 303 | 653 |
| 6 | Heacock St. | s/o Gentian Av. | Business Park | 71.3 | 121 | 261 | 562 |
| 7 | Heacock St. | s/o Iris Av. | Business Park | 70.7 | 112 | 241 | 518 |
| 8 | Heacock St. | s/o Krameria Av. (North) | Business Park | 71.1 | 118 | 254 | 547 |
| 9 | Heacock St. | n/o Cardinal Av. | Business Park | 69.3 | 90 | 193 | 416 |
| 10 | Heacock St. | s/o Cardinal Av. | Business Park | 69.0 | 86 | 184 | 397 |
| 11 | Heacock St. | s/o San Michele Rd. | Business Park | 64.2 | RW | 89 | 191 |
| 12 | Heacock St. | s/o Nandina Av. | Open Space | 45.2 | RW | RW | RW |
| 13 | Indian St. | n/o Krameria Av. | Residential | 65.8 | 53 | 113 | 244 |
| 14 | Indian St. | s/o Krameria Av. | Residential | 61.1 | RW | 55 | 119 |
| 15 | Cactus Av. | w/o Elsworth St. | Business Park | 75.5 | 234 | 503 | 1084 |
| 16 | Cactus Av. | e/o Elsworth St. | Business Park | 75.6 | 236 | 509 | 1096 |
| 17 | Cactus Av. | e/o Frederick St. | Light Industrial | 75.7 | 238 | 514 | 1107 |
| 18 | Cactus Av. | e/o Graham St. | Light Industrial | 74.9 | 211 | 454 | 978 |
| 19 | Cactus Av. | e/o Heacock St. | Residential | 72.0 | 136 | 293 | 631 |
| 20 | John F. Kennedy Dr. | e/o Heacock St. | Residential | 67.4 | 67 | 144 | 311 |
| 21 | Krameria Av. | e/o Indian St. | Residential | 63.0 | RW | 74 | 159 |
| 22 | Harley Knox Bl. | w/o Patterson Av. | March Air Reserve Base | 71.6 | 128 | 276 | 595 |
| 23 | Harley Knox Bl. | w/o Webster Av. | March Air Reserve Base | 70.6 | 109 | 236 | 508 |
| 24 | Harley Knox Bl. | e/o Webster Av. | Business Park | 70.5 | 108 | 234 | 503 |

[1] Source: City of Moreno Valley General Plan Land Use Map, Figure 2-2.

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

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

**TABLE 7-6: GENERAL PLAN BUILDOUT (2035) WITHOUT PROJECT CONDITIONS NOISE CONTOURS**

| ID | Road | Segment | Adjacent Planned Land Use[1] | CNEL at Nearest Adjacent Land Use (dBA)[2] | Distance to Contour from Centerline (Feet) | | |
|---|---|---|---|---|---|---|---|
| | | | | | 70 dBA CNEL | 65 dBA CNEL | 60 dBA CNEL |
| 1 | Graham St. | n/o Cactus Av. | Light Industrial | 68.2 | 76 | 163 | 351 |
| 2 | Graham St. | s/o Cactus Av. | March Air Reserve Base | 70.0 | 101 | 217 | 467 |
| 3 | Heacock St. | n/o Cactus Av. | Residential | 69.8 | 97 | 209 | 451 |
| 4 | Heacock St. | s/o Cactus Av. | Residential | 71.6 | 128 | 276 | 594 |
| 5 | Heacock St. | s/o John F. Kennedy Dr. | Residential | 72.4 | 144 | 310 | 669 |
| 6 | Heacock St. | s/o Gentian Av. | Business Park | 71.7 | 130 | 279 | 601 |
| 7 | Heacock St. | s/o Iris Av. | Business Park | 71.6 | 127 | 274 | 590 |
| 8 | Heacock St. | s/o Krameria Av. (North) | Business Park | 71.7 | 129 | 278 | 600 |
| 9 | Heacock St. | n/o Cardinal Av. | Business Park | 69.9 | 99 | 212 | 458 |
| 10 | Heacock St. | s/o Cardinal Av. | Business Park | 69.9 | 99 | 212 | 458 |
| 11 | Heacock St. | s/o San Michele Rd. | Business Park | 68.9 | 84 | 181 | 389 |
| 12 | Heacock St. | s/o Nandina Av. | Open Space | 61.3 | RW | 57 | 122 |
| 13 | Indian St. | n/o Krameria Av. | Residential | 69.2 | 89 | 191 | 412 |
| 14 | Indian St. | s/o Krameria Av. | Residential | 70.7 | 112 | 240 | 518 |
| 15 | Cactus Av. | w/o Elsworth St. | Business Park | 76.3 | 263 | 566 | 1220 |
| 16 | Cactus Av. | e/o Elsworth St. | Business Park | 75.8 | 242 | 522 | 1126 |
| 17 | Cactus Av. | e/o Frederick St. | Light Industrial | 75.7 | 240 | 517 | 1113 |
| 18 | Cactus Av. | e/o Graham St. | Light Industrial | 75.0 | 216 | 464 | 1001 |
| 19 | Cactus Av. | e/o Heacock St. | Residential | 73.4 | 169 | 365 | 786 |
| 20 | John F. Kennedy Dr. | e/o Heacock St. | Residential | 69.0 | 86 | 185 | 400 |
| 21 | Krameria Av. | e/o Indian St. | Residential | 65.0 | 47 | 100 | 216 |
| 22 | Harley Knox Bl. | w/o Patterson Av. | March Air Reserve Base | 72.6 | 150 | 322 | 694 |
| 23 | Harley Knox Bl. | w/o Webster Av. | March Air Reserve Base | 72.9 | 157 | 337 | 727 |
| 24 | Harley Knox Bl. | e/o Webster Av. | Business Park | 73.0 | 157 | 339 | 730 |

[1] Source: City of Moreno Valley General Plan Land Use Map, Figure 2-2.

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

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

**TABLE 7-7: GENERAL PLAN BUILDOUT (2035) WITH PROJECT CONDITIONS NOISE CONTOURS**

| ID | Road | Segment | Adjacent Planned Land Use[1] | CNEL at Nearest Adjacent Land Use (dBA)[2] | Distance to Contour from Centerline (Feet) | | |
|---|---|---|---|---|---|---|---|
| | | | | | 70 dBA CNEL | 65 dBA CNEL | 60 dBA CNEL |
| 1 | Graham St. | n/o Cactus Av. | Light Industrial | 68.2 | 76 | 164 | 354 |
| 2 | Graham St. | s/o Cactus Av. | March Air Reserve Base | 70.3 | 104 | 224 | 483 |
| 3 | Heacock St. | n/o Cactus Av. | Residential | 69.9 | 98 | 211 | 455 |
| 4 | Heacock St. | s/o Cactus Av. | Residential | 71.8 | 132 | 285 | 613 |
| 5 | Heacock St. | s/o John F. Kennedy Dr. | Residential | 72.6 | 149 | 322 | 693 |
| 6 | Heacock St. | s/o Gentian Av. | Business Park | 71.9 | 135 | 291 | 626 |
| 7 | Heacock St. | s/o Iris Av. | Business Park | 71.8 | 132 | 285 | 615 |
| 8 | Heacock St. | s/o Krameria Av. (North) | Business Park | 71.8 | 131 | 282 | 607 |
| 9 | Heacock St. | n/o Cardinal Av. | Business Park | 70.0 | 100 | 216 | 465 |
| 10 | Heacock St. | s/o Cardinal Av. | Business Park | 70.1 | 101 | 217 | 468 |
| 11 | Heacock St. | s/o San Michele Rd. | Business Park | 69.2 | 88 | 190 | 408 |
| 12 | Heacock St. | s/o Nandina Av. | Open Space | 61.6 | RW | 60 | 129 |
| 13 | Indian St. | n/o Krameria Av. | Residential | 69.3 | 89 | 192 | 415 |
| 14 | Indian St. | s/o Krameria Av. | Residential | 70.7 | 112 | 241 | 519 |
| 15 | Cactus Av. | w/o Elsworth St. | Business Park | 76.4 | 265 | 572 | 1232 |
| 16 | Cactus Av. | e/o Elsworth St. | Business Park | 75.8 | 245 | 528 | 1138 |
| 17 | Cactus Av. | e/o Frederick St. | Light Industrial | 75.8 | 242 | 522 | 1125 |
| 18 | Cactus Av. | e/o Graham St. | Light Industrial | 75.1 | 218 | 471 | 1014 |
| 19 | Cactus Av. | e/o Heacock St. | Residential | 73.4 | 170 | 366 | 788 |
| 20 | John F. Kennedy Dr. | e/o Heacock St. | Residential | 69.0 | 86 | 186 | 400 |
| 21 | Krameria Av. | e/o Indian St. | Residential | 65.1 | 47 | 102 | 219 |
| 22 | Harley Knox Bl. | w/o Patterson Av. | March Air Reserve Base | 72.8 | 153 | 330 | 712 |
| 23 | Harley Knox Bl. | w/o Webster Av. | March Air Reserve Base | 73.1 | 160 | 345 | 744 |
| 24 | Harley Knox Bl. | e/o Webster Av. | Business Park | 73.0 | 159 | 342 | 737 |

[1] Source: City of Moreno Valley General Plan Land Use Map, Figure 2-2.

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

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

## 7.2 EXISTING CONDITIONS PROJECT TRAFFIC NOISE LEVEL CONTRIBUTIONS

Table 7-1 presents the Existing without Project conditions CNEL noise levels. From this we can see that the exterior noise levels are expected to range from 45.2 to 73.5 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-2 shows the Existing with Project without Indian Street Bridge conditions will range from 45.2 to 73.7 dBA CNEL. As shown on Table 7-8 the Project will generate noise level increases approaching 0.8 dBA CNEL under the without Indian Street Bridge conditions. Based on the significance criteria outlined in Section 4, the Project-related increases at the adjacent land uses represent a *less than significant* impact under Existing with Project without Indian Street Bridge conditions.

Table 7-3 shows the Existing with Project with Indian Street Bridge conditions will range from 45.2 to 73.6 dBA CNEL. As shown on Table 7-9 the Project will generate noise level increases approaching 0.6 dBA CNEL under the with Indian Street Bridge conditions. Based on the significance criteria outlined in Section 4, the Project-related increases at the adjacent land uses represent a *less than significant* impact under Existing with Project with Indian Street Bridge conditions. Further, the Project-related noise level increases will be up to 0.2 dBA CNEL less than those under the without Indian Street Bridge conditions.

## 7.3 OPENING YEAR (2020) PROJECT TRAFFIC NOISE LEVEL CONTRIBUTIONS

Table 7-10 presents a comparison of the Opening Year (2020) without and with Project conditions CNEL noise levels. Table 7-4 shows that the exterior noise levels without accounting for any noise attenuation features are expected to range from 45.2 to 75.6 dBA CNEL under Opening Year (2020) without Project conditions. Table 7-5 presents the Opening Year (2020) with Project conditions noise level contours that are expected to range from 45.2 to 75.7 dBA CNEL. As shown on Table 7-10 the Project will generate noise level increases approaching 0.4 dBA CNEL. Based on the significance criteria outlined in Section 4, the Project-related increases at the adjacent land uses represent a *less than significant* impact under Opening Year (2020) conditions.

## 7.4 GENERAL PLAN BUILDOUT (2035) PROJECT TRAFFIC NOISE LEVEL CONTRIBUTIONS

Table 7-11 presents a comparison of the General Plan Buildout (2035) without and with Project conditions CNEL noise levels. Table 7-6 shows that the exterior noise levels without accounting for any noise attenuation features are expected to range from 61.3 to 76.3 dBA CNEL under General Plan Buildout (2035) without Project conditions. Table 7-7 presents the General Plan Buildout (2035) with Project conditions noise level contours that are expected to range from 61.6 to 76.4 dBA CNEL. As shown on Table 7-11 the Project will generate noise level increases approaching 0.3 dBA CNEL. Based on the significance criteria outlined in Section 4, the Project-related increases at the adjacent land uses represent a *less than significant* impact under General Plan Buildout (2035) conditions.

## 7.5 CUMULATIVE PROJECT TRAFFIC NOISE IMPACTS

According to the U.S. Environmental Protection Agency (EPA), cumulative impacts represent the combined incremental effects of human activities that accumulate over time. (21) While the

incremental impacts may be insignificant by themselves, the combined effect may result in a significant impact. The level of significance attributed to a cumulative noise impact is based on a comparison of the Existing without Project noise levels with the future General Plan Buildout (2035) without Project noise levels. Table 7-12 shows that the cumulative increase from Existing to General Plan Buildout (2035) without Project conditions (column 6) will range from 0.5 to 16.1 dBA CNEL. Based on the significance criteria in Section 4, the cumulative increases represent a *potentially significant* cumulative impact on 10 of the study area roadway segments.

Since the cumulative increase is shown to be potentially significant for 10 of the study area roadway segments, it is necessary to determine the Project-related contribution to the cumulative noise level increase on the affected roadway segments. As shown on Table 7-12, the Project-related noise level contribution is calculated for each roadway segment. To determine if the Project-related contribution to the cumulative noise impact is potentially significant, the Existing without Project noise levels were subtracted from the General Plan Buildout (2035) with Project noise levels to determine the Project plus cumulative noise level increase. As shown on Table 7-12, the General Plan Buildout (2035) with Project plus cumulative noise level increases over Existing without Project conditions (column 10) will range from 0.7 to 16.4 dBA CNEL and represent *potentially significant* impacts under General Plan Buildout (2035) conditions. However, to determine if the Project's contribution to the cumulative impact is cumulatively considerable, the General Plan Buildout (2035) without Project noise level increases are subtracted from the General Plan Buildout (2035) with Project noise level increases.

Table 7-12 shows the actual Project-related contribution to the cumulative noise level increases (column 13) will approach 0.3 dBA CNEL and will not exceed the significance thresholds at the adjacent land uses. Therefore, since the Project-related off-site traffic noise level increases represent a *less than significant* contribution to the cumulative noise impacts, the Project-related traffic noise level increases are *less than cumulatively considerable*.

**TABLE 7-8: EXISTING WITHOUT INDIAN STREET BRIDGE OFF-SITE TRAFFIC NOISE IMPACTS**

| ID | Road | Segment | Adjacent Planned Land Use[1] | CNEL at Adjacent Land Use (dBA)[2] | | | Threshold Exceeded?[3] | |
|---|---|---|---|---|---|---|---|---|
| | | | | No Project | With Project | Project Addition | Noise-Sensitive | Non Noise-Sensitive |
| 1 | Graham St. | n/o Cactus Av. | Light Industrial | 64.8 | 64.8 | 0.0 | No | No |
| 2 | Graham St. | s/o Cactus Av. | March Air Reserve Base | 65.7 | 65.7 | 0.0 | No | No |
| 3 | Heacock St. | n/o Cactus Av. | Residential | 68.8 | 68.8 | 0.0 | No | No |
| 4 | Heacock St. | s/o Cactus Av. | Residential | 71.1 | 71.4 | 0.3 | No | No |
| 5 | Heacock St. | s/o John F. Kennedy Dr. | Residential | 71.3 | 71.7 | 0.4 | No | No |
| 6 | Heacock St. | s/o Gentian Av. | Business Park | 70.2 | 70.7 | 0.5 | No | No |
| 7 | Heacock St. | s/o Iris Av. | Business Park | 67.5 | 68.3 | 0.8 | No | No |
| 8 | Heacock St. | s/o Krameria Av. (North) | Business Park | 67.2 | 67.8 | 0.6 | No | No |
| 9 | Heacock St. | n/o Cardinal Av. | Business Park | 65.6 | 65.9 | 0.3 | No | No |
| 10 | Heacock St. | s/o Cardinal Av. | Business Park | 64.8 | 65.3 | 0.5 | No | No |
| 11 | Heacock St. | s/o San Michele Rd. | Business Park | 63.2 | 63.2 | 0.0 | No | No |
| 12 | Heacock St. | s/o Nandina Av. | Open Space | 45.2 | 45.2 | 0.0 | No | No |
| 13 | Indian St. | n/o Krameria Av. | Residential | 64.1 | 64.2 | 0.1 | No | No |
| 14 | Indian St. | s/o Krameria Av. | Residential | 60.7 | 60.9 | 0.2 | No | No |
| 15 | Cactus Av. | w/o Elsworth St. | Business Park | 73.3 | 73.5 | 0.2 | No | No |
| 16 | Cactus Av. | e/o Elsworth St. | Business Park | 73.1 | 73.3 | 0.2 | No | No |
| 17 | Cactus Av. | e/o Frederick St. | Light Industrial | 73.5 | 73.7 | 0.2 | No | No |
| 18 | Cactus Av. | e/o Graham St. | Light Industrial | 73.5 | 73.7 | 0.2 | No | No |
| 19 | Cactus Av. | e/o Heacock St. | Residential | 69.9 | 70.0 | 0.1 | No | No |
| 20 | John F. Kennedy Dr. | e/o Heacock St. | Residential | 66.6 | 66.6 | 0.0 | No | No |
| 21 | Krameria Av. | e/o Indian St. | Residential | 61.6 | 61.8 | 0.2 | No | No |
| 22 | Harley Knox Bl. | w/o Patterson Av. | March Air Reserve Base | 68.6 | 68.8 | 0.2 | No | No |
| 23 | Harley Knox Bl. | w/o Webster Av. | March Air Reserve Base | 66.6 | 67.0 | 0.4 | No | No |
| 24 | Harley Knox Bl. | e/o Webster Av. | Business Park | 66.6 | 67.0 | 0.4 | No | No |

[1] Source: City of Moreno Valley General Plan Land Use Map, Figure 2-2.

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

[3] Significance Criteria (Section 4).

**TABLE 7-9: EXISTING WITH INDIAN STREET BRIDGE OFF-SITE TRAFFIC NOISE IMPACTS**

| ID | Road | Segment | Adjacent Planned Land Use[1] | CNEL at Adjacent Land Use (dBA)[2] | | | Threshold Exceeded?[3] | |
|---|---|---|---|---|---|---|---|---|
| | | | | No Project | With Project | Project Addition | Noise-Sensitive | Non Noise-Sensitive |
| 1 | Graham St. | n/o Cactus Av. | Light Industrial | 64.8 | 64.8 | 0.0 | No | No |
| 2 | Graham St. | s/o Cactus Av. | March Air Reserve Base | 65.7 | 65.7 | 0.0 | No | No |
| 3 | Heacock St. | n/o Cactus Av. | Residential | 68.8 | 68.8 | 0.0 | No | No |
| 4 | Heacock St. | s/o Cactus Av. | Residential | 71.1 | 71.3 | 0.2 | No | No |
| 5 | Heacock St. | s/o John F. Kennedy Dr. | Residential | 71.3 | 71.6 | 0.3 | No | No |
| 6 | Heacock St. | s/o Gentian Av. | Business Park | 70.2 | 70.6 | 0.4 | No | No |
| 7 | Heacock St. | s/o Iris Av. | Business Park | 67.5 | 68.1 | 0.6 | No | No |
| 8 | Heacock St. | s/o Krameria Av. (North) | Business Park | 67.2 | 67.4 | 0.2 | No | No |
| 9 | Heacock St. | n/o Cardinal Av. | Business Park | 65.6 | 65.9 | 0.3 | No | No |
| 10 | Heacock St. | s/o Cardinal Av. | Business Park | 64.8 | 65.3 | 0.5 | No | No |
| 11 | Heacock St. | s/o San Michele Rd. | Business Park | 63.2 | 63.2 | 0.0 | No | No |
| 12 | Heacock St. | s/o Nandina Av. | Open Space | 45.2 | 45.2 | 0.0 | No | No |
| 13 | Indian St. | n/o Krameria Av. | Residential | 64.1 | 64.2 | 0.1 | No | No |
| 14 | Indian St. | s/o Krameria Av. | Residential | 60.7 | 60.9 | 0.2 | No | No |
| 15 | Cactus Av. | w/o Elsworth St. | Business Park | 73.3 | 73.4 | 0.1 | No | No |
| 16 | Cactus Av. | e/o Elsworth St. | Business Park | 73.1 | 73.2 | 0.1 | No | No |
| 17 | Cactus Av. | e/o Frederick St. | Light Industrial | 73.5 | 73.6 | 0.1 | No | No |
| 18 | Cactus Av. | e/o Graham St. | Light Industrial | 73.5 | 73.6 | 0.1 | No | No |
| 19 | Cactus Av. | e/o Heacock St. | Residential | 69.9 | 70.0 | 0.1 | No | No |
| 20 | John F. Kennedy Dr. | e/o Heacock St. | Residential | 66.6 | 66.6 | 0.0 | No | No |
| 21 | Krameria Av. | e/o Indian St. | Residential | 61.6 | 61.8 | 0.2 | No | No |
| 22 | Harley Knox Bl. | w/o Patterson Av. | March Air Reserve Base | 68.6 | 68.9 | 0.3 | No | No |
| 23 | Harley Knox Bl. | w/o Webster Av. | March Air Reserve Base | 66.6 | 67.2 | 0.6 | No | No |
| 24 | Harley Knox Bl. | e/o Webster Av. | Business Park | 66.6 | 67.2 | 0.6 | No | No |

[1] Source: City of Moreno Valley General Plan Land Use Map, Figure 2-2.

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

[3] Significance Criteria (Section 4).

**TABLE 7-10: OPENING (2020) OFF-SITE PROJECT-RELATED TRAFFIC NOISE IMPACTS**

| ID | Road | Segment | Adjacent Planned Land Use[1] | CNEL at Adjacent Land Use (dBA)[2] | | | Threshold Exceeded?[3] | |
|---|---|---|---|---|---|---|---|---|
| | | | | No Project | With Project | Project Addition | Noise-Sensitive | Non Noise-Sensitive |
| 1 | Graham St. | n/o Cactus Av. | Light Industrial | 66.7 | 66.7 | 0.0 | No | No |
| 2 | Graham St. | s/o Cactus Av. | March Air Reserve Base | 68.0 | 68.0 | 0.0 | No | No |
| 3 | Heacock St. | n/o Cactus Av. | Residential | 69.1 | 69.1 | 0.0 | No | No |
| 4 | Heacock St. | s/o Cactus Av. | Residential | 71.4 | 71.7 | 0.3 | No | No |
| 5 | Heacock St. | s/o John F. Kennedy Dr. | Residential | 71.9 | 72.2 | 0.3 | No | No |
| 6 | Heacock St. | s/o Gentian Av. | Business Park | 70.9 | 71.3 | 0.4 | No | No |
| 7 | Heacock St. | s/o Iris Av. | Business Park | 70.3 | 70.7 | 0.4 | No | No |
| 8 | Heacock St. | s/o Krameria Av. (North) | Business Park | 70.8 | 71.1 | 0.3 | No | No |
| 9 | Heacock St. | n/o Cardinal Av. | Business Park | 69.1 | 69.3 | 0.2 | No | No |
| 10 | Heacock St. | s/o Cardinal Av. | Business Park | 68.8 | 69.0 | 0.2 | No | No |
| 11 | Heacock St. | s/o San Michele Rd. | Business Park | 64.2 | 64.2 | 0.0 | No | No |
| 12 | Heacock St. | s/o Nandina Av. | Open Space | 45.2 | 45.2 | 0.0 | No | No |
| 13 | Indian St. | n/o Krameria Av. | Residential | 65.7 | 65.8 | 0.1 | No | No |
| 14 | Indian St. | s/o Krameria Av. | Residential | 61.0 | 61.1 | 0.1 | No | No |
| 15 | Cactus Av. | w/o Elsworth St. | Business Park | 75.4 | 75.5 | 0.1 | No | No |
| 16 | Cactus Av. | e/o Elsworth St. | Business Park | 75.5 | 75.6 | 0.1 | No | No |
| 17 | Cactus Av. | e/o Frederick St. | Light Industrial | 75.6 | 75.7 | 0.1 | No | No |
| 18 | Cactus Av. | e/o Graham St. | Light Industrial | 74.7 | 74.9 | 0.2 | No | No |
| 19 | Cactus Av. | e/o Heacock St. | Residential | 72.0 | 72.0 | 0.0 | No | No |
| 20 | John F. Kennedy Dr. | e/o Heacock St. | Residential | 67.4 | 67.4 | 0.0 | No | No |
| 21 | Krameria Av. | e/o Indian St. | Residential | 62.8 | 63.0 | 0.2 | No | No |
| 22 | Harley Knox Bl. | w/o Patterson Av. | March Air Reserve Base | 71.5 | 71.6 | 0.1 | No | No |
| 23 | Harley Knox Bl. | w/o Webster Av. | March Air Reserve Base | 70.4 | 70.6 | 0.2 | No | No |
| 24 | Harley Knox Bl. | e/o Webster Av. | Business Park | 70.3 | 70.5 | 0.2 | No | No |

[1] Source: City of Moreno Valley General Plan Land Use Map, Figure 2-2.

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

[3] Significance Criteria (Section 4).

**TABLE 7-11: GENERAL PLAN BUILDOUT (2035) OFF-SITE PROJECT-RELATED TRAFFIC NOISE IMPACTS**

| ID | Road | Segment | Adjacent Planned Land Use[1] | CNEL at Adjacent Land Use (dBA)[2] | | | Threshold Exceeded?[3] | |
|---|---|---|---|---|---|---|---|---|
| | | | | No Project | With Project | Project Addition | Noise-Sensitive | Non Noise-Sensitive |
| 1 | Graham St. | n/o Cactus Av. | Light Industrial | 68.2 | 68.2 | 0.0 | No | No |
| 2 | Graham St. | s/o Cactus Av. | March Air Reserve Base | 70.0 | 70.3 | 0.3 | No | No |
| 3 | Heacock St. | n/o Cactus Av. | Residential | 69.8 | 69.9 | 0.1 | No | No |
| 4 | Heacock St. | s/o Cactus Av. | Residential | 71.6 | 71.8 | 0.2 | No | No |
| 5 | Heacock St. | s/o John F. Kennedy Dr. | Residential | 72.4 | 72.6 | 0.2 | No | No |
| 6 | Heacock St. | s/o Gentian Av. | Business Park | 71.7 | 71.9 | 0.2 | No | No |
| 7 | Heacock St. | s/o Iris Av. | Business Park | 71.6 | 71.8 | 0.2 | No | No |
| 8 | Heacock St. | s/o Krameria Av. (North) | Business Park | 71.7 | 71.8 | 0.1 | No | No |
| 9 | Heacock St. | n/o Cardinal Av. | Business Park | 69.9 | 70.0 | 0.1 | No | No |
| 10 | Heacock St. | s/o Cardinal Av. | Business Park | 69.9 | 70.1 | 0.2 | No | No |
| 11 | Heacock St. | s/o San Michele Rd. | Business Park | 68.9 | 69.2 | 0.3 | No | No |
| 12 | Heacock St. | s/o Nandina Av. | Open Space | 61.3 | 61.6 | 0.3 | No | No |
| 13 | Indian St. | n/o Krameria Av. | Residential | 69.2 | 69.3 | 0.1 | No | No |
| 14 | Indian St. | s/o Krameria Av. | Residential | 70.7 | 70.7 | 0.0 | No | No |
| 15 | Cactus Av. | w/o Elsworth St. | Business Park | 76.3 | 76.4 | 0.1 | No | No |
| 16 | Cactus Av. | e/o Elsworth St. | Business Park | 75.8 | 75.8 | 0.0 | No | No |
| 17 | Cactus Av. | e/o Frederick St. | Light Industrial | 75.7 | 75.8 | 0.1 | No | No |
| 18 | Cactus Av. | e/o Graham St. | Light Industrial | 75.0 | 75.1 | 0.1 | No | No |
| 19 | Cactus Av. | e/o Heacock St. | Residential | 73.4 | 73.4 | 0.0 | No | No |
| 20 | John F. Kennedy Dr. | e/o Heacock St. | Residential | 69.0 | 69.0 | 0.0 | No | No |
| 21 | Krameria Av. | e/o Indian St. | Residential | 65.0 | 65.1 | 0.1 | No | No |
| 22 | Harley Knox Bl. | w/o Patterson Av. | March Air Reserve Base | 72.6 | 72.8 | 0.2 | No | No |
| 23 | Harley Knox Bl. | w/o Webster Av. | March Air Reserve Base | 72.9 | 73.1 | 0.2 | No | No |
| 24 | Harley Knox Bl. | e/o Webster Av. | Business Park | 73.0 | 73.0 | 0.0 | No | No |

[1] Source: City of Moreno Valley General Plan Land Use Map, Figure 2-2.

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

[3] Significance Criteria (Section 4).

## TABLE 7-12: GENERAL PLAN BUILDOUT (2035) OFF-SITE CUMULATIVE TRAFFIC NOISE IMPACTS

| ID [1] | Road [2] | Segment [3] | CNEL at Adj. Land Use[1] | | Cumulative-Related | | | Project-Related | | | | Project Contributions | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Existing Without Project [4] | Year 2035 Without Project [5] | Cumulative Increase From Existing[2] [6] | Threshold Exceeded?[3] | | Year 2035 With Project[1] [9] | Project Increase From Existing[4] [10] | Threshold Exceeded?3 | | Project Contr.[5] [13] | Cumulatively Considerable?[6] | |
| | | | | | | Noise-Sensitive [7] | Non-Noise-Sensitive [8] | | | Noise-Sensitive [11] | Non-Noise-Sensitive [12] | | Noise-Sensitive [14] | Non-Noise-Sensitive [15] |
| 1 | Graham St. | n/o Cactus Av. | 64.8 | 68.2 | 3.4 | No | No | 68.2 | 3.4 | No | No | 0.0 | No | No |
| 2 | Graham St. | s/o Cactus Av. | 65.7 | 70.0 | 4.3 | No | No | 70.3 | 4.6 | No | No | 0.3 | No | No |
| 3 | Heacock St. | n/o Cactus Av. | 68.8 | 69.8 | 1.0 | No | No | 69.9 | 1.1 | No | No | 0.1 | No | No |
| 4 | Heacock St. | s/o Cactus Av. | 71.1 | 71.6 | 0.5 | No | No | 71.8 | 0.7 | No | No | 0.2 | No | No |
| 5 | Heacock St. | s/o John F. Kennedy Dr. | 71.3 | 72.4 | 1.1 | No | No | 72.6 | 1.3 | No | No | 0.2 | No | No |
| 6 | Heacock St. | s/o Gentian Av. | 70.2 | 71.7 | 1.5 | No | No | 71.9 | 1.7 | No | No | 0.2 | No | No |
| 7 | Heacock St. | s/o Iris Av. | 67.5 | 71.6 | 4.1 | No | No | 71.8 | 4.3 | No | No | 0.2 | No | No |
| 8 | Heacock St. | s/o Krameria Av. (North) | 67.2 | 71.7 | 4.5 | No | No | 71.8 | 4.6 | No | No | 0.1 | No | No |
| 9 | Heacock St. | n/o Cardinal Av. | 65.6 | 69.9 | 4.3 | No | No | 70.0 | 4.4 | No | No | 0.1 | No | No |
| 10 | Heacock St. | s/o Cardinal Av. | 64.8 | 69.9 | 5.1 | No | Yes | 70.1 | 5.3 | No | Yes | 0.2 | No | No |
| 11 | Heacock St. | s/o San Michele Rd. | 63.2 | 68.9 | 5.7 | No | Yes | 69.2 | 6.0 | No | Yes | 0.3 | No | No |
| 12 | Heacock St. | s/o Nandina Av. | 45.2 | 61.3 | 16.1 | No | Yes | 61.6 | 16.4 | No | Yes | 0.3 | No | No |
| 13 | Indian St. | n/o Krameria Av. | 64.1 | 69.2 | 5.1 | Yes | No | 69.3 | 5.2 | Yes | No | 0.1 | No | No |
| 14 | Indian St. | s/o Krameria Av. | 60.7 | 70.7 | 10.0 | Yes | No | 70.7 | 10.0 | Yes | No | 0.0 | No | No |
| 15 | Cactus Av. | w/o Elsworth St. | 73.3 | 76.3 | 3.0 | No | Yes | 76.4 | 3.1 | No | Yes | 0.1 | No | No |
| 16 | Cactus Av. | e/o Elsworth St. | 73.1 | 75.8 | 2.7 | No | No | 75.8 | 2.7 | No | No | 0.0 | No | No |
| 17 | Cactus Av. | e/o Frederick St. | 73.5 | 75.7 | 2.2 | No | No | 75.8 | 2.3 | No | No | 0.1 | No | No |
| 18 | Cactus Av. | e/o Graham St. | 73.5 | 75.0 | 1.5 | No | No | 75.1 | 1.6 | No | No | 0.1 | No | No |
| 19 | Cactus Av. | e/o Heacock St. | 69.9 | 73.4 | 3.5 | Yes | No | 73.4 | 3.5 | Yes | No | 0.0 | No | No |
| 20 | John F. Kennedy Dr. | e/o Heacock St. | 66.6 | 69.0 | 2.4 | Yes | No | 69.0 | 2.4 | No | No | 0.0 | No | No |
| 21 | Krameria Av. | e/o Indian St. | 61.6 | 65.0 | 3.4 | Yes | No | 65.1 | 3.5 | Yes | No | 0.1 | No | No |
| 22 | Harley Knox Bl. | w/o Patterson Av. | 68.6 | 72.6 | 4.0 | No | No | 72.8 | 4.2 | No | No | 0.2 | No | No |
| 23 | Harley Knox Bl. | w/o Webster Av. | 66.6 | 72.9 | 6.3 | No | Yes | 73.1 | 6.5 | No | Yes | 0.2 | No | No |
| 24 | Harley Knox Bl. | e/o Webster Av. | 66.6 | 73.0 | 6.4 | No | Yes | 73.0 | 6.4 | No | Yes | 0.0 | No | No |

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the nearest adjacent land use.

[2] Cumulative noise level increase from Existing without Project (Table 7-1) to Year 2035 without Project conditions (Table 7-6).

[3] Does the increase exceed the significance criteria in Section 4? Land use sensitivity is based on the City of Moreno Valley General Plan Land Use Map, Figure 2-2.

[4] Project-related noise level increase from Existing without Project (Table 7-1) to Year 2035 with Project conditions (Table 7-7).

[5] Total Project contribution to the cumulative noise level increase.

[6] Does the Project-related contribution to the cumulative noise level increase exceed the significance criteria at the adjacent land uses?

# 8 RECEIVER LOCATIONS

To assess the potential for long-term operational and short-term construction noise impacts, the following eight receiver locations, as shown on Exhibit 8-A, were identified as representative locations for analysis. Many of these receiver locations coincide with the existing noise level measurement locations outlined in Section 5 and previously shown on Exhibit 5-A. Sensitive receivers are generally defined as locations where people reside or where the presence of unwanted sound could otherwise adversely affect the use of the land. Noise-sensitive land uses are generally considered to include: schools, hospitals, single-family dwellings, mobile home parks, churches, libraries, and recreation areas. Moderately noise-sensitive land uses typically include: multi-family dwellings, hotels, motels, dormitories, out-patient clinics, cemeteries, golf courses, country clubs, athletic/tennis clubs, and equestrian clubs. Land uses that are considered relatively insensitive to noise include business, commercial, and professional developments. Land uses that are typically not affected by noise include: industrial, manufacturing, utilities, agriculture, natural open space, undeveloped land, parking lots, warehousing, liquid and solid waste facilities, salvage yards, and transit terminals.

Representative sensitive receivers in the vicinity of the Project site include the single-family residential homes at locations R1, and R3 to R8. Receiver location R2 represents Rainbow Ridge Elementary School. The closest noise-sensitive receiver is represented by location R8 where an existing residential home is located approximately 101 feet east of the Project site boundary.

R1: Located approximately 2,744 feet north of the Project site on Iris Avenue, R1 represents existing single-family residential homes. A long-term noise measurement was taken near this location, L5, to describe the existing ambient noise environment.

R2: Location R2 represents Rainbow Ridge Elementary School located roughly 2,853 feet northeast of the Project site.

R3: Location R3 represents the existing residential homes situated north of the Project site at a distance of approximately 1,544 feet on Indian Street. A long-term noise measurement was taken near this location, L6, to describe the existing ambient noise environment.

R4: Location R4 represents the existing residential homes situated approximately 471 feet northeast of the Project site. A long-term noise measurement was taken near this location, L7, to describe the existing ambient noise environment.

R5: At a distance of approximately 133 feet, location R5 represents single-family residential homes adjacent to Indian Street, east of the Project site. A long-term noise measurement was taken near this location, L7, to describe the existing ambient noise environment.

R6: Location R6 represents the existing residential homes situated east of the Project site at a distance of approximately 161 feet across Indian Street. A long-term noise measurement was taken near this location, L8, to describe the existing ambient noise environment.

R7: Location R7 represents the existing residential homes situated approximately 144 feet east of the Project site across Indian Street. A long-term noise measurement was taken near this location, L9, to describe the existing ambient noise environment.

R8: At a distance of approximately 101 feet, location R8 represents a single-family residential home southeast of the Project site.

**EXHIBIT 8-A: RECEIVER LOCATIONS**

# 9 OPERATIONAL NOISE IMPACTS

This section analyzes the potential stationary-source operational noise impacts at nearby receiver locations resulting from operation of the proposed Moreno Valley Logistics Center. Exhibit 9-A identifies the representative receiver locations and noise source locations used to assess the operational noise levels.

## 9.1 OPERATIONAL NOISE STANDARDS

The City of Moreno Valley Municipal Code, Chapter 11.80 *Noise Regulation*, provides performance standards and noise control guidelines for determining and mitigating non-transportation or stationary-source noise impacts from operations at private properties. The City of Moreno Valley Municipal Code defines *Maximum Sound Levels (in dB(A)) for Source Land Uses* in Table 11.80.030-2 for *Residential* and *Commercial* land uses. As defined by the Municipal Code, Section 11.80.020 *Definitions*, *Commercial* land use *means all uses of land not otherwise classified as residential,* and *Residential* land use *means all uses of land primarily for dwelling units, as well as hospitals, schools, colleges and universities, and places of religious assembly.* (2) For the purpose of this analysis, the Moreno Valley Logistics Center Project is considered *Commercial* land use since it is not classified as residential. Based on this standard, the operational noise level limits for commercial land use, from Table 11.80.030-2, of 65 dBA Leq during the daytime (8:00 a.m. to 10:00 p.m.) hours and 60 dBA Leq during the nighttime (10:01 p.m. to 7:59 a.m.) hours shall apply to the operational noise from the Project.

Further, Section 11.80.030 (C) *Prohibited Acts*, *Nonimpulsive Sound Decibel Limits*, states: *No person shall maintain, create, operate or cause to be operated on private property any source of sound in such a manner as to create any nonimpulsive sound which exceeds the limits set forth for the source land use category (as defined in Section 11.80.020) in Table 11.80.030-2 when measured at a distance of two hundred (200) feet or more from the real property line of the source of the sound, if the sound occurs on a privately owned property…* (2) Therefore, at a distance of 200 feet from the property line, the Project's operational noise levels shall not exceed the 65 dBA Leq daytime and 60 dBA Leq nighttime noise level standards for commercial land use.

## 9.2 OPERATIONAL NOISE SOURCES

To present the potential worst-case noise conditions, this analysis assumes all tenants within the Project building would be operational 24 hours per day, seven days per week. This analysis accounts for the noise associated with cold storage (refrigeration) as a worst-case scenario since it includes the additional noise from the refrigerated containers/reefers on trucks within the Project site, and may conservatively overstate the actual noise levels due to tenant operations at the Project site. Currently the proposed Project could not use more than 10% of the Project for cold storage. This noise analysis has assumed the possibility of more than 10% of cold storage only for the purposes of over-estimating as opposed to under-estimating noise impacts. As proposed, no more than 10% of the Project could be used for cold storage.

Business operations would primarily be conducted within the enclosed buildings, with the exception of traffic movement, parking, and the loading and unloading of trucks at designated loading bays. Therefore, the on-site Project related noise sources are expected to include: idling trucks, delivery truck activities, parking, backup alarms, refrigerated containers or reefers, as well as loading and unloading of dry goods. No additional on-site noise sources are included in the analysis based on observations made during the reference noise level measurements, provided in Appendix 9.1, at similar logistics warehouses. Additional on-site noise sources such as power generators, HVAC equipment, or material handling equipment will vary by tenant and do not represent the major noise sources for the Project land uses, and as such, are not included as specific references in this analysis. The proposed Project site plan does not identify the use of power generators, and the material handling noise levels are expected to occur within each building. Other operational noise levels associated with the activities expected at the proposed Moreno Valley Logistics Center such as background HVAC equipment are reflected in the reference noise level measurements. This noise analysis is intended to describe noise level impacts associated with the expected typical warehouse and distribution storage activities at the Project site.

## 9.3 REFERENCE NOISE LEVELS

Since the future tenants of the proposed Project are unknown, the Project's operational noise levels were estimated based on reference noise level measurements of similar operational activities. The reference noise levels are intended to describe the expected operational noise sources that may include idling trucks, delivery truck activities, parking, backup alarms, refrigerated containers or reefers, as well as loading and unloading of dry goods. To estimate the Project off-site operational noise impacts associated with the Moreno Valley Logistics Center, the following reference noise level measurements were collected from existing logistics warehouse operations containing similar operational noise sources, as shown on Table 9-1. Appendix 9.1 includes reference noise source descriptions and photos for each location.

### 9.3.1 WORST-CASE REFERENCE NOISE LEVELS

To describe the worst-case Project-only operational noise levels associated with the Moreno Valley Logistics Center Project, this analysis relies on a reference noise level of 70.1 dBA Leq at a distance of 30 feet from the truck idling/reefer activity taken at the Nature's Best distribution facility, described in Appendix 9.1. This analysis assumes both tenants within the Project building would be operational 24 hours per day, seven days per week. In addition, this analysis accounts for the noise associated with cold storage (refrigeration) as a worst-case scenario as it accounts for the additional noise from the refrigerated containers/reefers on trucks within the Project site, and may conservatively overstate the actual noise levels due to tenant operations at the Project site. Currently the proposed Project could not use more than 10% of the Project for cold storage.

As shown on Table 9-1, the reference noise level of 70.1 dBA is measured at a distance of 30 feet at a height of 8 feet. While the specific noise levels at the Project site will depend on the actual tenant, the intensity and the daytime / nighttime hours of operation, a reference noise level of 70.1 dBA Leq at 30 feet is used to describe the peak Project operational noise activity since it

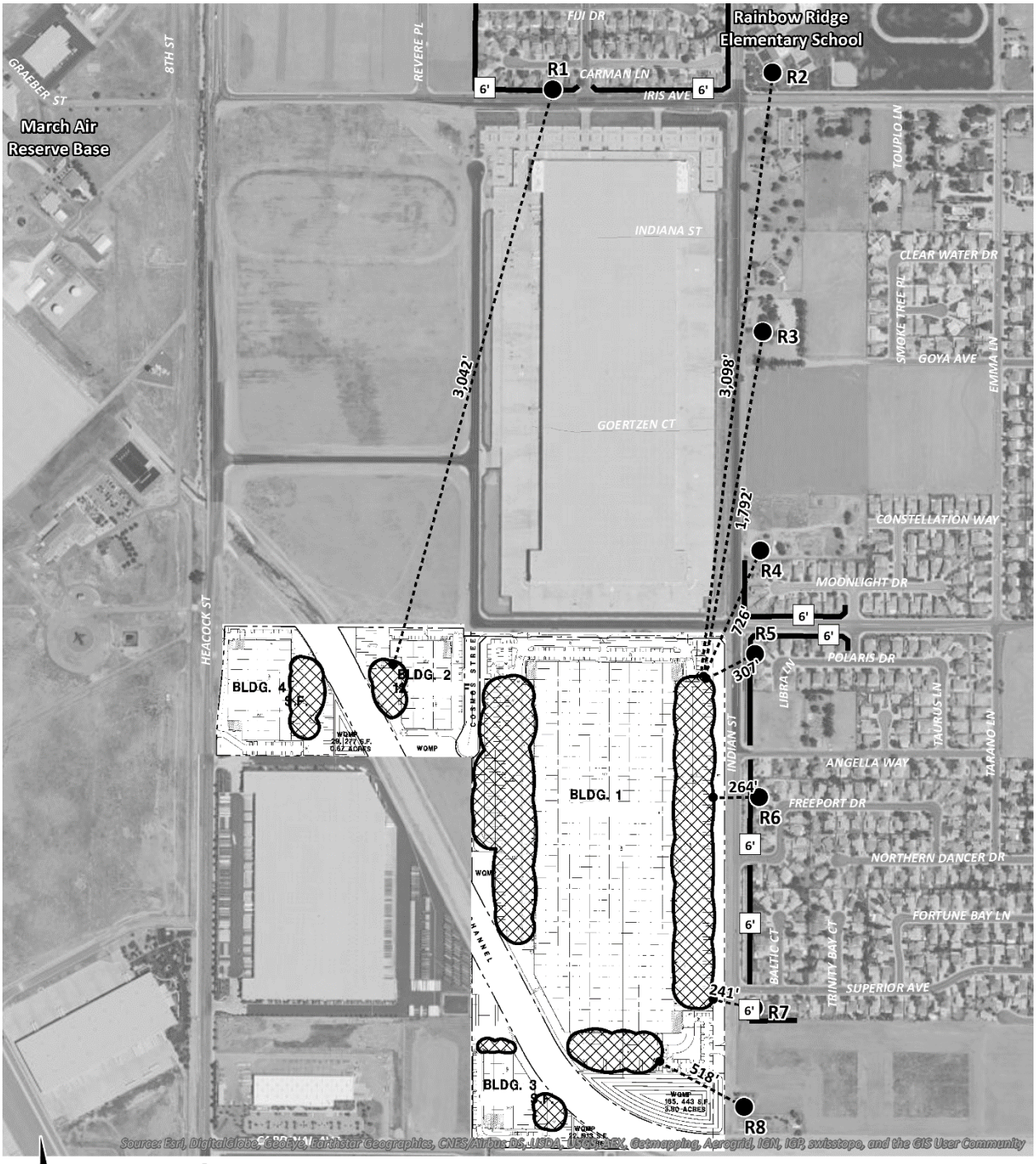
represents similar operational characteristics. The reference noise levels are intended to describe noise level impacts associated with the expected typical warehouse and distribution storage operations at the Project site.

**TABLE 9-1: REFERENCE NOISE LEVEL MEASUREMENTS**

| Noise Source | Duration (hh:mm:ss) | Distance From Source (Feet) | Noise Source Height (Feet) | Hourly Activity (Minutes)[4] | Hourly (dBA Leq) |
|---|---|---|---|---|---|
| Truck Idle/Reefer Activity[1] | 0:14:00 | 30' | 8' | 60 | 70.1 |
| Entry Gate Activity[1] | 0:10:00 | 20' | 8' | 60 | 69.2 |
| Entry Gate Activity[2] | 0:15:00 | 20' | 8' | 60 | 64.0 |
| Unloading/Docking Activity[2] | 0:15:00 | 30' | 8' | 60 | 67.2 |
| Distribution/Warehouse Activity[3] | 24:00:00 | 25' | 8' | 60 | 69.1 |

[1] Reference noise level measurements were collected from the existing operations of the Nature's Best distribution facility located at 16081 Fern Avenue in the City of Chino. The reference noise level measurements were collected on Wednesday, January 7, 2015.
[2] Reference noise level measurements were collected from the existing operations of the Motivational Fulfillment & Logistics Services distribution facility located at 6810 Bickmore Avenue in the City of Chino. The reference noise level measurements were collected on Wednesday, January 7, 2015.
[3] The reference noise level measurements include the daytime and nighttime noise levels associated with idling trucks, delivery truck activities, parking, backup alarms, refrigerated containers or reefers, as well as loading and unloading of dry goods. Reference noise level measurements were collected from the existing 24-hour operations of Veg Fresh Farms and FedEx distribution facility located at 500 East Orangethorpe Avenue in the City of Anaheim. The reference noise level measurements were collected on Tuesday, January 22, 2013.
[4] Duration (minutes within the hour) of noise activity during peak hourly conditions.

## EXHIBIT 9-A: OPERATIONAL NOISE SOURCE LOCATIONS




**LEGEND:**

- Receiver Locations
- 6' Existing Barrier Height (in feet)
- Existing Barrier
- Distribution/Warehouse Activity
- Distance from receiver to center of noise source (in feet)

## 9.4 PROJECT OPERATIONAL NOISE LEVELS

Based upon the reference noise levels, it is possible to estimate the Project operational stationary-source noise levels at a distance of 200 feet, consistent with the City of Moreno Valley Municipal Code requirements, and at each of the eight noise receiver locations. The operational noise level calculations shown on Tables 9-2 and 9-3 account for the distance attenuation provided due to geometric spreading, when sound from a localized stationary source (i.e., a point source) propagates uniformly outward in a spherical pattern. With geometric spreading, sound levels attenuate (or decrease) at a rate of 6 dB for each doubling of distance from a point source (idling trucks, delivery truck activities, parking, backup alarms, refrigerated containers or reefers, as well as loading and unloading of dry goods).

Table 9-2 presents the combined total operational noise level projections at a distance of 200 feet consistent with the City of Moreno Valley Municipal Code. The Project operational noise levels at a distance of 200 feet are estimated at 53.6 dBA Leq. Based on the results of this analysis, the Project operational noise levels associated with the Moreno Valley Logistics Center will satisfy the daytime and nighttime exterior noise level standards for commercial-source land uses of 65 dBA Leq and 60 dBA Leq, respectively, at a distance of 200 feet and, therefore, will be *less than significant*.

**TABLE 9-2: OPERATIONAL NOISE LEVEL PROJECTIONS AT A DISTANCE OF 200 FEET**

| Noise Source | Reference Noise Level (dBA Leq) | Distance Attenuation at 200 feet (dBA Leq)[1] | Hourly Activity (Minutes)[2] | Hourly Activity Adjustment (dBA Leq) | Calculated Noise Level at 200 feet (dBA Leq) |
|---|---|---|---|---|---|
| Truck Idle/Reefer Activity | 70.1 | -16.5 | 60 | 0.0 | 53.6 |

[1] Drop off rate of 6 dBA per doubling of distance (point source).
[2] Duration (minutes within the hour) of noise activity during peak hourly conditions.

Table 9-3 presents the exterior noise levels including the barrier attenuation provided by the existing 6-foot barriers in the Project study area, as previously shown on Exhibit 9-A. Table 9-3 indicates that the hourly noise levels associated with the Moreno Valley Logistics Center Project at the eight sensitive receiver locations are expected to range from 24.4 to 46.6 dBA Leq. The noise levels experienced at the nearby sensitive receiver locations include attenuation due to the distance from each receiver to the noise source, and the existing barriers at residential homes. The operational noise level calculations are included in Appendix 9.2.

**TABLE 9-3: OPERATIONAL NOISE LEVEL PROJECTIONS AT RECEIVER LOCATIONS**

*Using the Project Reference Operational Noise Level of 70.1 dBA Leq at 30 feet.*

| Receiver Location[1] | Distance From Source To Receiver (Feet)[2] | Attenuation (dBA Leq) | | Noise Level At Receiver Locations (dBA Leq)[5] |
|---|---|---|---|---|
| | | Distance[3] | Existing Noise Barriers[4] | |
| R1 | 3,042' | -40.1 | -5.6 | 24.4 |
| R2 | 3,098' | -40.3 | 0.0 | 29.8 |
| R3 | 1,792' | -35.5 | 0.0 | 34.6 |
| R4 | 726' | -27.7 | -5.5 | 36.9 |
| R5 | 307' | -20.2 | -5.4 | 44.5 |
| R6 | 264' | -18.9 | -5.4 | 45.8 |
| R7 | 241' | -18.1 | -5.4 | 46.6 |
| R8 | 518' | -24.7 | 0.0 | 45.4 |

[1] See Exhibit 9-A for the noise receiver and noise source locations.
[2] Estimated distances to nearest loading dock activities.
[3] Noise levels diminish at a rate 6 dBA per doubling of distance and a reference distance of 30 feet.
[4] Calculated noise attenuation provided by the recommended barriers, as shown on Exhibit 9-A.
[5] Calculated Project stationary source noise levels (Appendix 9.2).

## 9.5 PROJECT OPERATIONAL NOISE LEVEL CONTRIBUTIONS

Although the Project-related operational noise levels are shown to be less than significant based on the City of Moreno Valley Municipal Code standards at 200 feet, some receiver locations are located within 200 feet from the Project site boundaries. Therefore, to determine the potential Project-related operational noise impacts at each receiver location, the Project-related noise level contribution is evaluated at each receiver location based on the magnitude of the Project-related increase on the ambient noise levels.

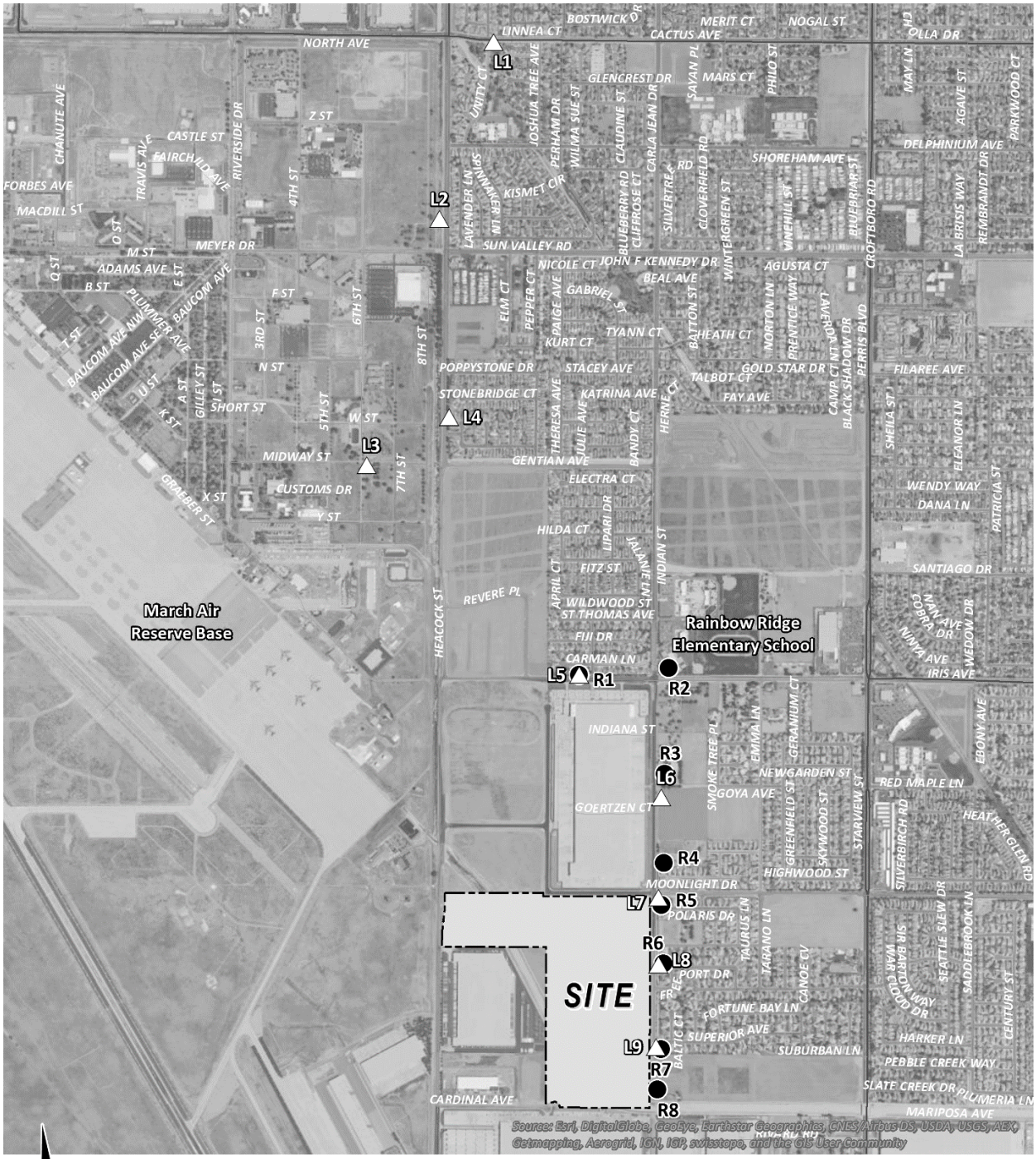
To describe the Project operational noise level contributions, the Project operational noise levels are combined with the existing ambient noise levels measurements for the five receiver locations potentially impacted by Project operational noise sources. Since the units used to measure noise, decibels (dB), are logarithmic units, the Project-operational and existing ambient noise levels cannot be combined using standard arithmetic equations. (4) Instead, they must be logarithmically added using the following base equation:

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

Where "SPL1," "SPL2," etc. are equal to the sound pressure levels being combined, or in this case, the Project-operational and existing ambient noise levels. The difference between the combined Project and ambient noise levels describe the Project noise level contributions to the existing ambient noise environment. Noise levels that would be experienced at receiver locations when Project-source noise is added to ambient daytime and nighttime conditions are presented on Tables 9-4 and 9-5, respectively. The noise levels presented on Tables 9-4 and 9-5 include the attenuation provided by the existing 6-foot high noise barriers in the Project study area, shown

on Exhibit 9-A. The noise measurement and sensitive receiver locations are shown on Exhibit 9-B.

**EXHIBIT 9-B: NOISE MEASUREMENT AND RECEIVER LOCATIONS**



As indicated on Table 9-4, the Project is expected to generate a daytime operational noise level contribution of up to 0.9 dBA Leq at the nearby receiver locations. Based on the significance criteria described in Section 4, the Project-related operational noise level contributions to the daytime ambient noise levels at nearby sensitive receiver locations will be *less than significant*.

Table 9-5 shows the Project is expected to generate a nighttime operational noise level contribution of up to 1.2 dBA Leq at the nearby receiver locations. Based on the significance criteria described in Section 4, the Project-related operational noise level contributions to the nighttime ambient noise levels at nearby sensitive receiver locations will be *less than significant*. On this basis, Project operational stationary-source noise levels would not result in a substantial temporary/periodic, or permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project, and impacts in will be *less than significant*.

**TABLE 9-4: DAYTIME OPERATIONAL NOISE LEVEL CONTRIBUTIONS**

| Receiver Location[1] | Total Project Operational Noise Level[2] | Measurement Location[3] | Reference Ambient Noise Levels[4] | Combined Project and Ambient[5] | Project Contribution[6] | Threshold Exceeded?[7] |
|---|---|---|---|---|---|---|
| R1 | 24.4 | L5 | 66.2 | 66.2 | 0.0 | No |
| R2 | 29.8 | L5 | 66.2 | 66.2 | 0.0 | No |
| R3 | 34.6 | L6 | 61.5 | 61.5 | 0.0 | No |
| R4 | 36.9 | L7 | 64.1 | 64.1 | 0.0 | No |
| R5 | 44.5 | L7 | 64.1 | 64.1 | 0.0 | No |
| R6 | 45.8 | L8 | 60.8 | 60.9 | 0.1 | No |
| R7 | 46.6 | L9 | 53.1 | 54.0 | 0.9 | No |
| R8 | 45.4 | L9 | 53.1 | 53.8 | 0.7 | No |

[1] See Exhibit 9-A for the sensitive receiver locations.
[2] Total Project operational noise levels as shown on Table 9-2.
[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 activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] Significance Criteria as defined in Section 4.

**TABLE 9-5: NIGHTTIME OPERATION NOISE LEVEL CONTRIBUTIONS**

| Receiver Location[1] | Total Project Operational Noise Level[2] | Measurement Location[3] | Reference Ambient Noise Levels[4] | Combined Project and Ambient[5] | Project Contribution[6] | Threshold Exceeded?[7] |
|---|---|---|---|---|---|---|
| R1 | 24.4 | L5 | 67.0 | 67.0 | 0.0 | No |
| R2 | 29.8 | L5 | 67.0 | 67.0 | 0.0 | No |
| R3 | 34.6 | L6 | 62.5 | 62.5 | 0.0 | No |
| R4 | 36.9 | L7 | 60.6 | 60.6 | 0.0 | No |
| R5 | 44.5 | L7 | 60.6 | 60.7 | 0.1 | No |
| R6 | 45.8 | L8 | 60.2 | 60.4 | 0.2 | No |
| R7 | 46.6 | L9 | 51.7 | 52.9 | 1.2 | No |
| R8 | 45.4 | L9 | 51.7 | 52.6 | 0.9 | No |

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

## 9.6 OPERATIONAL NOISE ABATEMENT MEASURES

The routine operation of the Project will not exceed the City of Moreno Valley standards for stationary noise impacts. To further reduce potential operational noise levels received at adjacent residential land uses, it is recommended that the Lead Agency require the following as Project Conditions of Approval:

- All on-site operating equipment under the control of the building user that is used in outdoor areas (including but not limited to trucks, tractors, forklifts, and hostlers), shall be operated with properly functioning and well-maintained mufflers. The City of Moreno Valley may conduct periodic inspection at its discretion.
- Maintain quality pavement conditions on the property that are free of vertical deflection (i.e. speed bumps) to minimize truck noise. The City of Moreno Valley may conduct periodic inspection at its discretion.
- Consistent with Mitigation Measure AQ-6 of the *Moreno Valley Logistics Center Air Quality Impact Analysis*, and enforced by the California Air Resources Board (CARB), the truck access gates and loading docks within the truck court on the Project site shall be posted with signs which state:
    - Truck drivers shall turn off engines when not in use;
    - Diesel trucks servicing the Project shall not idle for more than five (5) minutes; and
    - Telephone numbers of the building facilities manager and the CARB to report violations.

## 9.7 OPERATIONAL VIBRATION IMPACTS

Although the human threshold of perception for vibration is around 65 VdB, human response to vibration is not usually significant unless the vibration exceeds 70 VdB. Truck vibration levels are dependent on vehicle characteristics, load, speed, and pavement condition. Typical vibration levels for heavy trucks at normal traffic speeds do not exceed 65 VdB, and therefore, will be below the FTA vibration threshold of 80 VdB at nearby sensitive receiver locations. Truck deliveries transiting on site will be travelling at very low speeds so it is expected that delivery truck vibration impacts at nearby homes will be *less than significant*.

## 9.8 ALTERNATE SITE PLAN COMPARISON

This noise study evaluates the Project's worst-case condition based on the four-building Project site plan. If the alternate site plan with a 166-space truck parking lot in lieu of Building 2 is implemented, the operational noise levels would be reduced. The removal of Building 2 would reduce the total loading dock areas and potential operational noise sources within the Project site, thereby reducing the total operational noise levels expected at the nearby receiver locations.

# 10 CONSTRUCTION IMPACTS

This section analyzes potential impacts resulting from the short-term construction activities associated with the development of the Project.

## 10.1 CONSTRUCTION NOISE STANDARDS

To analyze noise impacts originating from the construction of the Moreno Valley Logistics Center Project, noise from construction activities are typically limited to the hours of operation established under a City's Municipal Code. The Municipal Code noise standards for construction are described below for the City of Moreno Valley to determine the potential noise impacts at nearby sensitive receiver locations. As a subset of its stationary-source noise regulations, the City Municipal Code establishes additional restrictions on construction-source noise. More specifically, Municipal Code Section 11.80.030 (D) (7), *Construction and Demolition*, provides the following:

> *No person shall operate or cause operation of any tools or equipment used in construction, drilling, repair, alteration or demolition work between the hours of eight p.m. and seven a.m. the following day such that the sound there from creates a noise disturbance, except for emergency work by public service utilities or for other work approved by the city manager or designee.*

A *noise disturbance*, as defined by the City of Moreno Valley Municipal Code, means any sound which:

- *Disturbs a reasonable person of normal sensitivities;*
- *Exceeds the sound level limits set forth in this chapter [Table 11.80.030-2];*
- *Is plainly audible as defined in this section. Where no specific distance is set forth for the determination of audibility, references to noise disturbance shall be deemed to mean plainly audible at a distance of two hundred (200) feet from the real property line of the source of the sound, if the sound occurs on a privately owned property, or from the source of the sound, if the sound occurs on public right, public space or other publicly owned property.*

Therefore, based on the Section 11.80.030 (D) (7) construction regulations, a construction-related *noise disturbance* occurs when the noise levels exceed the *commercial* land use criteria of 65 dBA Leq during the daytime hours and 60 dBA Leq during the nighttime hours at a distance of 200 feet from the property line of the source (Project site). In addition, grading operations shall be limited to the hours identified in Section 8.21.050 (O) of 7:00 a.m. to 6:00 p.m., Monday through Friday, and 8:00 a.m. to 4:00 p.m. on weekends and holidays or as approved by the City Engineer.

## 10.2 CONSTRUCTION NOISE LEVELS

Noise generated by the Project construction equipment will include a combination of trucks, power tools, concrete mixers and portable generators that when combined can reach high levels. Construction at the Project site is anticipated to occur in two overlapping phases:

- Phase 1: Construction of Buildings 1 and 2.
- Phase 2: Construction of Buildings 3 and 4.

The number and mix of construction equipment is expected to occur in each the following five stages, for each building within the Project site:

- Grading
- Trenching
- Building Construction
- Architectural Coating
- Paving

Construction is expected to commence in April 2016 and will last through May 2017. Phase 1 of Project construction is anticipated to occur from April 29th, 2016 to April 26th, 2017. Phase 2 of Project construction is expected to start on July 1st, 2016 and continue through March 2nd, 2017. This construction noise analysis was prepared using reference noise level measurements taken by Urban Crossroads, Inc. to describe the typical construction activity noise levels for each stage of Project construction. The construction reference noise level measurements, provided in Appendix 10.1, represent a list of typical construction activity noise levels. Noise levels generated by heavy construction equipment can range from approximately 60 dBA to in excess of 72 dBA when measured at 200 feet. However, these noise levels diminish with distance from the construction site at a rate of 6 dBA per doubling of distance. For example, a noise level of 72 dBA measured at 200 feet from the noise source to the receiver would be reduced to 66 dBA at 400 feet from the source to the receiver, and would be further reduced to 60 dBA at 800 feet from the source to the receiver. The types of equipment for each construction stage are generally consistent with the data used to support the construction emissions in the *Moreno Valley Logistics Center Air Quality Impact Analysis* prepared by Urban Crossroads Inc. (22)

## 10.3 CADNAA NOISE PREDICTION MODEL

The CadnaA (Computer Aided Noise Abatement) software is used to graphically represent the noise level contour boundaries for each stage of construction. CadnaA has the ability to analyze the noise level of multiple types of noise sources and calculates the noise levels at any location. The program has the ability to analyze the noise level of multiple types of noise sources and to calculate the effects of topography, buildings and multiple barriers. The noise level contour boundaries of each stage of Project construction are shown on Exhibits 10-A to 10-J based on the results of the construction noise analysis.

## 10.4 CONSTRUCTION REFERENCE NOISE LEVELS

To describe the Project construction noise levels, measurements were collected for similar activities at several construction sites. Table 10-1 provides a summary of the fifteen construction reference noise level measurements. Since the reference noise levels were collected at varying distances, all construction noise level measurements presented on Table 10-1 have been adjusted to describe a common reference distance of 50 feet.

For comparison with the City of Moreno Valley construction regulations Section 11.80.030 (D) (7), the construction noise levels are presented at a distance of 200 feet for each stage of construction. Appendix 10.1 includes a detailed construction reference noise level memo and reference noise source photos for each type of construction activity.

**TABLE 10-1: CONSTRUCTION REFERENCE NOISE LEVELS**

| ID | Noise Source | Reference Distance From Source (Feet) | Reference Noise Levels @ Reference Distance | | Reference Noise Levels @ 50 Feet[5] | |
|---|---|---|---|---|---|---|
| | | | dBA Leq | dBA Lmax | dBA Leq | dBA Lmax |
| 1 | Truck Pass-Bys & Dozer Activity[1] | 30' | 63.6 | 68.1 | 59.2 | 63.7 |
| 2 | Dozer Activity[1] | 30' | 68.6 | 76.4 | 64.2 | 72.0 |
| 3 | Construction Vehicle Maintenance Activities[2] | 30' | 71.9 | 74.8 | 67.5 | 70.4 |
| 4 | Foundation Trenching[2] | 30' | 72.6 | 74.9 | 68.2 | 70.5 |
| 5 | Rough Grading Activities[2] | 30' | 77.9 | 84.8 | 73.5 | 80.4 |
| 6 | Water Truck Pass-By & Backup Alarm[3] | 30' | 76.3 | 82.3 | 71.9 | 77.9 |
| 7 | Dozer Pass-By[3] | 30' | 84.0 | 89.9 | 79.6 | 85.5 |
| 8 | Two Scrapers & Water Truck Pass-By[3] | 30' | 83.4 | 89.0 | 79.0 | 84.6 |
| 9 | Two Scrapers Pass-By[3] | 30' | 83.7 | 86.9 | 79.3 | 82.5 |
| 10 | Scraper, Water Truck, & Dozer Activity[3] | 30' | 79.7 | 87.7 | 75.3 | 83.3 |
| 11 | Concrete Mixer Truck Movements[4] | 50' | 71.2 | 73.1 | 71.2 | 73.1 |
| 12 | Concrete Paver Activities[4] | 30' | 70.0 | 75.7 | 65.6 | 71.3 |
| 13 | Concrete Mixer Pour & Paving Activities[4] | 30' | 70.3 | 76.3 | 65.9 | 71.9 |
| 14 | Concrete Mixer Backup Alarms & Air Brakes[4] | 50' | 71.6 | 78.8 | 71.6 | 78.8 |
| 15 | Concrete Mixer Pour Activities[4] | 50' | 67.7 | 79.2 | 67.7 | 79.2 |

[1] As measured by Urban Crossroads, Inc. on 10/14/15 at a business park construction site located at the northwest corner of Barranca Parkway and Alton Parkway in the City of Irvine.
[2] As measured by Urban Crossroads, Inc. on 10/20/15 at a construction site located in Rancho Mission Viejo.
[3] As measured by Urban Crossroads, Inc. on 10/30/15 during grading operations within an industrial construction site located in the City of Ontario.
[4] Reference noise level measurements were collected from a nighttime concrete pour at an industrial construction site, located at 27334 San Bernardino Avenue in the City of Redlands, between 1:00 a.m. to 2:00 a.m. on 7/1/15.
[5] Reference noise levels are calculated at 50 feet using a drop off rate of 6 dBA per doubling of distance (point source).

## 10.5 CONSTRUCTION NOISE ANALYSIS

Tables 10-2 to 10-5 show the daytime Project construction stages and the reference construction noise levels used for each stage. Table 10-6 shows the nighttime building construction and paving reference noise levels for the potential nighttime concrete pour activities during the building construction and paving stages in Phases 1 and 2. Table 10-7 provides a summary of the noise levels from each stage of construction by the time of day the activities will take place at a distance of 200 feet from the noise source. This approach is consistent with the City of Moreno Valley Municipal Code 65dBA Leq daytime and 60 dBA Leq nighttime noise level standards at 200 feet from the source land use. Based on the reference construction noise levels, the noise levels due to Project construction at a distance of 200 feet, when the peak reference noise level is operating at a single point nearest the sensitive receiver location, will range from 59.6 to 67.5 dBA Leq.

**TABLE 10-2: GRADING EQUIPMENT NOISE LEVELS AT 200 FEET**

| Reference Construction Activity[1] | Reference Noise Level @ 50 Feet (dBA Leq) | Noise Level @ 200 Feet (dBA Leq) |
|---|---|---|
| Two Scrapers Pass-By | 79.3 | 67.2 |
| Dozer Pass-By | 79.6 | 67.5 |
| Rough Grading Activities | 73.5 | 61.4 |
| Peak Reference Noise Level at 200 Feet (dBA Leq) | | 67.5 |
| Distance to 65 dBA Leq Contour (Feet) | | 267' |

[1] See Appendix 10.1 for the reference construction noise level measurements and photos taken by Urban Crossroads, Inc.

**TABLE 10-3: TRENCHING EQUIPMENT NOISE LEVELS AT 200 FEET**

| Reference Construction Activity[1] | Reference Noise Level @ 50 Feet (dBA Leq) | Noise Level @ 200 Feet (dBA Leq) |
|---|---|---|
| Foundation Trenching | 68.2 | 56.1 |
| Rough Grading Activities | 73.5 | 61.4 |
| Peak Reference Noise Level at 200 Feet (dBA Leq) | | 61.4 |
| Distance to 65 dBA Leq Contour (Feet) | | 132' |

[1] See Appendix 10.1 for the reference construction noise level measurements and photos taken by Urban Crossroads, Inc.

**TABLE 10-4: BUILDING CONSTRUCTION & ARCHICTURAL COATING NOISE LEVELS AT 200 FEET**

| Reference Construction Activity[1] | Reference Noise Level @ 50 Feet (dBA Leq) | Noise Level @ 200 Feet (dBA Leq) |
|---|---|---|
| Dozer Pass-By | 79.6 | 67.5 |
| Foundation Trenching | 68.2 | 56.1 |
| Peak Reference Noise Level at 200 Feet (dBA Leq) | | 67.5 |
| Distance to 65 dBA Leq Contour (Feet) | | 267' |

[1] See Appendix 10.1 for the reference construction noise level measurements and photos taken by Urban Crossroads, Inc.

**TABLE 10-5: PAVING EQUIPMENT NOISE LEVELS AT 200 FEET**

| Reference Construction Activity[1] | Reference Noise Level @ 50 Feet (dBA Leq) | Noise Level @ 200 Feet (dBA Leq) |
|---|---|---|
| Dozer Pass-By | 79.6 | 67.5 |
| Concrete Paver Activities | 65.6 | 53.5 |
| Foundation Trenching | 68.2 | 56.1 |
| Peak Reference Noise Level at 200 Feet (dBA Leq) | | 67.5 |
| Distance to 65 dBA Leq Contour (Feet) | | 267' |

[1] See Appendix 10.1 for the reference construction noise level measurements and photos taken by Urban Crossroads, Inc.

**TABLE 10-6: NIGHTTIME BUILDING CONSTRUCTION & PAVING NOISE LEVELS AT 200 FEET**

| Reference Construction Activity[1] | Reference Noise Level @ 50 Feet (dBA Leq) | Noise Level @ 200 Feet (dBA Leq) |
|---|---|---|
| Concrete Mixer Truck Movements | 71.2 | 59.2 |
| Concrete Paver Activities | 65.6 | 53.5 |
| Concrete Mixer Pour & Paving Activities | 65.9 | 53.8 |
| Concrete Mixer Backup Alarms & Air Brakes | 71.6 | 59.6 |
| Concrete Mixer Pour Activities | 67.7 | 55.7 |
| Peak Reference Noise Level at 200 Feet (dBA Leq) | | 59.6 |
| Distance to 65 dBA Leq Contour (Feet) | | 107' |

[1] See Appendix 10.1 for the reference construction noise level measurements and photos taken by Urban Crossroads, Inc.

**TABLE 10-7: CONSTRUCTION EQUIPMENT NOISE LEVEL SUMMARY AT 200 FEET**

| Time of Day | Construction Noise Levels by Phase at 200 Feet (dBA Leq) | | | | |
|---|---|---|---|---|---|
| | Grading | Trenching | Building Construction & Arch. Coating | Paving | Peak |
| Daytime | 67.5 | 61.4 | 67.5 | 67.5 | 67.5 |
| Nighttime | n/a | n/a | 59.6 | 59.6 | 59.6 |

"n/a" = Only building construction and paving concrete pour activities are expected during the nighttime hours.

Using the peak reference construction noise level for each stage of construction, shown on Table 10-7, the construction noise levels by stage, were calculated at the nearby receiver locations under Phase 1 and 2 conditions: Phase 1 includes Buildings 1 and 2; and Phase 2 includes Buildings 3 and 4. It is important to note that once Buildings 1 and 2 are constructed, the building structures themselves will provide substantial additional attenuation for nearby sensitive receiver locations during the construction stages for Buildings 3 and 4. As such, this analysis includes the additional attenuation provided by Buildings 1 and 2 during Phase 2 conditions. To describe the conservative worst-case conditions, all reference noise sources are located at the site boundaries for grading, trenching, and paving activities. During the building construction and architectural coating activities all noise sources were placed at the boundaries for each building structure. The construction noise levels at each receiver location include the additional attenuation provided by the existing barriers in the Project study area. The noise barrier attenuation calculations are provided in Appendix 10.2.

### 10.5.1 DAYTIME CONSTRUCTION NOISE LEVELS

Table 10-8 shows the highest Phase 1 construction noise levels will range from 39.2 to 67.2 dBA Leq at the nearby receiver locations. A review of the analysis shown on Table 10-8 indicates that the unmitigated daytime construction activities may exceed the City of Moreno Valley Municipal Code 65 dBA Leq noise level threshold at 200 feet during Phase 1 (Buildings 1 and 2) grading and paving activities at receiver location R8. To satisfy the 65 dBA Leq noise level threshold during the Phase 1 (Buildings 1 and 2) grading and paving activities, the construction of a 6-foot high temporary noise barrier is required near receiver location R8. With the recommended construction noise mitigation measures identified in this report, the daytime construction noise level impacts at all noise sensitive receiver locations will be *less than significant*. Exhibits 10-A to 10-C show the noise contours by stage for Phase 1 daytime construction.

The peak construction noise levels for Phase 2 of Project construction are shown on Table 10-9 and are expected to range from 35.8 to 57.6 dBA Leq. Based on the construction noise analysis results shown on Table 10-9, the construction noise levels for Phase 2 of Project construction will satisfy the City of Moreno Valley 65 dBA Leq daytime noise level standard at all receiver locations and represents a *less than significant* noise impact. Exhibits 10-D to 10-F present the noise contours by stage for Phase 2 daytime construction.

## TABLE 10-8: PHASE 1 DAYTIME CONSTRUCTION NOISE LEVELS AT RECEIVER LOCATIONS

| Receiver Location[1] | Type of Noise/ Attenuation | Daytime Construction Noise Levels (dBA Leq) | | | | | | Threshold Exceeded?[3] |
|---|---|---|---|---|---|---|---|---|
| | | Grading | Trenching | Building Const. | Arch. Coating | Paving | Peak | |
| R1 | Equipment Noise Level[2] | 67.5 | 61.4 | 67.5 | 67.5 | 67.5 | 39.2 | No |
| | Distance to Construction[3] | 2,743' | 2,743' | 2,813' | 2,813' | 2,743' | | |
| | Distance Attenuation4 | -22.7 | -22.7 | -23.0 | -23.0 | -22.7 | | |
| | Existing Barrier Attenuation[5] | -5.6 | -5.6 | -5.6 | -5.6 | -5.6 | | |
| | Noise Level at Receiver: | 39.2 | 33.1 | 39.0 | 39.0 | 39.2 | | |
| R2 | Equipment Noise Level[2] | 67.5 | 61.4 | 67.5 | 67.5 | 67.5 | 44.5 | No |
| | Distance to Construction[3] | 2,844' | 2,844' | 2,987' | 2,987' | 2,844' | | |
| | Distance Attenuation4 | -23.1 | -23.1 | -23.5 | -23.5 | -23.1 | | |
| | Existing Barrier Attenuation[5] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | |
| | Noise Level at Receiver: | 44.5 | 38.4 | 44.0 | 44.0 | 44.5 | | |
| R3 | Equipment Noise Level[2] | 67.5 | 61.4 | 67.5 | 67.5 | 67.5 | 49.8 | No |
| | Distance to Construction[3] | 1,543' | 1,543' | 1,696' | 1,696' | 1,543' | | |
| | Distance Attenuation4 | -17.7 | -17.7 | -18.6 | -18.6 | -17.7 | | |
| | Existing Barrier Attenuation[5] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | |
| | Noise Level at Receiver: | 49.8 | 43.7 | 49.0 | 49.0 | 49.8 | | |
| R4 | Equipment Noise Level[2] | 67.5 | 61.4 | 67.5 | 67.5 | 67.5 | 54.6 | No |
| | Distance to Construction[3] | 471' | 471' | 678' | 678' | 471' | | |
| | Distance Attenuation4 | -7.4 | -7.4 | -10.6 | -10.6 | -7.4 | | |
| | Existing Barrier Attenuation[5] | -5.5 | -5.5 | -5.4 | -5.4 | -5.5 | | |
| | Noise Level at Receiver: | 54.6 | 48.5 | 51.5 | 51.5 | 54.6 | | |
| R5 | Equipment Noise Level[2] | 67.5 | 61.4 | 67.5 | 67.5 | 67.5 | 64.7 | No |
| | Distance to Construction[3] | 152' | 152' | 392' | 392' | 152' | | |
| | Distance Attenuation4 | 2.4 | 2.4 | -5.8 | -5.8 | 2.4 | | |
| | Existing Barrier Attenuation[5] | -5.2 | -5.2 | -5.3 | -5.3 | -5.2 | | |
| | Noise Level at Receiver: | 64.7 | 58.6 | 56.4 | 56.4 | 64.7 | | |
| R6 | Equipment Noise Level[2] | 67.5 | 61.4 | 67.5 | 67.5 | 67.5 | 63.0 | No |
| | Distance to Construction[3] | 176' | 176' | 429' | 429' | 176' | | |
| | Distance Attenuation4 | 1.1 | 1.1 | -6.6 | -6.6 | 1.1 | | |
| | Existing Barrier Attenuation[5] | -5.6 | -5.6 | -5.5 | -5.5 | -5.6 | | |
| | Noise Level at Receiver: | 63.0 | 56.9 | 55.4 | 55.4 | 63.0 | | |
| R7 | Equipment Noise Level[2] | 67.5 | 61.4 | 67.5 | 67.5 | 67.5 | 64.5 | No |
| | Distance to Construction[3] | 153' | 153' | 362' | 362' | 153' | | |
| | Distance Attenuation4 | 2.3 | 2.3 | -5.2 | -5.2 | 2.3 | | |
| | Existing Barrier Attenuation[5] | -5.3 | -5.3 | -5.4 | -5.4 | -5.3 | | |
| | Noise Level at Receiver: | 64.5 | 58.4 | 57.0 | 57.0 | 64.5 | | |
| R8 | Equipment Noise Level[2] | 67.5 | 61.4 | 67.5 | 67.5 | 67.5 | 67.2 | Yes |
| | Distance to Construction[3] | 207' | 207' | 492' | 492' | 207' | | |
| | Distance Attenuation4 | -0.3 | -0.3 | -7.8 | -7.8 | -0.3 | | |
| | Existing Barrier Attenuation[5] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | |
| | Noise Level at Receiver: | 67.2 | 61.1 | 59.7 | 59.7 | 67.2 | | |

[1] Noise receiver locations are shown on Exhibit 8-A.
[2] Noise level of the closest construction stage to each receiver, as provided on Table 10-7.
[3] Distance from the nearest point of construction activity to the nearest receiver.
[4] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.
[5] Calculated barrier attenuation (Appendix 10.2) provided by the existing barriers and buildings in the Project study area, as shown on Exhibit 8-A.
[6] Do the peak construction noise levels exceed the 65 dBA Leq construction noise level threshold during the daytime hours?

## TABLE 10-9: PHASE 2 DAYTIME CONSTRUCTION NOISE LEVELS AT RECEIVER LOCATIONS

| Receiver Location[1] | Type of Noise/ Attenuation | Daytime Construction Noise Levels (dBA Leq) | | | | | | Threshold Exceeded?[3] |
|---|---|---|---|---|---|---|---|---|
| | | Grading | Trenching | Building Const. | Arch. Coating | Paving | Peak | |
| R1 | Equipment Noise Level[2] | 67.5 | 61.4 | 67.5 | 67.5 | 67.5 | 38.4 | No |
| | Distance to Construction[3] | 3,006' | 3,006' | 3,088' | 3,088' | 3,006' | | |
| | Distance Attenuation4 | -23.5 | -23.5 | -23.8 | -23.8 | -23.5 | | |
| | Existing Barrier Attenuation[5] | -5.6 | -5.6 | -5.5 | -5.5 | -5.6 | | |
| | Noise Level at Receiver: | 38.4 | 32.3 | 38.2 | 38.2 | 38.4 | | |
| R2 | Equipment Noise Level[2] | 67.5 | 61.4 | 67.5 | 67.5 | 67.5 | 35.8 | No |
| | Distance to Construction[3] | 3,692' | 3,692' | 3,773' | 3,773' | 3,692' | | |
| | Distance Attenuation4 | -25.3 | -25.3 | -25.5 | -25.5 | -25.3 | | |
| | Existing Barrier Attenuation[5] | -6.4 | -6.4 | -6.3 | -6.3 | -6.4 | | |
| | Noise Level at Receiver: | 35.8 | 29.7 | 35.7 | 35.7 | 35.8 | | |
| R3 | Equipment Noise Level[2] | 67.5 | 61.4 | 67.5 | 67.5 | 67.5 | 37.1 | No |
| | Distance to Construction[3] | 2,782' | 2,782' | 2,864' | 2,864' | 2,782' | | |
| | Distance Attenuation4 | -22.9 | -22.9 | -23.1 | -23.1 | -22.9 | | |
| | Existing Barrier Attenuation[5] | -7.6 | -7.6 | -7.5 | -7.5 | -7.6 | | |
| | Noise Level at Receiver: | 37.1 | 31.0 | 36.9 | 36.9 | 37.1 | | |
| R4 | Equipment Noise Level[2] | 67.5 | 61.4 | 67.5 | 67.5 | 67.5 | 41.0 | No |
| | Distance to Construction[3] | 2,245' | 2,245' | 2,422' | 2,422' | 2,245' | | |
| | Distance Attenuation4 | -21.0 | -21.0 | -21.7 | -21.7 | -21.0 | | |
| | Existing Barrier Attenuation[5] | -5.5 | -5.5 | -8.5 | -8.5 | -5.5 | | |
| | Noise Level at Receiver: | 41.0 | 34.9 | 37.4 | 37.4 | 41.0 | | |
| R5 | Equipment Noise Level[2] | 67.5 | 61.4 | 67.5 | 67.5 | 67.5 | 39.1 | No |
| | Distance to Construction[3] | 2,022' | 2,022' | 2,318' | 2,318' | 2,022' | | |
| | Distance Attenuation4 | -20.1 | -20.1 | -21.3 | -21.3 | -20.1 | | |
| | Existing Barrier Attenuation[5] | -8.3 | -8.3 | -7.9 | -7.9 | -8.3 | | |
| | Noise Level at Receiver: | 39.1 | 33.0 | 38.3 | 38.3 | 39.1 | | |
| R6 | Equipment Noise Level[2] | 67.5 | 61.4 | 67.5 | 67.5 | 67.5 | 38.6 | No |
| | Distance to Construction[3] | 1,654' | 1,654' | 1,792' | 1,792' | 1,654' | | |
| | Distance Attenuation4 | -18.4 | -18.4 | -19.0 | -19.0 | -18.4 | | |
| | Existing Barrier Attenuation[5] | -10.6 | -10.6 | -10.6 | -10.6 | -10.6 | | |
| | Noise Level at Receiver: | 38.6 | 32.5 | 37.9 | 37.9 | 38.6 | | |
| R7 | Equipment Noise Level[2] | 67.5 | 61.4 | 67.5 | 67.5 | 67.5 | 48.4 | No |
| | Distance to Construction[3] | 962' | 962' | 1,184' | 1,184' | 962' | | |
| | Distance Attenuation4 | -13.6 | -13.6 | -15.4 | -15.4 | -13.6 | | |
| | Existing Barrier Attenuation[5] | -5.5 | -5.5 | -5.5 | -5.5 | -5.5 | | |
| | Noise Level at Receiver: | 48.4 | 42.3 | 46.6 | 46.6 | 48.4 | | |
| R8 | Equipment Noise Level[2] | 67.5 | 61.4 | 67.5 | 67.5 | 67.5 | 57.6 | No |
| | Distance to Construction[3] | 629' | 629' | 1,008' | 1,008' | 629' | | |
| | Distance Attenuation4 | -10.0 | -10.0 | -14.0 | -14.0 | -10.0 | | |
| | Existing Barrier Attenuation[5] | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | |
| | Noise Level at Receiver: | 57.6 | 51.5 | 53.5 | 53.5 | 57.6 | | |

[1] Noise receiver locations are shown on Exhibit 8-A.
[2] Noise level of the closest construction stage to each receiver, as provided on Table 10-7.
[3] Distance from the nearest point of construction activity to the nearest receiver.
[4] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.
[5] Calculated barrier attenuation (Appendix 10.2) provided by the existing barriers and buildings in the Project study area, as shown on Exhibit 8-A.
[6] Do the peak construction noise levels exceed the 65 dBA Leq construction noise level threshold during the daytime hours?

**EXHIBIT 10-A: PHASE 1 GRADING & PAVING EQUIPMENT NOISE CONTOURS**

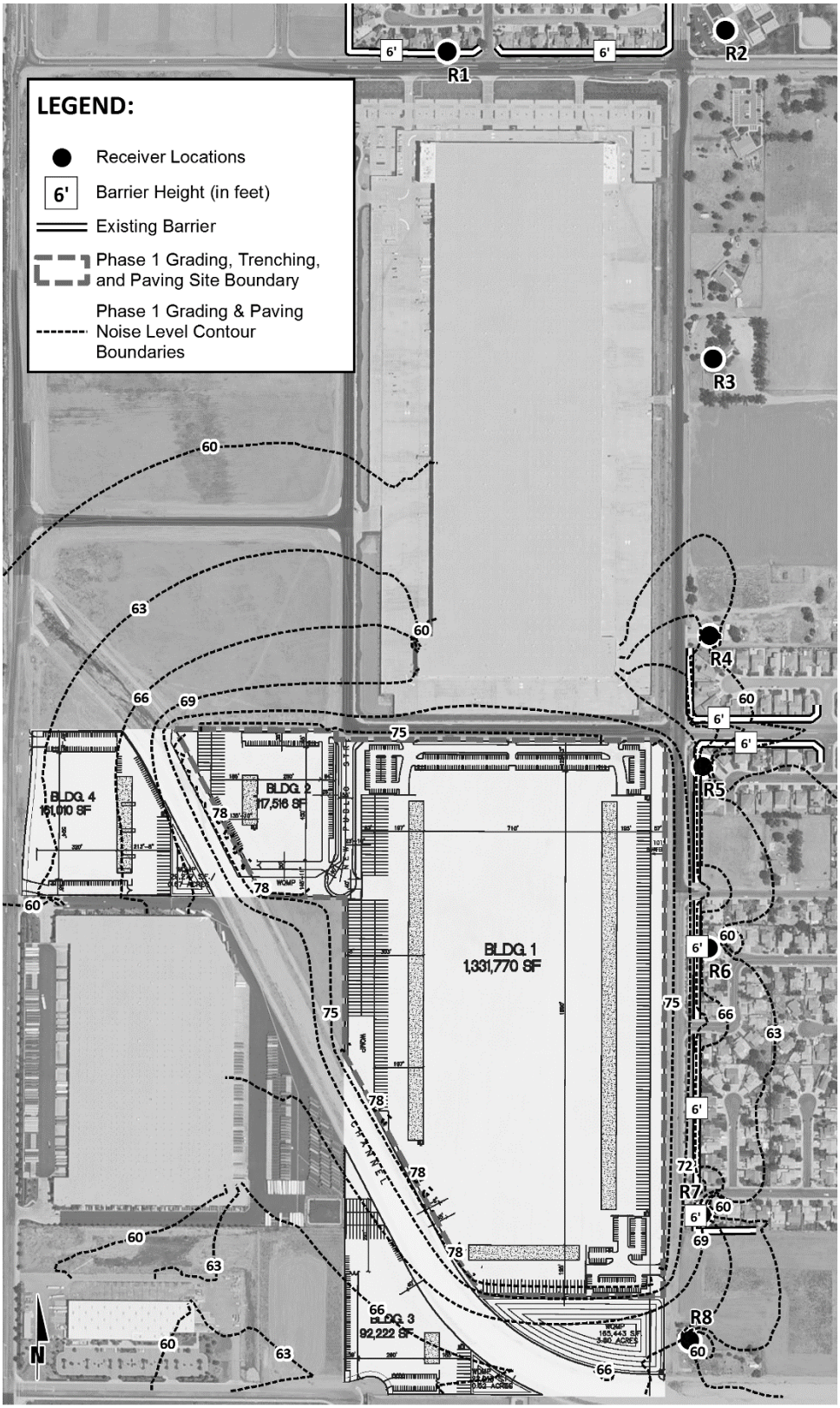


**EXHIBIT 10-B: PHASE 1 TRENCHING EQUIPMENT NOISE CONTOURS**

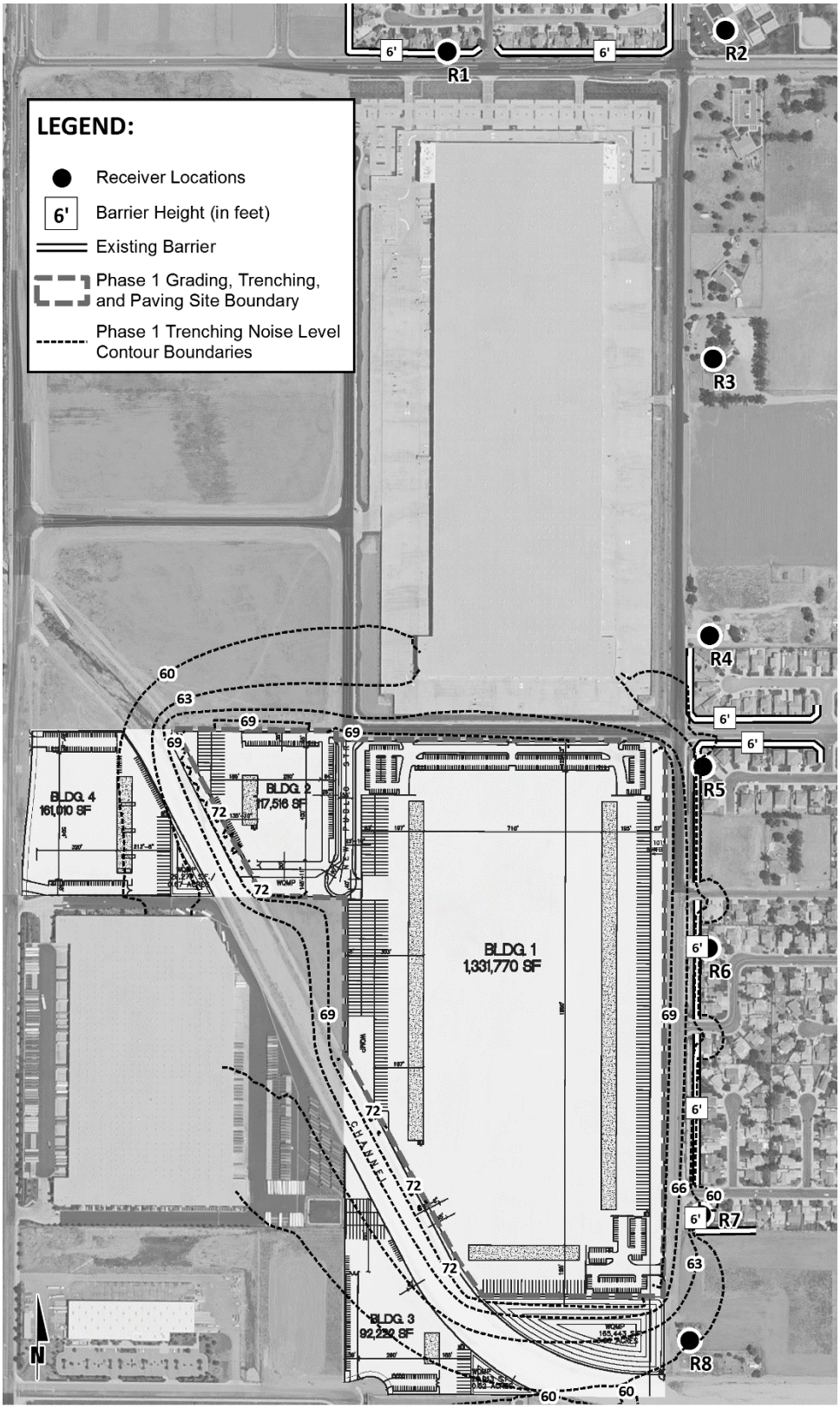
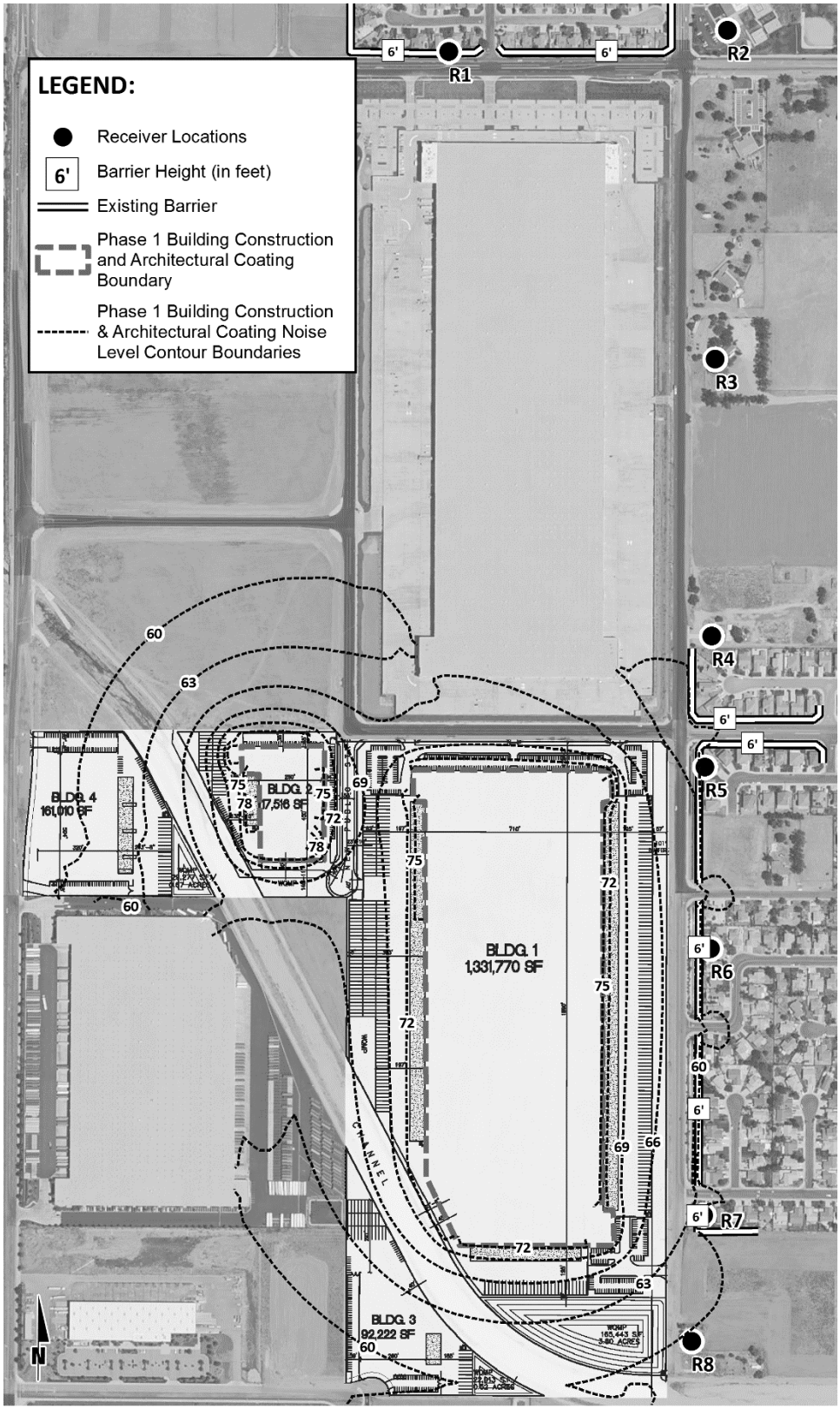


**EXHIBIT 10-C: PHASE 1 BUILDING CONSTRUCTION & ARCHITECTURAL COATING NOISE CONTOURS**



## EXHIBIT 10-D: PHASE 2 GRADING & PAVING EQUIPMENT NOISE CONTOURS

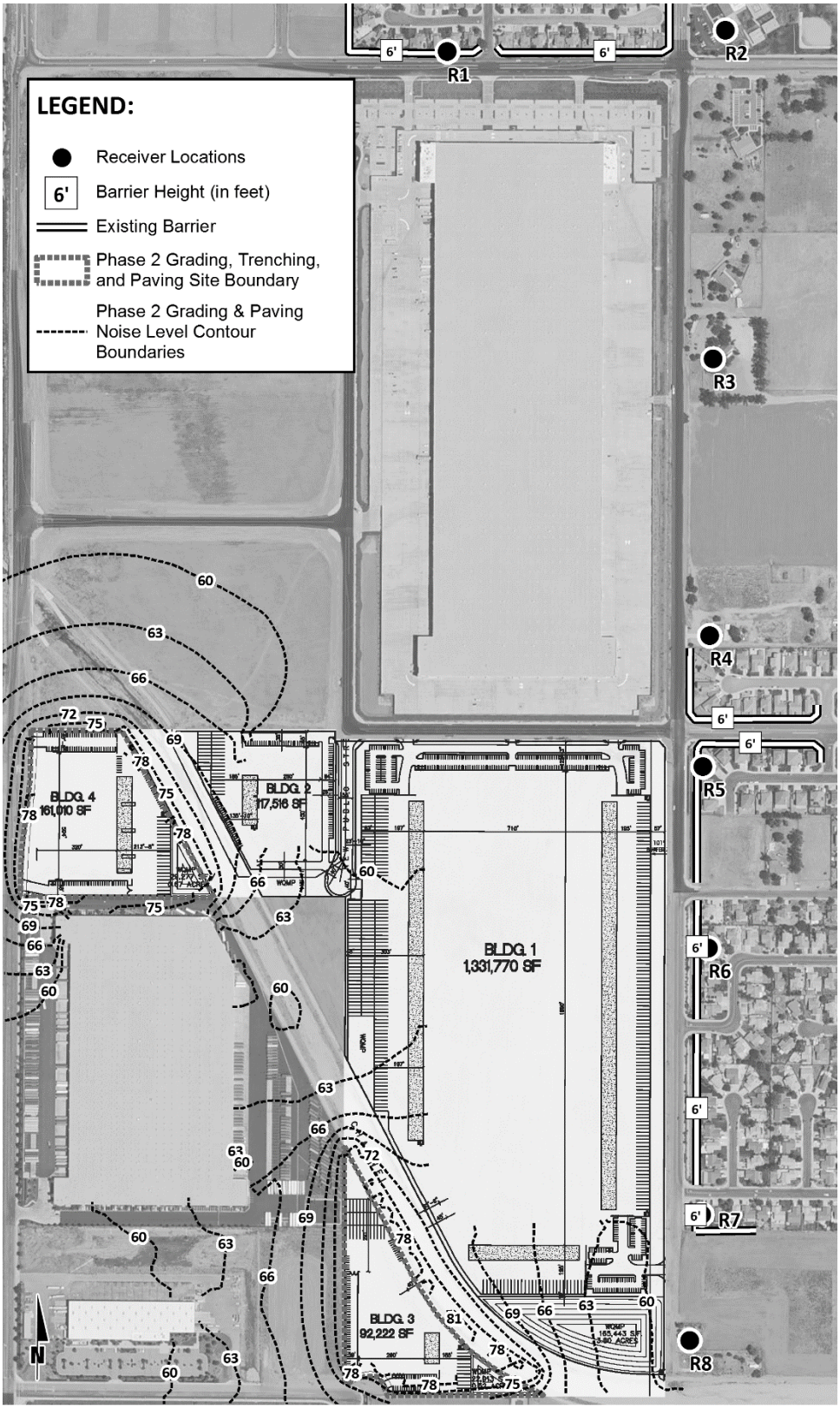
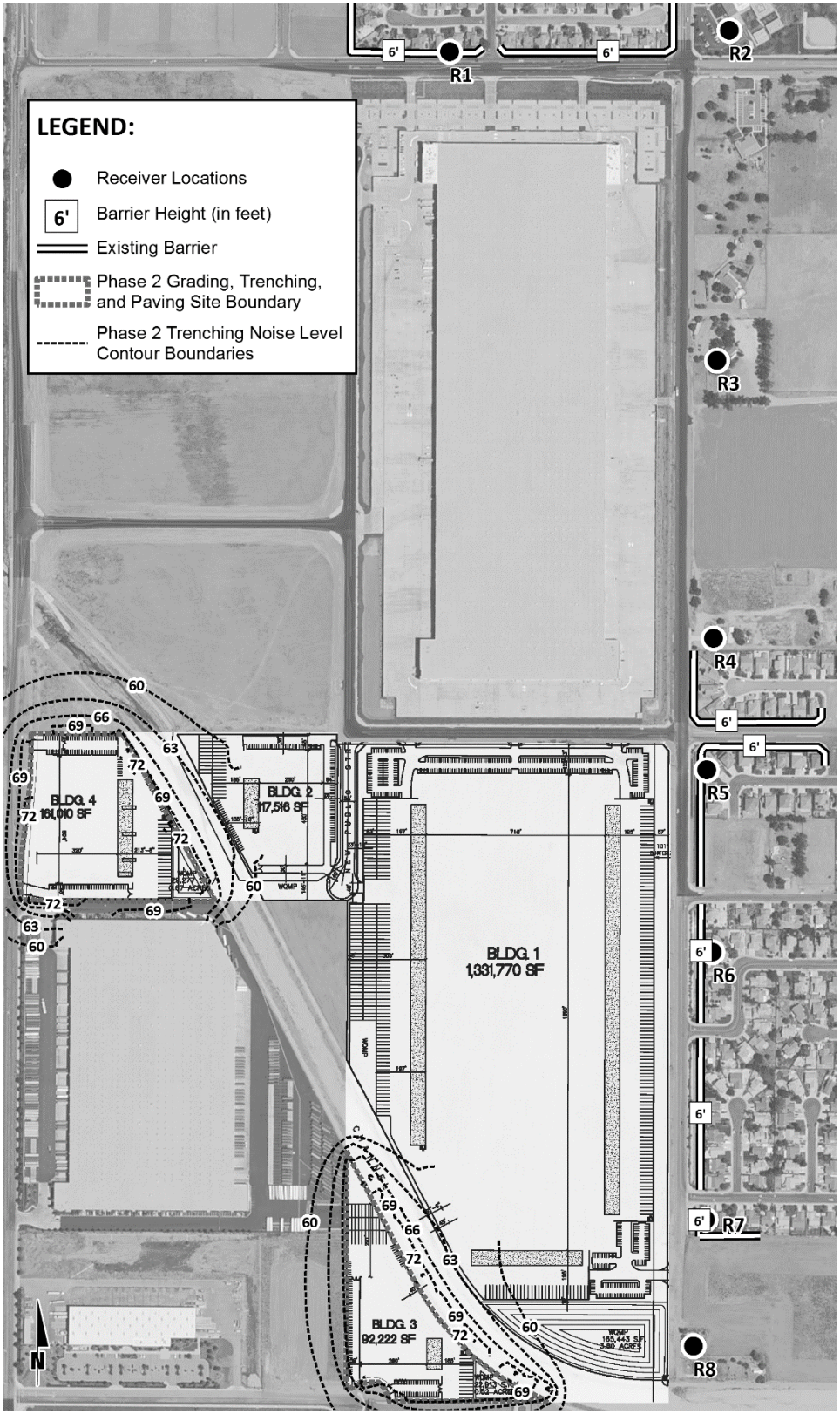
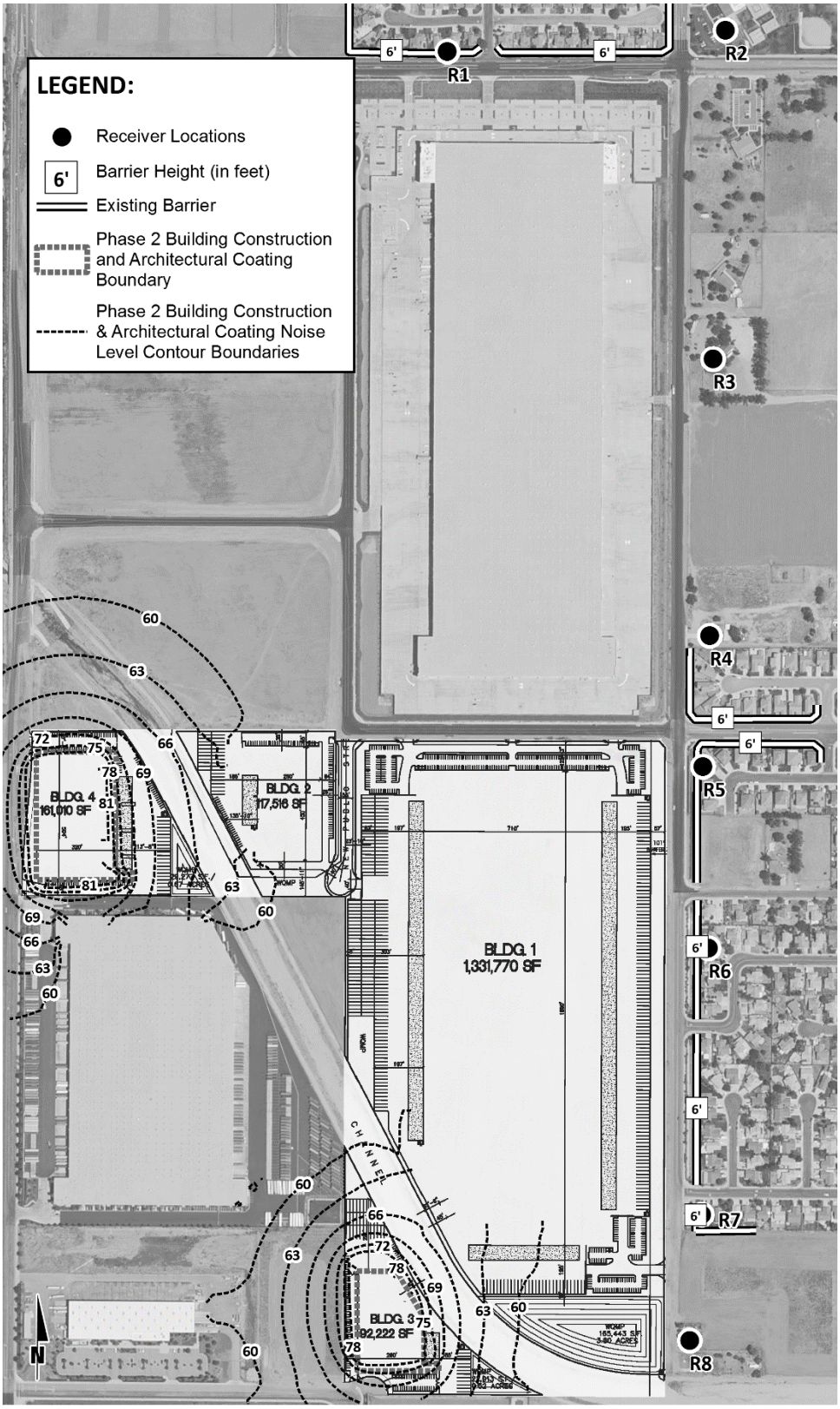


**EXHIBIT 10-E: PHASE 2 TRENCHING EQUIPMENT NOISE CONTOURS**



## EXHIBIT 10-F: PHASE 2 BUILDING CONSTRUCTION & ARCHITECTURAL COATING NOISE CONTOURS



### 10.5.2 NIGHTTIME CONSTRUCTION NOISE LEVELS

In addition to the daytime construction activities, the Project may pursue a temporary use or special event permit to allow for nighttime concrete pour activities during the building construction and paving stages of Project construction. Nighttime concrete pours are typically conducted during the summer months due to the warmer daytime weather conditions. While Section 11.80.030 (7) of the City of Moreno Valley Municipal Code currently prohibits nighttime construction activities, Section 11.80.030 (E) (8) allows for a temporary use or special event permit (Section 11.80.040). (2) The temporary use or special event permit shall be submitted to the City of Moreno Valley Planning Department for approval and meet the provisions Municipal Code Section 11.80.040.

To estimate the nighttime construction noise levels at the nearby receiver locations, sample reference noise level measurements were collected during nighttime concrete pour activities at a similar industrial development site. Appendix 10.1 includes the reference noise level measurement data and photos for the nighttime construction activities.

Table 10-10 shows the highest Phase 1 nighttime concrete pour construction noise levels will range from 31.2 to 59.3 dBA Leq at the nearby receiver locations. The peak nighttime concrete pour construction noise levels for Phase 2 of Project construction are shown on Table 10-11 and are expected to range from 27.8 to 49.6 dBA Leq. Based on the analysis results shown on Tables 10-10 and 10-11, the nighttime construction noise levels for Phases 1 and 2 of Project construction will satisfy the City of Moreno Valley 60 dBA Leq nighttime noise level standard at all receiver locations and represent a *less than significant* noise impact. Exhibits 10-G and 10-H show the noise contours by stage for Phase 1 nighttime construction, and Exhibits 10-I and 10-J show the noise contours by stage for Phase 2 nighttime construction.

## TABLE 10-10: PHASE 1 NIGHTTIME CONSTRUCTION NOISE LEVELS AT RECEIVER LOCATIONS

| Receiver Location[1] | Type of Noise/ Attenuation | Nighttime Construction Noise Levels (dBA Leq) | | | Threshold Exceeded?[3] |
|---|---|---|---|---|---|
| | | Building Const. | Paving | Peak | |
| R1 | Equipment Noise Level[2] | 59.6 | 59.6 | 31.2 | No |
| | Distance to Construction[3] | 2,813' | 2,743' | | |
| | Distance Attenuation4 | -23.0 | -22.7 | | |
| | Existing Barrier Attenuation[5] | -5.6 | -5.6 | | |
| | Noise Level at Receiver: | 31.0 | 31.2 | | |
| R2 | Equipment Noise Level[2] | 59.6 | 59.6 | 36.5 | No |
| | Distance to Construction[3] | 2,987' | 2,844' | | |
| | Distance Attenuation4 | -23.5 | -23.1 | | |
| | Existing Barrier Attenuation[5] | 0.0 | 0.0 | | |
| | Noise Level at Receiver: | 36.1 | 36.5 | | |
| R3 | Equipment Noise Level[2] | 59.6 | 59.6 | 41.8 | No |
| | Distance to Construction[3] | 1,696' | 1,543' | | |
| | Distance Attenuation4 | -18.6 | -17.7 | | |
| | Existing Barrier Attenuation[5] | 0.0 | 0.0 | | |
| | Noise Level at Receiver: | 41.0 | 41.8 | | |
| R4 | Equipment Noise Level[2] | 59.6 | 59.6 | 46.6 | No |
| | Distance to Construction[3] | 678' | 471' | | |
| | Distance Attenuation4 | -10.6 | -7.4 | | |
| | Existing Barrier Attenuation[5] | -5.4 | -5.5 | | |
| | Noise Level at Receiver: | 43.6 | 46.6 | | |
| R5 | Equipment Noise Level[2] | 59.6 | 59.6 | 56.7 | No |
| | Distance to Construction[3] | 392' | 152' | | |
| | Distance Attenuation4 | -5.8 | 2.4 | | |
| | Existing Barrier Attenuation[5] | -5.3 | -5.2 | | |
| | Noise Level at Receiver: | 48.4 | 56.7 | | |
| R6 | Equipment Noise Level[2] | 59.6 | 59.6 | 55.1 | No |
| | Distance to Construction[3] | 429' | 176' | | |
| | Distance Attenuation4 | -6.6 | 1.1 | | |
| | Existing Barrier Attenuation[5] | -5.5 | -5.6 | | |
| | Noise Level at Receiver: | 47.4 | 55.1 | | |
| R7 | Equipment Noise Level[2] | 59.6 | 59.6 | 56.6 | No |
| | Distance to Construction[3] | 362' | 153' | | |
| | Distance Attenuation4 | -5.2 | 2.3 | | |
| | Existing Barrier Attenuation[5] | -5.4 | -5.3 | | |
| | Noise Level at Receiver: | 49.0 | 56.6 | | |
| R8 | Equipment Noise Level[2] | 59.6 | 59.6 | 59.3 | No |
| | Distance to Construction[3] | 492' | 207' | | |
| | Distance Attenuation4 | -7.8 | -0.3 | | |
| | Existing Barrier Attenuation[5] | 0.0 | 0.0 | | |
| | Noise Level at Receiver: | 51.7 | 59.3 | | |

[1] Noise receiver locations are shown on Exhibit 8-A.
[2] Noise level of the closest construction stage to each receiver, as provided on Table 10-7.
[3] Distance from the nearest point of construction activity to the nearest receiver.
[4] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.
[5] Calculated barrier attenuation (Appendix 10.2) provided by the existing barriers and buildings in the Project study area, as shown on Exhibit 8-A.
[6] Do the peak construction noise levels exceed the 65 dBA Leq construction noise level threshold during the daytime hours?

## TABLE 10-11: PHASE 2 NIGHTTIME CONSTRUCTION NOISE LEVELS AT RECEIVER LOCATIONS

| Receiver Location[1] | Type of Noise/ Attenuation | Nighttime Construction Noise Levels (dBA Leq) | | | Threshold Exceeded?[3] |
|---|---|---|---|---|---|
| | | Building Const. | Paving | Peak | |
| R1 | Equipment Noise Level[2] | 59.6 | 59.6 | 30.4 | No |
| | Distance to Construction[3] | 3,088' | 3,006' | | |
| | Distance Attenuation4 | -23.8 | -23.5 | | |
| | Existing Barrier Attenuation[5] | -5.5 | -5.6 | | |
| | Noise Level at Receiver: | 30.3 | 30.4 | | |
| R2 | Equipment Noise Level[2] | 59.6 | 59.6 | 27.8 | No |
| | Distance to Construction[3] | 3,773' | 3,692' | | |
| | Distance Attenuation4 | -25.5 | -25.3 | | |
| | Existing Barrier Attenuation[5] | -6.3 | -6.4 | | |
| | Noise Level at Receiver: | 27.7 | 27.8 | | |
| R3 | Equipment Noise Level[2] | 59.6 | 59.6 | 29.1 | No |
| | Distance to Construction[3] | 2,864' | 2,782' | | |
| | Distance Attenuation4 | -23.1 | -22.9 | | |
| | Existing Barrier Attenuation[5] | -7.5 | -7.6 | | |
| | Noise Level at Receiver: | 28.9 | 29.1 | | |
| R4 | Equipment Noise Level[2] | 59.6 | 59.6 | 33.1 | No |
| | Distance to Construction[3] | 2,422' | 2,245' | | |
| | Distance Attenuation4 | -21.7 | -21.0 | | |
| | Existing Barrier Attenuation[5] | -8.5 | -5.5 | | |
| | Noise Level at Receiver: | 29.4 | 33.1 | | |
| R5 | Equipment Noise Level[2] | 59.6 | 59.6 | 31.2 | No |
| | Distance to Construction[3] | 2,318' | 2,022' | | |
| | Distance Attenuation4 | -21.3 | -20.1 | | |
| | Existing Barrier Attenuation[5] | -7.9 | -8.3 | | |
| | Noise Level at Receiver: | 30.4 | 31.2 | | |
| R6 | Equipment Noise Level[2] | 59.6 | 59.6 | 30.6 | No |
| | Distance to Construction[3] | 1,792' | 1,654' | | |
| | Distance Attenuation4 | -19.0 | -18.4 | | |
| | Existing Barrier Attenuation[5] | -10.6 | -10.6 | | |
| | Noise Level at Receiver: | 29.9 | 30.6 | | |
| R7 | Equipment Noise Level[2] | 59.6 | 59.6 | 40.4 | No |
| | Distance to Construction[3] | 1,184' | 962' | | |
| | Distance Attenuation4 | -15.4 | -13.6 | | |
| | Existing Barrier Attenuation[5] | -5.5 | -5.5 | | |
| | Noise Level at Receiver: | 38.6 | 40.4 | | |
| R8 | Equipment Noise Level[2] | 59.6 | 59.6 | 49.6 | No |
| | Distance to Construction[3] | 1,008' | 629' | | |
| | Distance Attenuation4 | -14.0 | -10.0 | | |
| | Existing Barrier Attenuation[5] | 0.0 | 0.0 | | |
| | Noise Level at Receiver: | 45.5 | 49.6 | | |

[1] Noise receiver locations are shown on Exhibit 8-A.
[2] Noise level of the closest construction stage to each receiver, as provided on Table 10-7.
[3] Distance from the nearest point of construction activity to the nearest receiver.
[4] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.
[5] Calculated barrier attenuation (Appendix 10.2) provided by the existing barriers and buildings in the Project study area, as shown on Exhibit 8-A.
[6] Do the peak construction noise levels exceed the 65 dBA Leq construction noise level threshold during the daytime hours?

**EXHIBIT 10-G: PHASE 1 NIGHTTIME BUILDING CONSTRUCTION EQUIPMENT NOISE CONTOURS**

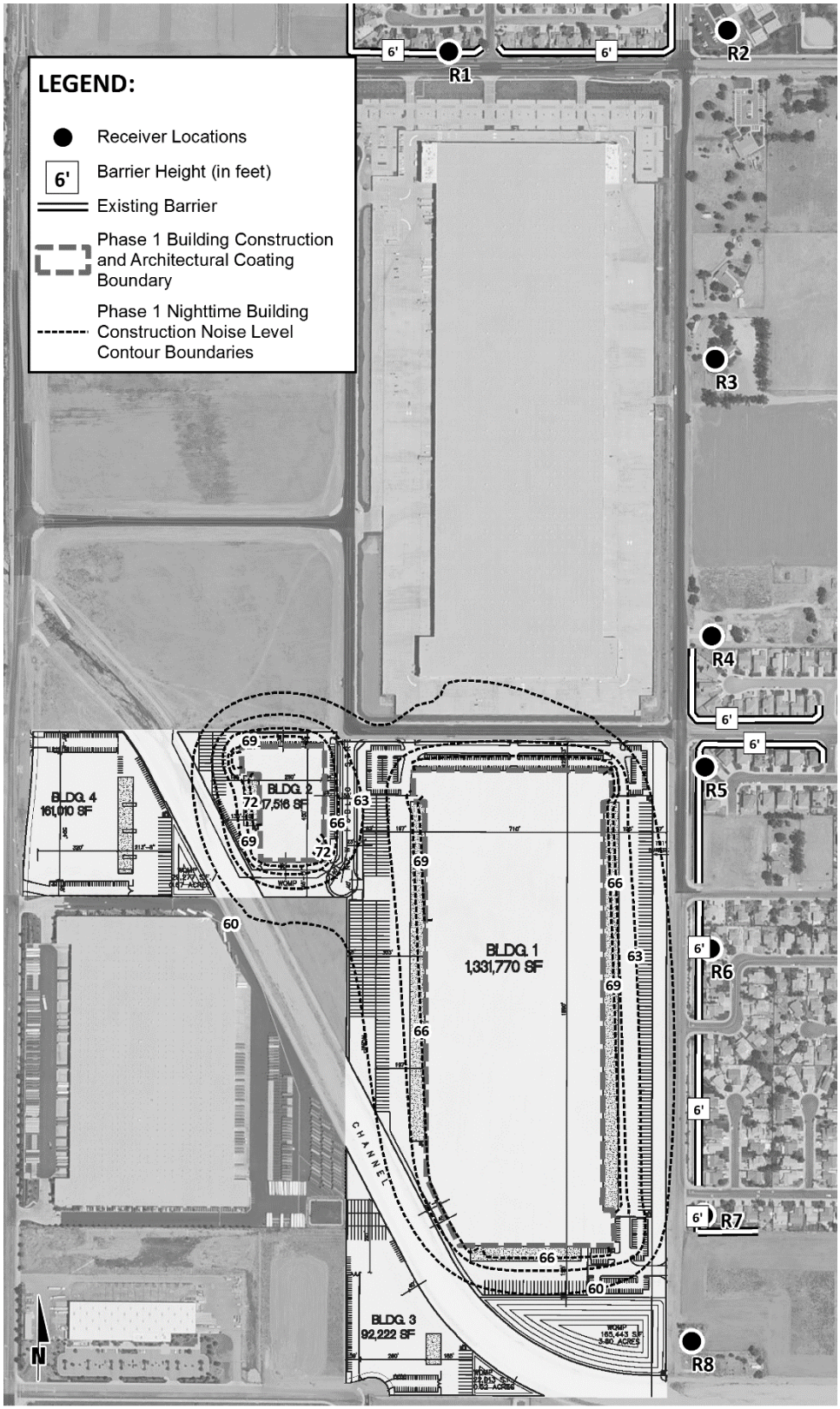


**EXHIBIT 10-H: PHASE 1 NIGHTTIME PAVING EQUIPMENT NOISE CONTOURS**

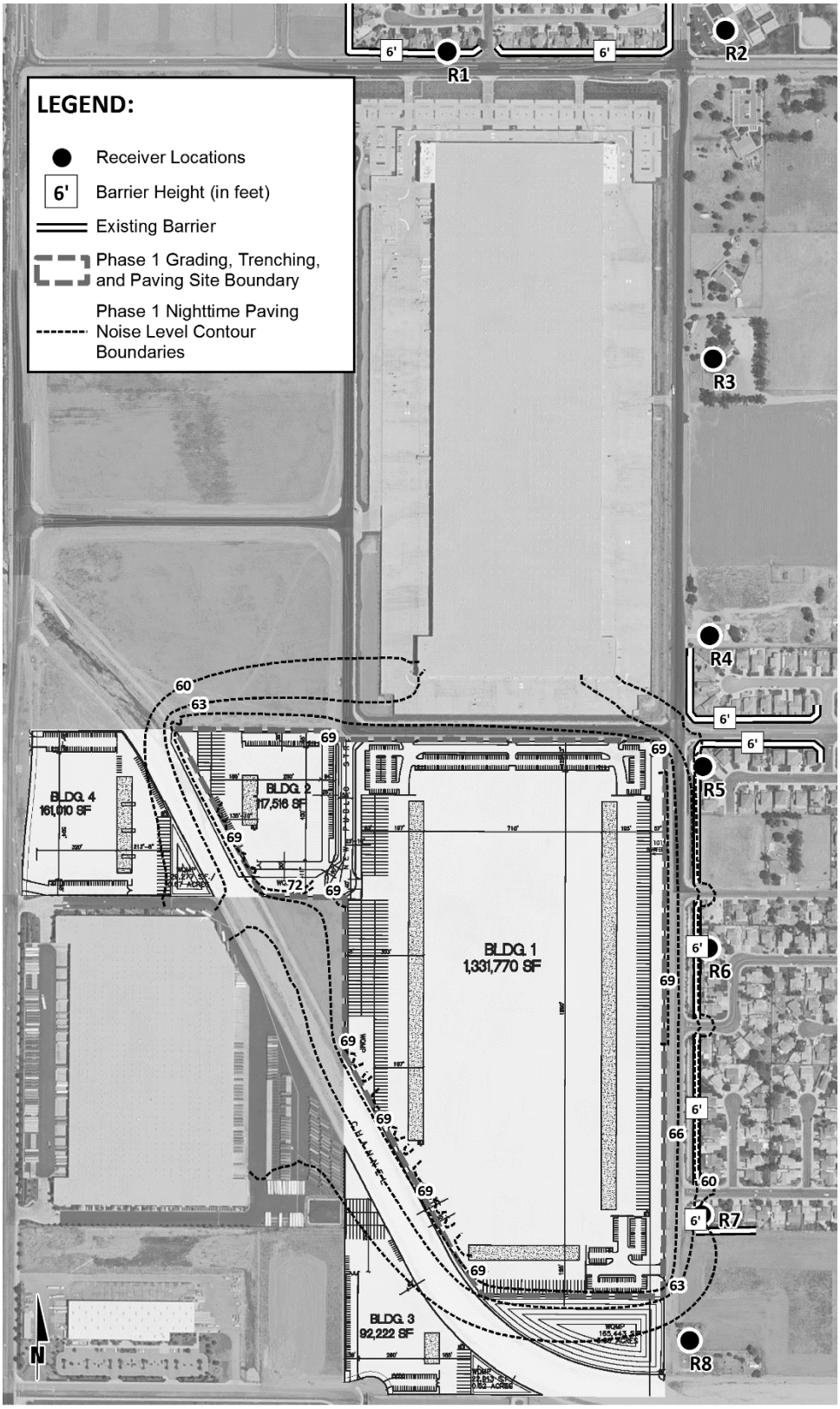


**EXHIBIT 10-I: PHASE 2 NIGHTTIME BUILDING CONSTRUCTION EQUIPMENT NOISE CONTOURS**

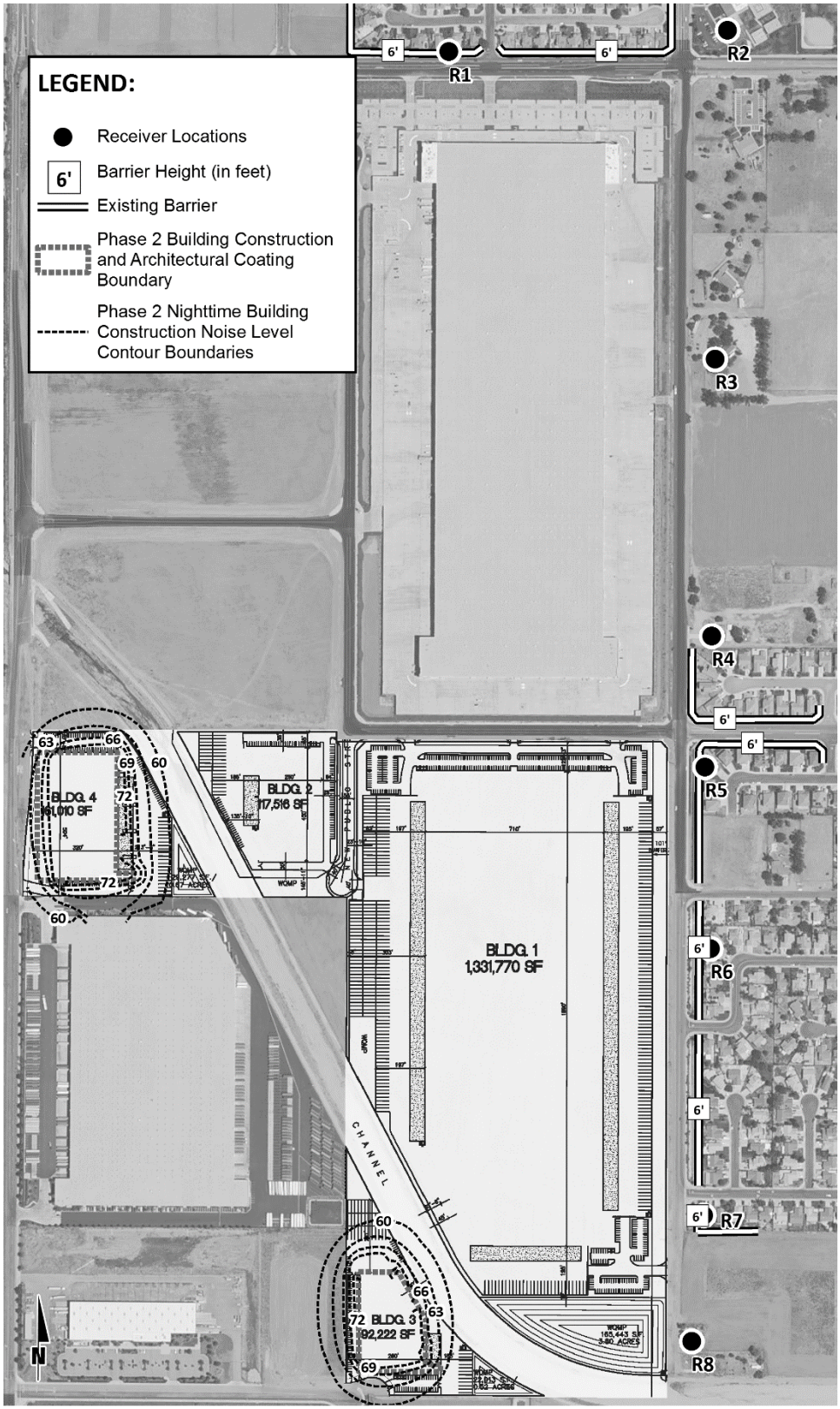
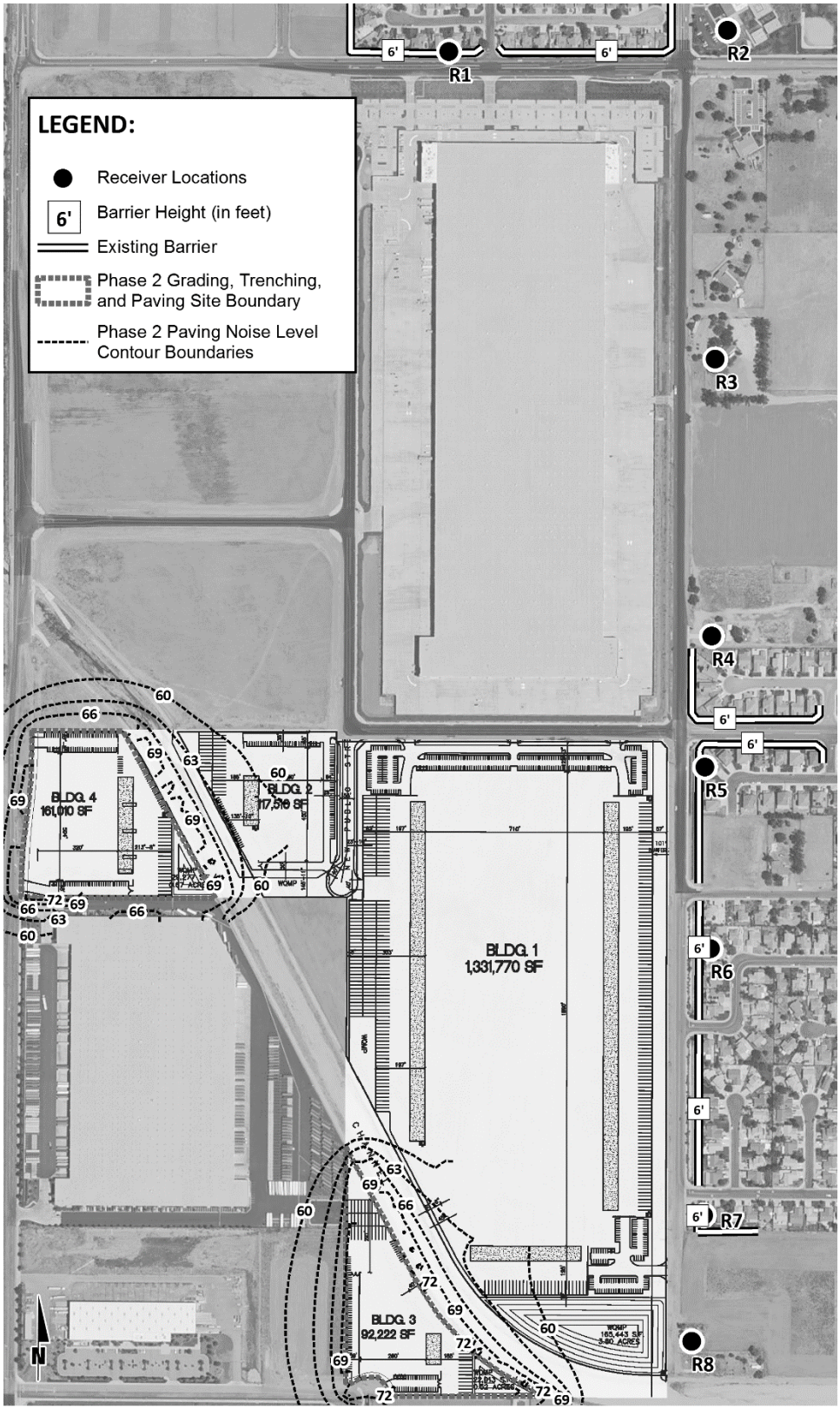


**EXHIBIT 10-J: PHASE 2 NIGHTTIME PAVING EQUIPMENT NOISE CONTOURS**



## 10.6 MITIGATED CONSTRUCTION NOISE LEVELS

As previously discussed in Section 10.5.1, the unmitigated daytime construction activities may exceed the City of Moreno Valley Municipal Code 65 dBA Leq noise level threshold at 200 feet during Phase 1 (Buildings 1 and 2) grading and paving activities at receiver location R8. To satisfy the 65 dBA Leq noise level threshold during the Phase 1 (Buildings 1 and 2) grading and paving activities, the construction of a 6-foot high temporary noise barrier is required when activities occur within 280 feet of receiver location R8, as shown on Exhibit ES-A.

Table 10-12 shows the construction noise levels at receiver location R8 will be reduced to 60.3 dBA Leq with the attenuation provided by the 6-foot high temporary construction noise barriers during the grading and paving stages of construction. With the recommended construction noise mitigation measures identified in this report, the daytime construction noise level impacts at all noise sensitive receiver locations will be *less than significant*.

**TABLE 10-12: MITIGATED PHASE 1 CONSTRUCTION NOISE LEVELS**

| Receiver Location[1] | Type of Noise/ Attenuation | Construction Noise Levels at Receiver Locations (dBA Leq) | | | Threshold Exceeded?[7] |
|---|---|---|---|---|---|
| | | Grading | Paving | Peak | |
| R8 | Equipment Noise Level[2] | 67.5 | 67.5 | 60.3 | No |
| | Distance to Construction[3] | 207' | 207' | | |
| | Distance Attenuation[4] | -0.3 | -0.3 | | |
| | Existing Barrier Attenuation[5] | 0.0 | 0.0 | | |
| | Temporary Barrier Atten.[6] | -6.9 | -6.9 | | |
| | Noise Level at Receiver: | 60.3 | 60.3 | | |

[1] Noise receiver locations are shown on Exhibit 8-A.
[2] Noise level of the closest construction stage to each receiver, as provided on Table 10-7.
[3] Distance from the nearest point of construction activity to the nearest receiver.
[4] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.
[5] Calculated barrier attenuation (Appendix 10.2) provided by the existing barriers and buildings in the Project study area, as shown on Exhibit 8-A.
[6] Additional barrier attenuation provided by the temporary noise barriers (Appendix 10.3).
[7] Do the peak construction noise levels exceed the 65 dBA Leq construction noise level threshold during the daytime hours?

## 10.7 CONSTRUCTION NOISE MITIGATION MEASURES

Though construction noise is temporary, intermittent and of short duration, and will not present any long-term impacts, the following practices would reduce any noise level increases produced by the construction equipment to the nearby noise-sensitive residential land uses:

- Prior to approval of grading plans and/or issuance of building permits, plans shall include a note indicating that noise-generating Project construction activities that would create noise levels of greater than 60 dBA Leq at sensitive receivers shall only occur between the permitted hours of 7:00 a.m. to 8:00 p.m. on any day. Grading operations shall be limited to between the hours of 8:00 a.m. to 6:00 p.m. weekdays, and 8:00 a.m. to 4:00 p.m. on weekends and holidays, or as otherwise approved by the City Engineer. The Project construction supervisor shall ensure compliance with the note and the City shall conduct periodic inspection at its discretion.
- Install 6-foot high temporary noise control barrier for a length of approximately 400 feet as shown on Exhibit ES-A at the Project site boundaries when Phase 1 grading and paving construction activities occur within 280 feet of receiver location R8. Alternatively, with the approval of the homeowner at receiver location R8, the 6-foot high temporary noise barrier can be installed at the property line of the residential home. The noise control barrier must present a solid face from top to bottom. The noise control barrier must be a minimum height of 6-feet.
    - The noise barrier may be constructed using an acoustical blanket (e.g. vinyl acoustic curtains or quilted blankets) attached to the construction site perimeter fence or equivalent temporary fence posts.
    - The noise barriers must be maintained and any damage promptly repaired. Gaps, holes, or weaknesses in the barrier or openings between the barrier and the ground shall be promptly repaired.
    - The noise control barriers and associated elements shall be completely removed and the site appropriately restored upon the conclusion of the construction activity.
- During all Project site construction, the construction contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers, consistent with manufacturers' standards. The construction contractor shall place all stationary construction equipment so that emitted noise is directed away from the noise sensitive receptors nearest the Project site.
- The construction contractor shall locate equipment staging in the vicinity of the intersection of Cosmos Street and Krameria Avenue to create additional distance between construction-related noise sources and noise-sensitive receivers nearest the Project site during all stages of Building 1 construction.
- The construction contractor shall limit haul truck deliveries to the same hours specified for construction equipment (between the hours of 7:00 a.m. to 8:00 p.m. on any day). The contractor shall prepare a haul route exhibit for review and approval by the Public Works Department, Land Development Division, and shall design delivery routes to minimize the exposure of sensitive land uses or residential dwellings to delivery truck-related noise (City of Moreno Valley Municipal Code, Section 8.21.050 (H) (7)).
- Any nighttime construction activity requires an exemption from the City of Moreno Valley Municipal Code as indicated in Section 11.80.030 (E) (8) for a special event permit (Section 11.80.040). The special event permit application shall be submitted to the City of Moreno Valley

Planning Department for approval and meet the requirements of Municipal Code Section 11.80.040.

## 10.8 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. The proposed Project's construction activities most likely to cause vibration impacts are:

- Heavy Construction Equipment: Although all heavy mobile construction equipment has the potential of causing at least some perceptible vibration while operating close to buildings, the vibration is usually short-term and is not of sufficient magnitude to cause building damage. It is not expected that heavy equipment such as large bulldozers would operate close enough to any residences or buildings to cause a vibration impact.
- Trucks: Trucks hauling building materials to construction sites can be sources of vibration intrusion if the haul routes pass through residential neighborhoods on streets with bumps or potholes. Repairing the bumps and potholes generally eliminates the problem.

Ground-borne vibration levels resulting from construction activities occurring within the Project site were estimated by data published by the Federal Transit Administration. Construction activities that would have the potential to generate low levels of ground-borne vibration within the Project site include demolition, grading, and paving. Using the vibration source levels of construction equipment provided on Table 6-9 and the construction vibration assessment methodology published by the FTA, it is possible to estimate the Project vibration impacts. Table 10-13 presents the expected Project related vibration levels at the five receiver locations.

**TABLE 10-13: CONSTRUCTION EQUIPMENT VIBRATION LEVELS**

| Receiver[1] | Distance To Construction Activity (Feet) | Receiver Vibration Levels (VdB)[2] | | | | | Threshold Exceeded?[3] |
|---|---|---|---|---|---|---|---|
| | | Small Bulldozer | Jackhammer | Loaded Trucks | Large Bulldozer | Peak Vibration | |
| R1 | 2,744' | 0.0 | 17.8 | 24.8 | 25.8 | 25.8 | No |
| R2 | 2,853' | 0.0 | 17.3 | 24.3 | 25.3 | 25.3 | No |
| R3 | 1,544' | 4.3 | 25.3 | 32.3 | 33.3 | 33.3 | No |
| R4 | 471' | 19.7 | 40.7 | 47.7 | 48.7 | 48.7 | No |
| R5 | 133' | 36.2 | 57.2 | 64.2 | 65.2 | 65.2 | No |
| R6 | 161' | 33.7 | 54.7 | 61.7 | 62.7 | 62.7 | No |
| R7 | 144' | 35.2 | 56.2 | 63.2 | 64.2 | 64.2 | No |
| R8 | 101' | 39.8 | 60.8 | 67.8 | 68.8 | 68.8 | No |

[1] Noise receiver locations are shown on Exhibit 8-A.
[2] Based on the Vibration Source Levels of Construction Equipment included on Table 6-9.
[3] Does the peak vibration exceed the FTA maximum acceptable vibration standard of 80 (VdB)?

Based on the reference vibration levels provided by the FTA, a large bulldozer represents the peak source of vibration with a reference level of 87 VdB at a distance of 25 feet. At distances ranging from 101 to 2,853 feet from the Project site, construction vibration levels are expected to range from 25.3 to 68.8 VdB. Using the construction vibration assessment methods provided by the FTA the proposed Project site will not include or require equipment, facilities, or activities that would result in a perceptible human response (annoyance). In addition, the 90 VdB threshold for building damage will also be satisfied and no building damage at the nearby receiver locations is expected due to Project construction.

The construction of the Project is not expected to generate vibration levels exceeding the FTA maximum acceptable vibration standard of 80 (VdB). Further, impacts at the site of the closest sensitive receiver are unlikely to be sustained during the entire construction period, but will occur rather only during the times that heavy construction equipment is operating adjacent to the Project site perimeter. Therefore, the potential for the Project to result in exposure of persons to, or generation of, excessive ground-borne vibration is *less than significant*.

## 10.9 ALTERNATE SITE PLAN COMPARISON

This noise study evaluates the Project's worst-case condition based on the four-building Project site plan. If the alternate site plan with a 166-space truck parking lot in lieu of Building 2 is implemented, the construction noise levels would be reduced. The removal of Building 2 would reduce the duration of and equipment used in Project construction, thereby reducing the construction noise levels expected at the nearby receiver locations.

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# 11 REFERENCES


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5. **Environmental Protection Agency Office of Noise Abatement and Control.** *Information on Levels of Environmental Noise Requsite to Protect Public Health and Welfare with an Adequate Margin of Safety.* March, 1974. EPA/ONAC 550/9/74-004.
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20. **California Department of Transportation.** *Traffic Noise Attenuation As a Function of Ground and Vegetation.* June 1995. FHWA/CA/TL-95/23.

21. **U.S. Environmental Protection Agency, Office of Federal Activities.** *Consideration of Cumultive Impacts.* May 1999. EPA 315-R-99-002.

22. **Urban Crossroads, Inc.** *Moreno Valley Logistics Center Air Quality Impact Analysis.* November 2015.

# 12 CERTIFICATION

The contents of this noise study report represent an accurate depiction of the noise environment and impacts associated with the proposed Moreno Valley Logistics Center 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) 660-1994 ext. 203.

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**EDUCATION**

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

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

**PROFESSIONAL REGISTRATIONS**

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

**PROFESSIONAL AFFILIATIONS**

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

**PROFESSIONAL CERTIFICATIONS**

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

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# APPENDIX 3.1:

# CITY OF MORENO VALLEY MUNICIPAL CODE

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Moreno Valley Municipal Code

Title 11 PEACE, MORALS AND SAFETY

# Chapter 11.80 NOISE REGULATION

## 11.80.010 Legislative findings.

It is found and declared that:

A. Excessive sound within the limits of the city is a condition which has existed for some time, and the amount and intensity of such sound is increasing.

B. Such excessive sound is a detriment to the public health, safety, and welfare and quality of life of the residents of the city.

C. The necessity in the public interest for the provisions and prohibitions hereinafter contained and enacted is declared as a matter of legislative determination and public policy, and it is further declared that the provisions and prohibitions hereinafter contained and enacted are in pursuance of and for the purpose of securing and promoting the public health, safety, welfare and quality of life of the city and its inhabitants. (Ord. 740 § 1.2, 2007)

## 11.80.020 Definitions.

For purposes of this chapter, certain words and phrases used herein are defined as follows:

"A-weighted sound level" means the sound pressure level in decibels as measured with a sound level meter using the A-weighting network. The unit of measurement is the dB(A).

"Commercial" means all uses of land not otherwise classified as residential, as defined in this section.

"Construction" means any site preparation, and/or any assembly, erection, repair, or alteration, excluding demolition, of any structure, or improvements to real property.

"Continuous airborne sound" means sound that is measured by the slow-response setting of a meter manufactured to the specifications of ANSI Section 1.4-1983 (R2006) "Specification for Sound Level Meters," or its successor.

"Daytime" means eight a.m. to ten p.m. the same day.

"Decibel" (dB) means a unit for measuring the amplitude of sound, equal to twenty (20) times the logarithm to the base ten (10) of the ratio of the pressure of the sound measured to the reference pressure, which is twenty (20) microPascals (twenty (20) microNewtons per square meter.)

"Demolition" means any dismantling, intentional destruction or removal of structures or other improvements to real property.

"Disturb" means to interrupt, interfere with, or hinder the enjoyment of peace or quiet or the normal listening activities or the sleep, rest or mental concentration of the hearer.

"Emergency" means any occurrence or set of circumstances involving actual or imminent physical trauma or significant property damage which necessitates immediate action. Economic loss alone shall not constitute an emergency. It shall be the burden of an alleged violator to prove an "emergency."

"Emergency work" means any work made necessary to restore property to a safe condition following an emergency, or to protect persons or property threatened by an imminent emergency, to the extent such work is, in fact, necessary to protect persons or property from exposure to imminent danger or damage.

"Frequency" means the number of complete oscillation cycles per unit of time.

"Impulsive sound" means sound of short duration, usually less than one second, with an abrupt onset and rapid decay. Examples of sources of impulsive sound include explosions, drop forge impacts, and discharge of firearms.

"Nighttime" means 10:01 p.m. to 7:59 a.m. the following day.

"Noise disturbance" means any sound which:

1. Disturbs a reasonable person of normal sensitivities;
2. Exceeds the sound level limits set forth in this chapter; or
3. Is plainly audible as defined in this section. Where no specific distance is set forth for the determination of audibility, references to noise disturbance shall be deemed to mean plainly audible at a distance of two hundred (200) feet from the real property line of the source of the sound, if the sound occurs on privately owned property, or from the source of the sound, if the sound occurs on public right of way, public space or other publicly owned property.

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

"Plainly audible" means that the sound or noise produced or reproduced by any particular source, can be clearly distinguished from ambient noise by a person using his/her normal hearing faculties.

"Public right-of-way" means any street, avenue, boulevard, sidewalk, bike path or alley, or similar place normally accessible to the public which is owned or controlled by a governmental entity.

"Public space" means any park, recreational or community facility, or lot which contains at least one building that is open to the general public during its hours of operation.

"Residential" means all uses of land primarily for dwelling units, as well as hospitals, schools, colleges and universities, and places of religious assembly.

"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 capable of producing an auditory impression. The description of sound may include any characteristic of such sound, including duration, intensity and frequency.

"Sound level" means the weighted sound pressure level as measured in dB(A) by a sound level meter and as specified in American National Standards Institute (ANSI) specifications for sound-level meters (ANSI Section 1.4-1971 (R1976)). If the frequency weighting employed is not indicated, the A-weighting shall apply.

"Sound level meter" means an instrument, demonstrably capable of accurately measuring sound levels as defined above.

All technical definitions not defined above shall be in accordance with applicable publications and standards of the American National Standards Institute (ANSI). (Ord. 740 § 1.2, 2007)

### 11.80.030 Prohibited acts.

A. General Prohibition. It is unlawful and a violation of this chapter to maintain, make, cause, or allow the making of any sound that causes a noise disturbance, as defined in Section 11.80.020.

B. Sound causing permanent hearing loss.

1. Sound level limits. Based on statistics from the Center for Disease Control and Prevention and the National Institute for Occupational Safety and Health, Table 1 and Table 1-A specify sound level limits which, if exceeded, will have a high probability of producing permanent hearing loss in anyone in the area where the sound levels are being exceeded. No sound shall be permitted within the city which exceeds the parameters set forth in Tables 11.80.030-1 and 11.80.030-1-A of this chapter:

**Table 11.80.030-1**

**MAXIMUM CONTINUOUS SOUND LEVELS***

| Duration per Day Continuous Hours | Sound level [db(A)] |
|---|---|
| 8 | 90 |
| 6 | 92 |
| 4 | 95 |
| 3 | 97 |
| 2 | 100 |
| 1.5 | 102 |
| 1 | 105 |
| 0.5 | 110 |
| 0.25 | 115 |

* When the daily sound exposure is composed of two or more periods of sound exposure at different levels, the combined effect of all such periods shall constitute a violation of this section if the sum of the percent of allowed period of sound exposure at each level exceeds 100 percent

**Table 11.80.030-1A**

**MAXIMUM IMPULSIVE SOUND LEVELS**

| Number of Repetitions per 24-Hour Period | Sound level [dB(A)] |
|---|---|

| | |
|---|---|
| 1 | 145 |
| 10 | 135 |
| 100 | 125 |

2. Exemptions. No violation shall exist if the only persons exposed to sound levels in excess of those listed in Tables 11.80.030-1 and 11.80.030-1A are exposed as a result of:

a. Trespass;

b. Invitation upon private property by the person causing or permitting the sound; or

c. Employment by the person or a contractor of the person causing or permitting the sound.

C. Nonimpulsive Sound Decibel Limits. No person shall maintain, create, operate or cause to be operated on private property any source of sound in such a manner as to create any nonimplusive sound which exceeds the limits set forth for the source land use category (as defined in Section 11.80.020) in Table 11.80.030-2 when measured at a distance of two hundred (200) feet or more from the real property line of the source of the sound, if the sound occurs on privately owned property, or from the source of the sound, if the sound occurs on public right-of-way, public space or other publicly owned property. Any source of sound in violation of this subsection shall be deemed prima facie to be a noise disturbance.

**Table 11.80.030-2**

**MAXIMUM SOUND LEVELS (IN dB(A)) FOR SOURCE LAND USES**

| Residential | | Commercial | |
|---|---|---|---|
| Daytime | Nighttime | Daytime | Nighttime |
| 60 | 55 | 65 | 60 |

D. Specific Prohibitions. In addition to the general prohibitions set out in subsection A of this section, and unless otherwise exempted by this chapter, the following specific acts, or the causing or permitting thereof, are regulated as follows:

1. Motor Vehicles. No person shall operate or cause to be operated a public or private motor vehicle, or combination of vehicles towed by a motor vehicle, that creates a sound exceeding the sound level limits in Table 11.80.030-2 when the vehicle(s) are not otherwise subject to noise regulations provided for by the California Vehicle Code.

2. Radios, Televisions, Electronic Audio Equipment, Musical Instruments or Similar Devices from a Stationary Source. No person shall operate, play or permit the operation or playing of any radio, tape player, television, electronic audio equipment, musical instrument, sound amplifier or other mechanical or electronic sound making device that produces, reproduces or amplifies sound in such a manner as to create a noise disturbance. However, this subsection shall not apply to any use or activity exempted in subsection E of this section and any use or activity for which a special permit has been issued pursuant to Section 11.80.040.

3. Radios, Electronic Audio Equipment, or Similar Devices from a Mobile Source Such as a Motor Vehicle. Sound amplification or reproduction equipment on or in a motor vehicle is subject to regulation in accordance with the California Vehicle Code when upon the public right-of-way. When upon public space or publicly owned property other than the public right-of-way or upon private property open to the public, sound amplification or reproduction equipment shall not be operated in such a manner that it is plainly audible at a distance of fifty (50) feet in any direction from the vehicle.

4. Portable, Hand-Held Music or Sound Amplification or Reproduction Equipment. Such equipment shall not be operated on a public right-of-way, public space or other publicly owned property in such a manner as to be plainly audible at a distance of fifty (50) feet in any direction from the operator.

5. Loudspeakers and Public Address Systems.

a. Except as permitted by Section 11.80.040, no person shall operate, or permit the operation of, any loudspeaker, public address system or similar device, for any commercial purpose:

1. Which produces, reproduces or amplifies sound in such a manner as to create a noise disturbance; or

2. During nighttime hours on a public right-of-way, public space or other publicly owned property.

b. No person shall operate, or permit the operation of, any loudspeaker, public address system or similar device, for any noncommercial purpose, during nighttime hours in such a manner as to create a noise disturbance.

6. Animals. No person shall own, possess or harbor an animal or bird that howls, barks, meows, squawks, or makes other sounds that:

a. Create a noise disturbance;

b. Are of frequent or continued duration for ten (10) or more consecutive minutes and are plainly audible at a distance of fifty (50) feet from the real property line of the source of the sound; or

c. Are intermittent for a period of thirty (30) or more minutes and are plainly audible at a distance of fifty (50) feet from the real property line of the source of the sound.

7. Construction and Demolition. No person shall operate or cause the operation of any tools or equipment used in construction, drilling, repair, alteration or demolition work between the hours of eight p.m. and seven a.m. the following day such that the sound there from creates a noise disturbance, except for emergency work by public service utilities or for other work approved by the city manager or designee. This section shall not apply to the use of power tools as provided in subsection (D)(9) of this section.

8. Emergency Signaling Devices. No person shall intentionally sound or permit the sounding outdoors of any fire, burglar or civil defense alarm, siren or whistle, or similar stationary emergency signaling device, except for emergency purposes or for testing as follows:

a. Testing of a stationary emergency signaling device shall not occur between seven p.m. and seven a.m. the following day;

b. Testing of a stationary emergency signaling device shall use only the minimum cycle test time, in no case to exceed sixty (60) seconds;

c. Testing of a complete emergency signaling system, including the functioning of the signaling device and the personnel response to the signaling device, shall not occur more than once in each calendar month. Such testing shall only occur only on weekdays between seven a.m. and seven p.m.

and shall be exempt from the time limit specified in subsection (D)(8)(2) of this section.

9. Power Tools. No person shall operate or permit the operation of any mechanically, electrically or gasoline motor-driven tool during nighttime hours so as to cause a noise disturbance across a residential real property boundary.

10. Pumps, Air Conditioners, Air-Handling Equipment and Other Continuously Operating Equipment. Notwithstanding the general prohibitions of subsection a of this section, no person shall operate or permit the operation of any pump, air conditioning, air-handling or other continuously operating motorized equipment in a state of disrepair or in a manner which otherwise creates a noise disturbance distinguishable from normal operating sounds.

E. Exemptions. The following uses and activities shall be exempt from the sound level regulations except the maximum sound levels provided in Tables 11.80.030-1 and 11.80.030-1A:

1. Sounds resulting from any authorized emergency vehicle when responding to an emergency call or acting in time of an emergency.

2. Sounds resulting from emergency work as defined in Section 11.80.020

3. Any aircraft operated in conformity with, or pursuant to, federal law, federal air regulations and air traffic control instruction used pursuant to and within the duly adopted federal air regulations; and any aircraft operating under technical difficulties in any kind of distress, under emergency orders of air traffic control, or being operated pursuant to and subsequent to the declaration of an emergency under federal air regulations.

4. All sounds coming from the normal operations of interstate motor and rail carriers, to the extent that local regulation of sound levels of such vehicles has been preempted by the Noise Control Act of 1972 (42 U.S.C. § 4901 et seq.) or other applicable federal laws or regulations

5. Sounds from the operation of motor vehicles, to the extent they are regulated by the California Vehicle Code.

6. Any constitutionally protected noncommercial speech or expression conducted within or upon a any public right-of-way, public space or other publicly owned property constituting an open or a designated public forum in compliance with any applicable reasonable time, place and manner restrictions on such speech or expression or otherwise pursuant to legal authority.

7. Sounds produced at otherwise lawful and permitted city-sponsored events, organized sporting events, school assemblies, school playground activities, by permitted fireworks, and by permitted parades on public right-of-way, public space or other publicly owned property.

8. An event for which a temporary use permit or special event permit has been issued under other provisions of this code, where the provisions of Section 11.80.040 are met, the permit granted expressly grants an exemption from specific standards contained in this chapter, and the permittee and all persons under the permittee's reasonable control actually comply with all conditions of such permit. Violation of any condition of such a permit related to sound or sound equipment shall be a violation of this chapter and punishable as such.

F. Nothing in this chapter shall be construed to limit, modify or repeal any other regulation elsewhere in this code relating to the regulation of noise sources, nor shall any such other regulation be read to permit the emission of noise in violation of any provision of this chapter. (Ord. 740 § 1.2, 2007)

## 11.80.040 Special provisions for temporary use and special event permits.

The exemption by permit set forth in Section 11.80.030(E)(8) shall be subject to the following requirements and conditions:

A. The permit application shall include the name, address and telephone number of the permit applicant; the date, hours and location for which the permit is requested; and the nature of the event or activity. It shall also specify the types of sounds and/or sound equipment to be permitted, the proposed duration of such sound, the specific standards from which the sound is to be exempted, and the reasons for each requested exemption.

B. The permit shall be issued provided the proposed activity meets the requirements of this section and the issuing official determines that the sound to be emitted at the event as proposed would not be detrimental to the public health, safety or welfare, that the event cannot reasonably achieve its legitimate aims and purposes without the exemption and that the sound levels proposed will not unreasonably damage the peace and quiet enjoyment of the lawful users of surrounding properties, nor constitute a public nuisance.

C. The official issuing the permit may prescribe any reasonable conditions or requirements he/she deems necessary to minimize noise disturbances upon the community or the surrounding neighborhood, and/or to protect the health, safety or welfare of the public, including participants in the permitted event, including use of mufflers, screens or other sound-attenuating devices.

D. Any permit granted must be in writing and shall contain all conditions upon which the permit shall be effective.

E. No more than six events requiring a sound limit exemption may be held at any particular location upon privately owned or controlled property per calendar year, provided further that the number of events shall not exceed the number permitted under the regulations for the type of permit issued. For purposes of this subsection, “location” means a legal parcel of real property or a complete shopping or commercial center or mall sharing common parking and access even if comprised of multiple legal parcels.

F. The exemption from sound limits under such permit shall not exceed maximum period of four hours in one twenty-four (24) hour day.

G. The permit will only be granted for hours between nine a.m. and ten p.m. on all days other than Friday and Saturday; and, on Friday and Saturday, between the hours of nine a.m. and one a.m. of the following day, except in the following circumstances:

1. A permit may be granted for hours between nine a.m. on New Year’s Eve and one a.m. the following day (New Year’s Day).

2. A permit may be granted for hours between nine a.m. and two a.m. the following day if there are no residences, hospitals, or nursing homes within a 0.5 mile radius of the property where the function is taking place.

H. Functions for which the permits are issued shall be limited to a continuous airborne sound level not to exceed seventy (70) dB(A), as measured two hundred (200) feet from the real property boundary of the source property if on private property, or from the source if on public right of way, public space or other publicly owned property. (Ord. 740 § 1.2, 2007)

## 11.80.050 Measurement or assessment of sound.

A. Measurement With Sound Meter.

1. The measurement of sound shall be made with a sound level meter meeting the standards prescribed by ANSI Section 1.4-1983 (R2006). The instruments shall be maintained in calibration and good working order. A calibration check shall be made of the system at the time of any sound level measurement. Measurements recorded shall be taken so as to provide a proper representation of the source of the sound. The microphone during measurement shall be positioned so as not to create any unnatural enhancement or diminution of the measured sound. A windscreen for the microphone shall be used at all times. However, a violation of this chapter may occur without the occasion of the measurements being made as otherwise provided.

2. The slow meter response of the sound level meter shall be used in order to best determine the average amplitude.

3. The measurement shall be made at any point on the property into which the sound is being transmitted and shall be made at least three feet away from any ground, wall, floor, ceiling, roof and other plane surface.

4. In case of multiple occupancy of a property, the measurement may be made at any point inside the premises to which any complainant has right of legal private occupancy; provided that the measurement shall not be made within three feet of any ground, wall, floor, ceiling, roof or other plane surface.

5. All measurements of sound provided for in this chapter will be made by qualified officials of the city who are designated by the city manger or designee to operate the apparatus used to make the measurements.

B. Assessment Without Sound Level Meter. Any police officer, code enforcement officer, or other official designated by the city manager or designee who hears a noise or sound that is plainly audible, as defined in Section 11.80.020, in violation of this chapter, may enforce this chapter and shall assess the noise or sound according to the following standards:

1. The primary means of detection shall be by means of the official's normal hearing faculties, not artificially enhanced.

2. The official shall first attempt to have a direct line of sight and hearing to the vehicle or real property from which the sound or noise emanates so that the official can readily identify the offending source of the sound or noise and the distance involved. If the official is unable to have a direct line of sight and hearing to the vehicle or real property from which the sound or noise emanates, then the official shall confirm the source of the sound or noise by approaching the suspected vehicle or real property until the official is able to obtain a direct line of sight and hearing, and confirm the source of the sound or noise that was heard at the place of the original assessment of the sound or noise.

3. The official need not be required to identify song titles, artists, or lyrics in order to establish a violation. (Ord. 740 § 1.2, 2007)

## 11.80.060 Violation.

A. Violation of Sound Level Limits. Any person violating any of the provisions of this chapter shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be punishable by a fine not to exceed one thousand dollars ($1,000.00) and/or six months in the county jail, or both.

Notwithstanding the foregoing, any violation of the provisions of this chapter may, in the discretion of the citing officer or the city attorney, be cited and/or prosecuted as an infraction or be subject to civil citation pursuant to Chapter 1.10.

B. Joint and Several Responsibility. In addition to the person causing the offending sound, the owner, tenant or lessee of property, or a manager, overseer or agent, or any other person lawfully entitled to possess the property from which the offending sound is emitted at the time the offending sound is emitted, shall be responsible for compliance with this chapter if the additionally responsible party knows or should have known of the offending noise disturbance. It shall not be a lawful defense to assert that some other person caused the sound. The lawful possessor or operator of the premises shall be responsible for operating or maintaining the premises in compliance with this chapter and may be cited regardless of whether or not the person actually causing the sound is also cited.

C. Violation May be Declared a Public Nuisance. The operation or maintenance of any device, equipment, instrument, vehicle or machinery in violation of any provisions of this chapter which endangers the public health, safety and quality of life of residents in the area is declared to be a public nuisance, and may be subject to abatement summarily or by a restraining order or injunction issued

by a court of competent jurisdiction. (Ord. 824 § 1.2, 2011; Ord. 740 § 1.2, 2007)

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# APPENDIX 5.1:

# STUDY AREA PHOTOS

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L1
33, 54' 35.765900", 117, 14' 29.677700"

L1_2
33, 54' 35.765900", 117, 14' 29.677700"

L1_E
33, 54' 35.765900", 117, 14' 29.677700"

L1_N
33, 54' 35.765900", 117, 14' 29.677700"

L1_SE
33, 54' 35.765900", 117, 14' 29.677700"

L1_W
33, 54' 35.765900", 117, 14' 29.677700"

L2
33, 54' 15.249000", 117, 14' 37.395600"

L2_2
33, 54' 15.249000", 117, 14' 37.395600"

L2_3
33, 54' 14.946900", 117, 14' 37.642800"

L2_E
33, 54' 15.249000", 117, 14' 37.395600"

L2_N
33, 54' 15.249000", 117, 14' 37.395600"

L2_NE
33, 54' 15.249000", 117, 14' 37.395600"

L2_NW
33, 54' 14.946900", 117, 14' 37.642800"

L2_S
33, 54' 15.249000", 117, 14' 37.395600"

L2_SW
33, 54' 15.249000", 117, 14' 37.395600"

L2_W
33, 54' 15.249000", 117, 14' 37.395600"

L3
33, 53' 43.306200", 117, 14' 48.766400"

L3_2
33, 53' 43.306200", 117, 14' 48.766400"

L3_E
33, 53' 43.306200", 117, 14' 48.766400"

L3_Intersection
33, 53' 43.443600", 117, 14' 49.178400"

L3_N
33, 53' 43.306200", 117, 14' 48.766400"

L3_N2
33, 53' 44.583400", 117, 14' 49.288300"

L3_NE
33, 53' 43.306200", 117, 14' 48.766400"

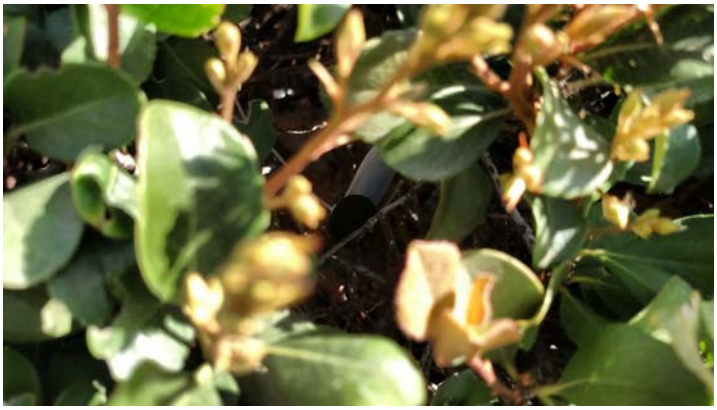
L3_NW
33, 53' 43.306200", 117, 14' 48.766400"

L3_S
33, 53' 43.306200", 117, 14' 48.766400"

L3_SE
33, 53' 43.306200", 117, 14' 48.766400"

L3_SW
33, 53' 43.306200", 117, 14' 48.766400"

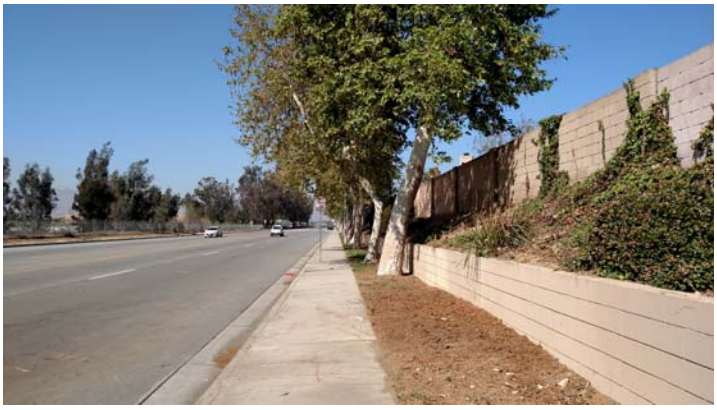
L3_W
33, 53' 43.306200", 117, 14' 48.766400"



L4
33, 53' 50.612100", 117, 14' 36.379300"

L4_2
33, 53' 50.612100", 117, 14' 36.379300"

L4_Intersection
33, 53' 18.408500", 117, 14' 14.379200"



L4_N
33, 53' 50.612100", 117, 14' 36.379300"

L4_S
33, 53' 50.612100", 117, 14' 36.379300"

L4_W
33, 53' 50.612100", 117, 14' 36.379300"

L5
33, 53' 18.449700", 117, 14' 14.598900"

L5_2
33, 53' 18.394700", 117, 14' 15.313100"

L5_E
33, 53' 18.408500", 117, 14' 14.379200"

L5_E2
33, 53' 18.381000", 117, 14' 16.109600"

L5_S
33, 53' 18.381000", 117, 14' 16.109600"

L5_SW
33, 53' 18.408500", 117, 14' 14.379200"

L5_W
33, 53' 18.408500", 117, 14' 14.379200"

L5_W2
33, 53' 18.408500", 117, 14' 14.379200"

L5_W3
33, 53' 18.394700", 117, 14' 15.313100"

L5_W4
33, 53' 18.381000", 117, 14' 16.109600"

L6
33, 53' 3.329700", 117, 14' 5.150700"

L6_2
33, 53' 3.329700", 117, 14' 5.150700"

L6_E
33, 53' 3.329700", 117, 14' 5.150700"

L6_N
33, 53' 3.329700", 117, 14' 5.150700"

L6_NW
33, 53' 3.329700", 117, 14' 5.150700"

L6_S
33, 53' 3.329700", 117, 14' 5.150700"

L6_SE
33, 53' 3.329700", 117, 14' 5.150700"

L6_W
33, 53' 3.329700", 117, 14' 5.150700"

L7
33, 52' 51.272200", 117, 14' 4.766200"

L7_Intersection
33, 52' 51.272200", 117, 14' 4.766200"

L7_NE
33, 52' 51.272200", 117, 14' 4.766200"

L7_NW
33, 52' 51.217300", 117, 14' 5.150700"

L7_NW2
33, 52' 51.217300", 117, 14' 5.150700"

L7_S
33, 52' 51.272200", 117, 14' 4.766200"

L7_SE
33, 52' 51.272200", 117, 14' 4.766200"

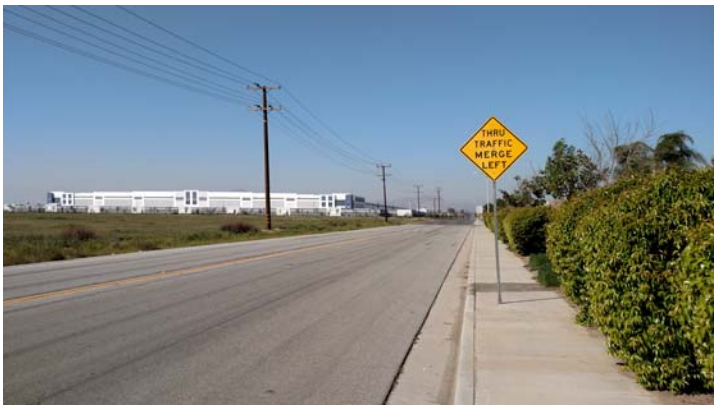
L7_SW
33, 52' 51.272200", 117, 14' 4.766200"

L7_W
33, 52' 51.272200", 117, 14' 4.766200"

L8
33, 52' 41.604300", 117, 14' 5.150700"

L8_2
33, 52' 41.604300", 117, 14' 5.150700"

L8_E
33, 52' 41.604300", 117, 14' 5.150700"




L8_N
33, 52' 41.604300", 117, 14' 5.150700"

L8_NW
33, 52' 41.604300", 117, 14' 5.150700"

L8_S
33, 52' 41.604300", 117, 14' 5.150700"

L8_SW
33, 52' 41.604300", 117, 14' 5.150700"

L9
33, 52' 32.293300", 117, 14' 5.123200"

L9_2
33, 52' 32.293300", 117, 14' 5.123200"

L9_NE
33, 52' 32.293300", 117, 14' 5.123200"

L9_NW
33, 52' 32.293300", 117, 14' 5.123200"

L9_S
33, 52' 32.293300", 117, 14' 5.123200"

L9_SE
33, 52' 32.293300", 117, 14' 5.123200"

L9_SW
33, 52' 32.293300", 117, 14' 5.123200"

L9_W
33, 52' 32.293300", 117, 14' 5.123200"

Site_Indian St_Freeport Dr
33, 52' 39.530600", 117, 14' 5.150700"

Site_Indian St_FreeportDr_N
33, 52' 39.530600", 117, 14' 5.150700"

Site_Indian St_FreeportDr_NE
33, 52' 39.530600", 117, 14' 5.150700"

Site_Indian St_FreeportDr_NW
33, 52' 39.530600", 117, 14' 5.150700"

Site_Indian St_FreeportDr_S
33, 52' 39.530600", 117, 14' 5.150700"

Site_Indian St_FreeportDr_SW
33, 52' 39.530600", 117, 14' 5.150700"

Site_Indian St_FreeportDr_W
33, 52' 39.530600", 117, 14' 5.150700"

StudyArea_ExistingPark_W
33, 53' 51.971700", 117, 14' 49.233400"

StudyArea_ExistingWarehouse_Indian St_E
33, 52' 57.740400", 117, 14' 5.452800"

StudyArea_ExistingWarehouse_Indian St_N
33, 52' 57.740400", 117, 14' 5.452800"

StudyArea_ExistingWarehouse_Indian St_SW
33, 52' 57.740400", 117, 14' 5.452800"

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# APPENDIX 5.2:

# NOISE LEVEL MEASUREMENT WORKSHEETS

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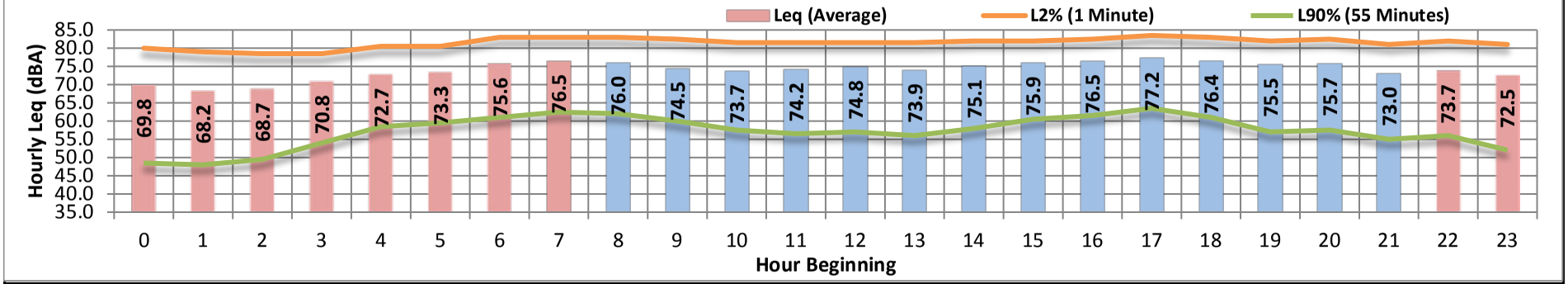
# 24-Hour Noise Level Measurement Summary

| | | | | Energy Average Leq | | 24-Hour |
|---|---|---|---|---|---|---|
| *Project Name:* | Moreno Valley Logistics | *JN:* | 9303 | *Day* | *Night* | *CNEL* |
| *Location:* | L1 - Located at the southeast corner of Cactus Avenue and Unity Court adjacent to existing residential homes. | *Analyst:* | A. Wolfe | 75.3 | 73.0 | 79.7 |
| | | *Date:* | 3/9-3/10/2015 | | | |

***Hourly Leq dBA Readings (unadjusted)***




| *Time Period* | *Hour* | *Leq* | *Lmax* | *Lmin* | *L1%* | *L2%* | *L5%* | *L8%* | *L25%* | *L50%* | *L90%* | *L95%* | *L99%* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day | Min | 73.0 | 89.5 | 43.0 | 82.0 | 81.0 | 79.5 | 78.0 | 72.5 | 65.5 | 55.0 | 53.0 | 48.5 |
| | Max | 77.2 | 101.1 | 54.8 | 85.5 | 83.5 | 82.0 | 81.0 | 78.5 | 73.5 | 63.5 | 61.0 | 58.0 |
| Energy Average | | 75.3 | 95.7 | 50.7 | 83.6 | 82.2 | 80.7 | 79.7 | 75.7 | 70.6 | 59.5 | 57.0 | 53.7 |
| Night | Min | 68.2 | 87.6 | 44.2 | 80.5 | 78.5 | 75.0 | 72.5 | 62.5 | 55.5 | 48.0 | 47.0 | 45.5 |
| | Max | 76.5 | 97.1 | 55.4 | 84.0 | 83.0 | 82.0 | 81.0 | 77.0 | 73.5 | 62.5 | 60.5 | 57.5 |
| Energy Average | | 73.0 | 92.5 | 51.3 | 82.3 | 80.9 | 78.8 | 77.4 | 72.5 | 67.9 | 57.5 | 55.7 | 53.1 |
| ***Hourly Summary*** | | | | | | | | | | | | | |
| Night | 0 | 69.8 | 89.4 | 44.6 | 81.5 | 80.0 | 77.0 | 75.0 | 65.0 | 57.5 | 48.5 | 47.0 | 45.5 |
| | 1 | 68.2 | 87.6 | 44.8 | 80.5 | 79.0 | 75.5 | 72.5 | 62.5 | 55.5 | 48.0 | 47.0 | 46.0 |
| | 2 | 68.7 | 91.4 | 44.2 | 80.5 | 78.5 | 75.0 | 72.5 | 63.5 | 56.0 | 49.5 | 48.0 | 45.5 |
| | 3 | 70.8 | 93.0 | 47.9 | 80.5 | 78.5 | 76.5 | 75.0 | 70.0 | 63.0 | 54.0 | 52.0 | 49.0 |
| | 4 | 72.7 | 88.6 | 51.4 | 82.0 | 80.5 | 78.0 | 77.0 | 73.5 | 68.0 | 58.5 | 57.0 | 54.0 |
| | 5 | 73.3 | 90.7 | 53.9 | 82.0 | 80.5 | 78.5 | 77.5 | 74.0 | 69.5 | 59.5 | 58.0 | 56.0 |
| | 6 | 75.6 | 93.5 | 55.4 | 84.0 | 83.0 | 81.5 | 80.0 | 76.0 | 72.0 | 61.0 | 59.0 | 56.5 |
| | 7 | 76.5 | 90.4 | 55.0 | 84.0 | 83.0 | 82.0 | 81.0 | 77.0 | 73.5 | 62.5 | 60.5 | 57.5 |
| Day | 8 | 76.0 | 91.4 | 52.7 | 84.0 | 83.0 | 82.0 | 81.0 | 76.0 | 72.0 | 62.0 | 60.0 | 56.0 |
| | 9 | 74.5 | 90.9 | 50.4 | 84.0 | 82.5 | 80.5 | 79.5 | 74.0 | 70.0 | 60.0 | 57.0 | 54.5 |
| | 10 | 73.7 | 91.9 | 48.4 | 82.5 | 81.5 | 79.5 | 78.5 | 73.5 | 68.5 | 57.5 | 55.5 | 53.0 |
| | 11 | 74.2 | 93.6 | 48.3 | 83.0 | 81.5 | 80.0 | 79.0 | 74.0 | 69.5 | 56.5 | 54.0 | 51.0 |
| | 12 | 74.8 | 100.1 | 45.9 | 82.5 | 81.5 | 80.0 | 79.0 | 74.5 | 69.0 | 57.0 | 54.5 | 50.0 |
| | 13 | 73.9 | 89.5 | 45.5 | 82.5 | 81.5 | 80.0 | 79.0 | 74.0 | 69.0 | 56.0 | 53.0 | 48.5 |
| | 14 | 75.1 | 91.6 | 43.0 | 82.5 | 82.0 | 80.5 | 80.0 | 76.0 | 71.0 | 58.0 | 54.0 | 49.0 |
| | 15 | 75.9 | 94.4 | 53.1 | 83.5 | 82.0 | 81.0 | 80.0 | 77.0 | 71.5 | 60.5 | 58.0 | 55.0 |
| | 16 | 76.5 | 97.6 | 52.7 | 83.5 | 82.5 | 81.5 | 80.5 | 77.5 | 72.0 | 61.5 | 58.5 | 55.0 |
| | 17 | 77.2 | 94.3 | 54.8 | 85.5 | 83.5 | 81.5 | 81.0 | 78.5 | 73.5 | 63.5 | 61.0 | 58.0 |
| | 18 | 76.4 | 95.0 | 50.7 | 84.0 | 83.0 | 81.5 | 80.5 | 77.5 | 72.0 | 61.0 | 58.5 | 54.0 |
| | 19 | 75.5 | 101.1 | 49.9 | 83.5 | 82.0 | 80.5 | 79.5 | 75.5 | 69.5 | 57.0 | 55.0 | 52.5 |
| | 20 | 75.7 | 96.4 | 51.1 | 85.5 | 82.5 | 80.5 | 79.5 | 75.0 | 69.0 | 57.5 | 55.5 | 53.5 |
| | 21 | 73.0 | 91.5 | 49.4 | 82.0 | 81.0 | 79.5 | 78.0 | 72.5 | 65.5 | 55.0 | 53.5 | 51.5 |
| Night | 22 | 73.7 | 94.3 | 49.5 | 83.5 | 82.0 | 79.5 | 78.5 | 72.0 | 65.0 | 56.0 | 54.0 | 51.5 |
| | 23 | 72.5 | 97.1 | 47.1 | 82.0 | 81.0 | 78.5 | 76.5 | 69.5 | 61.5 | 52.0 | 50.5 | 48.0 |

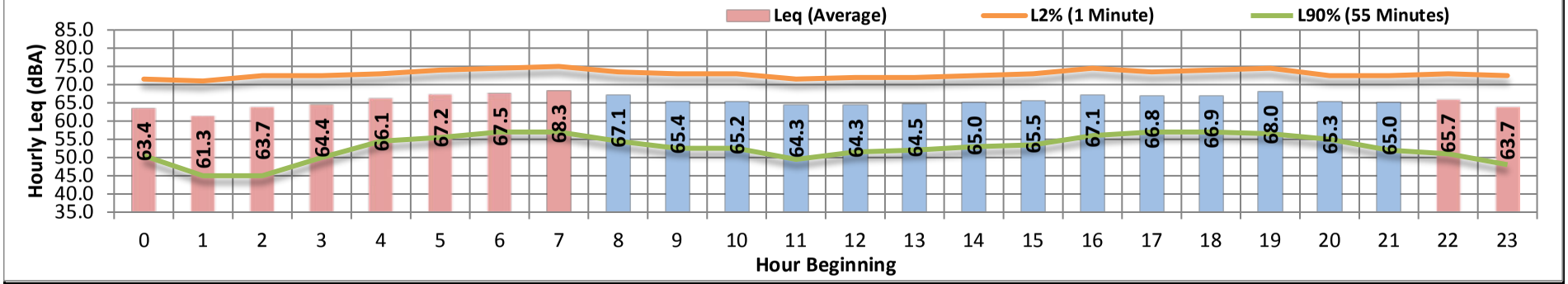


URBAN CROSSROADS

# 24-Hour Noise Level Measurement Summary

| | | | | Energy Average Leq | | 24-Hour |
|---|---|---|---|---|---|---|
| *Project Name:* | Moreno Valley Logistics | *JN:* | 9303 | *Day* | *Night* | *CNEL* |
| *Location:* | L2 - Located along Heacock Street north of Meyer Drive near existing residential homes. | *Analyst:* | A. Wolfe | 65.9 | 65.6 | 72.1 |
| | | *Date:* | 3/9-3/10/2015 | | | |

***Hourly Leq dBA Readings (unadjusted)***




| *Time Period* | *Hour* | *Leq* | *Lmax* | *Lmin* | *L1%* | *L2%* | *L5%* | *L8%* | *L25%* | *L50%* | *L90%* | *L95%* | *L99%* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day | Min | 64.3 | 79.4 | 38.7 | 73.0 | 71.5 | 69.0 | 68.0 | 64.5 | 61.0 | 49.5 | 46.5 | 42.5 |
| | Max | 68.0 | 91.7 | 50.4 | 76.5 | 74.5 | 72.0 | 70.5 | 67.0 | 64.5 | 57.0 | 55.0 | 52.5 |
| Energy Average | | 65.9 | 85.2 | 46.7 | 74.9 | 73.1 | 70.6 | 69.3 | 65.7 | 62.6 | 54.3 | 52.1 | 49.2 |
| Night | Min | 61.3 | 78.5 | 40.5 | 73.0 | 71.0 | 67.0 | 65.0 | 59.5 | 55.0 | 45.0 | 43.5 | 42.0 |
| | Max | 68.3 | 91.4 | 50.8 | 77.0 | 75.0 | 72.5 | 71.0 | 68.0 | 65.0 | 57.0 | 55.0 | 53.0 |
| Energy Average | | 65.6 | 86.1 | 47.2 | 75.2 | 73.1 | 70.3 | 69.0 | 65.2 | 61.6 | 53.2 | 51.3 | 49.4 |
| ***Hourly Summary*** | | | | | | | | | | | | | |
| Night | 0 | 63.4 | 83.8 | 42.3 | 74.0 | 71.5 | 68.0 | 66.5 | 62.0 | 59.5 | 50.5 | 47.5 | 44.0 |
| | 1 | 61.3 | 78.5 | 40.5 | 73.0 | 71.0 | 67.0 | 65.0 | 59.5 | 55.0 | 45.0 | 44.0 | 42.5 |
| | 2 | 63.7 | 83.6 | 41.4 | 75.0 | 72.5 | 69.0 | 67.5 | 62.5 | 55.0 | 45.0 | 43.5 | 42.0 |
| | 3 | 64.4 | 83.7 | 45.4 | 74.0 | 72.5 | 70.0 | 68.5 | 64.0 | 59.0 | 50.0 | 48.5 | 47.0 |
| | 4 | 66.1 | 82.4 | 49.2 | 74.5 | 73.0 | 71.0 | 70.0 | 66.5 | 63.0 | 54.5 | 52.5 | 50.5 |
| | 5 | 67.2 | 86.7 | 50.0 | 76.0 | 74.0 | 71.5 | 70.5 | 67.0 | 64.0 | 55.5 | 54.0 | 52.0 |
| | 6 | 67.5 | 82.8 | 50.8 | 76.0 | 74.5 | 72.0 | 71.0 | 68.0 | 65.0 | 57.0 | 54.5 | 52.5 |
| | 7 | 68.3 | 89.7 | 48.8 | 77.0 | 75.0 | 72.5 | 71.0 | 68.0 | 65.0 | 57.0 | 55.0 | 53.0 |
| Day | 8 | 67.1 | 87.0 | 48.8 | 76.0 | 73.5 | 71.5 | 70.0 | 67.0 | 64.0 | 54.5 | 52.5 | 49.5 |
| | 9 | 65.4 | 80.9 | 44.4 | 74.5 | 73.0 | 70.5 | 69.5 | 65.5 | 62.0 | 52.5 | 50.5 | 47.0 |
| | 10 | 65.2 | 83.2 | 43.2 | 75.5 | 73.0 | 70.0 | 69.0 | 65.0 | 61.5 | 52.5 | 50.0 | 45.5 |
| | 11 | 64.3 | 81.8 | 39.6 | 73.0 | 71.5 | 69.0 | 68.0 | 64.5 | 61.0 | 49.5 | 46.5 | 42.5 |
| | 12 | 64.3 | 81.4 | 38.7 | 73.5 | 72.0 | 69.5 | 68.0 | 64.5 | 61.0 | 51.5 | 48.5 | 45.0 |
| | 13 | 64.5 | 79.4 | 40.8 | 73.0 | 72.0 | 70.0 | 68.5 | 65.0 | 61.5 | 52.0 | 49.0 | 45.5 |
| | 14 | 65.0 | 85.6 | 41.1 | 74.5 | 72.5 | 70.0 | 68.5 | 64.5 | 61.5 | 53.0 | 50.0 | 44.5 |
| | 15 | 65.5 | 82.1 | 45.3 | 74.5 | 73.0 | 70.5 | 69.0 | 65.5 | 62.5 | 53.5 | 51.0 | 48.5 |
| | 16 | 67.1 | 88.8 | 46.5 | 76.5 | 74.5 | 71.0 | 70.0 | 66.5 | 63.5 | 56.0 | 53.0 | 49.0 |
| | 17 | 66.8 | 83.9 | 47.7 | 75.5 | 73.5 | 71.0 | 70.0 | 67.0 | 64.0 | 57.0 | 55.0 | 52.0 |
| | 18 | 66.9 | 81.9 | 50.1 | 75.5 | 74.0 | 72.0 | 70.5 | 67.0 | 64.5 | 57.0 | 55.0 | 52.5 |
| | 19 | 68.0 | 91.7 | 50.4 | 76.5 | 74.5 | 71.5 | 70.5 | 66.5 | 63.5 | 56.5 | 55.0 | 52.5 |
| | 20 | 65.3 | 80.5 | 49.2 | 74.0 | 72.5 | 70.5 | 69.0 | 65.5 | 62.5 | 55.0 | 53.5 | 51.5 |
| | 21 | 65.0 | 80.4 | 47.0 | 74.5 | 72.5 | 70.0 | 69.0 | 65.0 | 61.5 | 52.0 | 50.5 | 48.5 |
| Night | 22 | 65.7 | 91.4 | 47.1 | 76.0 | 73.0 | 69.5 | 68.0 | 64.0 | 59.5 | 51.0 | 50.0 | 48.5 |
| | 23 | 63.7 | 82.8 | 43.7 | 74.5 | 72.5 | 69.0 | 67.5 | 62.0 | 56.0 | 48.0 | 47.0 | 45.5 |

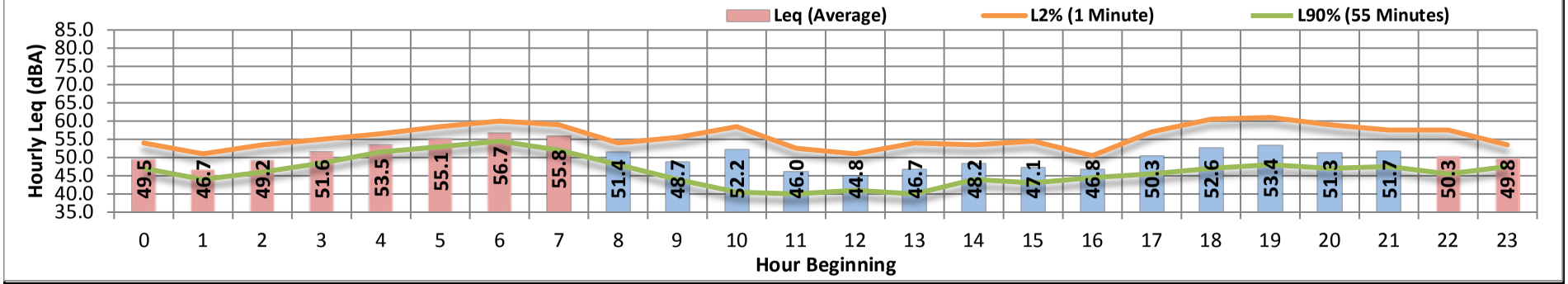


URBAN CROSSROADS

# 24-Hour Noise Level Measurement Summary

| | | | | Energy Average Leq | | 24-Hour |
|---|---|---|---|---|---|---|
| *Project Name:* | Moreno Valley Logistics | *JN:* | 9303 | *Day* | *Night* | *CNEL* |
| *Location:* | L3 - Located at the southeast corner of 6th Street and Midway Street near an existing baseball diamond and park. | *Analyst:* | A. Wolfe | 50.2 | 52.9 | 58.9 |
| | | *Date:* | 3/9-3/10/2015 | | | |

***Hourly Leq dBA Readings (unadjusted)***




| *Time Period* | *Hour* | *Leq* | *Lmax* | *Lmin* | *L1%* | *L2%* | *L5%* | *L8%* | *L25%* | *L50%* | *L90%* | *L95%* | *L99%* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day | Min | 44.8 | 60.8 | 38.2 | 51.5 | 50.5 | 47.5 | 46.0 | 42.5 | 41.0 | 40.0 | 39.5 | 38.0 |
| | Max | 53.4 | 75.1 | 46.6 | 63.5 | 61.0 | 57.5 | 55.5 | 52.0 | 51.0 | 48.0 | 47.5 | 47.0 |
| Energy Average | | 50.2 | 69.9 | 43.6 | 59.5 | 56.8 | 53.5 | 51.8 | 48.7 | 47.1 | 45.2 | 44.8 | 44.2 |
| Night | Min | 46.7 | 53.6 | 42.2 | 51.5 | 51.0 | 49.5 | 49.0 | 47.0 | 46.0 | 44.0 | 43.5 | 42.5 |
| | Max | 56.7 | 71.0 | 53.5 | 64.5 | 60.0 | 58.5 | 58.0 | 57.0 | 56.0 | 54.5 | 54.5 | 54.0 |
| Energy Average | | 52.9 | 66.2 | 48.8 | 58.9 | 56.7 | 55.2 | 54.6 | 53.2 | 52.0 | 50.2 | 50.0 | 49.4 |
| ***Hourly Summary*** | | | | | | | | | | | | | |
| Night | 0 | 49.5 | 60.3 | 44.5 | 55.0 | 54.0 | 52.5 | 51.5 | 49.5 | 48.5 | 47.0 | 46.0 | 45.0 |
| | 1 | 46.7 | 53.6 | 42.2 | 51.5 | 51.0 | 49.5 | 49.0 | 47.0 | 46.0 | 44.0 | 43.5 | 42.5 |
| | 2 | 49.2 | 63.0 | 44.4 | 55.5 | 53.5 | 52.0 | 51.0 | 49.5 | 48.0 | 46.0 | 45.5 | 45.0 |
| | 3 | 51.6 | 59.2 | 46.7 | 56.0 | 55.0 | 54.0 | 54.0 | 52.0 | 51.0 | 48.5 | 48.0 | 47.5 |
| | 4 | 53.5 | 66.4 | 50.1 | 57.5 | 56.5 | 55.5 | 55.0 | 53.5 | 53.0 | 51.5 | 51.0 | 51.0 |
| | 5 | 55.1 | 64.5 | 51.1 | 59.0 | 58.5 | 57.0 | 56.5 | 55.5 | 54.5 | 53.0 | 53.0 | 52.0 |
| | 6 | 56.7 | 68.2 | 53.5 | 64.5 | 60.0 | 58.0 | 57.5 | 56.5 | 56.0 | 54.5 | 54.5 | 54.0 |
| | 7 | 55.8 | 71.0 | 50.7 | 60.0 | 59.0 | 58.5 | 58.0 | 57.0 | 54.5 | 52.0 | 51.5 | 51.0 |
| Day | 8 | 51.4 | 66.7 | 46.6 | 56.0 | 54.0 | 53.0 | 53.0 | 52.0 | 51.0 | 48.0 | 47.5 | 47.0 |
| | 9 | 48.7 | 72.3 | 42.9 | 59.5 | 55.5 | 50.5 | 49.0 | 46.0 | 45.0 | 44.0 | 44.0 | 43.5 |
| | 10 | 52.2 | 75.1 | 38.3 | 61.0 | 58.5 | 53.5 | 51.0 | 46.0 | 43.5 | 40.5 | 40.0 | 39.5 |
| | 11 | 46.0 | 69.0 | 38.2 | 57.0 | 52.5 | 47.5 | 46.0 | 42.5 | 41.0 | 40.0 | 39.5 | 38.0 |
| | 12 | 44.8 | 60.8 | 39.9 | 54.5 | 51.0 | 48.0 | 47.0 | 44.0 | 42.5 | 41.0 | 40.5 | 40.0 |
| | 13 | 46.7 | 67.8 | 39.9 | 56.0 | 54.0 | 52.0 | 50.5 | 45.5 | 43.5 | 40.0 | 40.0 | 40.0 |
| | 14 | 48.2 | 70.0 | 42.8 | 59.0 | 53.5 | 50.0 | 48.5 | 46.5 | 45.0 | 44.0 | 43.5 | 43.0 |
| | 15 | 47.1 | 67.7 | 42.1 | 57.0 | 54.5 | 49.5 | 48.0 | 45.5 | 44.5 | 43.0 | 43.0 | 42.5 |
| | 16 | 46.8 | 62.0 | 43.0 | 51.5 | 50.5 | 49.0 | 48.5 | 47.0 | 46.0 | 44.5 | 44.0 | 43.5 |
| | 17 | 50.3 | 69.7 | 43.7 | 59.5 | 57.0 | 53.0 | 51.5 | 49.0 | 47.5 | 45.5 | 45.5 | 44.5 |
| | 18 | 52.6 | 68.9 | 45.6 | 62.5 | 60.5 | 57.5 | 55.5 | 51.5 | 49.0 | 47.0 | 46.5 | 46.0 |
| | 19 | 53.4 | 73.2 | 45.9 | 63.5 | 61.0 | 57.0 | 54.5 | 51.0 | 49.5 | 48.0 | 47.5 | 46.5 |
| | 20 | 51.3 | 67.4 | 45.0 | 60.5 | 59.0 | 56.5 | 54.5 | 50.0 | 48.5 | 47.0 | 46.5 | 46.0 |
| | 21 | 51.7 | 67.1 | 45.9 | 61.0 | 57.5 | 55.0 | 54.0 | 51.5 | 49.5 | 47.5 | 47.0 | 46.5 |
| Night | 22 | 50.3 | 69.2 | 43.9 | 59.9 | 57.5 | 54.3 | 52.4 | 48.8 | 47.2 | 45.5 | 45.1 | 44.4 |
| | 23 | 49.8 | 64.5 | 46.3 | 55.0 | 53.5 | 52.0 | 51.5 | 50.0 | 49.0 | 47.5 | 47.5 | 47.0 |

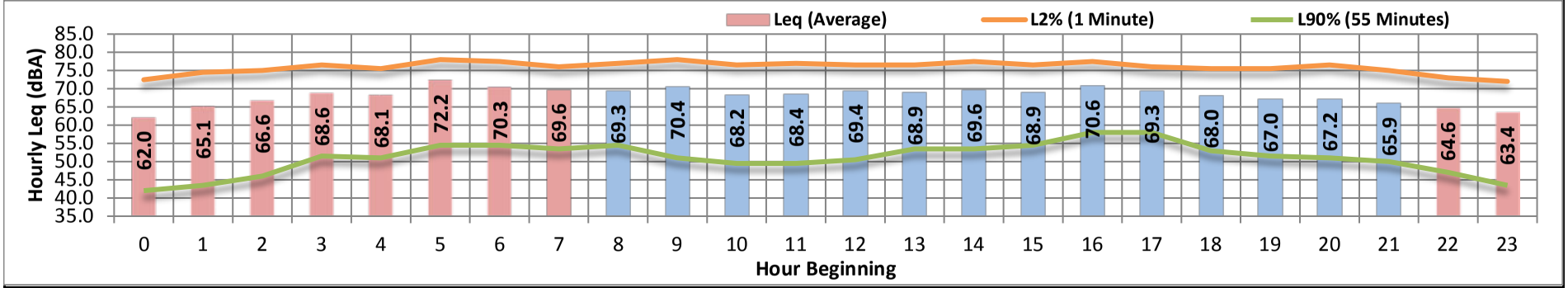


URBAN CROSSROADS

# 24-Hour Noise Level Measurement Summary

| | | | | Energy Average Leq | | 24-Hour |
|---|---|---|---|---|---|---|
| *Project Name:* | Moreno Valley Logistics | *JN:* | 9303 | *Day* | *Night* | *CNEL* |
| *Location:* | L4 - Located along Heacock Street north of Bentian Avenue adjacent to an existing residential community. | *Analyst:* | A. Wolfe | 68.8 | 68.1 | 74.7 |
| | | *Date:* | 3/9-3/10/2015 | | | |

***Hourly Leq dBA Readings (unadjusted)***




| *Time Period* | *Hour* | *Leq* | *Lmax* | *Lmin* | *L1%* | *L2%* | *L5%* | *L8%* | *L25%* | *L50%* | *L90%* | *L95%* | *L99%* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day | Min | 65.9 | 83.0 | 39.6 | 77.0 | 75.0 | 71.5 | 70.0 | 65.5 | 59.0 | 49.5 | 46.5 | 41.5 |
| | Max | 70.6 | 95.1 | 49.5 | 80.0 | 78.0 | 74.5 | 73.0 | 70.0 | 67.5 | 58.0 | 55.0 | 52.5 |
| Energy Average | | 68.8 | 90.0 | 46.3 | 78.4 | 76.6 | 73.7 | 72.2 | 68.5 | 64.7 | 53.7 | 51.3 | 48.5 |
| Night | Min | 62.0 | 82.1 | 38.0 | 75.0 | 72.0 | 68.5 | 66.0 | 54.0 | 47.0 | 42.0 | 41.0 | 40.0 |
| | Max | 72.2 | 101.1 | 50.2 | 80.5 | 78.0 | 75.0 | 74.0 | 70.5 | 67.0 | 54.5 | 53.5 | 51.0 |
| Energy Average | | 68.1 | 93.7 | 46.4 | 77.7 | 75.5 | 72.6 | 71.2 | 66.9 | 62.1 | 50.8 | 49.4 | 47.5 |
| ***Hourly Summary*** | | | | | | | | | | | | | |
| Night | 0 | 62.0 | 82.3 | 38.0 | 75.0 | 72.5 | 68.5 | 66.0 | 54.0 | 47.0 | 42.0 | 41.0 | 40.0 |
| | 1 | 65.1 | 91.3 | 40.0 | 77.0 | 74.5 | 70.5 | 68.5 | 59.0 | 50.0 | 43.5 | 42.5 | 41.0 |
| | 2 | 66.6 | 90.4 | 43.3 | 77.0 | 75.0 | 72.5 | 71.0 | 64.0 | 56.5 | 46.0 | 44.5 | 44.0 |
| | 3 | 68.6 | 94.5 | 47.0 | 78.5 | 76.5 | 73.0 | 71.5 | 67.5 | 61.5 | 51.5 | 50.0 | 48.0 |
| | 4 | 68.1 | 92.3 | 48.2 | 78.0 | 75.5 | 73.0 | 72.0 | 68.0 | 61.5 | 51.0 | 50.5 | 49.0 |
| | 5 | 72.2 | 101.1 | 50.0 | 80.5 | 78.0 | 74.5 | 73.0 | 69.5 | 64.5 | 54.5 | 53.0 | 51.0 |
| | 6 | 70.3 | 91.6 | 50.2 | 79.0 | 77.5 | 75.0 | 74.0 | 70.5 | 67.0 | 54.5 | 53.5 | 51.0 |
| | 7 | 69.6 | 91.7 | 46.5 | 78.0 | 76.0 | 74.5 | 73.0 | 70.0 | 66.0 | 53.5 | 51.0 | 48.5 |
| Day | 8 | 69.3 | 90.9 | 47.5 | 78.5 | 77.0 | 74.0 | 72.5 | 69.5 | 65.0 | 54.5 | 52.5 | 49.0 |
| | 9 | 70.4 | 95.1 | 43.9 | 80.0 | 78.0 | 74.5 | 73.0 | 68.5 | 63.5 | 51.0 | 49.5 | 47.0 |
| | 10 | 68.2 | 85.5 | 39.6 | 79.0 | 76.5 | 73.5 | 72.0 | 68.0 | 63.5 | 49.5 | 47.0 | 41.5 |
| | 11 | 68.4 | 84.6 | 39.6 | 78.5 | 77.0 | 74.0 | 72.5 | 68.5 | 64.0 | 49.5 | 46.5 | 43.0 |
| | 12 | 69.4 | 93.5 | 41.1 | 78.5 | 76.5 | 74.0 | 72.5 | 68.5 | 64.5 | 50.5 | 48.0 | 44.5 |
| | 13 | 68.9 | 86.9 | 44.6 | 78.0 | 76.5 | 74.0 | 72.5 | 69.0 | 65.5 | 53.5 | 51.0 | 47.0 |
| | 14 | 69.6 | 89.5 | 46.6 | 79.0 | 77.5 | 74.5 | 73.0 | 69.0 | 65.5 | 53.5 | 52.0 | 49.5 |
| | 15 | 68.9 | 90.4 | 46.4 | 78.0 | 76.5 | 74.0 | 72.5 | 69.0 | 66.0 | 54.5 | 51.5 | 49.0 |
| | 16 | 70.6 | 93.3 | 47.6 | 79.5 | 77.5 | 74.5 | 73.0 | 70.0 | 67.5 | 58.0 | 55.0 | 51.0 |
| | 17 | 69.3 | 86.7 | 49.5 | 77.5 | 76.0 | 74.0 | 73.0 | 69.5 | 67.0 | 58.0 | 55.0 | 52.5 |
| | 18 | 68.0 | 88.9 | 48.2 | 77.5 | 75.5 | 72.5 | 71.5 | 68.0 | 64.0 | 53.0 | 51.5 | 49.5 |
| | 19 | 67.0 | 83.0 | 47.6 | 77.0 | 75.5 | 72.5 | 71.0 | 67.0 | 63.0 | 51.5 | 50.0 | 48.5 |
| | 20 | 67.2 | 86.2 | 47.0 | 78.5 | 76.5 | 72.5 | 70.5 | 66.5 | 61.0 | 51.0 | 50.0 | 48.0 |
| | 21 | 65.9 | 83.4 | 46.2 | 77.0 | 75.0 | 71.5 | 70.0 | 65.5 | 59.0 | 50.0 | 48.5 | 47.0 |
| Night | 22 | 64.6 | 82.1 | 43.5 | 75.5 | 73.0 | 70.0 | 68.5 | 63.5 | 59.5 | 47.0 | 46.0 | 45.0 |
| | 23 | 63.4 | 87.5 | 41.0 | 75.0 | 72.0 | 69.0 | 67.5 | 58.5 | 49.5 | 43.5 | 42.5 | 42.0 |

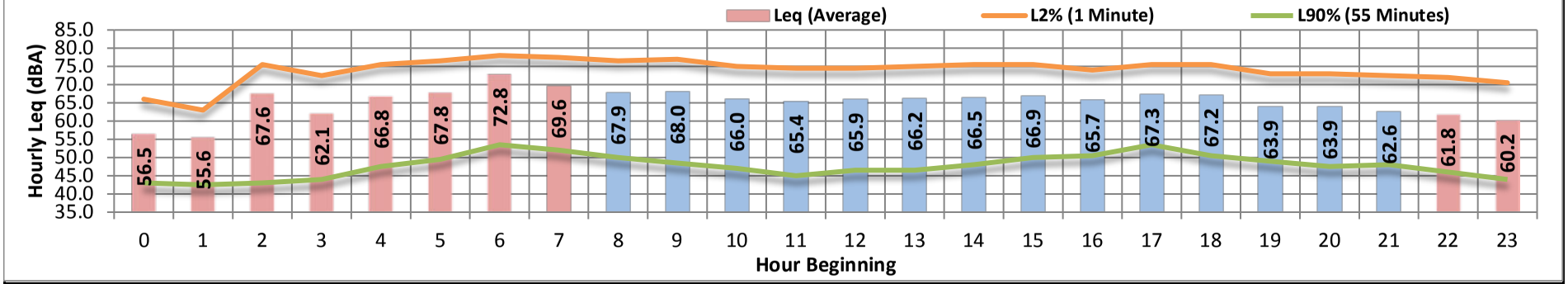


URBAN CROSSROADS

# 24-Hour Noise Level Measurement Summary

| | | | | Energy Average Leq | | 24-Hour |
|---|---|---|---|---|---|---|
| *Project Name:* | Moreno Valley Logistics | *JN:* | 9303 | *Day* | *Night* | *CNEL* |
| *Location:* | L5 - Located along Iris Avenue west of Indian Street and the Rainbow Ridge Elementary School. An existing logisitics warehouse is located south of Iris Avenue. | *Analyst:* | A. Wolfe | 66.2 | 67.0 | 73.1 |
| | | *Date:* | 3/9-3/10/2015 | | | |

***Hourly Leq dBA Readings (unadjusted)***




| *Time Period* | *Hour* | *Leq* | *Lmax* | *Lmin* | *L1%* | *L2%* | *L5%* | *L8%* | *L25%* | *L50%* | *L90%* | *L95%* | *L99%* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day | Min | 62.6 | 80.4 | 39.7 | 74.0 | 72.5 | 69.5 | 67.0 | 60.0 | 54.0 | 45.0 | 43.5 | 41.5 |
| | Max | 68.0 | 90.5 | 46.5 | 79.0 | 77.0 | 75.0 | 73.5 | 66.0 | 61.0 | 53.5 | 51.0 | 48.0 |
| Energy Average | | 66.2 | 86.7 | 44.0 | 76.5 | 75.0 | 72.7 | 71.1 | 64.2 | 57.9 | 49.2 | 47.5 | 45.5 |
| Night | Min | 55.6 | 77.5 | 40.6 | 68.0 | 63.0 | 57.5 | 52.5 | 47.0 | 44.5 | 42.5 | 42.0 | 41.5 |
| | Max | 72.8 | 100.7 | 49.8 | 80.0 | 78.0 | 76.0 | 74.0 | 68.0 | 60.5 | 53.5 | 52.0 | 50.5 |
| Energy Average | | 67.0 | 93.5 | 45.1 | 76.9 | 74.6 | 71.6 | 69.6 | 61.9 | 54.8 | 48.3 | 47.3 | 46.1 |
| ***Hourly Summary*** | | | | | | | | | | | | | |
| Night | 0 | 56.5 | 77.5 | 40.6 | 69.0 | 66.0 | 62.0 | 59.0 | 49.5 | 46.0 | 43.0 | 42.5 | 42.0 |
| | 1 | 55.6 | 79.7 | 41.1 | 68.0 | 63.0 | 57.5 | 52.5 | 47.0 | 44.5 | 42.5 | 42.0 | 41.5 |
| | 2 | 67.6 | 95.5 | 40.9 | 80.0 | 75.5 | 69.0 | 64.5 | 51.5 | 47.0 | 43.0 | 42.5 | 41.5 |
| | 3 | 62.1 | 86.3 | 41.9 | 75.0 | 72.5 | 67.5 | 64.0 | 52.0 | 47.0 | 44.0 | 43.5 | 42.5 |
| | 4 | 66.8 | 95.2 | 43.9 | 77.0 | 75.5 | 73.0 | 71.0 | 60.5 | 52.0 | 47.5 | 46.5 | 45.0 |
| | 5 | 67.8 | 90.6 | 46.1 | 79.0 | 76.5 | 74.0 | 72.5 | 63.5 | 55.5 | 49.5 | 48.5 | 47.0 |
| | 6 | 72.8 | 100.7 | 49.2 | 79.5 | 78.0 | 76.0 | 74.0 | 66.5 | 60.0 | 53.5 | 52.0 | 50.5 |
| | 7 | 69.6 | 91.7 | 49.8 | 79.0 | 77.5 | 75.5 | 74.0 | 68.0 | 60.5 | 52.0 | 51.5 | 50.5 |
| Day | 8 | 67.9 | 88.8 | 45.3 | 77.5 | 76.5 | 75.0 | 73.5 | 66.0 | 57.0 | 50.0 | 49.0 | 47.0 |
| | 9 | 68.0 | 87.1 | 45.9 | 79.0 | 77.0 | 74.5 | 72.5 | 65.5 | 57.5 | 48.5 | 47.5 | 46.5 |
| | 10 | 66.0 | 86.8 | 41.3 | 76.0 | 75.0 | 72.5 | 71.0 | 63.5 | 56.0 | 47.0 | 45.5 | 44.0 |
| | 11 | 65.4 | 82.6 | 39.7 | 76.0 | 74.5 | 72.5 | 71.0 | 63.5 | 56.5 | 45.0 | 43.5 | 41.5 |
| | 12 | 65.9 | 90.5 | 41.5 | 76.0 | 74.5 | 71.5 | 70.0 | 63.5 | 55.5 | 46.5 | 45.0 | 43.5 |
| | 13 | 66.2 | 84.0 | 41.9 | 76.0 | 75.0 | 73.0 | 71.5 | 64.5 | 57.0 | 46.5 | 45.5 | 43.5 |
| | 14 | 66.5 | 85.4 | 42.8 | 77.0 | 75.5 | 73.0 | 71.5 | 64.5 | 58.0 | 48.0 | 46.5 | 44.0 |
| | 15 | 66.9 | 84.0 | 44.1 | 77.0 | 75.5 | 73.5 | 72.0 | 65.5 | 59.5 | 50.0 | 48.0 | 46.0 |
| | 16 | 65.7 | 83.8 | 44.6 | 75.5 | 74.0 | 72.0 | 70.5 | 64.5 | 59.5 | 50.5 | 49.0 | 47.0 |
| | 17 | 67.3 | 89.3 | 46.5 | 77.0 | 75.5 | 73.5 | 72.0 | 65.0 | 61.0 | 53.5 | 51.0 | 48.0 |
| | 18 | 67.2 | 89.5 | 45.1 | 77.5 | 75.5 | 73.0 | 71.5 | 65.0 | 60.0 | 50.5 | 48.5 | 46.5 |
| | 19 | 63.9 | 85.1 | 44.5 | 74.5 | 73.0 | 70.5 | 68.5 | 62.0 | 57.0 | 49.0 | 47.5 | 45.5 |
| | 20 | 63.9 | 84.8 | 43.8 | 75.0 | 73.0 | 71.0 | 68.5 | 61.5 | 55.5 | 47.5 | 46.5 | 45.0 |
| | 21 | 62.6 | 80.4 | 43.9 | 74.0 | 72.5 | 69.5 | 67.0 | 60.0 | 54.0 | 48.0 | 47.0 | 45.0 |
| Night | 22 | 61.8 | 85.3 | 42.1 | 74.5 | 72.0 | 67.5 | 64.5 | 58.0 | 51.5 | 46.0 | 45.0 | 43.5 |
| | 23 | 60.2 | 81.3 | 41.5 | 73.0 | 70.5 | 66.5 | 63.5 | 54.5 | 48.5 | 44.0 | 43.5 | 42.5 |

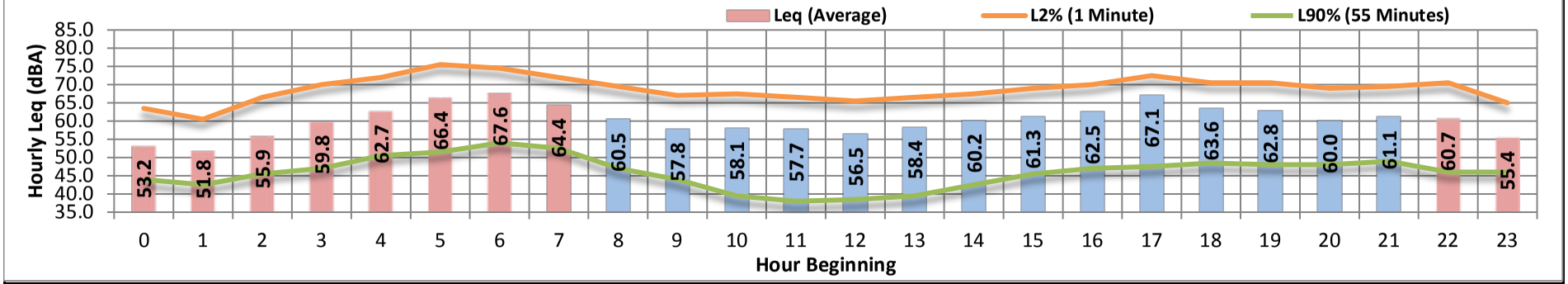


URBAN CROSSROADS

# 24-Hour Noise Level Measurement Summary

| | | | | Energy Average Leq | | 24-Hour |
|---|---|---|---|---|---|---|
| *Project Name:* | Moreno Valley Logistics | *JN:* | 9303 | *Day* | *Night* | *CNEL* |
| *Location:* | L6 - Located north of the Project site along Indian Street near an existing residential home. | *Analyst:* | A. Wolfe | 61.5 | 62.5 | 68.8 |
| | | *Date:* | 3/9-3/10/2015 | | | |

***Hourly Leq dBA Readings (unadjusted)***




| *Time Period* | *Hour* | *Leq* | *Lmax* | *Lmin* | *L1%* | *L2%* | *L5%* | *L8%* | *L25%* | *L50%* | *L90%* | *L95%* | *L99%* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day | Min | 56.5 | 73.2 | 34.9 | 67.0 | 65.5 | 63.0 | 62.0 | 54.5 | 45.5 | 38.0 | 37.0 | 35.5 |
| | Max | 67.1 | 93.9 | 46.2 | 75.5 | 72.5 | 70.0 | 68.5 | 64.0 | 57.0 | 49.0 | 48.5 | 47.0 |
| Energy Average | | 61.5 | 86.1 | 42.3 | 71.0 | 69.1 | 66.8 | 65.5 | 59.7 | 53.0 | 45.9 | 45.0 | 43.6 |
| Night | Min | 51.8 | 73.8 | 40.6 | 64.0 | 60.5 | 55.0 | 52.0 | 47.0 | 45.5 | 42.5 | 42.0 | 41.0 |
| | Max | 67.6 | 89.2 | 51.8 | 78.0 | 75.5 | 72.5 | 71.5 | 68.0 | 62.5 | 54.0 | 53.5 | 52.5 |
| Energy Average | | 62.5 | 83.2 | 47.4 | 72.8 | 71.1 | 68.3 | 66.6 | 61.2 | 55.3 | 49.5 | 48.9 | 48.2 |
| ***Hourly Summary*** | | | | | | | | | | | | | |
| Night | 0 | 53.2 | 73.8 | 42.4 | 66.0 | 63.5 | 57.0 | 54.0 | 48.5 | 46.5 | 44.0 | 43.5 | 43.0 |
| | 1 | 51.8 | 74.5 | 40.6 | 64.0 | 60.5 | 55.0 | 52.0 | 47.0 | 45.5 | 42.5 | 42.0 | 41.0 |
| | 2 | 55.9 | 76.8 | 43.1 | 69.5 | 66.5 | 60.0 | 56.0 | 50.0 | 47.5 | 45.5 | 45.0 | 44.5 |
| | 3 | 59.8 | 80.5 | 45.3 | 71.5 | 70.0 | 66.5 | 64.5 | 55.0 | 51.5 | 47.0 | 46.5 | 46.0 |
| | 4 | 62.7 | 86.0 | 47.8 | 74.0 | 72.0 | 69.0 | 66.5 | 58.0 | 53.5 | 50.5 | 49.5 | 49.0 |
| | 5 | 66.4 | 89.2 | 49.9 | 78.0 | 75.5 | 72.0 | 70.0 | 63.0 | 56.5 | 51.5 | 51.0 | 50.5 |
| | 6 | 67.6 | 85.2 | 51.8 | 75.5 | 74.5 | 72.5 | 71.5 | 68.0 | 62.5 | 54.0 | 53.5 | 52.5 |
| | 7 | 64.4 | 82.4 | 50.2 | 73.0 | 72.0 | 70.5 | 69.5 | 65.0 | 57.0 | 52.5 | 52.0 | 51.0 |
| Day | 8 | 60.5 | 80.7 | 43.7 | 71.0 | 69.5 | 67.0 | 65.5 | 57.5 | 51.5 | 47.0 | 46.0 | 45.0 |
| | 9 | 57.8 | 78.4 | 40.5 | 68.0 | 67.0 | 65.0 | 63.0 | 54.5 | 47.5 | 44.0 | 43.5 | 42.5 |
| | 10 | 58.1 | 78.2 | 35.3 | 69.0 | 67.5 | 64.5 | 62.5 | 55.5 | 47.5 | 39.5 | 38.0 | 36.0 |
| | 11 | 57.7 | 82.3 | 34.9 | 68.0 | 66.5 | 64.0 | 62.5 | 55.0 | 45.5 | 38.0 | 37.0 | 35.5 |
| | 12 | 56.5 | 73.2 | 35.5 | 67.0 | 65.5 | 63.0 | 62.0 | 55.0 | 46.0 | 38.5 | 37.5 | 36.0 |
| | 13 | 58.4 | 74.0 | 35.0 | 68.0 | 66.5 | 64.5 | 63.5 | 59.0 | 51.5 | 39.5 | 37.5 | 35.5 |
| | 14 | 60.2 | 78.9 | 36.4 | 70.0 | 67.5 | 65.5 | 64.5 | 60.0 | 54.0 | 42.5 | 40.5 | 38.0 |
| | 15 | 61.3 | 81.8 | 42.3 | 71.0 | 69.0 | 67.0 | 65.5 | 60.5 | 53.5 | 45.5 | 44.5 | 43.0 |
| | 16 | 62.5 | 80.7 | 43.1 | 72.0 | 70.0 | 68.5 | 67.0 | 63.0 | 56.0 | 47.0 | 45.5 | 44.0 |
| | 17 | 67.1 | 93.9 | 43.7 | 75.5 | 72.5 | 70.0 | 68.5 | 64.0 | 57.0 | 47.5 | 46.5 | 45.0 |
| | 18 | 63.6 | 90.7 | 43.9 | 72.5 | 70.5 | 68.5 | 67.5 | 62.0 | 55.0 | 48.5 | 47.5 | 46.0 |
| | 19 | 62.8 | 90.7 | 44.7 | 72.0 | 70.5 | 68.0 | 66.5 | 59.5 | 53.5 | 48.0 | 47.0 | 46.0 |
| | 20 | 60.0 | 75.5 | 44.3 | 70.5 | 69.0 | 66.5 | 65.5 | 58.0 | 52.5 | 48.0 | 47.5 | 46.5 |
| | 21 | 61.1 | 76.4 | 46.2 | 71.0 | 69.5 | 67.5 | 66.5 | 59.0 | 54.0 | 49.0 | 48.5 | 47.0 |
| Night | 22 | 60.7 | 79.7 | 43.8 | 71.0 | 70.5 | 68.5 | 66.0 | 57.5 | 50.0 | 46.0 | 45.0 | 44.5 |
| | 23 | 55.4 | 77.1 | 43.5 | 67.5 | 65.0 | 60.5 | 57.0 | 51.0 | 48.5 | 46.0 | 45.5 | 45.0 |

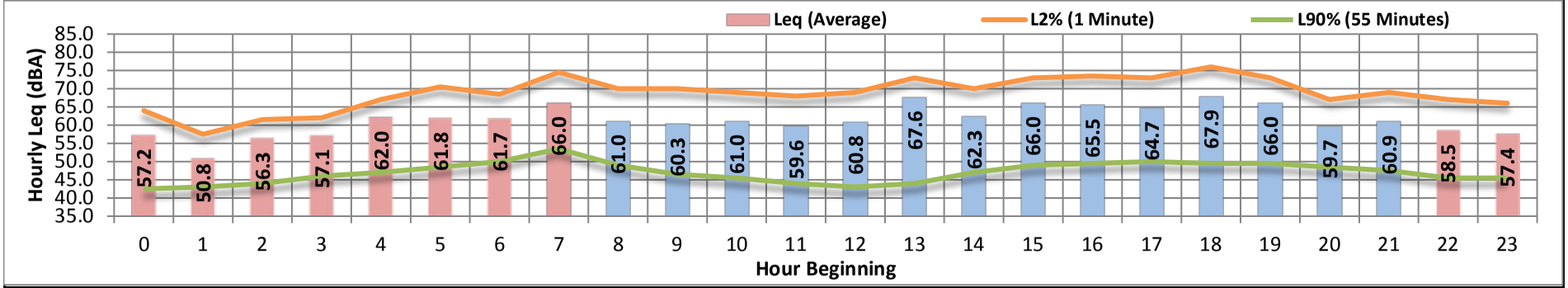


URBAN CROSSROADS

# 24-Hour Noise Level Measurement Summary

| | | | | Energy Average Leq | | 24-Hour |
|---|---|---|---|---|---|---|
| *Project Name:* | Moreno Valley Logistics | *JN:* | 9303 | *Day* | *Night* | *CNEL* |
| *Location:* | L7 - Located along Indian Street south of Krameria Avenue near existing residential homes and northeast of the Project site. | *Analyst:* | A. Wolfe | 64.1 | 60.6 | 67.2 |
| | | *Date:* | 3/9-3/10/2015 | | | |

***Hourly Leq dBA Readings (unadjusted)***




| *Time Period* | *Hour* | *Leq* | *Lmax* | *Lmin* | *L1%* | *L2%* | *L5%* | *L8%* | *L25%* | *L50%* | *L90%* | *L95%* | *L99%* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day | Min | 59.6 | 82.1 | 37.6 | 70.0 | 67.0 | 64.0 | 62.0 | 54.5 | 50.5 | 43.0 | 41.0 | 39.0 |
| | Max | 67.9 | 97.7 | 47.2 | 81.0 | 76.0 | 70.0 | 67.0 | 61.0 | 56.5 | 50.0 | 48.5 | 47.5 |
| Energy Average | | 64.1 | 90.4 | 44.0 | 75.4 | 71.7 | 66.7 | 64.6 | 58.8 | 54.2 | 47.9 | 46.7 | 45.0 |
| Night | Min | 50.8 | 75.3 | 40.6 | 61.5 | 57.5 | 53.5 | 51.5 | 46.5 | 45.0 | 42.5 | 42.0 | 41.5 |
| | Max | 66.0 | 92.0 | 49.9 | 77.0 | 74.5 | 69.5 | 67.5 | 63.5 | 60.0 | 53.5 | 52.0 | 50.5 |
| Energy Average | | 60.6 | 86.2 | 45.3 | 71.3 | 68.2 | 63.4 | 61.2 | 56.3 | 52.8 | 47.9 | 47.0 | 46.1 |
| ***Hourly Summary*** | | | | | | | | | | | | | |
| Night | 0 | 57.2 | 84.1 | 40.6 | 67.0 | 64.0 | 59.0 | 56.0 | 49.5 | 46.5 | 42.5 | 42.0 | 41.5 |
| | 1 | 50.8 | 75.3 | 41.5 | 61.5 | 57.5 | 53.5 | 51.5 | 46.5 | 45.0 | 43.0 | 42.5 | 42.0 |
| | 2 | 56.3 | 83.0 | 42.7 | 66.5 | 61.5 | 56.5 | 54.5 | 48.5 | 46.5 | 44.0 | 44.0 | 43.5 |
| | 3 | 57.1 | 85.7 | 44.4 | 65.0 | 62.0 | 57.5 | 55.5 | 51.5 | 49.5 | 46.0 | 45.5 | 45.0 |
| | 4 | 62.0 | 92.0 | 45.3 | 69.5 | 67.0 | 62.5 | 60.0 | 54.0 | 50.0 | 47.0 | 46.5 | 46.0 |
| | 5 | 61.8 | 85.2 | 45.3 | 74.0 | 70.5 | 65.0 | 62.0 | 56.0 | 52.5 | 48.5 | 47.5 | 46.0 |
| | 6 | 61.7 | 86.9 | 47.7 | 73.0 | 68.5 | 64.5 | 63.0 | 57.0 | 54.0 | 50.0 | 49.5 | 49.0 |
| | 7 | 66.0 | 87.5 | 49.9 | 77.0 | 74.5 | 69.5 | 67.5 | 63.5 | 60.0 | 53.5 | 52.0 | 50.5 |
| Day | 8 | 61.0 | 83.0 | 44.8 | 72.5 | 70.0 | 65.5 | 63.5 | 57.5 | 53.5 | 49.0 | 48.5 | 46.0 |
| | 9 | 60.3 | 82.8 | 43.6 | 73.0 | 70.0 | 64.5 | 62.0 | 54.5 | 50.5 | 46.5 | 45.5 | 44.5 |
| | 10 | 61.0 | 87.1 | 39.3 | 72.5 | 69.0 | 65.0 | 63.0 | 57.0 | 52.0 | 45.5 | 44.0 | 41.0 |
| | 11 | 59.6 | 82.4 | 39.4 | 70.0 | 68.0 | 64.5 | 63.0 | 58.0 | 52.5 | 44.0 | 42.5 | 40.5 |
| | 12 | 60.8 | 84.5 | 37.6 | 71.5 | 69.0 | 65.0 | 63.5 | 57.5 | 52.0 | 43.0 | 41.0 | 39.0 |
| | 13 | 67.6 | 97.7 | 40.5 | 77.0 | 73.0 | 66.5 | 64.0 | 58.0 | 52.5 | 44.0 | 43.0 | 41.5 |
| | 14 | 62.3 | 86.0 | 40.6 | 74.0 | 70.0 | 65.5 | 63.0 | 58.0 | 53.5 | 47.0 | 46.0 | 44.0 |
| | 15 | 66.0 | 93.1 | 44.0 | 76.5 | 73.0 | 68.0 | 65.5 | 60.0 | 55.5 | 49.0 | 47.5 | 45.5 |
| | 16 | 65.5 | 89.4 | 45.8 | 77.0 | 73.5 | 69.0 | 67.0 | 60.5 | 56.0 | 49.5 | 48.5 | 46.5 |
| | 17 | 64.7 | 86.5 | 45.4 | 76.5 | 73.0 | 68.5 | 66.5 | 61.0 | 56.5 | 50.0 | 48.5 | 46.5 |
| | 18 | 67.9 | 91.7 | 45.7 | 81.0 | 76.0 | 70.0 | 67.0 | 61.0 | 56.5 | 49.5 | 48.0 | 46.5 |
| | 19 | 66.0 | 93.8 | 47.2 | 76.0 | 73.0 | 67.5 | 65.5 | 60.5 | 56.0 | 49.5 | 48.5 | 47.5 |
| | 20 | 59.7 | 82.1 | 46.1 | 70.5 | 67.0 | 64.0 | 62.5 | 57.0 | 53.5 | 48.5 | 48.0 | 47.0 |
| | 21 | 60.9 | 83.2 | 44.1 | 72.5 | 69.0 | 65.0 | 63.0 | 56.5 | 52.0 | 47.5 | 46.5 | 45.0 |
| Night | 22 | 58.5 | 83.6 | 43.5 | 69.5 | 67.0 | 62.5 | 60.5 | 55.0 | 50.5 | 45.5 | 45.0 | 44.0 |
| | 23 | 57.4 | 80.9 | 43.2 | 69.0 | 66.0 | 61.5 | 59.0 | 53.0 | 48.5 | 45.5 | 45.0 | 44.5 |

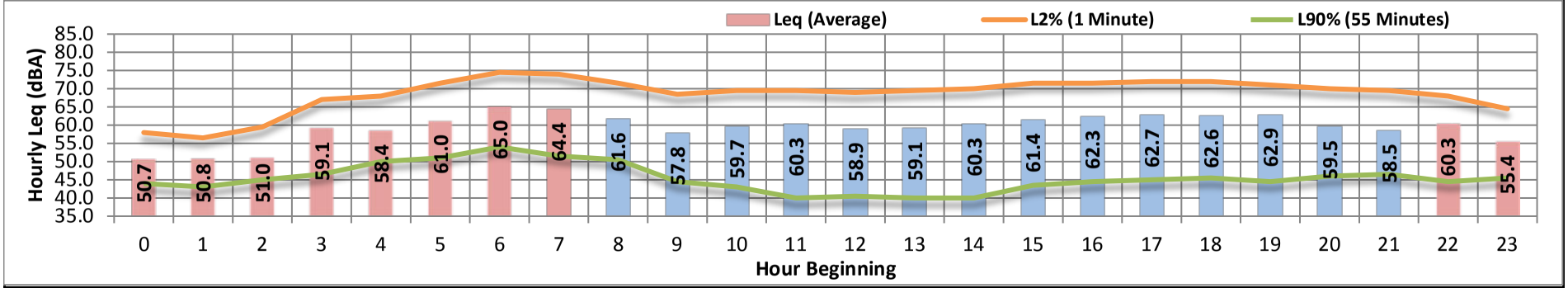


URBAN CROSSROADS

# 24-Hour Noise Level Measurement Summary

| | | | | Energy Average Leq | | 24-Hour |
|---|---|---|---|---|---|---|
| *Project Name:* | Moreno Valley Logistics | *JN:* | 9303 | *Day* | *Night* | *CNEL* |
| *Location:* | L8 - Located east of the Project site along Indian Street near existing residential homes. | *Analyst:* | A. Wolfe | 60.8 | 60.2 | 66.4 |
| | | *Date:* | 3/9-3/10/2015 | | | |

***Hourly Leq dBA Readings (unadjusted)***




| *Time Period* | *Hour* | *Leq* | *Lmax* | *Lmin* | *L1%* | *L2%* | *L5%* | *L8%* | *L25%* | *L50%* | *L90%* | *L95%* | *L99%* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day | Min | 57.8 | 77.4 | 37.6 | 70.5 | 68.5 | 64.0 | 60.0 | 50.0 | 45.0 | 40.0 | 39.0 | 39.0 |
| | Max | 62.9 | 92.0 | 47.7 | 73.5 | 72.0 | 69.5 | 68.0 | 60.5 | 53.0 | 50.5 | 49.5 | 48.5 |
| Energy Average | | 60.8 | 84.9 | 42.6 | 72.3 | 70.5 | 67.3 | 65.0 | 55.8 | 49.1 | 44.9 | 44.1 | 43.3 |
| Night | Min | 50.7 | 72.3 | 41.6 | 61.5 | 56.5 | 50.5 | 48.0 | 45.5 | 44.5 | 43.0 | 42.5 | 42.0 |
| | Max | 65.0 | 86.9 | 50.6 | 76.0 | 74.5 | 71.5 | 69.5 | 61.5 | 57.5 | 54.0 | 53.5 | 52.0 |
| Energy Average | | 60.2 | 82.7 | 46.9 | 71.9 | 69.5 | 65.8 | 63.4 | 55.9 | 52.0 | 49.0 | 48.6 | 47.7 |
| ***Hourly Summary*** | | | | | | | | | | | | | |
| Night | 0 | 50.7 | 72.3 | 42.9 | 62.5 | 58.0 | 51.5 | 50.0 | 47.5 | 46.0 | 44.0 | 44.0 | 43.5 |
| | 1 | 50.8 | 76.2 | 41.6 | 62.5 | 56.5 | 50.5 | 48.0 | 45.5 | 44.5 | 43.0 | 42.5 | 42.0 |
| | 2 | 51.0 | 73.7 | 43.3 | 61.5 | 59.5 | 53.0 | 51.5 | 49.0 | 47.5 | 45.0 | 44.5 | 44.0 |
| | 3 | 59.1 | 86.6 | 44.6 | 71.0 | 67.0 | 59.5 | 55.0 | 50.5 | 49.0 | 46.5 | 46.0 | 45.0 |
| | 4 | 58.4 | 79.1 | 48.0 | 71.5 | 68.0 | 62.0 | 57.5 | 53.0 | 51.5 | 50.0 | 49.5 | 48.5 |
| | 5 | 61.0 | 79.9 | 49.4 | 74.0 | 71.5 | 67.5 | 63.0 | 55.0 | 53.0 | 51.0 | 50.5 | 50.0 |
| | 6 | 65.0 | 86.9 | 50.6 | 75.5 | 74.5 | 71.5 | 69.5 | 61.5 | 57.5 | 54.0 | 53.5 | 52.0 |
| | 7 | 64.4 | 82.2 | 50.0 | 76.0 | 74.0 | 71.0 | 69.0 | 61.5 | 55.5 | 51.5 | 51.0 | 50.5 |
| Day | 8 | 61.6 | 84.7 | 47.7 | 73.5 | 71.5 | 67.5 | 65.0 | 56.0 | 53.0 | 50.5 | 49.5 | 48.5 |
| | 9 | 57.8 | 78.8 | 42.9 | 71.0 | 68.5 | 64.0 | 60.0 | 50.0 | 47.0 | 44.5 | 44.5 | 43.5 |
| | 10 | 59.7 | 80.2 | 40.5 | 72.0 | 69.5 | 66.0 | 63.5 | 53.5 | 47.5 | 43.0 | 42.0 | 41.5 |
| | 11 | 60.3 | 86.2 | 38.5 | 71.0 | 69.5 | 66.5 | 63.5 | 52.0 | 45.0 | 40.0 | 39.0 | 39.0 |
| | 12 | 58.9 | 80.8 | 37.6 | 70.5 | 69.0 | 65.5 | 63.0 | 52.5 | 47.0 | 40.5 | 39.5 | 39.0 |
| | 13 | 59.1 | 77.4 | 37.8 | 71.0 | 69.5 | 66.5 | 64.0 | 53.5 | 46.0 | 40.0 | 39.5 | 39.0 |
| | 14 | 60.3 | 85.8 | 37.6 | 72.0 | 70.0 | 67.0 | 65.0 | 55.0 | 45.5 | 40.0 | 39.5 | 39.0 |
| | 15 | 61.4 | 81.8 | 41.1 | 73.0 | 71.5 | 68.5 | 66.5 | 56.5 | 48.0 | 43.5 | 43.0 | 42.0 |
| | 16 | 62.3 | 86.2 | 41.8 | 73.0 | 71.5 | 69.0 | 67.0 | 59.0 | 49.5 | 44.5 | 44.0 | 43.0 |
| | 17 | 62.7 | 86.6 | 42.8 | 73.5 | 72.0 | 69.5 | 67.5 | 59.0 | 50.5 | 45.0 | 44.0 | 43.0 |
| | 18 | 62.6 | 79.1 | 43.3 | 73.5 | 72.0 | 69.5 | 68.0 | 60.5 | 52.5 | 45.5 | 44.5 | 43.5 |
| | 19 | 62.9 | 92.0 | 42.4 | 73.0 | 71.0 | 67.5 | 64.5 | 54.5 | 48.0 | 44.5 | 44.0 | 43.0 |
| | 20 | 59.5 | 79.2 | 44.2 | 72.0 | 70.0 | 66.5 | 63.1 | 53.0 | 49.5 | 46.0 | 45.5 | 45.0 |
| | 21 | 58.5 | 77.7 | 44.1 | 71.5 | 69.5 | 65.0 | 61.0 | 51.5 | 49.0 | 46.5 | 45.5 | 45.0 |
| Night | 22 | 60.3 | 86.3 | 42.3 | 71.5 | 68.0 | 63.5 | 62.0 | 53.5 | 47.5 | 44.5 | 44.0 | 43.0 |
| | 23 | 55.4 | 77.7 | 44.5 | 69.0 | 64.5 | 54.0 | 52.0 | 48.5 | 47.0 | 45.5 | 45.5 | 45.0 |



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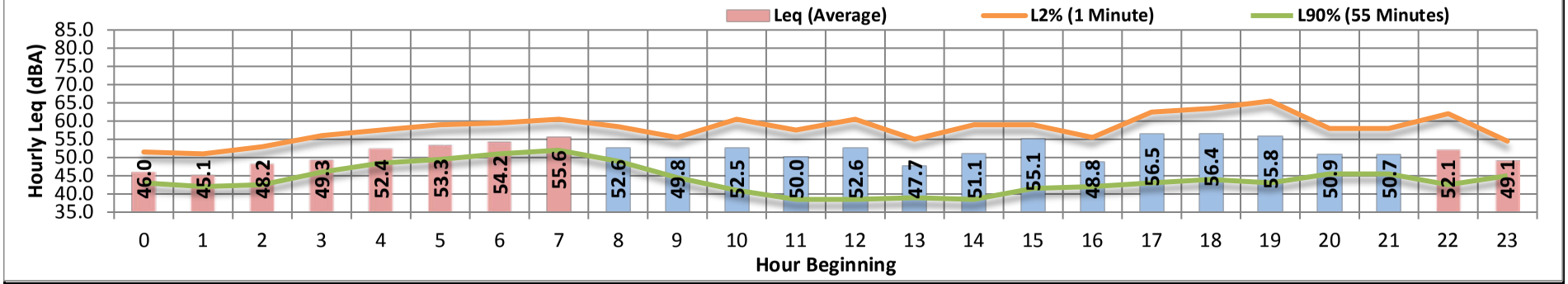
# 24-Hour Noise Level Measurement Summary

| | | | | Energy Average Leq | | 24-Hour |
|---|---|---|---|---|---|---|
| *Project Name:* | Moreno Valley Logistics | *JN:* | 9303 | *Day* | *Night* | *CNEL* |
| *Location:* | L9 - Located east of the Project site on Indian Street, south of Superior Avenue near existing residential homes. | *Analyst:* | A. Wolfe | 53.1 | 51.7 | 58.2 |
| | | *Date:* | 3/9-3/10/2015 | | | |

***Hourly Leq dBA Readings (unadjusted)***




| *Time Period* | *Hour* | *Leq* | *Lmax* | *Lmin* | *L1%* | *L2%* | *L5%* | *L8%* | *L25%* | *L50%* | *L90%* | *L95%* | *L99%* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Day | Min | 47.7 | 65.9 | 36.9 | 58.0 | 55.0 | 50.0 | 48.0 | 44.0 | 41.0 | 38.5 | 38.5 | 37.5 |
| | Max | 56.5 | 84.2 | 47.6 | 69.5 | 65.5 | 59.5 | 57.5 | 53.0 | 51.0 | 49.0 | 48.5 | 48.0 |
| Energy Average | | 53.1 | 77.8 | 41.7 | 63.9 | 60.3 | 55.7 | 54.1 | 49.6 | 46.5 | 43.5 | 42.9 | 42.2 |
| Night | Min | 45.1 | 58.6 | 40.8 | 53.0 | 51.0 | 47.5 | 46.5 | 44.5 | 43.5 | 42.0 | 42.0 | 41.5 |
| | Max | 55.6 | 75.3 | 49.5 | 62.5 | 62.0 | 60.0 | 57.5 | 55.5 | 54.0 | 52.0 | 51.0 | 50.0 |
| Energy Average | | 51.7 | 69.8 | 45.8 | 59.5 | 57.9 | 55.7 | 54.2 | 51.1 | 49.5 | 47.7 | 47.1 | 46.4 |
| ***Hourly Summary*** | | | | | | | | | | | | | |
| Night | 0 | 46.0 | 58.6 | 41.5 | 53.0 | 51.5 | 48.5 | 47.5 | 46.0 | 45.0 | 43.0 | 43.0 | 42.0 |
| | 1 | 45.1 | 59.2 | 40.9 | 53.5 | 51.0 | 47.5 | 46.5 | 44.5 | 43.5 | 42.0 | 42.0 | 41.5 |
| | 2 | 48.2 | 66.2 | 40.9 | 55.0 | 53.0 | 51.5 | 50.5 | 48.5 | 46.5 | 42.5 | 42.0 | 41.5 |
| | 3 | 49.3 | 63.5 | 43.7 | 57.5 | 56.0 | 53.0 | 51.5 | 49.0 | 47.5 | 46.0 | 45.0 | 44.0 |
| | 4 | 52.4 | 70.7 | 46.9 | 60.0 | 57.5 | 55.0 | 54.0 | 52.0 | 50.5 | 48.5 | 48.0 | 47.5 |
| | 5 | 53.3 | 75.3 | 48.0 | 61.0 | 59.0 | 56.5 | 55.0 | 52.5 | 51.0 | 49.5 | 49.0 | 48.5 |
| | 6 | 54.2 | 64.3 | 49.5 | 61.0 | 59.5 | 58.0 | 57.0 | 54.0 | 52.5 | 51.0 | 50.5 | 50.0 |
| | 7 | 55.6 | 72.7 | 49.1 | 62.5 | 60.5 | 58.5 | 57.5 | 55.5 | 54.0 | 52.0 | 51.0 | 50.0 |
| Day | 8 | 52.6 | 65.9 | 47.6 | 60.0 | 58.5 | 56.0 | 55.0 | 52.5 | 51.0 | 49.0 | 48.5 | 48.0 |
| | 9 | 49.8 | 71.0 | 42.9 | 58.0 | 55.5 | 53.0 | 51.5 | 49.0 | 47.0 | 44.5 | 44.0 | 43.5 |
| | 10 | 52.5 | 77.0 | 39.8 | 64.0 | 60.5 | 55.5 | 53.0 | 46.5 | 44.0 | 41.0 | 40.5 | 40.0 |
| | 11 | 50.0 | 77.0 | 37.0 | 61.0 | 57.5 | 50.0 | 48.0 | 44.0 | 41.0 | 38.5 | 38.5 | 38.0 |
| | 12 | 52.6 | 76.8 | 38.1 | 65.5 | 60.5 | 55.0 | 54.0 | 44.0 | 41.0 | 38.5 | 38.5 | 38.5 |
| | 13 | 47.7 | 69.5 | 36.9 | 59.0 | 55.0 | 51.5 | 49.5 | 46.0 | 42.0 | 39.0 | 38.5 | 38.5 |
| | 14 | 51.1 | 72.0 | 36.9 | 60.5 | 59.0 | 57.0 | 55.5 | 49.5 | 44.5 | 38.5 | 38.5 | 37.5 |
| | 15 | 55.1 | 83.9 | 39.9 | 65.5 | 59.0 | 52.5 | 50.5 | 46.5 | 44.0 | 41.5 | 41.0 | 40.5 |
| | 16 | 48.8 | 68.1 | 39.9 | 58.0 | 55.5 | 53.0 | 51.5 | 47.5 | 45.0 | 42.0 | 41.5 | 41.0 |
| | 17 | 56.5 | 78.4 | 40.8 | 66.5 | 62.5 | 58.5 | 57.5 | 53.0 | 48.0 | 43.0 | 42.5 | 41.5 |
| | 18 | 56.4 | 84.2 | 41.6 | 66.5 | 63.5 | 59.5 | 57.5 | 53.0 | 48.5 | 44.0 | 43.0 | 42.0 |
| | 19 | 55.8 | 77.3 | 40.9 | 69.5 | 65.5 | 57.5 | 55.0 | 49.0 | 45.0 | 43.0 | 42.5 | 41.5 |
| | 20 | 50.9 | 66.5 | 43.8 | 59.5 | 58.0 | 55.5 | 54.0 | 50.5 | 48.0 | 45.5 | 45.0 | 44.0 |
| | 21 | 50.7 | 67.8 | 42.1 | 59.5 | 58.0 | 55.5 | 54.0 | 50.0 | 48.0 | 45.5 | 44.0 | 42.5 |
| Night | 22 | 52.1 | 65.9 | 40.8 | 62.5 | 62.0 | 60.0 | 57.5 | 49.0 | 45.0 | 42.5 | 42.0 | 41.5 |
| | 23 | 49.1 | 72.0 | 43.7 | 56.5 | 54.5 | 52.0 | 50.5 | 47.5 | 46.5 | 45.0 | 44.5 | 44.0 |



URBAN CROSSROADS

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# APPENDIX 7.1:

# OFF-SITE TRAFFIC NOISE CONTOURS

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Existing Without Project
Road Name: Graham St.
Road Segment: n/o Cactus Av.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 6,000 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 600 | vehicles |
| Vehicle Speed: | 45 | mph |
| Near/Far Lane Distance: | 36 | feet |

*Site Data*

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

*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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | -4.53 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -18.89 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -15.60 | -4.51 | -1.20 | -5.16 | 0.000 | 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 | 55.7 | 51.3 | 52.9 | 59.7 | 59.8 |
| Medium Trucks: | 54.8 | 53.4 | 43.1 | 45.8 | 54.1 | 54.1 |
| Heavy Trucks: | 62.9 | 61.1 | 58.3 | 53.8 | 62.1 | 62.6 |
| Vehicle Noise: | 64.7 | 62.7 | 59.2 | 56.7 | 64.5 | 64.8 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 43 | 92 | 199 | 428 |
| CNEL: | 45 | 97 | 209 | 451 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Existing Without Project
Road Name: Graham St.
Road Segment: s/o Cactus Av.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 7,300 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 730 | vehicles |
| Vehicle Speed: | 45 | mph |
| Near/Far Lane Distance: | 36 | feet |

*Site Data*

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

*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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | -3.68 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -18.04 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -14.75 | -4.51 | -1.20 | -5.16 | 0.000 | 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 | 56.6 | 52.2 | 53.7 | 60.5 | 60.7 |
| Medium Trucks: | 55.7 | 54.3 | 44.0 | 46.6 | 54.9 | 55.0 |
| Heavy Trucks: | 63.8 | 62.0 | 59.2 | 54.6 | 63.0 | 63.4 |
| Vehicle Noise: | 65.5 | 63.6 | 60.1 | 57.6 | 65.3 | 65.7 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 49 | 105 | 227 | 488 |
| CNEL: | 51 | 111 | 239 | 514 |

Tuesday, November 17, 2015

**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Existing Without Project
Road Name: Heacock St.
Road Segment: n/o Cactus Av.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 14,600 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 1,460 | vehicles |
| Vehicle Speed: | 45 | mph |
| Near/Far Lane Distance: | 48 | feet |

*Site Data*

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

*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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | -0.67 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -15.03 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -11.74 | -4.43 | -1.20 | -5.16 | 0.000 | 0.000 |

*Unmitigated Noise Levels (without Topo and barrier attenuation)*

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 62.2 | 59.7 | 55.2 | 56.8 | 63.6 | 63.8 |
| Medium Trucks: | 58.8 | 57.4 | 47.1 | 49.7 | 58.0 | 58.1 |
| Heavy Trucks: | 66.9 | 65.0 | 62.3 | 57.7 | 66.0 | 66.5 |
| Vehicle Noise: | 68.6 | 66.7 | 63.2 | 60.7 | 68.4 | 68.8 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 79 | 169 | 365 | 785 |
| CNEL: | 83 | 178 | 384 | 827 |

Tuesday, November 17, 2015

**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Existing Without Project
Road Name: Heacock St.
Road Segment: s/o Cactus Av.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 24,800 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 2,480 | vehicles |
| Vehicle Speed: | 45 | mph |
| Near/Far Lane Distance: | 48 | feet |

*Site Data*

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

*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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | 1.64 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -12.73 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -9.44 | -4.43 | -1.20 | -5.16 | 0.000 | 0.000 |

*Unmitigated Noise Levels (without Topo and barrier attenuation)*

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 64.5 | 62.0 | 57.5 | 59.1 | 65.9 | 66.1 |
| Medium Trucks: | 61.1 | 59.7 | 49.4 | 52.0 | 60.3 | 60.4 |
| Heavy Trucks: | 69.2 | 67.4 | 64.6 | 60.0 | 68.4 | 68.8 |
| Vehicle Noise: | 70.9 | 69.0 | 65.5 | 63.0 | 70.7 | 71.1 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 112 | 241 | 519 | 1,118 |
| CNEL: | 118 | 254 | 547 | 1,178 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Heacock St.
Road Segment: s/o John F. Kennedy Dr.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 21,300 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 2,130 vehicles |
| Vehicle Speed: | 50 mph |
| Near/Far Lane Distance: | 48 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 0.52 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -13.84 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -10.56 | -4.43 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 65.1 | 62.6 | 58.2 | 59.7 | 66.5 | 66.7 |
| Medium Trucks: | 61.5 | 60.1 | 49.8 | 52.4 | 60.7 | 60.8 |
| Heavy Trucks: | 69.2 | 67.4 | 64.6 | 60.0 | 68.4 | 68.8 |
| Vehicle Noise: | 71.1 | 69.2 | 65.6 | 63.3 | 71.0 | 71.3 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 116 | 251 | 540 | 1,164 |
| CNEL: | 122 | 264 | 568 | 1,224 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Heacock St.
Road Segment: s/o Gentian Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 17,100 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 1,710 vehicles |
| Vehicle Speed: | 50 mph |
| Near/Far Lane Distance: | 24 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | -0.44 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -14.80 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -11.51 | -4.57 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 64.0 | 61.5 | 57.1 | 58.6 | 65.4 | 65.6 |
| Medium Trucks: | 60.4 | 59.0 | 48.7 | 51.3 | 59.6 | 59.7 |
| Heavy Trucks: | 68.1 | 66.3 | 63.5 | 58.9 | 67.3 | 67.7 |
| Vehicle Noise: | 70.0 | 68.1 | 64.5 | 62.2 | 69.9 | 70.2 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 98 | 212 | 456 | 983 |
| CNEL: | 103 | 223 | 480 | 1,034 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Heacock St.
Road Segment: s/o Iris Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 9,100 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 910 vehicles |
| Vehicle Speed: | 50 mph |
| Near/Far Lane Distance: | 24 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | -3.18 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -17.54 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -14.25 | -4.57 | -1.20 | -5.16 | 0.000 | 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 | 58.8 | 54.3 | 55.9 | 62.7 | 62.9 |
| Medium Trucks: | 57.7 | 56.3 | 46.0 | 48.6 | 56.9 | 57.0 |
| Heavy Trucks: | 65.4 | 63.5 | 60.8 | 56.2 | 64.5 | 65.0 |
| Vehicle Noise: | 67.3 | 65.3 | 61.8 | 59.4 | 67.1 | 67.5 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 65 | 139 | 300 | 646 |
| CNEL: | 68 | 146 | 315 | 679 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Heacock St.
Road Segment: s/o Krameria Av. (North)
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 8,500 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 850 vehicles |
| Vehicle Speed: | 50 mph |
| Near/Far Lane Distance: | 24 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | -3.47 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -17.83 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -14.55 | -4.57 | -1.20 | -5.16 | 0.000 | 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 | 58.5 | 54.0 | 55.6 | 62.4 | 62.6 |
| Medium Trucks: | 57.4 | 56.0 | 45.7 | 48.3 | 56.6 | 56.7 |
| Heavy Trucks: | 65.1 | 63.2 | 60.5 | 55.9 | 64.2 | 64.7 |
| Vehicle Noise: | 67.0 | 65.1 | 61.5 | 59.1 | 66.9 | 67.2 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 62 | 133 | 286 | 617 |
| CNEL: | 65 | 140 | 301 | 649 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

*Scenario:* Existing Without Project
*Road Name:* Heacock St.
*Road Segment:* n/o Cardinal Av.
*Project Name:* MV Logistics Center
*Job Number:* 9303

**SITE SPECIFIC INPUT DATA**

***Highway Data***

| | | |
|---|---|---|
| *Average Daily Traffic (Adt):* | 8,900 | vehicles |
| *Peak Hour Percentage:* | 10% | |
| *Peak Hour Volume:* | 890 | vehicles |
| *Vehicle Speed:* | 40 | mph |
| *Near/Far Lane Distance:* | 48 | feet |

***Site Data***

| | | |
|---|---|---|
| ***Barrier Height:*** | **0.0** | **feet** |
| *Barrier Type (0-Wall, 1-Berm):* | 0.0 | |
| *Centerline Dist. to Barrier:* | 100.0 | feet |
| *Centerline Dist. to Observer:* | 100.0 | feet |
| *Barrier Distance to Observer:* | 0.0 | feet |
| *Observer Height (Above Pad):* | 5.0 | feet |
| *Pad Elevation:* | 0.0 | feet |
| *Road Elevation:* | 0.0 | feet |
| *Road Grade:* | 0.0% | |
| *Left View:* | -90.0 | degrees |
| *Right View:* | 90.0 | degrees |

**NOISE MODEL INPUTS**

***Site Conditions (Hard = 10, Soft = 15)***

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

***Vehicle Mix***

| *VehicleType* | *Day* | *Evening* | *Night* | *Daily* |
|---|---|---|---|---|
| *Autos:* | 67.7% | 6.1% | 26.2% | 89.71% |
| *Medium Trucks:* | 86.9% | 2.0% | 11.1% | 3.29% |
| *Heavy Trucks:* | 78.7% | 10.4% | 10.9% | 7.00% |

***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:* | 97.206 |
| *Medium Trucks:* | 97.115 |
| *Heavy Trucks:* | 97.124 |

***FHWA Noise Model Calculations***

| *VehicleType* | *REMEL* | *Traffic Flow* | *Distance* | *Finite Road* | *Fresnel* | *Barrier Atten* | *Berm Atten* |
|---|---|---|---|---|---|---|---|
| *Autos:* | 66.51 | -2.30 | -4.43 | -1.20 | *-4.77* | 0.000 | 0.000 |
| *Medium Trucks:* | 77.72 | -16.67 | -4.43 | -1.20 | *-4.88* | 0.000 | 0.000 |
| *Heavy Trucks:* | 82.99 | -13.38 | -4.43 | -1.20 | *-5.16* | 0.000 | 0.000 |

***Unmitigated Noise Levels (without Topo and barrier attenuation)***

| *VehicleType* | *Leq Peak Hour* | *Leq Day* | *Leq Evening* | *Leq Night* | *Ldn* | *CNEL* |
|---|---|---|---|---|---|---|
| *Autos:* | 58.6 | 56.1 | 51.7 | 53.2 | 60.0 | 60.2 |
| *Medium Trucks:* | 55.4 | 54.0 | 43.7 | 46.3 | 54.6 | 54.7 |
| *Heavy Trucks:* | 64.0 | 62.2 | 59.4 | 54.8 | 63.2 | 63.6 |
| *Vehicle Noise:* | 65.5 | 63.6 | 60.2 | 57.5 | 65.3 | 65.6 |

***Centerline Distance to Noise Contour (in feet)***

| | *70 dBA* | *65 dBA* | *60 dBA* | *55 dBA* |
|---|---|---|---|---|
| *Ldn:* | 48 | 104 | 225 | 484 |
| *CNEL:* | 51 | 110 | 237 | 510 |

Tuesday, November 17, 2015

**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

*Scenario:* Existing Without Project
*Road Name:* Heacock St.
*Road Segment:* s/o Cardinal Av.
*Project Name:* MV Logistics Center
*Job Number:* 9303

**SITE SPECIFIC INPUT DATA**

***Highway Data***

| | | |
|---|---|---|
| *Average Daily Traffic (Adt):* | 7,400 | vehicles |
| *Peak Hour Percentage:* | 10% | |
| *Peak Hour Volume:* | 740 | vehicles |
| *Vehicle Speed:* | 40 | mph |
| *Near/Far Lane Distance:* | 48 | feet |

***Site Data***

| | | |
|---|---|---|
| ***Barrier Height:*** | **0.0** | **feet** |
| *Barrier Type (0-Wall, 1-Berm):* | 0.0 | |
| *Centerline Dist. to Barrier:* | 100.0 | feet |
| *Centerline Dist. to Observer:* | 100.0 | feet |
| *Barrier Distance to Observer:* | 0.0 | feet |
| *Observer Height (Above Pad):* | 5.0 | feet |
| *Pad Elevation:* | 0.0 | feet |
| *Road Elevation:* | 0.0 | feet |
| *Road Grade:* | 0.0% | |
| *Left View:* | -90.0 | degrees |
| *Right View:* | 90.0 | degrees |

**NOISE MODEL INPUTS**

***Site Conditions (Hard = 10, Soft = 15)***

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

***Vehicle Mix***

| *VehicleType* | *Day* | *Evening* | *Night* | *Daily* |
|---|---|---|---|---|
| *Autos:* | 67.7% | 6.1% | 26.2% | 89.71% |
| *Medium Trucks:* | 86.9% | 2.0% | 11.1% | 3.29% |
| *Heavy Trucks:* | 78.7% | 10.4% | 10.9% | 7.00% |

***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:* | 97.206 |
| *Medium Trucks:* | 97.115 |
| *Heavy Trucks:* | 97.124 |

***FHWA Noise Model Calculations***

| *VehicleType* | *REMEL* | *Traffic Flow* | *Distance* | *Finite Road* | *Fresnel* | *Barrier Atten* | *Berm Atten* |
|---|---|---|---|---|---|---|---|
| *Autos:* | 66.51 | -3.11 | -4.43 | -1.20 | *-4.77* | 0.000 | 0.000 |
| *Medium Trucks:* | 77.72 | -17.47 | -4.43 | -1.20 | *-4.88* | 0.000 | 0.000 |
| *Heavy Trucks:* | 82.99 | -14.18 | -4.43 | -1.20 | *-5.16* | 0.000 | 0.000 |

***Unmitigated Noise Levels (without Topo and barrier attenuation)***

| *VehicleType* | *Leq Peak Hour* | *Leq Day* | *Leq Evening* | *Leq Night* | *Ldn* | *CNEL* |
|---|---|---|---|---|---|---|
| *Autos:* | 57.8 | 55.3 | 50.9 | 52.4 | 59.2 | 59.4 |
| *Medium Trucks:* | 54.6 | 53.2 | 42.9 | 45.5 | 53.8 | 53.9 |
| *Heavy Trucks:* | 63.2 | 61.4 | 58.6 | 54.0 | 62.4 | 62.8 |
| *Vehicle Noise:* | 64.7 | 62.8 | 59.4 | 56.7 | 64.5 | 64.8 |

***Centerline Distance to Noise Contour (in feet)***

| | *70 dBA* | *65 dBA* | *60 dBA* | *55 dBA* |
|---|---|---|---|---|
| *Ldn:* | 43 | 92 | 199 | 428 |
| *CNEL:* | 45 | 97 | 209 | 451 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

*Scenario:* Existing Without Project
*Road Name:* Heacock St.
*Road Segment:* s/o San Michele Rd.
*Project Name:* MV Logistics Center
*Job Number:* 9303

**SITE SPECIFIC INPUT DATA**

***Highway Data***

| | | |
|---|---|---|
| *Average Daily Traffic (Adt):* | 3,400 | vehicles |
| *Peak Hour Percentage:* | 10% | |
| *Peak Hour Volume:* | 340 | vehicles |
| *Vehicle Speed:* | 50 | mph |
| *Near/Far Lane Distance:* | 24 | feet |

***Site Data***

| | | |
|---|---|---|
| ***Barrier Height:*** | **0.0** | **feet** |
| *Barrier Type (0-Wall, 1-Berm):* | 0.0 | |
| *Centerline Dist. to Barrier:* | 100.0 | feet |
| *Centerline Dist. to Observer:* | 100.0 | feet |
| *Barrier Distance to Observer:* | 0.0 | feet |
| *Observer Height (Above Pad):* | 5.0 | feet |
| *Pad Elevation:* | 0.0 | feet |
| *Road Elevation:* | 0.0 | feet |
| *Road Grade:* | 0.0% | |
| *Left View:* | -90.0 | degrees |
| *Right View:* | 90.0 | degrees |

**NOISE MODEL INPUTS**

***Site Conditions (Hard = 10, Soft = 15)***

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

***Vehicle Mix***

| *VehicleType* | *Day* | *Evening* | *Night* | *Daily* |
|---|---|---|---|---|
| *Autos:* | 67.7% | 6.1% | 26.2% | 89.71% |
| *Medium Trucks:* | 86.9% | 2.0% | 11.1% | 3.29% |
| *Heavy Trucks:* | 78.7% | 10.4% | 10.9% | 7.00% |

***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:* | 99.403 |
| *Medium Trucks:* | 99.314 |
| *Heavy Trucks:* | 99.323 |

***FHWA Noise Model Calculations***

| *VehicleType* | *REMEL* | *Traffic Flow* | *Distance* | *Finite Road* | *Fresnel* | *Barrier Atten* | *Berm Atten* |
|---|---|---|---|---|---|---|---|
| *Autos:* | 70.20 | -7.45 | -4.58 | -1.20 | *-4.77* | 0.000 | 0.000 |
| *Medium Trucks:* | 81.00 | -21.81 | -4.57 | -1.20 | *-4.88* | 0.000 | 0.000 |
| *Heavy Trucks:* | 85.38 | -18.53 | -4.57 | -1.20 | *-5.16* | 0.000 | 0.000 |

***Unmitigated Noise Levels (without Topo and barrier attenuation)***

| *VehicleType* | *Leq Peak Hour* | *Leq Day* | *Leq Evening* | *Leq Night* | *Ldn* | *CNEL* |
|---|---|---|---|---|---|---|
| *Autos:* | 57.0 | 54.5 | 50.1 | 51.6 | 58.4 | 58.6 |
| *Medium Trucks:* | 53.4 | 52.0 | 41.7 | 44.3 | 52.6 | 52.7 |
| *Heavy Trucks:* | 61.1 | 59.2 | 56.5 | 51.9 | 60.2 | 60.7 |
| *Vehicle Noise:* | 63.0 | 61.1 | 57.5 | 55.2 | 62.9 | 63.2 |

***Centerline Distance to Noise Contour (in feet)***

| | *70 dBA* | *65 dBA* | *60 dBA* | *55 dBA* |
|---|---|---|---|---|
| *Ldn:* | 33 | 72 | 155 | 335 |
| *CNEL:* | 35 | 76 | 163 | 352 |

Tuesday, November 17, 2015

**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

*Scenario:* Existing Without Project
*Road Name:* Heacock St.
*Road Segment:* s/o Nandina Av.
*Project Name:* MV Logistics Center
*Job Number:* 9303

**SITE SPECIFIC INPUT DATA**

***Highway Data***

| | | |
|---|---|---|
| *Average Daily Traffic (Adt):* | 200 | vehicles |
| *Peak Hour Percentage:* | 10% | |
| *Peak Hour Volume:* | 20 | vehicles |
| *Vehicle Speed:* | 25 | mph |
| *Near/Far Lane Distance:* | 24 | feet |

***Site Data***

| | | |
|---|---|---|
| ***Barrier Height:*** | **0.0** | **feet** |
| *Barrier Type (0-Wall, 1-Berm):* | 0.0 | |
| *Centerline Dist. to Barrier:* | 100.0 | feet |
| *Centerline Dist. to Observer:* | 100.0 | feet |
| *Barrier Distance to Observer:* | 0.0 | feet |
| *Observer Height (Above Pad):* | 5.0 | feet |
| *Pad Elevation:* | 0.0 | feet |
| *Road Elevation:* | 0.0 | feet |
| *Road Grade:* | 0.0% | |
| *Left View:* | -90.0 | degrees |
| *Right View:* | 90.0 | degrees |

**NOISE MODEL INPUTS**

***Site Conditions (Hard = 10, Soft = 15)***

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

***Vehicle Mix***

| *VehicleType* | *Day* | *Evening* | *Night* | *Daily* |
|---|---|---|---|---|
| *Autos:* | 67.7% | 6.1% | 26.2% | 89.71% |
| *Medium Trucks:* | 86.9% | 2.0% | 11.1% | 3.29% |
| *Heavy Trucks:* | 78.7% | 10.4% | 10.9% | 7.00% |

***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:* | 99.403 |
| *Medium Trucks:* | 99.314 |
| *Heavy Trucks:* | 99.323 |

***FHWA Noise Model Calculations***

| *VehicleType* | *REMEL* | *Traffic Flow* | *Distance* | *Finite Road* | *Fresnel* | *Barrier Atten* | *Berm Atten* |
|---|---|---|---|---|---|---|---|
| *Autos:* | 58.73 | -16.75 | -4.58 | -1.20 | *-4.77* | 0.000 | 0.000 |
| *Medium Trucks:* | 70.80 | -31.11 | -4.57 | -1.20 | *-4.88* | 0.000 | 0.000 |
| *Heavy Trucks:* | 77.97 | -27.82 | -4.57 | -1.20 | *-5.16* | 0.000 | 0.000 |

***Unmitigated Noise Levels (without Topo and barrier attenuation)***

| *VehicleType* | *Leq Peak Hour* | *Leq Day* | *Leq Evening* | *Leq Night* | *Ldn* | *CNEL* |
|---|---|---|---|---|---|---|
| *Autos:* | 36.2 | 33.7 | 29.3 | 30.9 | 37.7 | 37.8 |
| *Medium Trucks:* | 33.9 | 32.5 | 22.2 | 24.8 | 33.1 | 33.2 |
| *Heavy Trucks:* | 44.4 | 42.5 | 39.8 | 35.2 | 43.5 | 44.0 |
| *Vehicle Noise:* | 45.3 | 43.4 | 40.2 | 36.8 | 44.8 | 45.2 |

***Centerline Distance to Noise Contour (in feet)***

| | *70 dBA* | *65 dBA* | *60 dBA* | *55 dBA* |
|---|---|---|---|---|
| *Ldn:* | 2 | 5 | 10 | 21 |
| *CNEL:* | 2 | 5 | 10 | 22 |

Tuesday, November 17, 2015

**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

*Scenario:* Existing Without Project
*Road Name:* Indian St.
*Road Segment:* n/o Krameria Av.
*Project Name:* MV Logistics Center
*Job Number:* 9303

**SITE SPECIFIC INPUT DATA**

***Highway Data***

| | | |
|---|---|---|
| *Average Daily Traffic (Adt):* | 4,100 | vehicles |
| *Peak Hour Percentage:* | 10% | |
| *Peak Hour Volume:* | 410 | vehicles |
| *Vehicle Speed:* | 50 | mph |
| *Near/Far Lane Distance:* | 36 | feet |

***Site Data***

| | | |
|---|---|---|
| ***Barrier Height:*** | **0.0** | **feet** |
| *Barrier Type (0-Wall, 1-Berm):* | 0.0 | |
| *Centerline Dist. to Barrier:* | 100.0 | feet |
| *Centerline Dist. to Observer:* | 100.0 | feet |
| *Barrier Distance to Observer:* | 0.0 | feet |
| *Observer Height (Above Pad):* | 5.0 | feet |
| *Pad Elevation:* | 0.0 | feet |
| *Road Elevation:* | 0.0 | feet |
| *Road Grade:* | 0.0% | |
| *Left View:* | -90.0 | degrees |
| *Right View:* | 90.0 | degrees |

**NOISE MODEL INPUTS**

***Site Conditions (Hard = 10, Soft = 15)***

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

***Vehicle Mix***

| *VehicleType* | *Day* | *Evening* | *Night* | *Daily* |
|---|---|---|---|---|
| *Autos:* | 67.7% | 6.1% | 26.2% | 89.71% |
| *Medium Trucks:* | 86.9% | 2.0% | 11.1% | 3.29% |
| *Heavy Trucks:* | 78.7% | 10.4% | 10.9% | 7.00% |

***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:* | 98.494 |
| *Medium Trucks:* | 98.404 |
| *Heavy Trucks:* | 98.413 |

***FHWA Noise Model Calculations***

| *VehicleType* | *REMEL* | *Traffic Flow* | *Distance* | *Finite Road* | *Fresnel* | *Barrier Atten* | *Berm Atten* |
|---|---|---|---|---|---|---|---|
| *Autos:* | 70.20 | -6.64 | -4.52 | -1.20 | *-4.77* | 0.000 | 0.000 |
| *Medium Trucks:* | 81.00 | -21.00 | -4.51 | -1.20 | *-4.88* | 0.000 | 0.000 |
| *Heavy Trucks:* | 85.38 | -17.71 | -4.51 | -1.20 | *-5.16* | 0.000 | 0.000 |

***Unmitigated Noise Levels (without Topo and barrier attenuation)***

| *VehicleType* | *Leq Peak Hour* | *Leq Day* | *Leq Evening* | *Leq Night* | *Ldn* | *CNEL* |
|---|---|---|---|---|---|---|
| *Autos:* | 57.8 | 55.4 | 50.9 | 52.5 | 59.3 | 59.5 |
| *Medium Trucks:* | 54.3 | 52.9 | 42.6 | 45.2 | 53.5 | 53.6 |
| *Heavy Trucks:* | 61.9 | 60.1 | 57.4 | 52.8 | 61.1 | 61.6 |
| *Vehicle Noise:* | 63.9 | 61.9 | 58.4 | 56.0 | 63.7 | 64.1 |

***Centerline Distance to Noise Contour (in feet)***

| | *70 dBA* | *65 dBA* | *60 dBA* | *55 dBA* |
|---|---|---|---|---|
| *Ldn:* | 38 | 82 | 178 | 383 |
| *CNEL:* | 40 | 87 | 187 | 403 |



**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

*Scenario:* Existing Without Project
*Road Name:* Indian St.
*Road Segment:* s/o Krameria Av.
*Project Name:* MV Logistics Center
*Job Number:* 9303

**SITE SPECIFIC INPUT DATA**

***Highway Data***

| | | |
|---|---|---|
| *Average Daily Traffic (Adt):* | 1,900 | vehicles |
| *Peak Hour Percentage:* | 10% | |
| *Peak Hour Volume:* | 190 | vehicles |
| *Vehicle Speed:* | 50 | mph |
| *Near/Far Lane Distance:* | 36 | feet |

***Site Data***

| | | |
|---|---|---|
| ***Barrier Height:*** | **0.0** | **feet** |
| *Barrier Type (0-Wall, 1-Berm):* | 0.0 | |
| *Centerline Dist. to Barrier:* | 100.0 | feet |
| *Centerline Dist. to Observer:* | 100.0 | feet |
| *Barrier Distance to Observer:* | 0.0 | feet |
| *Observer Height (Above Pad):* | 5.0 | feet |
| *Pad Elevation:* | 0.0 | feet |
| *Road Elevation:* | 0.0 | feet |
| *Road Grade:* | 0.0% | |
| *Left View:* | -90.0 | degrees |
| *Right View:* | 90.0 | degrees |

**NOISE MODEL INPUTS**

***Site Conditions (Hard = 10, Soft = 15)***

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

***Vehicle Mix***

| *VehicleType* | *Day* | *Evening* | *Night* | *Daily* |
|---|---|---|---|---|
| *Autos:* | 67.7% | 6.1% | 26.2% | 89.71% |
| *Medium Trucks:* | 86.9% | 2.0% | 11.1% | 3.29% |
| *Heavy Trucks:* | 78.7% | 10.4% | 10.9% | 7.00% |

***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:* | 98.494 |
| *Medium Trucks:* | 98.404 |
| *Heavy Trucks:* | 98.413 |

***FHWA Noise Model Calculations***

| *VehicleType* | *REMEL* | *Traffic Flow* | *Distance* | *Finite Road* | *Fresnel* | *Barrier Atten* | *Berm Atten* |
|---|---|---|---|---|---|---|---|
| *Autos:* | 70.20 | -9.98 | -4.52 | -1.20 | *-4.77* | 0.000 | 0.000 |
| *Medium Trucks:* | 81.00 | -24.34 | -4.51 | -1.20 | *-4.88* | 0.000 | 0.000 |
| *Heavy Trucks:* | 85.38 | -21.05 | -4.51 | -1.20 | *-5.16* | 0.000 | 0.000 |

***Unmitigated Noise Levels (without Topo and barrier attenuation)***

| *VehicleType* | *Leq Peak Hour* | *Leq Day* | *Leq Evening* | *Leq Night* | *Ldn* | *CNEL* |
|---|---|---|---|---|---|---|
| *Autos:* | 54.5 | 52.0 | 47.6 | 49.2 | 56.0 | 56.1 |
| *Medium Trucks:* | 50.9 | 49.5 | 39.2 | 41.9 | 50.2 | 50.2 |
| *Heavy Trucks:* | 58.6 | 56.8 | 54.0 | 49.4 | 57.8 | 58.2 |
| *Vehicle Noise:* | 60.5 | 58.6 | 55.0 | 52.7 | 60.4 | 60.7 |

***Centerline Distance to Noise Contour (in feet)***

| | *70 dBA* | *65 dBA* | *60 dBA* | *55 dBA* |
|---|---|---|---|---|
| *Ldn:* | 23 | 49 | 106 | 229 |
| *CNEL:* | 24 | 52 | 112 | 241 |



**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

*Scenario:* Existing Without Project
*Road Name:* Cactus Av.
*Road Segment:* w/o Elsworth St.
*Project Name:* MV Logistics Center
*Job Number:* 9303

**SITE SPECIFIC INPUT DATA**

***Highway Data***

| | | |
|---|---|---|
| *Average Daily Traffic (Adt):* | 34,200 | vehicles |
| *Peak Hour Percentage:* | 10% | |
| *Peak Hour Volume:* | 3,420 | vehicles |
| *Vehicle Speed:* | 50 | mph |
| *Near/Far Lane Distance:* | 36 | feet |

***Site Data***

| | | |
|---|---|---|
| ***Barrier Height:*** | **0.0** | **feet** |
| *Barrier Type (0-Wall, 1-Berm):* | 0.0 | |
| *Centerline Dist. to Barrier:* | 100.0 | feet |
| *Centerline Dist. to Observer:* | 100.0 | feet |
| *Barrier Distance to Observer:* | 0.0 | feet |
| *Observer Height (Above Pad):* | 5.0 | feet |
| *Pad Elevation:* | 0.0 | feet |
| *Road Elevation:* | 0.0 | feet |
| *Road Grade:* | 0.0% | |
| *Left View:* | -90.0 | degrees |
| *Right View:* | 90.0 | degrees |

**NOISE MODEL INPUTS**

***Site Conditions (Hard = 10, Soft = 15)***

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

***Vehicle Mix***

| *VehicleType* | *Day* | *Evening* | *Night* | *Daily* |
|---|---|---|---|---|
| *Autos:* | 67.7% | 6.1% | 26.2% | 89.71% |
| *Medium Trucks:* | 86.9% | 2.0% | 11.1% | 3.29% |
| *Heavy Trucks:* | 78.7% | 10.4% | 10.9% | 7.00% |

***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:* | 98.494 |
| *Medium Trucks:* | 98.404 |
| *Heavy Trucks:* | 98.413 |

***FHWA Noise Model Calculations***

| *VehicleType* | *REMEL* | *Traffic Flow* | *Distance* | *Finite Road* | *Fresnel* | *Barrier Atten* | *Berm Atten* |
|---|---|---|---|---|---|---|---|
| *Autos:* | 70.20 | 2.57 | -4.52 | -1.20 | *-4.77* | 0.000 | 0.000 |
| *Medium Trucks:* | 81.00 | -11.79 | -4.51 | -1.20 | *-4.88* | 0.000 | 0.000 |
| *Heavy Trucks:* | 85.38 | -8.50 | -4.51 | -1.20 | *-5.16* | 0.000 | 0.000 |

***Unmitigated Noise Levels (without Topo and barrier attenuation)***

| *VehicleType* | *Leq Peak Hour* | *Leq Day* | *Leq Evening* | *Leq Night* | *Ldn* | *CNEL* |
|---|---|---|---|---|---|---|
| *Autos:* | 67.1 | 64.6 | 60.1 | 61.7 | 68.5 | 68.7 |
| *Medium Trucks:* | 63.5 | 62.1 | 51.8 | 54.4 | 62.7 | 62.8 |
| *Heavy Trucks:* | 71.2 | 69.3 | 66.6 | 62.0 | 70.3 | 70.8 |
| *Vehicle Noise:* | 73.1 | 71.2 | 67.6 | 65.2 | 73.0 | 73.3 |

***Centerline Distance to Noise Contour (in feet)***

| | *70 dBA* | *65 dBA* | *60 dBA* | *55 dBA* |
|---|---|---|---|---|
| *Ldn:* | 157 | 339 | 731 | 1,575 |
| *CNEL:* | 166 | 357 | 769 | 1,656 |



**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

*Scenario:* Existing Without Project
*Road Name:* Cactus Av.
*Road Segment:* e/o Elsworth St.
*Project Name:* MV Logistics Center
*Job Number:* 9303

**SITE SPECIFIC INPUT DATA**

***Highway Data***

| | | |
|---|---|---|
| *Average Daily Traffic (Adt):* | 32,600 | vehicles |
| *Peak Hour Percentage:* | 10% | |
| *Peak Hour Volume:* | 3,260 | vehicles |
| *Vehicle Speed:* | 50 | mph |
| *Near/Far Lane Distance:* | 36 | feet |

***Site Data***

| | | |
|---|---|---|
| ***Barrier Height:*** | **0.0** | **feet** |
| *Barrier Type (0-Wall, 1-Berm):* | 0.0 | |
| *Centerline Dist. to Barrier:* | 100.0 | feet |
| *Centerline Dist. to Observer:* | 100.0 | feet |
| *Barrier Distance to Observer:* | 0.0 | feet |
| *Observer Height (Above Pad):* | 5.0 | feet |
| *Pad Elevation:* | 0.0 | feet |
| *Road Elevation:* | 0.0 | feet |
| *Road Grade:* | 0.0% | |
| *Left View:* | -90.0 | degrees |
| *Right View:* | 90.0 | degrees |

**NOISE MODEL INPUTS**

***Site Conditions (Hard = 10, Soft = 15)***

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

***Vehicle Mix***

| *VehicleType* | *Day* | *Evening* | *Night* | *Daily* |
|---|---|---|---|---|
| *Autos:* | 67.7% | 6.1% | 26.2% | 89.71% |
| *Medium Trucks:* | 86.9% | 2.0% | 11.1% | 3.29% |
| *Heavy Trucks:* | 78.7% | 10.4% | 10.9% | 7.00% |

***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:* | 98.494 |
| *Medium Trucks:* | 98.404 |
| *Heavy Trucks:* | 98.413 |

***FHWA Noise Model Calculations***

| *VehicleType* | *REMEL* | *Traffic Flow* | *Distance* | *Finite Road* | *Fresnel* | *Barrier Atten* | *Berm Atten* |
|---|---|---|---|---|---|---|---|
| *Autos:* | 70.20 | 2.37 | -4.52 | -1.20 | *-4.77* | 0.000 | 0.000 |
| *Medium Trucks:* | 81.00 | -12.00 | -4.51 | -1.20 | *-4.88* | 0.000 | 0.000 |
| *Heavy Trucks:* | 85.38 | -8.71 | -4.51 | -1.20 | *-5.16* | 0.000 | 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 | 64.4 | 59.9 | 61.5 | 68.3 | 68.5 |
| *Medium Trucks:* | 63.3 | 61.9 | 51.6 | 54.2 | 62.5 | 62.6 |
| *Heavy Trucks:* | 71.0 | 69.1 | 66.4 | 61.8 | 70.1 | 70.6 |
| *Vehicle Noise:* | 72.9 | 70.9 | 67.4 | 65.0 | 72.8 | 73.1 |

***Centerline Distance to Noise Contour (in feet)***

| | *70 dBA* | *65 dBA* | *60 dBA* | *55 dBA* |
|---|---|---|---|---|
| *Ldn:* | 153 | 329 | 708 | 1,525 |
| *CNEL:* | 160 | 346 | 744 | 1,604 |

## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Cactus Av.
Road Segment: e/o Frederick St.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 36,000 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 3,600 vehicles |
| Vehicle Speed: | 50 mph |
| Near/Far Lane Distance: | 36 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 2.80 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -11.57 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -8.28 | -4.51 | -1.20 | -5.16 | 0.000 | 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 | 64.8 | 60.4 | 61.9 | 68.7 | 68.9 |
| Medium Trucks: | 63.7 | 62.3 | 52.0 | 54.6 | 62.9 | 63.0 |
| Heavy Trucks: | 71.4 | 69.6 | 66.8 | 62.2 | 70.6 | 71.0 |
| Vehicle Noise: | 73.3 | 71.4 | 67.8 | 65.5 | 73.2 | 73.5 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 163 | 351 | 756 | 1,630 |
| CNEL: | 171 | 369 | 795 | 1,714 |

Tuesday, November 17, 2015

## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Cactus Av.
Road Segment: e/o Graham St.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 35,800 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 3,580 vehicles |
| Vehicle Speed: | 50 mph |
| Near/Far Lane Distance: | 36 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 2.77 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -11.59 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -8.30 | -4.51 | -1.20 | -5.16 | 0.000 | 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 | 64.8 | 60.3 | 61.9 | 68.7 | 68.9 |
| Medium Trucks: | 63.7 | 62.3 | 52.0 | 54.6 | 62.9 | 63.0 |
| Heavy Trucks: | 71.4 | 69.5 | 66.8 | 62.2 | 70.5 | 71.0 |
| Vehicle Noise: | 73.3 | 71.4 | 67.8 | 65.4 | 73.2 | 73.5 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 162 | 350 | 754 | 1,624 |
| CNEL: | 171 | 368 | 792 | 1,707 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: Cactus Av.
Road Segment: e/o Heacock St.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 19,400 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 1,940 vehicles |
| Vehicle Speed: | 45 mph |
| Near/Far Lane Distance: | 36 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | 0.57 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -13.79 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -10.51 | -4.51 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 63.3 | 60.8 | 56.4 | 58.0 | 64.8 | 64.9 |
| Medium Trucks: | 59.9 | 58.5 | 48.2 | 50.9 | 59.2 | 59.2 |
| Heavy Trucks: | 68.0 | 66.2 | 63.4 | 58.9 | 67.2 | 67.7 |
| Vehicle Noise: | 69.8 | 67.8 | 64.3 | 61.8 | 69.6 | 69.9 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 94 | 202 | 435 | 937 |
| CNEL: | 99 | 213 | 458 | 987 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing Without Project
Road Name: John F. Kennedy Dr.
Road Segment: e/o Heacock St.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 8,800 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 880 vehicles |
| Vehicle Speed: | 45 mph |
| Near/Far Lane Distance: | 48 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | -2.86 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -17.23 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -13.94 | -4.43 | -1.20 | -5.16 | 0.000 | 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 | 57.5 | 53.0 | 54.6 | 61.4 | 61.6 |
| Medium Trucks: | 56.6 | 55.2 | 44.9 | 47.5 | 55.8 | 55.9 |
| Heavy Trucks: | 64.7 | 62.9 | 60.1 | 55.5 | 63.9 | 64.3 |
| Vehicle Noise: | 66.4 | 64.5 | 61.0 | 58.5 | 66.2 | 66.6 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 56 | 121 | 260 | 560 |
| CNEL: | 59 | 127 | 274 | 590 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Existing Without Project | Project Name: MV Logistics Center
Road Name: Krameria Av. | Job Number: 9303
Road Segment: e/o Indian St.

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | |
|---|---|
| Average Daily Traffic (Adt): | 3,700 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 370 vehicles |
| Vehicle Speed: | 40 mph |
| Near/Far Lane Distance: | 12 feet |

*Site Data*

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

*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: | 99.945 |
| Medium Trucks: | 99.856 |
| Heavy Trucks: | 99.865 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 66.51 | -6.12 | -4.62 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 77.72 | -20.48 | -4.61 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 82.99 | -17.19 | -4.61 | -1.20 | -5.16 | 0.000 | 0.000 |

*Unmitigated Noise Levels (without Topo and barrier attenuation)*

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 54.6 | 52.1 | 47.7 | 49.2 | 56.0 | 56.2 |
| Medium Trucks: | 51.4 | 50.0 | 39.7 | 42.3 | 50.6 | 50.7 |
| Heavy Trucks: | 60.0 | 58.2 | 55.4 | 50.8 | 59.2 | 59.6 |
| Vehicle Noise: | 61.5 | 59.6 | 56.2 | 53.5 | 61.3 | 61.6 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 26 | 56 | 122 | 262 |
| CNEL: | 28 | 60 | 128 | 277 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Existing Without Project | Project Name: MV Logistics Center
Road Name: Harley Knox Bl. | Job Number: 9303
Road Segment: w/o Patterson Av.

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | |
|---|---|
| Average Daily Traffic (Adt): | 13,900 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 1,390 vehicles |
| Vehicle Speed: | 45 mph |
| Near/Far Lane Distance: | 48 feet |

*Site Data*

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

*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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | -0.88 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -15.24 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -11.95 | -4.43 | -1.20 | -5.16 | 0.000 | 0.000 |

*Unmitigated Noise Levels (without Topo and barrier attenuation)*

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 61.9 | 59.5 | 55.0 | 56.6 | 63.4 | 63.6 |
| Medium Trucks: | 58.6 | 57.2 | 46.9 | 49.5 | 57.8 | 57.9 |
| Heavy Trucks: | 66.7 | 64.8 | 62.1 | 57.5 | 65.8 | 66.3 |
| Vehicle Noise: | 68.4 | 66.5 | 63.0 | 60.4 | 68.2 | 68.6 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 76 | 164 | 353 | 760 |
| CNEL: | 80 | 172 | 372 | 801 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Existing Without Project | Project Name: MV Logistics Center
Road Name: Harley Knox Bl. | Job Number: 9303
Road Segment: w/o Webster Av.

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | |
|---|---|
| Average Daily Traffic (Adt): | 9,100 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 910 vehicles |
| Vehicle Speed: | 45 mph |
| Near/Far Lane Distance: | 24 feet |

*Site Data*

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

*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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | -2.72 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -17.08 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -13.79 | -4.57 | -1.20 | -5.16 | 0.000 | 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 | 57.5 | 53.0 | 54.6 | 61.4 | 61.6 |
| Medium Trucks: | 56.6 | 55.2 | 44.9 | 47.5 | 55.8 | 55.9 |
| Heavy Trucks: | 64.7 | 62.9 | 60.1 | 55.5 | 63.9 | 64.3 |
| Vehicle Noise: | 66.4 | 64.5 | 61.0 | 58.5 | 66.2 | 66.6 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 56 | 121 | 260 | 560 |
| CNEL: | 59 | 127 | 274 | 590 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Existing Without Project | Project Name: MV Logistics Center
Road Name: Harley Knox Bl. | Job Number: 9303
Road Segment: e/o Webster Av.

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | |
|---|---|
| Average Daily Traffic (Adt): | 9,200 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 920 vehicles |
| Vehicle Speed: | 45 mph |
| Near/Far Lane Distance: | 24 feet |

*Site Data*

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

*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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | -2.67 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -17.03 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -13.75 | -4.57 | -1.20 | -5.16 | 0.000 | 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 | 57.5 | 53.1 | 54.7 | 61.5 | 61.6 |
| Medium Trucks: | 56.6 | 55.2 | 44.9 | 47.6 | 55.9 | 55.9 |
| Heavy Trucks: | 64.7 | 62.9 | 60.1 | 55.6 | 63.9 | 64.4 |
| Vehicle Noise: | 66.5 | 64.5 | 61.0 | 58.5 | 66.3 | 66.6 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 56 | 122 | 262 | 565 |
| CNEL: | 59 | 128 | 276 | 595 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project w/o Indian St Br
Road Name: Graham St.
Road Segment: n/o Cactus Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 6,000 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 600 vehicles |
| Vehicle Speed: | 45 mph |
| Near/Far Lane Distance: | 36 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | -4.53 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -18.89 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -15.60 | -4.51 | -1.20 | -5.16 | 0.000 | 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 | 55.7 | 51.3 | 52.9 | 59.7 | 59.8 |
| Medium Trucks: | 54.8 | 53.4 | 43.1 | 45.8 | 54.1 | 54.1 |
| Heavy Trucks: | 62.9 | 61.1 | 58.3 | 53.8 | 62.1 | 62.6 |
| Vehicle Noise: | 64.7 | 62.7 | 59.2 | 56.7 | 64.5 | 64.8 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 43 | 92 | 199 | 428 |
| CNEL: | 45 | 97 | 209 | 451 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project w/o Indian St Br
Road Name: Graham St.
Road Segment: s/o Cactus Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 7,300 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 730 vehicles |
| Vehicle Speed: | 45 mph |
| Near/Far Lane Distance: | 36 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | -3.68 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -18.04 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -14.75 | -4.51 | -1.20 | -5.16 | 0.000 | 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 | 56.6 | 52.2 | 53.7 | 60.5 | 60.7 |
| Medium Trucks: | 55.7 | 54.3 | 44.0 | 46.6 | 54.9 | 55.0 |
| Heavy Trucks: | 63.8 | 62.0 | 59.2 | 54.6 | 63.0 | 63.4 |
| Vehicle Noise: | 65.5 | 63.6 | 60.1 | 57.6 | 65.3 | 65.7 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 49 | 105 | 227 | 488 |
| CNEL: | 51 | 111 | 239 | 514 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project w/o Indian St Br
Road Name: Heacock St.
Road Segment: n/o Cactus Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 15,110 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 1,511 vehicles |
| Vehicle Speed: | 45 mph |
| Near/Far Lane Distance: | 48 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.99% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.19% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.81% |

**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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | -0.50 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -15.00 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -11.71 | -4.43 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 62.3 | 59.8 | 55.4 | 57.0 | 63.8 | 64.0 |
| Medium Trucks: | 58.8 | 57.4 | 47.1 | 49.7 | 58.0 | 58.1 |
| Heavy Trucks: | 66.9 | 65.1 | 62.3 | 57.7 | 66.1 | 66.5 |
| Vehicle Noise: | 68.7 | 66.8 | 63.2 | 60.7 | 68.5 | 68.8 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 79 | 171 | 369 | 794 |
| CNEL: | 84 | 180 | 388 | 836 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project w/o Indian St Br
Road Name: Heacock St.
Road Segment: s/o Cactus Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 28,560 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 2,856 vehicles |
| Vehicle Speed: | 45 mph |
| Near/Far Lane Distance: | 48 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 90.86% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 2.91% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | 2.30 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -12.64 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -9.33 | -4.43 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 65.1 | 62.6 | 58.2 | 59.8 | 66.6 | 66.8 |
| Medium Trucks: | 61.2 | 59.8 | 49.5 | 52.1 | 60.4 | 60.5 |
| Heavy Trucks: | 69.3 | 67.5 | 64.7 | 60.1 | 68.5 | 68.9 |
| Vehicle Noise: | 71.2 | 69.2 | 65.7 | 63.3 | 71.0 | 71.4 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 117 | 252 | 543 | 1,171 |
| CNEL: | 123 | 265 | 572 | 1,232 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Existing + Project w/o Indian St Br
Road Name: Heacock St.
Road Segment: s/o John F. Kennedy Dr.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

**Highway Data**

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 25,160 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 2,516 | vehicles |
| Vehicle Speed: | 50 | mph |
| Near/Far Lane Distance: | 48 | feet |

**Site Data**

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

**NOISE MODEL INPUTS**

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 91.05% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 2.85% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.10% |

**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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 1.30 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -13.74 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -10.44 | -4.43 | -1.20 | -5.16 | 0.000 | 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 | 63.4 | 59.0 | 60.5 | 67.3 | 67.5 |
| Medium Trucks: | 61.6 | 60.2 | 49.9 | 52.5 | 60.8 | 60.9 |
| Heavy Trucks: | 69.3 | 67.5 | 64.7 | 60.1 | 68.5 | 68.9 |
| Vehicle Noise: | 71.4 | 69.5 | 65.9 | 63.7 | 71.4 | 71.7 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 123 | 265 | 572 | 1,232 |
| CNEL: | 129 | 279 | 601 | 1,294 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Existing + Project w/o Indian St Br
Road Name: Heacock St.
Road Segment: s/o Gentian Av.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

**Highway Data**

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 20,960 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 2,096 | vehicles |
| Vehicle Speed: | 50 | mph |
| Near/Far Lane Distance: | 24 | feet |

**Site Data**

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

**NOISE MODEL INPUTS**

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 91.32% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 2.76% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 5.92% |

**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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 0.52 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -14.67 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -11.36 | -4.57 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 64.9 | 62.5 | 58.0 | 59.6 | 66.4 | 66.6 |
| Medium Trucks: | 60.6 | 59.2 | 48.8 | 51.5 | 59.8 | 59.9 |
| Heavy Trucks: | 68.2 | 66.4 | 63.7 | 59.1 | 67.4 | 67.9 |
| Vehicle Noise: | 70.4 | 68.4 | 64.8 | 62.7 | 70.3 | 70.7 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 105 | 227 | 490 | 1,055 |
| CNEL: | 111 | 239 | 514 | 1,107 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Existing + Project w/o Indian St Br
Road Name: Heacock St.
Road Segment: s/o Iris Av.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

**Highway Data**

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 12,960 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 1,296 | vehicles |
| Vehicle Speed: | 50 | mph |
| Near/Far Lane Distance: | 24 | feet |

**Site Data**

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

**NOISE MODEL INPUTS**

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 92.31% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 2.44% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 5.25% |

**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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | -1.52 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -17.30 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -13.97 | -4.57 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 62.9 | 60.4 | 56.0 | 57.6 | 64.4 | 64.5 |
| Medium Trucks: | 57.9 | 56.5 | 46.2 | 48.8 | 57.1 | 57.2 |
| Heavy Trucks: | 65.6 | 63.8 | 61.0 | 56.5 | 64.8 | 65.3 |
| Vehicle Noise: | 67.9 | 66.0 | 62.3 | 60.4 | 68.0 | 68.3 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 73 | 158 | 340 | 733 |
| CNEL: | 77 | 166 | 357 | 768 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Existing + Project w/o Indian St Br
Road Name: Heacock St.
Road Segment: s/o Krameria Av. (North)
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

**Highway Data**

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 10,760 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 1,076 | vehicles |
| Vehicle Speed: | 50 | mph |
| Near/Far Lane Distance: | 24 | feet |

**Site Data**

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

**NOISE MODEL INPUTS**

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 91.31% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 2.75% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 5.93% |

**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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | -2.37 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -17.58 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -14.25 | -4.57 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 62.1 | 59.6 | 55.1 | 56.7 | 63.5 | 63.7 |
| Medium Trucks: | 57.6 | 56.2 | 45.9 | 48.6 | 56.9 | 57.0 |
| Heavy Trucks: | 65.4 | 63.5 | 60.8 | 56.2 | 64.5 | 65.0 |
| Vehicle Noise: | 67.5 | 65.5 | 61.9 | 59.8 | 67.5 | 67.8 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 68 | 146 | 314 | 677 |
| CNEL: | 71 | 153 | 330 | 710 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project w/o Indian St Br
Road Name: Heacock St.
Road Segment: n/o Cardinal Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 11,000 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 1,100 vehicles |
| Vehicle Speed: | 40 mph |
| Near/Far Lane Distance: | 48 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 91.68% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 2.66% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 5.67% |

**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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 66.51 | -1.29 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 77.72 | -16.67 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 82.99 | -13.38 | -4.43 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 59.6 | 57.1 | 52.7 | 54.2 | 61.1 | 61.2 |
| Medium Trucks: | 55.4 | 54.0 | 43.7 | 46.3 | 54.6 | 54.7 |
| Heavy Trucks: | 64.0 | 62.2 | 59.4 | 54.8 | 63.2 | 63.6 |
| Vehicle Noise: | 65.8 | 63.8 | 60.3 | 57.9 | 65.6 | 65.9 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 51 | 110 | 236 | 509 |
| CNEL: | 54 | 115 | 249 | 536 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project w/o Indian St Br
Road Name: Heacock St.
Road Segment: s/o Cardinal Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 9,730 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 973 vehicles |
| Vehicle Speed: | 40 mph |
| Near/Far Lane Distance: | 48 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 91.87% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 2.58% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 5.55% |

**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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 66.51 | -1.81 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 77.72 | -17.33 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 82.99 | -14.00 | -4.43 | -1.20 | -5.16 | 0.000 | 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 | 56.6 | 52.1 | 53.7 | 60.5 | 60.7 |
| Medium Trucks: | 54.8 | 53.4 | 43.0 | 45.7 | 54.0 | 54.1 |
| Heavy Trucks: | 63.4 | 61.5 | 58.8 | 54.2 | 62.5 | 63.0 |
| Vehicle Noise: | 65.2 | 63.2 | 59.7 | 57.3 | 65.0 | 65.3 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 46 | 100 | 216 | 465 |
| CNEL: | 49 | 105 | 227 | 489 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project w/o Indian St Br
Road Name: Heacock St.
Road Segment: s/o San Michele Rd.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 3,400 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 340 vehicles |
| Vehicle Speed: | 50 mph |
| Near/Far Lane Distance: | 24 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | -7.45 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -21.81 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -18.53 | -4.57 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 57.0 | 54.5 | 50.1 | 51.6 | 58.4 | 58.6 |
| Medium Trucks: | 53.4 | 52.0 | 41.7 | 44.3 | 52.6 | 52.7 |
| Heavy Trucks: | 61.1 | 59.2 | 56.5 | 51.9 | 60.2 | 60.7 |
| Vehicle Noise: | 63.0 | 61.1 | 57.5 | 55.2 | 62.9 | 63.2 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 33 | 72 | 155 | 335 |
| CNEL: | 35 | 76 | 163 | 352 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project w/o Indian St Br
Road Name: Heacock St.
Road Segment: s/o Nandina Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 200 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 20 vehicles |
| Vehicle Speed: | 25 mph |
| Near/Far Lane Distance: | 24 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 58.73 | -16.75 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 70.80 | -31.11 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 77.97 | -27.82 | -4.57 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 36.2 | 33.7 | 29.3 | 30.9 | 37.7 | 37.8 |
| Medium Trucks: | 33.9 | 32.5 | 22.2 | 24.8 | 33.1 | 33.2 |
| Heavy Trucks: | 44.4 | 42.5 | 39.8 | 35.2 | 43.5 | 44.0 |
| Vehicle Noise: | 45.3 | 43.4 | 40.2 | 36.8 | 44.8 | 45.2 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 2 | 5 | 10 | 21 |
| CNEL: | 2 | 5 | 10 | 22 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

*Scenario:* Existing + Project w/o Indian St Br
*Road Name:* Indian St.
*Road Segment:* n/o Krameria Av.
*Project Name:* MV Logistics Center
*Job Number:* 9303

**SITE SPECIFIC INPUT DATA**

***Highway Data***

| | | |
|---|---|---|
| *Average Daily Traffic (Adt):* | 4,500 | vehicles |
| *Peak Hour Percentage:* | 10% | |
| *Peak Hour Volume:* | 450 | vehicles |
| *Vehicle Speed:* | 50 | mph |
| *Near/Far Lane Distance:* | 36 | feet |

***Site Data***

| | | |
|---|---|---|
| ***Barrier Height:*** | **0.0** | **feet** |
| *Barrier Type (0-Wall, 1-Berm):* | 0.0 | |
| *Centerline Dist. to Barrier:* | 100.0 | feet |
| *Centerline Dist. to Observer:* | 100.0 | feet |
| *Barrier Distance to Observer:* | 0.0 | feet |
| *Observer Height (Above Pad):* | 5.0 | feet |
| *Pad Elevation:* | 0.0 | feet |
| *Road Elevation:* | 0.0 | feet |
| *Road Grade:* | 0.0% | |
| *Left View:* | -90.0 | degrees |
| *Right View:* | 90.0 | degrees |

**NOISE MODEL INPUTS**

***Site Conditions (Hard = 10, Soft = 15)***

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

***Vehicle Mix***

| *VehicleType* | *Day* | *Evening* | *Night* | *Daily* |
|---|---|---|---|---|
| *Autos:* | 67.7% | 6.1% | 26.2% | 90.63% |
| *Medium Trucks:* | 86.9% | 2.0% | 11.1% | 2.99% |
| *Heavy Trucks:* | 78.7% | 10.4% | 10.9% | 6.38% |

***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:* | 98.494 |
| *Medium Trucks:* | 98.404 |
| *Heavy Trucks:* | 98.413 |

***FHWA Noise Model Calculations***

| *VehicleType* | *REMEL* | *Traffic Flow* | *Distance* | *Finite Road* | *Fresnel* | *Barrier Atten* | *Berm Atten* |
|---|---|---|---|---|---|---|---|
| *Autos:* | 70.20 | -6.19 | -4.52 | -1.20 | *-4.77* | 0.000 | 0.000 |
| *Medium Trucks:* | 81.00 | -21.00 | -4.51 | -1.20 | *-4.88* | 0.000 | 0.000 |
| *Heavy Trucks:* | 85.38 | -17.71 | -4.51 | -1.20 | *-5.16* | 0.000 | 0.000 |

***Unmitigated Noise Levels (without Topo and barrier attenuation)***

| *VehicleType* | *Leq Peak Hour* | *Leq Day* | *Leq Evening* | *Leq Night* | *Ldn* | *CNEL* |
|---|---|---|---|---|---|---|
| *Autos:* | 58.3 | 55.8 | 51.4 | 52.9 | 59.8 | 59.9 |
| *Medium Trucks:* | 54.3 | 52.9 | 42.6 | 45.2 | 53.5 | 53.6 |
| *Heavy Trucks:* | 61.9 | 60.1 | 57.4 | 52.8 | 61.1 | 61.6 |
| *Vehicle Noise:* | 64.0 | 62.0 | 58.5 | 56.2 | 63.9 | 64.2 |

***Centerline Distance to Noise Contour (in feet)***

| | *70 dBA* | *65 dBA* | *60 dBA* | *55 dBA* |
|---|---|---|---|---|
| *Ldn:* | 39 | 85 | 182 | 393 |
| *CNEL:* | 41 | 89 | 192 | 413 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

*Scenario:* Existing + Project w/o Indian St Br
*Road Name:* Indian St.
*Road Segment:* s/o Krameria Av.
*Project Name:* MV Logistics Center
*Job Number:* 9303

**SITE SPECIFIC INPUT DATA**

***Highway Data***

| | | |
|---|---|---|
| *Average Daily Traffic (Adt):* | 2,100 | vehicles |
| *Peak Hour Percentage:* | 10% | |
| *Peak Hour Volume:* | 210 | vehicles |
| *Vehicle Speed:* | 50 | mph |
| *Near/Far Lane Distance:* | 36 | feet |

***Site Data***

| | | |
|---|---|---|
| ***Barrier Height:*** | **0.0** | **feet** |
| *Barrier Type (0-Wall, 1-Berm):* | 0.0 | |
| *Centerline Dist. to Barrier:* | 100.0 | feet |
| *Centerline Dist. to Observer:* | 100.0 | feet |
| *Barrier Distance to Observer:* | 0.0 | feet |
| *Observer Height (Above Pad):* | 5.0 | feet |
| *Pad Elevation:* | 0.0 | feet |
| *Road Elevation:* | 0.0 | feet |
| *Road Grade:* | 0.0% | |
| *Left View:* | -90.0 | degrees |
| *Right View:* | 90.0 | degrees |

**NOISE MODEL INPUTS**

***Site Conditions (Hard = 10, Soft = 15)***

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

***Vehicle Mix***

| *VehicleType* | *Day* | *Evening* | *Night* | *Daily* |
|---|---|---|---|---|
| *Autos:* | 67.7% | 6.1% | 26.2% | 90.69% |
| *Medium Trucks:* | 86.9% | 2.0% | 11.1% | 2.97% |
| *Heavy Trucks:* | 78.7% | 10.4% | 10.9% | 6.34% |

***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:* | 98.494 |
| *Medium Trucks:* | 98.404 |
| *Heavy Trucks:* | 98.413 |

***FHWA Noise Model Calculations***

| *VehicleType* | *REMEL* | *Traffic Flow* | *Distance* | *Finite Road* | *Fresnel* | *Barrier Atten* | *Berm Atten* |
|---|---|---|---|---|---|---|---|
| *Autos:* | 70.20 | -9.50 | -4.52 | -1.20 | *-4.77* | 0.000 | 0.000 |
| *Medium Trucks:* | 81.00 | -24.34 | -4.51 | -1.20 | *-4.88* | 0.000 | 0.000 |
| *Heavy Trucks:* | 85.38 | -21.05 | -4.51 | -1.20 | *-5.16* | 0.000 | 0.000 |

***Unmitigated Noise Levels (without Topo and barrier attenuation)***

| *VehicleType* | *Leq Peak Hour* | *Leq Day* | *Leq Evening* | *Leq Night* | *Ldn* | *CNEL* |
|---|---|---|---|---|---|---|
| *Autos:* | 55.0 | 52.5 | 48.1 | 49.6 | 56.4 | 56.6 |
| *Medium Trucks:* | 50.9 | 49.5 | 39.2 | 41.9 | 50.2 | 50.2 |
| *Heavy Trucks:* | 58.6 | 56.8 | 54.0 | 49.4 | 57.8 | 58.2 |
| *Vehicle Noise:* | 60.7 | 58.7 | 55.1 | 52.9 | 60.6 | 60.9 |

***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 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

*Scenario:* Existing + Project w/o Indian St Br
*Road Name:* Cactus Av.
*Road Segment:* w/o Elsworth St.
*Project Name:* MV Logistics Center
*Job Number:* 9303

**SITE SPECIFIC INPUT DATA**

***Highway Data***

| | | |
|---|---|---|
| *Average Daily Traffic (Adt):* | 37,060 | vehicles |
| *Peak Hour Percentage:* | 10% | |
| *Peak Hour Volume:* | 3,706 | vehicles |
| *Vehicle Speed:* | 50 | mph |
| *Near/Far Lane Distance:* | 36 | feet |

***Site Data***

| | | |
|---|---|---|
| ***Barrier Height:*** | **0.0** | **feet** |
| *Barrier Type (0-Wall, 1-Berm):* | 0.0 | |
| *Centerline Dist. to Barrier:* | 100.0 | feet |
| *Centerline Dist. to Observer:* | 100.0 | feet |
| *Barrier Distance to Observer:* | 0.0 | feet |
| *Observer Height (Above Pad):* | 5.0 | feet |
| *Pad Elevation:* | 0.0 | feet |
| *Road Elevation:* | 0.0 | feet |
| *Road Grade:* | 0.0% | |
| *Left View:* | -90.0 | degrees |
| *Right View:* | 90.0 | degrees |

**NOISE MODEL INPUTS**

***Site Conditions (Hard = 10, Soft = 15)***

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

***Vehicle Mix***

| *VehicleType* | *Day* | *Evening* | *Night* | *Daily* |
|---|---|---|---|---|
| *Autos:* | 67.7% | 6.1% | 26.2% | 90.34% |
| *Medium Trucks:* | 86.9% | 2.0% | 11.1% | 3.08% |
| *Heavy Trucks:* | 78.7% | 10.4% | 10.9% | 6.58% |

***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:* | 98.494 |
| *Medium Trucks:* | 98.404 |
| *Heavy Trucks:* | 98.413 |

***FHWA Noise Model Calculations***

| *VehicleType* | *REMEL* | *Traffic Flow* | *Distance* | *Finite Road* | *Fresnel* | *Barrier Atten* | *Berm Atten* |
|---|---|---|---|---|---|---|---|
| *Autos:* | 70.20 | 2.95 | -4.52 | -1.20 | *-4.77* | 0.000 | 0.000 |
| *Medium Trucks:* | 81.00 | -11.72 | -4.51 | -1.20 | *-4.88* | 0.000 | 0.000 |
| *Heavy Trucks:* | 85.38 | -8.42 | -4.51 | -1.20 | *-5.16* | 0.000 | 0.000 |

***Unmitigated Noise Levels (without Topo and barrier attenuation)***

| *VehicleType* | *Leq Peak Hour* | *Leq Day* | *Leq Evening* | *Leq Night* | *Ldn* | *CNEL* |
|---|---|---|---|---|---|---|
| *Autos:* | 67.4 | 64.9 | 60.5 | 62.1 | 68.9 | 69.1 |
| *Medium Trucks:* | 63.6 | 62.2 | 51.8 | 54.5 | 62.8 | 62.9 |
| *Heavy Trucks:* | 71.2 | 69.4 | 66.6 | 62.1 | 70.4 | 70.9 |
| *Vehicle Noise:* | 73.2 | 71.3 | 67.7 | 65.4 | 73.1 | 73.5 |

***Centerline Distance to Noise Contour (in feet)***

| | *70 dBA* | *65 dBA* | *60 dBA* | *55 dBA* |
|---|---|---|---|---|
| *Ldn:* | 162 | 349 | 752 | 1,621 |
| *CNEL:* | 170 | 367 | 791 | 1,703 |

Tuesday, November 17, 2015

**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

*Scenario:* Existing + Project w/o Indian St Br
*Road Name:* Cactus Av.
*Road Segment:* e/o Elsworth St.
*Project Name:* MV Logistics Center
*Job Number:* 9303

**SITE SPECIFIC INPUT DATA**

***Highway Data***

| | | |
|---|---|---|
| *Average Daily Traffic (Adt):* | 35,460 | vehicles |
| *Peak Hour Percentage:* | 10% | |
| *Peak Hour Volume:* | 3,546 | vehicles |
| *Vehicle Speed:* | 50 | mph |
| *Near/Far Lane Distance:* | 36 | feet |

***Site Data***

| | | |
|---|---|---|
| ***Barrier Height:*** | **0.0** | **feet** |
| *Barrier Type (0-Wall, 1-Berm):* | 0.0 | |
| *Centerline Dist. to Barrier:* | 100.0 | feet |
| *Centerline Dist. to Observer:* | 100.0 | feet |
| *Barrier Distance to Observer:* | 0.0 | feet |
| *Observer Height (Above Pad):* | 5.0 | feet |
| *Pad Elevation:* | 0.0 | feet |
| *Road Elevation:* | 0.0 | feet |
| *Road Grade:* | 0.0% | |
| *Left View:* | -90.0 | degrees |
| *Right View:* | 90.0 | degrees |

**NOISE MODEL INPUTS**

***Site Conditions (Hard = 10, Soft = 15)***

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

***Vehicle Mix***

| *VehicleType* | *Day* | *Evening* | *Night* | *Daily* |
|---|---|---|---|---|
| *Autos:* | 67.7% | 6.1% | 26.2% | 90.37% |
| *Medium Trucks:* | 86.9% | 2.0% | 11.1% | 3.07% |
| *Heavy Trucks:* | 78.7% | 10.4% | 10.9% | 6.56% |

***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:* | 98.494 |
| *Medium Trucks:* | 98.404 |
| *Heavy Trucks:* | 98.413 |

***FHWA Noise Model Calculations***

| *VehicleType* | *REMEL* | *Traffic Flow* | *Distance* | *Finite Road* | *Fresnel* | *Barrier Atten* | *Berm Atten* |
|---|---|---|---|---|---|---|---|
| *Autos:* | 70.20 | 2.76 | -4.52 | -1.20 | *-4.77* | 0.000 | 0.000 |
| *Medium Trucks:* | 81.00 | -11.93 | -4.51 | -1.20 | *-4.88* | 0.000 | 0.000 |
| *Heavy Trucks:* | 85.38 | -8.63 | -4.51 | -1.20 | *-5.16* | 0.000 | 0.000 |

***Unmitigated Noise Levels (without Topo and barrier attenuation)***

| *VehicleType* | *Leq Peak Hour* | *Leq Day* | *Leq Evening* | *Leq Night* | *Ldn* | *CNEL* |
|---|---|---|---|---|---|---|
| *Autos:* | 67.2 | 64.8 | 60.3 | 61.9 | 68.7 | 68.9 |
| *Medium Trucks:* | 63.4 | 62.0 | 51.6 | 54.3 | 62.6 | 62.7 |
| *Heavy Trucks:* | 71.0 | 69.2 | 66.4 | 61.9 | 70.2 | 70.7 |
| *Vehicle Noise:* | 73.0 | 71.1 | 67.5 | 65.3 | 72.9 | 73.3 |

***Centerline Distance to Noise Contour (in feet)***

| | *70 dBA* | *65 dBA* | *60 dBA* | *55 dBA* |
|---|---|---|---|---|
| *Ldn:* | 157 | 339 | 730 | 1,572 |
| *CNEL:* | 165 | 356 | 767 | 1,652 |

Tuesday, November 17, 2015

**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Existing + Project w/o Indian St Br
Road Name: Cactus Av.
Road Segment: e/o Frederick St.
Project Name: MV Logistics Center
Job Number: 9303

| SITE SPECIFIC INPUT DATA | | NOISE MODEL INPUTS | |
|---|---|---|---|
| **Highway Data** | | **Site Conditions (Hard = 10, Soft = 15)** | |
| Average Daily Traffic (Adt): | 38,860 vehicles | Autos: | 15 |
| Peak Hour Percentage: | 10% | Medium Trucks (2 Axles): | 15 |
| Peak Hour Volume: | 3,886 vehicles | Heavy Trucks (3+ Axles): | 15 |
| Vehicle Speed: | 50 mph | | |
| Near/Far Lane Distance: | 36 feet | | |
| **Site Data** | | | |
| **Barrier Height:** | **0.0 feet** | | |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | | |
| Centerline Dist. to Barrier: | 100.0 feet | | |
| Centerline Dist. to Observer: | 100.0 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 | | |

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 90.31% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.09% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.60% |

**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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 3.16 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -11.50 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -8.21 | -4.51 | -1.20 | -5.16 | 0.000 | 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 | 65.2 | 60.7 | 62.3 | 69.1 | 69.3 |
| Medium Trucks: | 63.8 | 62.4 | 52.1 | 54.7 | 63.0 | 63.1 |
| Heavy Trucks: | 71.5 | 69.6 | 66.9 | 62.3 | 70.6 | 71.1 |
| Vehicle Noise: | 73.5 | 71.5 | 67.9 | 65.7 | 73.4 | 73.7 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 167 | 361 | 777 | 1,675 |
| CNEL: | 176 | 379 | 817 | 1,760 |



**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Existing + Project w/o Indian St Br
Road Name: Cactus Av.
Road Segment: e/o Graham St.
Project Name: MV Logistics Center
Job Number: 9303

| SITE SPECIFIC INPUT DATA | | NOISE MODEL INPUTS | |
|---|---|---|---|
| **Highway Data** | | **Site Conditions (Hard = 10, Soft = 15)** | |
| Average Daily Traffic (Adt): | 38,660 vehicles | Autos: | 15 |
| Peak Hour Percentage: | 10% | Medium Trucks (2 Axles): | 15 |
| Peak Hour Volume: | 3,866 vehicles | Heavy Trucks (3+ Axles): | 15 |
| Vehicle Speed: | 50 mph | | |
| Near/Far Lane Distance: | 36 feet | | |
| **Site Data** | | | |
| **Barrier Height:** | **0.0 feet** | | |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | | |
| Centerline Dist. to Barrier: | 100.0 feet | | |
| Centerline Dist. to Observer: | 100.0 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 | | |

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 90.32% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.09% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.60% |

**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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 3.14 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -11.53 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -8.23 | -4.51 | -1.20 | -5.16 | 0.000 | 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 | 65.1 | 60.7 | 62.3 | 69.1 | 69.2 |
| Medium Trucks: | 63.8 | 62.4 | 52.0 | 54.7 | 63.0 | 63.1 |
| Heavy Trucks: | 71.4 | 69.6 | 66.8 | 62.3 | 70.6 | 71.1 |
| Vehicle Noise: | 73.4 | 71.5 | 67.9 | 65.6 | 73.3 | 73.7 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 167 | 360 | 775 | 1,669 |
| CNEL: | 175 | 378 | 814 | 1,754 |



**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Existing + Project w/o Indian St Br
Road Name: Cactus Av.
Road Segment: e/o Heacock St.
Project Name: MV Logistics Center
Job Number: 9303

| SITE SPECIFIC INPUT DATA | | NOISE MODEL INPUTS | |
|---|---|---|---|
| **Highway Data** | | **Site Conditions (Hard = 10, Soft = 15)** | |
| Average Daily Traffic (Adt): | 19,900 vehicles | Autos: | 15 |
| Peak Hour Percentage: | 10% | Medium Trucks (2 Axles): | 15 |
| Peak Hour Volume: | 1,990 vehicles | Heavy Trucks (3+ Axles): | 15 |
| Vehicle Speed: | 45 mph | | |
| Near/Far Lane Distance: | 36 feet | | |
| **Site Data** | | | |
| **Barrier Height:** | **0.0 feet** | | |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | | |
| Centerline Dist. to Barrier: | 100.0 feet | | |
| Centerline Dist. to Observer: | 100.0 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 | | |

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.97% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.20% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.83% |

**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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | 0.69 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -13.79 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -10.51 | -4.51 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 63.4 | 60.9 | 56.5 | 58.1 | 64.9 | 65.1 |
| Medium Trucks: | 59.9 | 58.5 | 48.2 | 50.9 | 59.2 | 59.2 |
| Heavy Trucks: | 68.0 | 66.2 | 63.4 | 58.9 | 67.2 | 67.7 |
| Vehicle Noise: | 69.8 | 67.9 | 64.4 | 61.9 | 69.6 | 70.0 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 94 | 203 | 438 | 943 |
| CNEL: | 99 | 214 | 461 | 993 |



**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Existing + Project w/o Indian St Br
Road Name: John F. Kennedy Dr.
Road Segment: e/o Heacock St.
Project Name: MV Logistics Center
Job Number: 9303

| SITE SPECIFIC INPUT DATA | | NOISE MODEL INPUTS | |
|---|---|---|---|
| **Highway Data** | | **Site Conditions (Hard = 10, Soft = 15)** | |
| Average Daily Traffic (Adt): | 8,900 vehicles | Autos: | 15 |
| Peak Hour Percentage: | 10% | Medium Trucks (2 Axles): | 15 |
| Peak Hour Volume: | 890 vehicles | Heavy Trucks (3+ Axles): | 15 |
| Vehicle Speed: | 45 mph | | |
| Near/Far Lane Distance: | 48 feet | | |
| **Site Data** | | | |
| **Barrier Height:** | **0.0 feet** | | |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | | |
| Centerline Dist. to Barrier: | 100.0 feet | | |
| Centerline Dist. to Observer: | 100.0 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 | | |

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.83% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.25% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.92% |

**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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | -2.81 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -17.23 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -13.94 | -4.43 | -1.20 | -5.16 | 0.000 | 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 | 57.5 | 53.1 | 54.7 | 61.5 | 61.6 |
| Medium Trucks: | 56.6 | 55.2 | 44.9 | 47.5 | 55.8 | 55.9 |
| Heavy Trucks: | 64.7 | 62.9 | 60.1 | 55.5 | 63.9 | 64.3 |
| Vehicle Noise: | 66.4 | 64.5 | 61.0 | 58.5 | 66.2 | 66.6 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 56 | 121 | 261 | 562 |
| CNEL: | 59 | 128 | 275 | 592 |

## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project w/o Indian St Br
Road Name: Krameria Av.
Road Segment: e/o Indian St.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 4,200 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 420 vehicles |
| Vehicle Speed: | 40 mph |
| Near/Far Lane Distance: | 12 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 90.94% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 2.89% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.17% |

**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: | 99.945 |
| Medium Trucks: | 99.856 |
| Heavy Trucks: | 99.865 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 66.51 | -5.51 | -4.62 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 77.72 | -20.48 | -4.61 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 82.99 | -17.19 | -4.61 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 55.2 | 52.7 | 48.3 | 49.8 | 56.7 | 56.8 |
| Medium Trucks: | 51.4 | 50.0 | 39.7 | 42.3 | 50.6 | 50.7 |
| Heavy Trucks: | 60.0 | 58.2 | 55.4 | 50.8 | 59.2 | 59.6 |
| Vehicle Noise: | 61.7 | 59.7 | 56.3 | 53.7 | 61.5 | 61.8 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 27 | 58 | 125 | 270 |
| CNEL: | 28 | 61 | 132 | 284 |



## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project w/o Indian St Br
Road Name: Harley Knox Bl.
Road Segment: w/o Patterson Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 15,830 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 1,583 vehicles |
| Vehicle Speed: | 45 mph |
| Near/Far Lane Distance: | 48 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 90.78% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 2.94% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.29% |

**Noise Source Elevations (in feet)**

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

**Lane Equivalent Distance (in feet)**

| | |
|---|---|
| Autos: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | -0.26 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -15.17 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -11.86 | -4.43 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 62.6 | 60.1 | 55.6 | 57.2 | 64.0 | 64.2 |
| Medium Trucks: | 58.7 | 57.3 | 46.9 | 49.6 | 57.9 | 58.0 |
| Heavy Trucks: | 66.8 | 64.9 | 62.2 | 57.6 | 65.9 | 66.4 |
| Vehicle Noise: | 68.6 | 66.7 | 63.2 | 60.8 | 68.5 | 68.8 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 79 | 171 | 368 | 793 |
| CNEL: | 83 | 180 | 387 | 834 |



## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project w/o Indian St Br
Road Name: Harley Knox Bl.
Road Segment: w/o Webster Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 11,230 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 1,123 vehicles |
| Vehicle Speed: | 45 mph |
| Near/Far Lane Distance: | 24 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 91.40% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 2.73% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 5.87% |

**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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | -1.72 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -16.97 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -13.65 | -4.57 | -1.20 | -5.16 | 0.000 | 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 | 58.5 | 54.0 | 55.6 | 62.4 | 62.6 |
| Medium Trucks: | 56.7 | 55.3 | 45.0 | 47.6 | 55.9 | 56.0 |
| Heavy Trucks: | 64.8 | 63.0 | 60.2 | 55.7 | 64.0 | 64.5 |
| Vehicle Noise: | 66.8 | 64.8 | 61.3 | 59.0 | 66.7 | 67.0 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 60 | 129 | 278 | 600 |
| CNEL: | 63 | 136 | 293 | 631 |



## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project w/o Indian St Br
Road Name: Harley Knox Bl.
Road Segment: e/o Webster Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 11,330 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 1,133 vehicles |
| Vehicle Speed: | 45 mph |
| Near/Far Lane Distance: | 24 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 91.38% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 2.74% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 5.88% |

**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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | -1.69 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -16.92 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -13.60 | -4.57 | -1.20 | -5.16 | 0.000 | 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 | 58.5 | 54.1 | 55.6 | 62.5 | 62.6 |
| Medium Trucks: | 56.8 | 55.4 | 45.0 | 47.7 | 56.0 | 56.1 |
| Heavy Trucks: | 64.9 | 63.0 | 60.3 | 55.7 | 64.0 | 64.5 |
| Vehicle Noise: | 66.8 | 64.9 | 61.3 | 59.0 | 66.7 | 67.0 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 60 | 130 | 280 | 604 |
| CNEL: | 63 | 137 | 295 | 635 |

## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project w/ Indian St Bri
Road Name: Graham St.
Road Segment: n/o Cactus Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 6,000 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 600 vehicles |
| Vehicle Speed: | 45 mph |
| Near/Far Lane Distance: | 36 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | -4.53 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -18.89 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -15.60 | -4.51 | -1.20 | -5.16 | 0.000 | 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 | 55.7 | 51.3 | 52.9 | 59.7 | 59.8 |
| Medium Trucks: | 54.8 | 53.4 | 43.1 | 45.8 | 54.1 | 54.1 |
| Heavy Trucks: | 62.9 | 61.1 | 58.3 | 53.8 | 62.1 | 62.6 |
| Vehicle Noise: | 64.7 | 62.7 | 59.2 | 56.7 | 64.5 | 64.8 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 43 | 92 | 199 | 428 |
| CNEL: | 45 | 97 | 209 | 451 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project w/ Indian St Bri
Road Name: Graham St.
Road Segment: s/o Cactus Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 7,300 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 730 vehicles |
| Vehicle Speed: | 45 mph |
| Near/Far Lane Distance: | 36 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | -3.68 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -18.04 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -14.75 | -4.51 | -1.20 | -5.16 | 0.000 | 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 | 56.6 | 52.2 | 53.7 | 60.5 | 60.7 |
| Medium Trucks: | 55.7 | 54.3 | 44.0 | 46.6 | 54.9 | 55.0 |
| Heavy Trucks: | 63.8 | 62.0 | 59.2 | 54.6 | 63.0 | 63.4 |
| Vehicle Noise: | 65.5 | 63.6 | 60.1 | 57.6 | 65.3 | 65.7 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 49 | 105 | 227 | 488 |
| CNEL: | 51 | 111 | 239 | 514 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project w/ Indian St Bri
Road Name: Heacock St.
Road Segment: n/o Cactus Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 15,110 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 1,511 vehicles |
| Vehicle Speed: | 45 mph |
| Near/Far Lane Distance: | 48 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.99% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.19% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.81% |

**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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | -0.50 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -15.00 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -11.71 | -4.43 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 62.3 | 59.8 | 55.4 | 57.0 | 63.8 | 64.0 |
| Medium Trucks: | 58.8 | 57.4 | 47.1 | 49.7 | 58.0 | 58.1 |
| Heavy Trucks: | 66.9 | 65.1 | 62.3 | 57.7 | 66.1 | 66.5 |
| Vehicle Noise: | 68.7 | 66.8 | 63.2 | 60.7 | 68.5 | 68.8 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 79 | 171 | 369 | 794 |
| CNEL: | 84 | 180 | 388 | 836 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project w/ Indian St Bri
Road Name: Heacock St.
Road Segment: s/o Cactus Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 27,750 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 2,775 vehicles |
| Vehicle Speed: | 45 mph |
| Near/Far Lane Distance: | 48 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 90.62% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 2.99% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.39% |

**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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | 2.17 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -12.65 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -9.35 | -4.43 | -1.20 | -5.16 | 0.000 | 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 | 62.5 | 58.1 | 59.6 | 66.5 | 66.6 |
| Medium Trucks: | 61.2 | 59.8 | 49.5 | 52.1 | 60.4 | 60.5 |
| Heavy Trucks: | 69.3 | 67.4 | 64.7 | 60.1 | 68.4 | 68.9 |
| Vehicle Noise: | 71.1 | 69.2 | 65.6 | 63.2 | 71.0 | 71.3 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 116 | 250 | 538 | 1,160 |
| CNEL: | 122 | 263 | 567 | 1,221 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Existing + Project w/ Indian St Bri
Road Name: Heacock St.
Road Segment: s/o John F. Kennedy Dr.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 24,350 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 2,435 | vehicles |
| Vehicle Speed: | 50 | mph |
| Near/Far Lane Distance: | 48 | feet |

*Site Data*

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 90.79% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 2.93% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.27% |

*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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 1.15 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -13.76 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -10.45 | -4.43 | -1.20 | -5.16 | 0.000 | 0.000 |

*Unmitigated Noise Levels (without Topo and barrier attenuation)*

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 65.7 | 63.2 | 58.8 | 60.4 | 67.2 | 67.3 |
| Medium Trucks: | 61.6 | 60.2 | 49.9 | 52.5 | 60.8 | 60.9 |
| Heavy Trucks: | 69.3 | 67.5 | 64.7 | 60.1 | 68.5 | 68.9 |
| Vehicle Noise: | 71.4 | 69.4 | 65.8 | 63.6 | 71.3 | 71.6 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 122 | 263 | 566 | 1,219 |
| CNEL: | 128 | 276 | 594 | 1,280 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Existing + Project w/ Indian St Bri
Road Name: Heacock St.
Road Segment: s/o Gentian Av.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 20,150 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 2,015 | vehicles |
| Vehicle Speed: | 50 | mph |
| Near/Far Lane Distance: | 24 | feet |

*Site Data*

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 91.02% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 2.86% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.12% |

*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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 0.34 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -14.69 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -11.38 | -4.57 | -1.20 | -5.16 | 0.000 | 0.000 |

*Unmitigated Noise Levels (without Topo and barrier attenuation)*

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 64.8 | 62.3 | 57.8 | 59.4 | 66.2 | 66.4 |
| Medium Trucks: | 60.5 | 59.1 | 48.8 | 51.4 | 59.7 | 59.8 |
| Heavy Trucks: | 68.2 | 66.4 | 63.6 | 59.1 | 67.4 | 67.9 |
| Vehicle Noise: | 70.3 | 68.4 | 64.8 | 62.6 | 70.3 | 70.6 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 104 | 224 | 483 | 1,041 |
| CNEL: | 109 | 235 | 507 | 1,093 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Existing + Project w/ Indian St Bri
Road Name: Heacock St.
Road Segment: s/o Iris Av.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 12,150 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 1,215 | vehicles |
| Vehicle Speed: | 50 | mph |
| Near/Far Lane Distance: | 24 | feet |

*Site Data*

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 91.88% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 2.58% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 5.54% |

*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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | -1.82 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -17.34 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -14.01 | -4.57 | -1.20 | -5.16 | 0.000 | 0.000 |

*Unmitigated Noise Levels (without Topo and barrier attenuation)*

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 62.6 | 60.1 | 55.7 | 57.3 | 64.1 | 64.2 |
| Medium Trucks: | 57.9 | 56.5 | 46.2 | 48.8 | 57.1 | 57.2 |
| Heavy Trucks: | 65.6 | 63.8 | 61.0 | 56.4 | 64.8 | 65.2 |
| Vehicle Noise: | 67.8 | 65.9 | 62.2 | 60.2 | 67.8 | 68.1 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 72 | 154 | 332 | 716 |
| CNEL: | 75 | 162 | 349 | 751 |

Tuesday, November 17, 2015

**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Existing + Project w/ Indian St Bri
Road Name: Heacock St.
Road Segment: s/o Krameria Av. (North)
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 9,700 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 970 | vehicles |
| Vehicle Speed: | 50 | mph |
| Near/Far Lane Distance: | 24 | feet |

*Site Data*

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 90.98% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 2.88% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.14% |

*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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | -2.84 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -17.83 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -14.55 | -4.57 | -1.20 | -5.16 | 0.000 | 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 | 59.1 | 54.7 | 56.2 | 63.0 | 63.2 |
| Medium Trucks: | 57.4 | 56.0 | 45.7 | 48.3 | 56.6 | 56.7 |
| Heavy Trucks: | 65.1 | 63.2 | 60.5 | 55.9 | 64.2 | 64.7 |
| Vehicle Noise: | 67.2 | 65.2 | 61.6 | 59.4 | 67.1 | 67.4 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 64 | 138 | 297 | 640 |
| CNEL: | 67 | 145 | 312 | 672 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

*Scenario:* Existing + Project w/ Indian St Bri
*Road Name:* Heacock St.
*Road Segment:* n/o Cardinal Av.
*Project Name:* MV Logistics Center
*Job Number:* 9303

**SITE SPECIFIC INPUT DATA**

***Highway Data***

| | | |
|---|---|---|
| *Average Daily Traffic (Adt):* | 10,800 | vehicles |
| *Peak Hour Percentage:* | 10% | |
| *Peak Hour Volume:* | 1,080 | vehicles |
| *Vehicle Speed:* | 40 | mph |
| *Near/Far Lane Distance:* | 48 | feet |

***Site Data***

| | | |
|---|---|---|
| ***Barrier Height:*** | **0.0** | **feet** |
| *Barrier Type (0-Wall, 1-Berm):* | 0.0 | |
| *Centerline Dist. to Barrier:* | 100.0 | feet |
| *Centerline Dist. to Observer:* | 100.0 | feet |
| *Barrier Distance to Observer:* | 0.0 | feet |
| *Observer Height (Above Pad):* | 5.0 | feet |
| *Pad Elevation:* | 0.0 | feet |
| *Road Elevation:* | 0.0 | feet |
| *Road Grade:* | 0.0% | |
| *Left View:* | -90.0 | degrees |
| *Right View:* | 90.0 | degrees |

**NOISE MODEL INPUTS**

***Site Conditions (Hard = 10, Soft = 15)***

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

***Vehicle Mix***

| *VehicleType* | *Day* | *Evening* | *Night* | *Daily* |
|---|---|---|---|---|
| *Autos:* | 67.7% | 6.1% | 26.2% | 91.52% |
| *Medium Trucks:* | 86.9% | 2.0% | 11.1% | 2.71% |
| *Heavy Trucks:* | 78.7% | 10.4% | 10.9% | 5.77% |

***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:* | 97.206 |
| *Medium Trucks:* | 97.115 |
| *Heavy Trucks:* | 97.124 |

***FHWA Noise Model Calculations***

| *VehicleType* | *REMEL* | *Traffic Flow* | *Distance* | *Finite Road* | *Fresnel* | *Barrier Atten* | *Berm Atten* |
|---|---|---|---|---|---|---|---|
| *Autos:* | 66.51 | -1.38 | -4.43 | -1.20 | *-4.77* | 0.000 | 0.000 |
| *Medium Trucks:* | 77.72 | -16.67 | -4.43 | -1.20 | *-4.88* | 0.000 | 0.000 |
| *Heavy Trucks:* | 82.99 | -13.38 | -4.43 | -1.20 | *-5.16* | 0.000 | 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 | 57.0 | 52.6 | 54.1 | 61.0 | 61.1 |
| *Medium Trucks:* | 55.4 | 54.0 | 43.7 | 46.3 | 54.6 | 54.7 |
| *Heavy Trucks:* | 64.0 | 62.2 | 59.4 | 54.8 | 63.2 | 63.6 |
| *Vehicle Noise:* | 65.7 | 63.8 | 60.3 | 57.8 | 65.6 | 65.9 |

***Centerline Distance to Noise Contour (in feet)***

| | *70 dBA* | *65 dBA* | *60 dBA* | *55 dBA* |
|---|---|---|---|---|
| *Ldn:* | 51 | 109 | 235 | 507 |
| *CNEL:* | 53 | 115 | 248 | 533 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

*Scenario:* Existing + Project w/ Indian St Bri
*Road Name:* Heacock St.
*Road Segment:* s/o Cardinal Av.
*Project Name:* MV Logistics Center
*Job Number:* 9303

**SITE SPECIFIC INPUT DATA**

***Highway Data***

| | | |
|---|---|---|
| *Average Daily Traffic (Adt):* | 9,430 | vehicles |
| *Peak Hour Percentage:* | 10% | |
| *Peak Hour Volume:* | 943 | vehicles |
| *Vehicle Speed:* | 40 | mph |
| *Near/Far Lane Distance:* | 48 | feet |

***Site Data***

| | | |
|---|---|---|
| ***Barrier Height:*** | **0.0** | **feet** |
| *Barrier Type (0-Wall, 1-Berm):* | 0.0 | |
| *Centerline Dist. to Barrier:* | 100.0 | feet |
| *Centerline Dist. to Observer:* | 100.0 | feet |
| *Barrier Distance to Observer:* | 0.0 | feet |
| *Observer Height (Above Pad):* | 5.0 | feet |
| *Pad Elevation:* | 0.0 | feet |
| *Road Elevation:* | 0.0 | feet |
| *Road Grade:* | 0.0% | |
| *Left View:* | -90.0 | degrees |
| *Right View:* | 90.0 | degrees |

**NOISE MODEL INPUTS**

***Site Conditions (Hard = 10, Soft = 15)***

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

***Vehicle Mix***

| *VehicleType* | *Day* | *Evening* | *Night* | *Daily* |
|---|---|---|---|---|
| *Autos:* | 67.7% | 6.1% | 26.2% | 91.61% |
| *Medium Trucks:* | 86.9% | 2.0% | 11.1% | 2.66% |
| *Heavy Trucks:* | 78.7% | 10.4% | 10.9% | 5.73% |

***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:* | 97.206 |
| *Medium Trucks:* | 97.115 |
| *Heavy Trucks:* | 97.124 |

***FHWA Noise Model Calculations***

| *VehicleType* | *REMEL* | *Traffic Flow* | *Distance* | *Finite Road* | *Fresnel* | *Barrier Atten* | *Berm Atten* |
|---|---|---|---|---|---|---|---|
| *Autos:* | 66.51 | -1.96 | -4.43 | -1.20 | *-4.77* | 0.000 | 0.000 |
| *Medium Trucks:* | 77.72 | -17.33 | -4.43 | -1.20 | *-4.88* | 0.000 | 0.000 |
| *Heavy Trucks:* | 82.99 | -14.00 | -4.43 | -1.20 | *-5.16* | 0.000 | 0.000 |

***Unmitigated Noise Levels (without Topo and barrier attenuation)***

| *VehicleType* | *Leq Peak Hour* | *Leq Day* | *Leq Evening* | *Leq Night* | *Ldn* | *CNEL* |
|---|---|---|---|---|---|---|
| *Autos:* | 58.9 | 56.4 | 52.0 | 53.6 | 60.4 | 60.5 |
| *Medium Trucks:* | 54.8 | 53.4 | 43.0 | 45.7 | 54.0 | 54.1 |
| *Heavy Trucks:* | 63.4 | 61.5 | 58.8 | 54.2 | 62.5 | 63.0 |
| *Vehicle Noise:* | 65.1 | 63.2 | 59.7 | 57.2 | 65.0 | 65.3 |

***Centerline Distance to Noise Contour (in feet)***

| | *70 dBA* | *65 dBA* | *60 dBA* | *55 dBA* |
|---|---|---|---|---|
| *Ldn:* | 46 | 99 | 214 | 461 |
| *CNEL:* | 49 | 105 | 225 | 486 |

Tuesday, November 17, 2015

**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

*Scenario:* Existing + Project w/ Indian St Bri
*Road Name:* Heacock St.
*Road Segment:* s/o San Michele Rd.
*Project Name:* MV Logistics Center
*Job Number:* 9303

**SITE SPECIFIC INPUT DATA**

***Highway Data***

| | | |
|---|---|---|
| *Average Daily Traffic (Adt):* | 3,400 | vehicles |
| *Peak Hour Percentage:* | 10% | |
| *Peak Hour Volume:* | 340 | vehicles |
| *Vehicle Speed:* | 50 | mph |
| *Near/Far Lane Distance:* | 24 | feet |

***Site Data***

| | | |
|---|---|---|
| ***Barrier Height:*** | **0.0** | **feet** |
| *Barrier Type (0-Wall, 1-Berm):* | 0.0 | |
| *Centerline Dist. to Barrier:* | 100.0 | feet |
| *Centerline Dist. to Observer:* | 100.0 | feet |
| *Barrier Distance to Observer:* | 0.0 | feet |
| *Observer Height (Above Pad):* | 5.0 | feet |
| *Pad Elevation:* | 0.0 | feet |
| *Road Elevation:* | 0.0 | feet |
| *Road Grade:* | 0.0% | |
| *Left View:* | -90.0 | degrees |
| *Right View:* | 90.0 | degrees |

**NOISE MODEL INPUTS**

***Site Conditions (Hard = 10, Soft = 15)***

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

***Vehicle Mix***

| *VehicleType* | *Day* | *Evening* | *Night* | *Daily* |
|---|---|---|---|---|
| *Autos:* | 67.7% | 6.1% | 26.2% | 89.71% |
| *Medium Trucks:* | 86.9% | 2.0% | 11.1% | 3.29% |
| *Heavy Trucks:* | 78.7% | 10.4% | 10.9% | 7.00% |

***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:* | 99.403 |
| *Medium Trucks:* | 99.314 |
| *Heavy Trucks:* | 99.323 |

***FHWA Noise Model Calculations***

| *VehicleType* | *REMEL* | *Traffic Flow* | *Distance* | *Finite Road* | *Fresnel* | *Barrier Atten* | *Berm Atten* |
|---|---|---|---|---|---|---|---|
| *Autos:* | 70.20 | -7.45 | -4.58 | -1.20 | *-4.77* | 0.000 | 0.000 |
| *Medium Trucks:* | 81.00 | -21.81 | -4.57 | -1.20 | *-4.88* | 0.000 | 0.000 |
| *Heavy Trucks:* | 85.38 | -18.53 | -4.57 | -1.20 | *-5.16* | 0.000 | 0.000 |

***Unmitigated Noise Levels (without Topo and barrier attenuation)***

| *VehicleType* | *Leq Peak Hour* | *Leq Day* | *Leq Evening* | *Leq Night* | *Ldn* | *CNEL* |
|---|---|---|---|---|---|---|
| *Autos:* | 57.0 | 54.5 | 50.1 | 51.6 | 58.4 | 58.6 |
| *Medium Trucks:* | 53.4 | 52.0 | 41.7 | 44.3 | 52.6 | 52.7 |
| *Heavy Trucks:* | 61.1 | 59.2 | 56.5 | 51.9 | 60.2 | 60.7 |
| *Vehicle Noise:* | 63.0 | 61.1 | 57.5 | 55.2 | 62.9 | 63.2 |

***Centerline Distance to Noise Contour (in feet)***

| | *70 dBA* | *65 dBA* | *60 dBA* | *55 dBA* |
|---|---|---|---|---|
| *Ldn:* | 33 | 72 | 155 | 335 |
| *CNEL:* | 35 | 76 | 163 | 352 |

Tuesday, November 17, 2015

**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

*Scenario:* Existing + Project w/ Indian St Bri
*Road Name:* Heacock St.
*Road Segment:* s/o Nandina Av.
*Project Name:* MV Logistics Center
*Job Number:* 9303

**SITE SPECIFIC INPUT DATA**

***Highway Data***

| | | |
|---|---|---|
| *Average Daily Traffic (Adt):* | 200 | vehicles |
| *Peak Hour Percentage:* | 10% | |
| *Peak Hour Volume:* | 20 | vehicles |
| *Vehicle Speed:* | 25 | mph |
| *Near/Far Lane Distance:* | 24 | feet |

***Site Data***

| | | |
|---|---|---|
| ***Barrier Height:*** | **0.0** | **feet** |
| *Barrier Type (0-Wall, 1-Berm):* | 0.0 | |
| *Centerline Dist. to Barrier:* | 100.0 | feet |
| *Centerline Dist. to Observer:* | 100.0 | feet |
| *Barrier Distance to Observer:* | 0.0 | feet |
| *Observer Height (Above Pad):* | 5.0 | feet |
| *Pad Elevation:* | 0.0 | feet |
| *Road Elevation:* | 0.0 | feet |
| *Road Grade:* | 0.0% | |
| *Left View:* | -90.0 | degrees |
| *Right View:* | 90.0 | degrees |

**NOISE MODEL INPUTS**

***Site Conditions (Hard = 10, Soft = 15)***

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

***Vehicle Mix***

| *VehicleType* | *Day* | *Evening* | *Night* | *Daily* |
|---|---|---|---|---|
| *Autos:* | 67.7% | 6.1% | 26.2% | 89.71% |
| *Medium Trucks:* | 86.9% | 2.0% | 11.1% | 3.29% |
| *Heavy Trucks:* | 78.7% | 10.4% | 10.9% | 7.00% |

***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:* | 99.403 |
| *Medium Trucks:* | 99.314 |
| *Heavy Trucks:* | 99.323 |

***FHWA Noise Model Calculations***

| *VehicleType* | *REMEL* | *Traffic Flow* | *Distance* | *Finite Road* | *Fresnel* | *Barrier Atten* | *Berm Atten* |
|---|---|---|---|---|---|---|---|
| *Autos:* | 58.73 | -16.75 | -4.58 | -1.20 | *-4.77* | 0.000 | 0.000 |
| *Medium Trucks:* | 70.80 | -31.11 | -4.57 | -1.20 | *-4.88* | 0.000 | 0.000 |
| *Heavy Trucks:* | 77.97 | -27.82 | -4.57 | -1.20 | *-5.16* | 0.000 | 0.000 |

***Unmitigated Noise Levels (without Topo and barrier attenuation)***

| *VehicleType* | *Leq Peak Hour* | *Leq Day* | *Leq Evening* | *Leq Night* | *Ldn* | *CNEL* |
|---|---|---|---|---|---|---|
| *Autos:* | 36.2 | 33.7 | 29.3 | 30.9 | 37.7 | 37.8 |
| *Medium Trucks:* | 33.9 | 32.5 | 22.2 | 24.8 | 33.1 | 33.2 |
| *Heavy Trucks:* | 44.4 | 42.5 | 39.8 | 35.2 | 43.5 | 44.0 |
| *Vehicle Noise:* | 45.3 | 43.4 | 40.2 | 36.8 | 44.8 | 45.2 |

***Centerline Distance to Noise Contour (in feet)***

| | *70 dBA* | *65 dBA* | *60 dBA* | *55 dBA* |
|---|---|---|---|---|
| *Ldn:* | 2 | 5 | 10 | 21 |
| *CNEL:* | 2 | 5 | 10 | 22 |

Tuesday, November 17, 2015

## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project w/ Indian St Bri
Road Name: Indian St.
Road Segment: n/o Krameria Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 4,500 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 450 vehicles |
| Vehicle Speed: | 50 mph |
| Near/Far Lane Distance: | 36 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 90.63% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 2.99% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.38% |

**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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | -6.19 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -21.00 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -17.71 | -4.51 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 58.3 | 55.8 | 51.4 | 52.9 | 59.8 | 59.9 |
| Medium Trucks: | 54.3 | 52.9 | 42.6 | 45.2 | 53.5 | 53.6 |
| Heavy Trucks: | 61.9 | 60.1 | 57.4 | 52.8 | 61.1 | 61.6 |
| Vehicle Noise: | 64.0 | 62.0 | 58.5 | 56.2 | 63.9 | 64.2 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 39 | 85 | 182 | 393 |
| CNEL: | 41 | 89 | 192 | 413 |



## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project w/ Indian St Bri
Road Name: Indian St.
Road Segment: s/o Krameria Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 2,100 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 210 vehicles |
| Vehicle Speed: | 50 mph |
| Near/Far Lane Distance: | 36 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 90.69% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 2.97% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.34% |

**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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | -9.50 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -24.34 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -21.05 | -4.51 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 55.0 | 52.5 | 48.1 | 49.6 | 56.4 | 56.6 |
| Medium Trucks: | 50.9 | 49.5 | 39.2 | 41.9 | 50.2 | 50.2 |
| Heavy Trucks: | 58.6 | 56.8 | 54.0 | 49.4 | 57.8 | 58.2 |
| Vehicle Noise: | 60.7 | 58.7 | 55.1 | 52.9 | 60.6 | 60.9 |

**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 |



## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project w/ Indian St Bri
Road Name: Cactus Av.
Road Segment: w/o Elsworth St.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 36,140 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 3,614 vehicles |
| Vehicle Speed: | 50 mph |
| Near/Far Lane Distance: | 36 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 90.15% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.14% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.71% |

**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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 2.83 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -11.75 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -8.45 | -4.51 | -1.20 | -5.16 | 0.000 | 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 | 64.8 | 60.4 | 62.0 | 68.8 | 68.9 |
| Medium Trucks: | 63.5 | 62.1 | 51.8 | 54.5 | 62.7 | 62.8 |
| Heavy Trucks: | 71.2 | 69.4 | 66.6 | 62.0 | 70.4 | 70.8 |
| Vehicle Noise: | 73.2 | 71.3 | 67.7 | 65.4 | 73.1 | 73.4 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 161 | 346 | 745 | 1,606 |
| CNEL: | 169 | 364 | 784 | 1,688 |



## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project w/ Indian St Bri
Road Name: Cactus Av.
Road Segment: e/o Elsworth St.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 34,540 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 3,454 vehicles |
| Vehicle Speed: | 50 mph |
| Near/Far Lane Distance: | 36 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 90.17% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.13% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.69% |

**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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 2.64 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -11.95 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -8.66 | -4.51 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 67.1 | 64.6 | 60.2 | 61.8 | 68.6 | 68.8 |
| Medium Trucks: | 63.3 | 61.9 | 51.6 | 54.2 | 62.5 | 62.6 |
| Heavy Trucks: | 71.0 | 69.2 | 66.4 | 61.8 | 70.2 | 70.6 |
| Vehicle Noise: | 73.0 | 71.1 | 67.5 | 65.2 | 72.9 | 73.2 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 156 | 335 | 723 | 1,557 |
| CNEL: | 164 | 353 | 760 | 1,636 |

**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Existing + Project w/ Indian St Bri
Road Name: Cactus Av.
Road Segment: e/o Frederick St.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 37,940 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 3,794 vehicles |
| Vehicle Speed: | 50 mph |
| Near/Far Lane Distance: | 36 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

**NOISE MODEL INPUTS**

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 90.13% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.15% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.72% |

**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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 3.04 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -11.53 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -8.23 | -4.51 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 67.5 | 65.0 | 60.6 | 62.2 | 69.0 | 69.2 |
| Medium Trucks: | 63.8 | 62.4 | 52.0 | 54.7 | 63.0 | 63.1 |
| Heavy Trucks: | 71.4 | 69.6 | 66.8 | 62.3 | 70.6 | 71.1 |
| Vehicle Noise: | 73.4 | 71.5 | 67.9 | 65.6 | 73.3 | 73.6 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 166 | 358 | 771 | 1,660 |
| CNEL: | 175 | 376 | 810 | 1,745 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Existing + Project w/ Indian St Bri
Road Name: Cactus Av.
Road Segment: e/o Graham St.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 37,740 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 3,774 vehicles |
| Vehicle Speed: | 50 mph |
| Near/Far Lane Distance: | 36 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

**NOISE MODEL INPUTS**

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 90.13% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.15% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.72% |

**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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 3.02 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -11.55 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -8.25 | -4.51 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 67.5 | 65.0 | 60.6 | 62.2 | 69.0 | 69.1 |
| Medium Trucks: | 63.7 | 62.3 | 52.0 | 54.7 | 62.9 | 63.0 |
| Heavy Trucks: | 71.4 | 69.6 | 66.8 | 62.2 | 70.6 | 71.0 |
| Vehicle Noise: | 73.4 | 71.4 | 67.9 | 65.6 | 73.3 | 73.6 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 165 | 356 | 768 | 1,654 |
| CNEL: | 174 | 375 | 807 | 1,739 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Existing + Project w/ Indian St Bri
Road Name: Cactus Av.
Road Segment: e/o Heacock St.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 19,900 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 1,990 vehicles |
| Vehicle Speed: | 45 mph |
| Near/Far Lane Distance: | 36 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

**NOISE MODEL INPUTS**

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.97% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.20% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.83% |

**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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | 0.69 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -13.79 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -10.51 | -4.51 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 63.4 | 60.9 | 56.5 | 58.1 | 64.9 | 65.1 |
| Medium Trucks: | 59.9 | 58.5 | 48.2 | 50.9 | 59.2 | 59.2 |
| Heavy Trucks: | 68.0 | 66.2 | 63.4 | 58.9 | 67.2 | 67.7 |
| Vehicle Noise: | 69.8 | 67.9 | 64.4 | 61.9 | 69.6 | 70.0 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 94 | 203 | 438 | 943 |
| CNEL: | 99 | 214 | 461 | 993 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Existing + Project w/ Indian St Bri
Road Name: John F. Kennedy Dr.
Road Segment: e/o Heacock St.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 8,900 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 890 vehicles |
| Vehicle Speed: | 45 mph |
| Near/Far Lane Distance: | 48 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

**NOISE MODEL INPUTS**

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.83% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.25% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.92% |

**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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | -2.81 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -17.23 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -13.94 | -4.43 | -1.20 | -5.16 | 0.000 | 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 | 57.5 | 53.1 | 54.7 | 61.5 | 61.6 |
| Medium Trucks: | 56.6 | 55.2 | 44.9 | 47.5 | 55.8 | 55.9 |
| Heavy Trucks: | 64.7 | 62.9 | 60.1 | 55.5 | 63.9 | 64.3 |
| Vehicle Noise: | 66.4 | 64.5 | 61.0 | 58.5 | 66.2 | 66.6 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 56 | 121 | 261 | 562 |
| CNEL: | 59 | 128 | 275 | 592 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project w/ Indian St Bri
Road Name: Krameria Av.
Road Segment: e/o Indian St.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 4,200 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 420 vehicles |
| Vehicle Speed: | 40 mph |
| Near/Far Lane Distance: | 12 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 90.94% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 2.89% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.17% |

**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: | 99.945 |
| Medium Trucks: | 99.856 |
| Heavy Trucks: | 99.865 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 66.51 | -5.51 | -4.62 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 77.72 | -20.48 | -4.61 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 82.99 | -17.19 | -4.61 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 55.2 | 52.7 | 48.3 | 49.8 | 56.7 | 56.8 |
| Medium Trucks: | 51.4 | 50.0 | 39.7 | 42.3 | 50.6 | 50.7 |
| Heavy Trucks: | 60.0 | 58.2 | 55.4 | 50.8 | 59.2 | 59.6 |
| Vehicle Noise: | 61.7 | 59.7 | 56.3 | 53.7 | 61.5 | 61.8 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 27 | 58 | 125 | 270 |
| CNEL: | 28 | 61 | 132 | 284 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project w/ Indian St Bri
Road Name: Harley Knox Bl.
Road Segment: w/o Patterson Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 16,750 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 1,675 vehicles |
| Vehicle Speed: | 45 mph |
| Near/Far Lane Distance: | 48 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 91.16% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 2.81% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.03% |

**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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | 0.00 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -15.11 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -11.80 | -4.43 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 62.8 | 60.3 | 55.9 | 57.5 | 64.3 | 64.5 |
| Medium Trucks: | 58.7 | 57.3 | 47.0 | 49.6 | 57.9 | 58.0 |
| Heavy Trucks: | 66.8 | 65.0 | 62.2 | 57.7 | 66.0 | 66.5 |
| Vehicle Noise: | 68.7 | 66.8 | 63.3 | 60.9 | 68.6 | 68.9 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 81 | 174 | 376 | 809 |
| CNEL: | 85 | 183 | 395 | 851 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project w/ Indian St Bri
Road Name: Harley Knox Bl.
Road Segment: w/o Webster Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 12,150 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 1,215 vehicles |
| Vehicle Speed: | 45 mph |
| Near/Far Lane Distance: | 24 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 91.88% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 2.58% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 5.54% |

**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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | -1.36 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -16.88 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -13.56 | -4.57 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 61.3 | 58.8 | 54.4 | 56.0 | 62.8 | 63.0 |
| Medium Trucks: | 56.8 | 55.4 | 45.1 | 47.7 | 56.0 | 56.1 |
| Heavy Trucks: | 64.9 | 63.1 | 60.3 | 55.8 | 64.1 | 64.6 |
| Vehicle Noise: | 66.9 | 65.0 | 61.4 | 59.2 | 66.9 | 67.2 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 62 | 133 | 287 | 618 |
| CNEL: | 65 | 140 | 302 | 650 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Existing + Project w/ Indian St Bri
Road Name: Harley Knox Bl.
Road Segment: e/o Webster Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 12,250 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 1,225 vehicles |
| Vehicle Speed: | 45 mph |
| Near/Far Lane Distance: | 24 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 91.86% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 2.58% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 5.55% |

**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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | -1.32 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -16.84 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -13.51 | -4.57 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 61.4 | 58.9 | 54.4 | 56.0 | 62.8 | 63.0 |
| Medium Trucks: | 56.8 | 55.4 | 45.1 | 47.8 | 56.0 | 56.1 |
| Heavy Trucks: | 65.0 | 63.1 | 60.4 | 55.8 | 64.1 | 64.6 |
| Vehicle Noise: | 67.0 | 65.0 | 61.5 | 59.2 | 66.9 | 67.2 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 62 | 134 | 289 | 622 |
| CNEL: | 65 | 141 | 303 | 654 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Opening Year Cumulative w/o Pro
Road Name: Graham St.
Road Segment: n/o Cactus Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 9,300 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 930 | vehicles |
| Vehicle Speed: | 45 | mph |
| Near/Far Lane Distance: | 36 | feet |

**Site Data**

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | -2.62 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -16.99 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -13.70 | -4.51 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 60.1 | 57.6 | 53.2 | 54.8 | 61.6 | 61.7 |
| Medium Trucks: | 56.7 | 55.3 | 45.0 | 47.7 | 56.0 | 56.1 |
| Heavy Trucks: | 64.8 | 63.0 | 60.2 | 55.7 | 64.0 | 64.5 |
| Vehicle Noise: | 66.6 | 64.7 | 61.1 | 58.6 | 66.4 | 66.7 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 57 | 124 | 266 | 574 |
| CNEL: | 60 | 130 | 281 | 604 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Opening Year Cumulative w/o Pro
Road Name: Graham St.
Road Segment: s/o Cactus Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 12,600 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 1,260 | vehicles |
| Vehicle Speed: | 45 | mph |
| Near/Far Lane Distance: | 36 | feet |

**Site Data**

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | -1.31 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -15.67 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -12.38 | -4.51 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 61.4 | 58.9 | 54.5 | 56.1 | 62.9 | 63.1 |
| Medium Trucks: | 58.1 | 56.7 | 46.4 | 49.0 | 57.3 | 57.4 |
| Heavy Trucks: | 66.2 | 64.3 | 61.6 | 57.0 | 65.3 | 65.8 |
| Vehicle Noise: | 67.9 | 66.0 | 62.5 | 59.9 | 67.7 | 68.0 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 70 | 151 | 326 | 703 |
| CNEL: | 74 | 159 | 343 | 740 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Opening Year Cumulative w/o Pro
Road Name: Heacock St.
Road Segment: n/o Cactus Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 15,600 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 1,560 | vehicles |
| Vehicle Speed: | 45 | mph |
| Near/Far Lane Distance: | 48 | feet |

**Site Data**

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | -0.38 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -14.74 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -11.45 | -4.43 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 62.4 | 60.0 | 55.5 | 57.1 | 63.9 | 64.1 |
| Medium Trucks: | 59.1 | 57.7 | 47.4 | 50.0 | 58.3 | 58.4 |
| Heavy Trucks: | 67.2 | 65.3 | 62.6 | 58.0 | 66.3 | 66.8 |
| Vehicle Noise: | 68.9 | 67.0 | 63.5 | 60.9 | 68.7 | 69.1 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 82 | 177 | 381 | 821 |
| CNEL: | 86 | 186 | 401 | 865 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Opening Year Cumulative w/o Pro
Road Name: Heacock St.
Road Segment: s/o Cactus Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 26,700 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 2,670 | vehicles |
| Vehicle Speed: | 45 | mph |
| Near/Far Lane Distance: | 48 | feet |

**Site Data**

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | 1.96 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -12.41 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -9.12 | -4.43 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 64.8 | 62.3 | 57.9 | 59.4 | 66.2 | 66.4 |
| Medium Trucks: | 61.4 | 60.0 | 49.7 | 52.3 | 60.6 | 60.7 |
| Heavy Trucks: | 69.5 | 67.7 | 64.9 | 60.3 | 68.7 | 69.1 |
| Vehicle Noise: | 71.2 | 69.3 | 65.8 | 63.3 | 71.0 | 71.4 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 117 | 253 | 545 | 1,175 |
| CNEL: | 124 | 267 | 574 | 1,237 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Opening Year Cumulative w/o Pro
Road Name: Heacock St.
Road Segment: s/o John F. Kennedy Dr.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

**Highway Data**

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 24,400 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 2,440 | vehicles |
| Vehicle Speed: | 50 | mph |
| Near/Far Lane Distance: | 48 | feet |

**Site Data**

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

**NOISE MODEL INPUTS**

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 1.11 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -13.25 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -9.97 | -4.43 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 65.7 | 63.2 | 58.8 | 60.3 | 67.1 | 67.3 |
| Medium Trucks: | 62.1 | 60.7 | 50.4 | 53.0 | 61.3 | 61.4 |
| Heavy Trucks: | 69.8 | 67.9 | 65.2 | 60.6 | 68.9 | 69.4 |
| Vehicle Noise: | 71.7 | 69.8 | 66.2 | 63.9 | 71.6 | 71.9 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 127 | 274 | 591 | 1,274 |
| CNEL: | 134 | 289 | 622 | 1,340 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Opening Year Cumulative w/o Pro
Road Name: Heacock St.
Road Segment: s/o Gentian Av.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

**Highway Data**

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 19,800 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 1,980 | vehicles |
| Vehicle Speed: | 50 | mph |
| Near/Far Lane Distance: | 24 | feet |

**Site Data**

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

**NOISE MODEL INPUTS**

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 0.20 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -14.16 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -10.88 | -4.57 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 64.6 | 62.1 | 57.7 | 59.3 | 66.1 | 66.3 |
| Medium Trucks: | 61.1 | 59.7 | 49.3 | 52.0 | 60.3 | 60.4 |
| Heavy Trucks: | 68.7 | 66.9 | 64.1 | 59.6 | 67.9 | 68.4 |
| Vehicle Noise: | 70.7 | 68.7 | 65.1 | 62.8 | 70.5 | 70.9 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 108 | 234 | 503 | 1,084 |
| CNEL: | 114 | 246 | 529 | 1,140 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Opening Year Cumulative w/o Pro
Road Name: Heacock St.
Road Segment: s/o Iris Av.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

**Highway Data**

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 17,300 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 1,730 | vehicles |
| Vehicle Speed: | 50 | mph |
| Near/Far Lane Distance: | 24 | feet |

**Site Data**

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

**NOISE MODEL INPUTS**

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | -0.39 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -14.75 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -11.46 | -4.57 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 64.0 | 61.5 | 57.1 | 58.7 | 65.5 | 65.7 |
| Medium Trucks: | 60.5 | 59.1 | 48.8 | 51.4 | 59.7 | 59.8 |
| Heavy Trucks: | 68.1 | 66.3 | 63.6 | 59.0 | 67.3 | 67.8 |
| Vehicle Noise: | 70.1 | 68.1 | 64.6 | 62.2 | 69.9 | 70.3 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 99 | 213 | 460 | 991 |
| CNEL: | 104 | 224 | 484 | 1,042 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Opening Year Cumulative w/o Pro
Road Name: Heacock St.
Road Segment: s/o Krameria Av. (North)
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

**Highway Data**

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 19,600 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 1,960 | vehicles |
| Vehicle Speed: | 50 | mph |
| Near/Far Lane Distance: | 24 | feet |

**Site Data**

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

**NOISE MODEL INPUTS**

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 0.16 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -14.21 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -10.92 | -4.57 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 64.6 | 62.1 | 57.7 | 59.2 | 66.0 | 66.2 |
| Medium Trucks: | 61.0 | 59.6 | 49.3 | 51.9 | 60.2 | 60.3 |
| Heavy Trucks: | 68.7 | 66.9 | 64.1 | 59.5 | 67.9 | 68.3 |
| Vehicle Noise: | 70.6 | 68.7 | 65.1 | 62.8 | 70.5 | 70.8 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 108 | 232 | 500 | 1,077 |
| CNEL: | 113 | 244 | 525 | 1,132 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Opening Year Cumulative w/o Pro
Road Name: Heacock St.
Road Segment: n/o Cardinal Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 20,000 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 2,000 vehicles |
| Vehicle Speed: | 40 mph |
| Near/Far Lane Distance: | 48 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 66.51 | 1.21 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 77.72 | -13.15 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 82.99 | -9.86 | -4.43 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 62.1 | 59.6 | 55.2 | 56.7 | 63.6 | 63.7 |
| Medium Trucks: | 58.9 | 57.5 | 47.2 | 49.9 | 58.1 | 58.2 |
| Heavy Trucks: | 67.5 | 65.7 | 62.9 | 58.3 | 66.7 | 67.1 |
| Vehicle Noise: | 69.0 | 67.1 | 63.7 | 61.0 | 68.8 | 69.1 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 83 | 179 | 385 | 830 |
| CNEL: | 88 | 189 | 406 | 876 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Opening Year Cumulative w/o Pro
Road Name: Heacock St.
Road Segment: s/o Cardinal Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 18,400 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 1,840 vehicles |
| Vehicle Speed: | 40 mph |
| Near/Far Lane Distance: | 48 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 66.51 | 0.85 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 77.72 | -13.51 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 82.99 | -10.22 | -4.43 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 61.7 | 59.2 | 54.8 | 56.4 | 63.2 | 63.4 |
| Medium Trucks: | 58.6 | 57.2 | 46.9 | 49.5 | 57.8 | 57.9 |
| Heavy Trucks: | 67.1 | 65.3 | 62.6 | 58.0 | 66.3 | 66.8 |
| Vehicle Noise: | 68.7 | 66.8 | 63.3 | 60.6 | 68.4 | 68.8 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 79 | 169 | 364 | 785 |
| CNEL: | 83 | 178 | 384 | 828 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Opening Year Cumulative w/o Pro
Road Name: Heacock St.
Road Segment: s/o San Michele Rd.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 4,300 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 430 vehicles |
| Vehicle Speed: | 50 mph |
| Near/Far Lane Distance: | 24 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | -6.43 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -20.79 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -17.51 | -4.57 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 58.0 | 55.5 | 51.1 | 52.6 | 59.5 | 59.6 |
| Medium Trucks: | 54.4 | 53.0 | 42.7 | 45.3 | 53.6 | 53.7 |
| Heavy Trucks: | 62.1 | 60.3 | 57.5 | 52.9 | 61.3 | 61.7 |
| Vehicle Noise: | 64.0 | 62.1 | 58.5 | 56.2 | 63.9 | 64.2 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 39 | 84 | 182 | 392 |
| CNEL: | 41 | 89 | 191 | 412 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Opening Year Cumulative w/o Pro
Road Name: Heacock St.
Road Segment: s/o Nandina Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 200 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 20 vehicles |
| Vehicle Speed: | 25 mph |
| Near/Far Lane Distance: | 24 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 58.73 | -16.75 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 70.80 | -31.11 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 77.97 | -27.82 | -4.57 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 36.2 | 33.7 | 29.3 | 30.9 | 37.7 | 37.8 |
| Medium Trucks: | 33.9 | 32.5 | 22.2 | 24.8 | 33.1 | 33.2 |
| Heavy Trucks: | 44.4 | 42.5 | 39.8 | 35.2 | 43.5 | 44.0 |
| Vehicle Noise: | 45.3 | 43.4 | 40.2 | 36.8 | 44.8 | 45.2 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 2 | 5 | 10 | 21 |
| CNEL: | 2 | 5 | 10 | 22 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Opening Year Cumulative w/o Pro
Road Name: Indian St.
Road Segment: n/o Krameria Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 6,000 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 600 vehicles |
| Vehicle Speed: | 50 mph |
| Near/Far Lane Distance: | 36 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | -4.99 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -19.35 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -16.06 | -4.51 | -1.20 | -5.16 | 0.000 | 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 | 57.0 | 52.6 | 54.1 | 61.0 | 61.1 |
| Medium Trucks: | 55.9 | 54.5 | 44.2 | 46.9 | 55.1 | 55.2 |
| Heavy Trucks: | 63.6 | 61.8 | 59.0 | 54.4 | 62.8 | 63.2 |
| Vehicle Noise: | 65.5 | 63.6 | 60.0 | 57.7 | 65.4 | 65.7 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 49 | 106 | 229 | 494 |
| CNEL: | 52 | 112 | 241 | 519 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Opening Year Cumulative w/o Pro
Road Name: Indian St.
Road Segment: s/o Krameria Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 2,000 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 200 vehicles |
| Vehicle Speed: | 50 mph |
| Near/Far Lane Distance: | 36 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | -9.76 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -24.12 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -20.83 | -4.51 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 54.7 | 52.2 | 47.8 | 49.4 | 56.2 | 56.4 |
| Medium Trucks: | 51.2 | 49.8 | 39.5 | 42.1 | 50.4 | 50.5 |
| Heavy Trucks: | 58.8 | 57.0 | 54.2 | 49.7 | 58.0 | 58.5 |
| Vehicle Noise: | 60.8 | 58.8 | 55.2 | 52.9 | 60.6 | 61.0 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 24 | 51 | 110 | 237 |
| CNEL: | 25 | 54 | 116 | 249 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Opening Year Cumulative w/o Pro
Road Name: Cactus Av.
Road Segment: w/o Elsworth St.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 55,800 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 5,580 vehicles |
| Vehicle Speed: | 50 mph |
| Near/Far Lane Distance: | 36 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 4.70 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -9.66 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -6.38 | -4.51 | -1.20 | -5.16 | 0.000 | 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 | 66.7 | 62.3 | 63.8 | 70.6 | 70.8 |
| Medium Trucks: | 65.6 | 64.2 | 53.9 | 56.5 | 64.8 | 64.9 |
| Heavy Trucks: | 73.3 | 71.5 | 68.7 | 64.1 | 72.5 | 72.9 |
| Vehicle Noise: | 75.2 | 73.3 | 69.7 | 67.4 | 75.1 | 75.4 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 218 | 470 | 1,013 | 2,183 |
| CNEL: | 230 | 494 | 1,065 | 2,295 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Opening Year Cumulative w/o Pro
Road Name: Cactus Av.
Road Segment: e/o Elsworth St.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 56,800 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 5,680 vehicles |
| Vehicle Speed: | 50 mph |
| Near/Far Lane Distance: | 36 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 4.78 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -9.59 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -6.30 | -4.51 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 69.3 | 66.8 | 62.3 | 63.9 | 70.7 | 70.9 |
| Medium Trucks: | 65.7 | 64.3 | 54.0 | 56.6 | 64.9 | 65.0 |
| Heavy Trucks: | 73.4 | 71.5 | 68.8 | 64.2 | 72.5 | 73.0 |
| Vehicle Noise: | 75.3 | 73.4 | 69.8 | 67.4 | 75.2 | 75.5 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 221 | 476 | 1,025 | 2,209 |
| CNEL: | 232 | 500 | 1,078 | 2,322 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Opening Year Cumulative w/o Pro
Road Name: Cactus Av.
Road Segment: e/o Frederick St.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | |
|---|---|
| Average Daily Traffic (Adt): | 57,900 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 5,790 vehicles |
| Vehicle Speed: | 50 mph |
| Near/Far Lane Distance: | 36 feet |

*Site Data*

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

*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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 4.86 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -9.50 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -6.22 | -4.51 | -1.20 | -5.16 | 0.000 | 0.000 |

*Unmitigated Noise Levels (without Topo and barrier attenuation)*

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 69.3 | 66.9 | 62.4 | 64.0 | 70.8 | 71.0 |
| Medium Trucks: | 65.8 | 64.4 | 54.1 | 56.7 | 65.0 | 65.1 |
| Heavy Trucks: | 73.4 | 71.6 | 68.9 | 64.3 | 72.6 | 73.1 |
| Vehicle Noise: | 75.4 | 73.4 | 69.9 | 67.5 | 75.2 | 75.6 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 224 | 482 | 1,038 | 2,237 |
| CNEL: | 235 | 507 | 1,092 | 2,352 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Opening Year Cumulative w/o Pro
Road Name: Cactus Av.
Road Segment: e/o Graham St.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | |
|---|---|
| Average Daily Traffic (Adt): | 47,600 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 4,760 vehicles |
| Vehicle Speed: | 50 mph |
| Near/Far Lane Distance: | 36 feet |

*Site Data*

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

*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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 4.01 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -10.35 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -7.07 | -4.51 | -1.20 | -5.16 | 0.000 | 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 | 66.0 | 61.6 | 63.1 | 70.0 | 70.1 |
| Medium Trucks: | 64.9 | 63.5 | 53.2 | 55.8 | 64.1 | 64.2 |
| Heavy Trucks: | 72.6 | 70.8 | 68.0 | 63.4 | 71.8 | 72.2 |
| Vehicle Noise: | 74.5 | 72.6 | 69.0 | 66.7 | 74.4 | 74.7 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 196 | 423 | 911 | 1,963 |
| CNEL: | 206 | 445 | 958 | 2,064 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Opening Year Cumulative w/o Pro
Road Name: Cactus Av.
Road Segment: e/o Heacock St.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | |
|---|---|
| Average Daily Traffic (Adt): | 31,200 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 3,120 vehicles |
| Vehicle Speed: | 45 mph |
| Near/Far Lane Distance: | 36 feet |

*Site Data*

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

*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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | 2.63 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -11.73 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -8.44 | -4.51 | -1.20 | -5.16 | 0.000 | 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 | 62.9 | 58.5 | 60.0 | 66.8 | 67.0 |
| Medium Trucks: | 62.0 | 60.6 | 50.3 | 52.9 | 61.2 | 61.3 |
| Heavy Trucks: | 70.1 | 68.3 | 65.5 | 60.9 | 69.3 | 69.7 |
| Vehicle Noise: | 71.8 | 69.9 | 66.4 | 63.9 | 71.6 | 72.0 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 129 | 277 | 597 | 1,286 |
| CNEL: | 135 | 292 | 629 | 1,354 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Opening Year Cumulative w/o Pro
Road Name: John F. Kennedy Dr.
Road Segment: e/o Heacock St.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | |
|---|---|
| Average Daily Traffic (Adt): | 10,600 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 1,060 vehicles |
| Vehicle Speed: | 45 mph |
| Near/Far Lane Distance: | 48 feet |

*Site Data*

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

*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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | -2.06 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -16.42 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -13.13 | -4.43 | -1.20 | -5.16 | 0.000 | 0.000 |

*Unmitigated Noise Levels (without Topo and barrier attenuation)*

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 60.8 | 58.3 | 53.9 | 55.4 | 62.2 | 62.4 |
| Medium Trucks: | 57.4 | 56.0 | 45.7 | 48.3 | 56.6 | 56.7 |
| Heavy Trucks: | 65.5 | 63.7 | 60.9 | 56.3 | 64.7 | 65.1 |
| Vehicle Noise: | 67.2 | 65.3 | 61.8 | 59.3 | 67.0 | 67.4 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 63 | 137 | 295 | 634 |
| CNEL: | 67 | 144 | 310 | 668 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Opening Year Cumulative w/o Pro
Road Name: Krameria Av.
Road Segment: e/o Indian St.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 4,900 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 490 vehicles |
| Vehicle Speed: | 40 mph |
| Near/Far Lane Distance: | 12 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 99.945 |
| Medium Trucks: | 99.856 |
| Heavy Trucks: | 99.865 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 66.51 | -4.90 | -4.62 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 77.72 | -19.26 | -4.61 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 82.99 | -15.97 | -4.61 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 55.8 | 53.3 | 48.9 | 50.4 | 57.3 | 57.4 |
| Medium Trucks: | 52.6 | 51.2 | 40.9 | 43.6 | 51.9 | 52.0 |
| Heavy Trucks: | 61.2 | 59.4 | 56.6 | 52.0 | 60.4 | 60.8 |
| Vehicle Noise: | 62.8 | 60.8 | 57.4 | 54.7 | 62.5 | 62.8 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 32 | 68 | 147 | 316 |
| CNEL: | 33 | 72 | 155 | 333 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Opening Year Cumulative w/o Pro
Road Name: Harley Knox Bl.
Road Segment: w/o Patterson Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 27,300 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 2,730 vehicles |
| Vehicle Speed: | 45 mph |
| Near/Far Lane Distance: | 48 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | 2.05 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -12.31 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -9.02 | -4.43 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 64.9 | 62.4 | 58.0 | 59.5 | 66.3 | 66.5 |
| Medium Trucks: | 61.5 | 60.1 | 49.8 | 52.4 | 60.7 | 60.8 |
| Heavy Trucks: | 69.6 | 67.8 | 65.0 | 60.4 | 68.8 | 69.2 |
| Vehicle Noise: | 71.3 | 69.4 | 65.9 | 63.4 | 71.1 | 71.5 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 119 | 257 | 553 | 1,192 |
| CNEL: | 126 | 270 | 583 | 1,256 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Opening Year Cumulative w/o Pro
Road Name: Harley Knox Bl.
Road Segment: w/o Webster Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 22,000 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 2,200 vehicles |
| Vehicle Speed: | 45 mph |
| Near/Far Lane Distance: | 24 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | 1.12 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -13.25 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -9.96 | -4.57 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 63.8 | 61.3 | 56.9 | 58.4 | 65.3 | 65.4 |
| Medium Trucks: | 60.4 | 59.0 | 48.7 | 51.3 | 59.6 | 59.7 |
| Heavy Trucks: | 68.5 | 66.7 | 63.9 | 59.3 | 67.7 | 68.2 |
| Vehicle Noise: | 70.3 | 68.3 | 64.8 | 62.3 | 70.1 | 70.4 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 101 | 217 | 469 | 1,010 |
| CNEL: | 106 | 229 | 493 | 1,063 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Opening Year Cumulative w/o Pro
Road Name: Harley Knox Bl.
Road Segment: e/o Webster Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 21,700 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 2,170 vehicles |
| Vehicle Speed: | 45 mph |
| Near/Far Lane Distance: | 24 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | 1.06 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -13.31 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -10.02 | -4.57 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 63.7 | 61.2 | 56.8 | 58.4 | 65.2 | 65.4 |
| Medium Trucks: | 60.4 | 59.0 | 48.7 | 51.3 | 59.6 | 59.7 |
| Heavy Trucks: | 68.5 | 66.6 | 63.9 | 59.3 | 67.6 | 68.1 |
| Vehicle Noise: | 70.2 | 68.3 | 64.8 | 62.2 | 70.0 | 70.3 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 100 | 216 | 464 | 1,000 |
| CNEL: | 105 | 227 | 489 | 1,054 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Opening Year Cumulative w/ Proj
Road Name: Graham St.
Road Segment: n/o Cactus Av.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | |
|---|---|
| Average Daily Traffic (Adt): | 9,300 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 930 vehicles |
| Vehicle Speed: | 45 mph |
| Near/Far Lane Distance: | 36 feet |

*Site Data*

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

*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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | -2.62 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -16.99 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -13.70 | -4.51 | -1.20 | -5.16 | 0.000 | 0.000 |

*Unmitigated Noise Levels (without Topo and barrier attenuation)*

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 60.1 | 57.6 | 53.2 | 54.8 | 61.6 | 61.7 |
| Medium Trucks: | 56.7 | 55.3 | 45.0 | 47.7 | 56.0 | 56.1 |
| Heavy Trucks: | 64.8 | 63.0 | 60.2 | 55.7 | 64.0 | 64.5 |
| Vehicle Noise: | 66.6 | 64.7 | 61.1 | 58.6 | 66.4 | 66.7 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 57 | 124 | 266 | 574 |
| CNEL: | 60 | 130 | 281 | 604 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Opening Year Cumulative w/ Proj
Road Name: Graham St.
Road Segment: s/o Cactus Av.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | |
|---|---|
| Average Daily Traffic (Adt): | 12,600 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 1,260 vehicles |
| Vehicle Speed: | 45 mph |
| Near/Far Lane Distance: | 36 feet |

*Site Data*

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

*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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | -1.31 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -15.67 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -12.38 | -4.51 | -1.20 | -5.16 | 0.000 | 0.000 |

*Unmitigated Noise Levels (without Topo and barrier attenuation)*

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 61.4 | 58.9 | 54.5 | 56.1 | 62.9 | 63.1 |
| Medium Trucks: | 58.1 | 56.7 | 46.4 | 49.0 | 57.3 | 57.4 |
| Heavy Trucks: | 66.2 | 64.3 | 61.6 | 57.0 | 65.3 | 65.8 |
| Vehicle Noise: | 67.9 | 66.0 | 62.5 | 59.9 | 67.7 | 68.0 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 70 | 151 | 326 | 703 |
| CNEL: | 74 | 159 | 343 | 740 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Opening Year Cumulative w/ Proj
Road Name: Heacock St.
Road Segment: n/o Cactus Av.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | |
|---|---|
| Average Daily Traffic (Adt): | 16,110 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 1,611 vehicles |
| Vehicle Speed: | 45 mph |
| Near/Far Lane Distance: | 48 feet |

*Site Data*

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.97% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.20% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.82% |

*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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | -0.23 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -14.71 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -11.43 | -4.43 | -1.20 | -5.16 | 0.000 | 0.000 |

*Unmitigated Noise Levels (without Topo and barrier attenuation)*

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 62.6 | 60.1 | 55.7 | 57.2 | 64.1 | 64.2 |
| Medium Trucks: | 59.1 | 57.7 | 47.4 | 50.0 | 58.3 | 58.4 |
| Heavy Trucks: | 67.2 | 65.4 | 62.6 | 58.0 | 66.4 | 66.8 |
| Vehicle Noise: | 69.0 | 67.0 | 63.5 | 61.0 | 68.8 | 69.1 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 83 | 179 | 385 | 830 |
| CNEL: | 87 | 188 | 405 | 874 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Opening Year Cumulative w/ Proj
Road Name: Heacock St.
Road Segment: s/o Cactus Av.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | |
|---|---|
| Average Daily Traffic (Adt): | 30,460 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 3,046 vehicles |
| Vehicle Speed: | 45 mph |
| Near/Far Lane Distance: | 48 feet |

*Site Data*

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 90.78% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 2.94% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.28% |

*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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | 2.58 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -12.32 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -9.02 | -4.43 | -1.20 | -5.16 | 0.000 | 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 | 62.9 | 58.5 | 60.1 | 66.9 | 67.0 |
| Medium Trucks: | 61.5 | 60.1 | 49.8 | 52.4 | 60.7 | 60.8 |
| Heavy Trucks: | 69.6 | 67.8 | 65.0 | 60.4 | 68.8 | 69.2 |
| Vehicle Noise: | 71.5 | 69.5 | 66.0 | 63.6 | 71.3 | 71.7 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 123 | 264 | 569 | 1,226 |
| CNEL: | 129 | 278 | 599 | 1,290 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Opening Year Cumulative w/ Proj
Road Name: Heacock St.
Road Segment: s/o John F. Kennedy Dr.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 28,260 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 2,826 | vehicles |
| Vehicle Speed: | 50 | mph |
| Near/Far Lane Distance: | 48 | feet |

**Site Data**

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 90.90% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 2.90% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.20% |

**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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 1.80 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -13.16 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -9.86 | -4.43 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 66.4 | 63.9 | 59.5 | 61.0 | 67.8 | 68.0 |
| Medium Trucks: | 62.2 | 60.8 | 50.5 | 53.1 | 61.4 | 61.5 |
| Heavy Trucks: | 69.9 | 68.1 | 65.3 | 60.7 | 69.1 | 69.5 |
| Vehicle Noise: | 72.0 | 70.0 | 66.4 | 64.2 | 71.9 | 72.2 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 134 | 289 | 622 | 1,340 |
| CNEL: | 141 | 303 | 653 | 1,407 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Opening Year Cumulative w/ Proj
Road Name: Heacock St.
Road Segment: s/o Gentian Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 23,760 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 2,376 | vehicles |
| Vehicle Speed: | 50 | mph |
| Near/Far Lane Distance: | 24 | feet |

**Site Data**

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 91.17% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 2.81% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.02% |

**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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 1.06 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -14.05 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -10.74 | -4.57 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 65.5 | 63.0 | 58.6 | 60.1 | 66.9 | 67.1 |
| Medium Trucks: | 61.2 | 59.8 | 49.5 | 52.1 | 60.4 | 60.5 |
| Heavy Trucks: | 68.9 | 67.0 | 64.3 | 59.7 | 68.0 | 68.5 |
| Vehicle Noise: | 71.0 | 69.0 | 65.4 | 63.3 | 70.9 | 71.3 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 115 | 249 | 536 | 1,154 |
| CNEL: | 121 | 261 | 562 | 1,212 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Opening Year Cumulative w/ Proj
Road Name: Heacock St.
Road Segment: s/o Iris Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 21,260 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 2,126 | vehicles |
| Vehicle Speed: | 50 | mph |
| Near/Far Lane Distance: | 24 | feet |

**Site Data**

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 91.35% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 2.75% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 5.90% |

**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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 0.59 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -14.62 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -11.31 | -4.57 | -1.20 | -5.16 | 0.000 | 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 | 62.5 | 58.1 | 59.7 | 66.5 | 66.6 |
| Medium Trucks: | 60.6 | 59.2 | 48.9 | 51.5 | 59.8 | 59.9 |
| Heavy Trucks: | 68.3 | 66.5 | 63.7 | 59.1 | 67.5 | 67.9 |
| Vehicle Noise: | 70.4 | 68.5 | 64.9 | 62.7 | 70.4 | 70.7 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 106 | 229 | 494 | 1,064 |
| CNEL: | 112 | 241 | 518 | 1,117 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Opening Year Cumulative w/ Proj
Road Name: Heacock St.
Road Segment: s/o Krameria Av. (North)
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 21,760 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 2,176 | vehicles |
| Vehicle Speed: | 50 | mph |
| Near/Far Lane Distance: | 24 | feet |

**Site Data**

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 90.46% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.04% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.51% |

**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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 0.65 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -14.09 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -10.79 | -4.57 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 65.1 | 62.6 | 58.2 | 59.7 | 66.5 | 66.7 |
| Medium Trucks: | 61.1 | 59.7 | 49.4 | 52.0 | 60.3 | 60.4 |
| Heavy Trucks: | 68.8 | 67.0 | 64.2 | 59.6 | 68.0 | 68.5 |
| Vehicle Noise: | 70.8 | 68.9 | 65.3 | 63.1 | 70.7 | 71.1 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 112 | 242 | 520 | 1,121 |
| CNEL: | 118 | 254 | 547 | 1,178 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Opening Year Cumulative w/ Proj
Road Name: Heacock St.
Road Segment: n/o Cardinal Av.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | |
|---|---|
| Average Daily Traffic (Adt): | 22,100 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 2,210 vehicles |
| Vehicle Speed: | 40 mph |
| Near/Far Lane Distance: | 48 feet |

*Site Data*

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 90.69% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 2.97% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.34% |

*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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 66.51 | 1.69 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 77.72 | -13.15 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 82.99 | -9.86 | -4.43 | -1.20 | -5.16 | 0.000 | 0.000 |

*Unmitigated Noise Levels (without Topo and barrier attenuation)*

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 62.6 | 60.1 | 55.7 | 57.2 | 64.0 | 64.2 |
| Medium Trucks: | 58.9 | 57.5 | 47.2 | 49.9 | 58.1 | 58.2 |
| Heavy Trucks: | 67.5 | 65.7 | 62.9 | 58.3 | 66.7 | 67.1 |
| Vehicle Noise: | 69.1 | 67.2 | 63.8 | 61.2 | 68.9 | 69.3 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 85 | 183 | 394 | 849 |
| CNEL: | 90 | 193 | 416 | 895 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Opening Year Cumulative w/ Proj
Road Name: Heacock St.
Road Segment: s/o Cardinal Av.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | |
|---|---|
| Average Daily Traffic (Adt): | 20,630 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 2,063 vehicles |
| Vehicle Speed: | 40 mph |
| Near/Far Lane Distance: | 48 feet |

*Site Data*

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 90.68% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 2.97% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.35% |

*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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 66.51 | 1.39 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 77.72 | -13.45 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 82.99 | -10.15 | -4.43 | -1.20 | -5.16 | 0.000 | 0.000 |

*Unmitigated Noise Levels (without Topo and barrier attenuation)*

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 62.3 | 59.8 | 55.4 | 56.9 | 63.7 | 63.9 |
| Medium Trucks: | 58.6 | 57.2 | 46.9 | 49.5 | 57.8 | 57.9 |
| Heavy Trucks: | 67.2 | 65.4 | 62.6 | 58.0 | 66.4 | 66.8 |
| Vehicle Noise: | 68.9 | 66.9 | 63.5 | 60.9 | 68.6 | 69.0 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 81 | 175 | 377 | 812 |
| CNEL: | 86 | 184 | 397 | 856 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Opening Year Cumulative w/ Proj
Road Name: Heacock St.
Road Segment: s/o San Michele Rd.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | |
|---|---|
| Average Daily Traffic (Adt): | 4,300 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 430 vehicles |
| Vehicle Speed: | 50 mph |
| Near/Far Lane Distance: | 24 feet |

*Site Data*

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

*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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | -6.43 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -20.79 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -17.51 | -4.57 | -1.20 | -5.16 | 0.000 | 0.000 |

*Unmitigated Noise Levels (without Topo and barrier attenuation)*

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 58.0 | 55.5 | 51.1 | 52.6 | 59.5 | 59.6 |
| Medium Trucks: | 54.4 | 53.0 | 42.7 | 45.3 | 53.6 | 53.7 |
| Heavy Trucks: | 62.1 | 60.3 | 57.5 | 52.9 | 61.3 | 61.7 |
| Vehicle Noise: | 64.0 | 62.1 | 58.5 | 56.2 | 63.9 | 64.2 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 39 | 84 | 182 | 392 |
| CNEL: | 41 | 89 | 191 | 412 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Opening Year Cumulative w/ Proj
Road Name: Heacock St.
Road Segment: s/o Nandina Av.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | |
|---|---|
| Average Daily Traffic (Adt): | 200 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 20 vehicles |
| Vehicle Speed: | 25 mph |
| Near/Far Lane Distance: | 24 feet |

*Site Data*

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

*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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 58.73 | -16.75 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 70.80 | -31.11 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 77.97 | -27.82 | -4.57 | -1.20 | -5.16 | 0.000 | 0.000 |

*Unmitigated Noise Levels (without Topo and barrier attenuation)*

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 36.2 | 33.7 | 29.3 | 30.9 | 37.7 | 37.8 |
| Medium Trucks: | 33.9 | 32.5 | 22.2 | 24.8 | 33.1 | 33.2 |
| Heavy Trucks: | 44.4 | 42.5 | 39.8 | 35.2 | 43.5 | 44.0 |
| Vehicle Noise: | 45.3 | 43.4 | 40.2 | 36.8 | 44.8 | 45.2 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 2 | 5 | 10 | 21 |
| CNEL: | 2 | 5 | 10 | 22 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Opening Year Cumulative w/ Proj
Road Name: Indian St.
Road Segment: n/o Krameria Av.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 6,300 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 630 vehicles |
| Vehicle Speed: | 50 mph |
| Near/Far Lane Distance: | 36 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

**NOISE MODEL INPUTS**

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 90.20% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.13% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.67% |

**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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | -4.75 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -19.35 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -16.06 | -4.51 | -1.20 | -5.16 | 0.000 | 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 | 57.2 | 52.8 | 54.4 | 61.2 | 61.4 |
| Medium Trucks: | 55.9 | 54.5 | 44.2 | 46.9 | 55.1 | 55.2 |
| Heavy Trucks: | 63.6 | 61.8 | 59.0 | 54.4 | 62.8 | 63.2 |
| Vehicle Noise: | 65.6 | 63.7 | 60.1 | 57.8 | 65.5 | 65.8 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 50 | 108 | 232 | 500 |
| CNEL: | 53 | 113 | 244 | 526 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Opening Year Cumulative w/ Proj
Road Name: Indian St.
Road Segment: s/o Krameria Av.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 2,200 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 220 vehicles |
| Vehicle Speed: | 50 mph |
| Near/Far Lane Distance: | 36 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

**NOISE MODEL INPUTS**

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 90.65% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 2.99% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.37% |

**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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | -9.30 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -24.12 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -20.83 | -4.51 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 55.2 | 52.7 | 48.3 | 49.8 | 56.6 | 56.8 |
| Medium Trucks: | 51.2 | 49.8 | 39.5 | 42.1 | 50.4 | 50.5 |
| Heavy Trucks: | 58.8 | 57.0 | 54.2 | 49.7 | 58.0 | 58.5 |
| Vehicle Noise: | 60.9 | 58.9 | 55.3 | 53.1 | 60.8 | 61.1 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 24 | 52 | 113 | 244 |
| CNEL: | 26 | 55 | 119 | 256 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Opening Year Cumulative w/ Proj
Road Name: Cactus Av.
Road Segment: w/o Elsworth St.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 58,660 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 5,866 vehicles |
| Vehicle Speed: | 50 mph |
| Near/Far Lane Distance: | 36 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

**NOISE MODEL INPUTS**

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 90.11% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.15% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.73% |

**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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 4.94 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -9.62 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -6.33 | -4.51 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 69.4 | 66.9 | 62.5 | 64.1 | 70.9 | 71.0 |
| Medium Trucks: | 65.7 | 64.3 | 53.9 | 56.6 | 64.9 | 65.0 |
| Heavy Trucks: | 73.3 | 71.5 | 68.7 | 64.2 | 72.5 | 73.0 |
| Vehicle Noise: | 75.3 | 73.4 | 69.8 | 67.5 | 75.2 | 75.5 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 222 | 479 | 1,031 | 2,222 |
| CNEL: | 234 | 503 | 1,084 | 2,335 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Opening Year Cumulative w/ Proj
Road Name: Cactus Av.
Road Segment: e/o Elsworth St.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 59,560 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 5,956 vehicles |
| Vehicle Speed: | 50 mph |
| Near/Far Lane Distance: | 36 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

**NOISE MODEL INPUTS**

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 90.09% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.16% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.75% |

**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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 5.00 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -9.55 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -6.25 | -4.51 | -1.20 | -5.16 | 0.000 | 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 | 67.0 | 62.6 | 64.1 | 70.9 | 71.1 |
| Medium Trucks: | 65.7 | 64.3 | 54.0 | 56.7 | 64.9 | 65.0 |
| Heavy Trucks: | 73.4 | 71.6 | 68.8 | 64.2 | 72.6 | 73.0 |
| Vehicle Noise: | 75.4 | 73.4 | 69.9 | 67.6 | 75.3 | 75.6 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 225 | 484 | 1,043 | 2,246 |
| CNEL: | 236 | 509 | 1,096 | 2,361 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Opening Year Cumulative w/ Proj
Road Name: Cactus Av.
Road Segment: e/o Frederick St.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 60,060 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 6,006 vehicles |
| Vehicle Speed: | 50 mph |
| Near/Far Lane Distance: | 36 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.98% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.20% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.82% |

**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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 5.03 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -9.46 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -6.17 | -4.51 | -1.20 | -5.16 | 0.000 | 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 | 67.0 | 62.6 | 64.2 | 71.0 | 71.1 |
| Medium Trucks: | 65.8 | 64.4 | 54.1 | 56.7 | 65.0 | 65.1 |
| Heavy Trucks: | 73.5 | 71.7 | 68.9 | 64.3 | 72.7 | 73.1 |
| Vehicle Noise: | 75.5 | 73.5 | 69.9 | 67.6 | 75.3 | 75.7 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 227 | 489 | 1,053 | 2,268 |
| CNEL: | 238 | 514 | 1,107 | 2,385 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Opening Year Cumulative w/ Proj
Road Name: Cactus Av.
Road Segment: e/o Graham St.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 50,460 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 5,046 vehicles |
| Vehicle Speed: | 50 mph |
| Near/Far Lane Distance: | 36 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 90.18% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.13% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.69% |

**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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 4.29 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -10.31 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -7.01 | -4.51 | -1.20 | -5.16 | 0.000 | 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 | 66.3 | 61.9 | 63.4 | 70.2 | 70.4 |
| Medium Trucks: | 65.0 | 63.6 | 53.3 | 55.9 | 64.2 | 64.3 |
| Heavy Trucks: | 72.7 | 70.8 | 68.1 | 63.5 | 71.8 | 72.3 |
| Vehicle Noise: | 74.6 | 72.7 | 69.1 | 66.8 | 74.5 | 74.9 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 200 | 432 | 930 | 2,004 |
| CNEL: | 211 | 454 | 978 | 2,107 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Opening Year Cumulative w/ Proj
Road Name: Cactus Av.
Road Segment: e/o Heacock St.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 31,700 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 3,170 vehicles |
| Vehicle Speed: | 45 mph |
| Near/Far Lane Distance: | 36 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.87% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.23% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.89% |

**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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | 2.71 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -11.73 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -8.44 | -4.51 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 65.5 | 63.0 | 58.5 | 60.1 | 66.9 | 67.1 |
| Medium Trucks: | 62.0 | 60.6 | 50.3 | 52.9 | 61.2 | 61.3 |
| Heavy Trucks: | 70.1 | 68.3 | 65.5 | 60.9 | 69.3 | 69.7 |
| Vehicle Noise: | 71.9 | 69.9 | 66.4 | 63.9 | 71.7 | 72.0 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 129 | 278 | 599 | 1,291 |
| CNEL: | 136 | 293 | 631 | 1,360 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: Opening Year Cumulative w/ Proj
Road Name: John F. Kennedy Dr.
Road Segment: e/o Heacock St.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 10,700 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 1,070 vehicles |
| Vehicle Speed: | 45 mph |
| Near/Far Lane Distance: | 48 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.81% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.26% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.94% |

**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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | -2.01 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -16.42 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -13.13 | -4.43 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 60.8 | 58.3 | 53.9 | 55.5 | 62.3 | 62.4 |
| Medium Trucks: | 57.4 | 56.0 | 45.7 | 48.3 | 56.6 | 56.7 |
| Heavy Trucks: | 65.5 | 63.7 | 60.9 | 56.3 | 64.7 | 65.1 |
| Vehicle Noise: | 67.2 | 65.3 | 61.8 | 59.3 | 67.1 | 67.4 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 64 | 137 | 295 | 636 |
| CNEL: | 67 | 144 | 311 | 670 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Opening Year Cumulative w/ Proj
Road Name: Krameria Av.
Road Segment: e/o Indian St.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 5,500 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 550 vehicles |
| Vehicle Speed: | 40 mph |
| Near/Far Lane Distance: | 12 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

**NOISE MODEL INPUTS**

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 90.83% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 2.93% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.24% |

**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: | 99.945 |
| Medium Trucks: | 99.856 |
| Heavy Trucks: | 99.865 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 66.51 | -4.34 | -4.62 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 77.72 | -19.26 | -4.61 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 82.99 | -15.97 | -4.61 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 56.4 | 53.9 | 49.4 | 51.0 | 57.8 | 58.0 |
| Medium Trucks: | 52.6 | 51.2 | 40.9 | 43.6 | 51.9 | 52.0 |
| Heavy Trucks: | 61.2 | 59.4 | 56.6 | 52.0 | 60.4 | 60.8 |
| Vehicle Noise: | 62.9 | 60.9 | 57.5 | 54.9 | 62.7 | 63.0 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 32 | 70 | 151 | 325 |
| CNEL: | 34 | 74 | 159 | 342 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Opening Year Cumulative w/ Proj
Road Name: Harley Knox Bl.
Road Segment: w/o Patterson Av.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 29,230 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 2,923 vehicles |
| Vehicle Speed: | 45 mph |
| Near/Far Lane Distance: | 48 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

**NOISE MODEL INPUTS**

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 90.29% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.10% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.62% |

**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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | 2.38 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -12.27 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -8.97 | -4.43 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 65.2 | 62.7 | 58.3 | 59.8 | 66.7 | 66.8 |
| Medium Trucks: | 61.6 | 60.1 | 49.8 | 52.5 | 60.8 | 60.9 |
| Heavy Trucks: | 69.7 | 67.8 | 65.1 | 60.5 | 68.8 | 69.3 |
| Vehicle Noise: | 71.5 | 69.5 | 66.0 | 63.5 | 71.3 | 71.6 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 122 | 262 | 565 | 1,218 |
| CNEL: | 128 | 276 | 595 | 1,282 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Opening Year Cumulative w/ Proj
Road Name: Harley Knox Bl.
Road Segment: w/o Webster Av.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 24,130 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 2,413 vehicles |
| Vehicle Speed: | 45 mph |
| Near/Far Lane Distance: | 24 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

**NOISE MODEL INPUTS**

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 90.50% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.03% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.48% |

**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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | 1.55 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -13.20 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -9.90 | -4.57 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 64.2 | 61.7 | 57.3 | 58.9 | 65.7 | 65.9 |
| Medium Trucks: | 60.5 | 59.1 | 48.8 | 51.4 | 59.7 | 59.8 |
| Heavy Trucks: | 68.6 | 66.7 | 64.0 | 59.4 | 67.7 | 68.2 |
| Vehicle Noise: | 70.4 | 68.5 | 64.9 | 62.5 | 70.3 | 70.6 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 104 | 224 | 482 | 1,039 |
| CNEL: | 109 | 236 | 508 | 1,094 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: Opening Year Cumulative w/ Proj
Road Name: Harley Knox Bl.
Road Segment: e/o Webster Av.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 23,830 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 2,383 vehicles |
| Vehicle Speed: | 45 mph |
| Near/Far Lane Distance: | 24 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

**NOISE MODEL INPUTS**

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 90.51% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.03% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.47% |

**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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | 1.50 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -13.26 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -9.96 | -4.57 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 64.2 | 61.7 | 57.3 | 58.8 | 65.6 | 65.8 |
| Medium Trucks: | 60.4 | 59.0 | 48.7 | 51.3 | 59.6 | 59.7 |
| Heavy Trucks: | 68.5 | 66.7 | 63.9 | 59.4 | 67.7 | 68.2 |
| Vehicle Noise: | 70.3 | 68.4 | 64.9 | 62.5 | 70.2 | 70.5 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 103 | 222 | 478 | 1,030 |
| CNEL: | 108 | 234 | 503 | 1,084 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: GP Building (2035) w/o Project
Road Name: Graham St.
Road Segment: n/o Cactus Av.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 13,000 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 1,300 | vehicles |
| Vehicle Speed: | 45 | mph |
| Near/Far Lane Distance: | 36 | feet |

*Site Data*

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

*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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | -1.17 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -15.53 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -12.25 | -4.51 | -1.20 | -5.16 | 0.000 | 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 | 59.1 | 54.7 | 56.2 | 63.0 | 63.2 |
| Medium Trucks: | 58.2 | 56.8 | 46.5 | 49.1 | 57.4 | 57.5 |
| Heavy Trucks: | 66.3 | 64.5 | 61.7 | 57.1 | 65.5 | 65.9 |
| Vehicle Noise: | 68.0 | 66.1 | 62.6 | 60.1 | 67.8 | 68.2 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 72 | 155 | 333 | 717 |
| CNEL: | 76 | 163 | 351 | 756 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: GP Building (2035) w/o Project
Road Name: Graham St.
Road Segment: s/o Cactus Av.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 20,000 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 2,000 | vehicles |
| Vehicle Speed: | 45 | mph |
| Near/Far Lane Distance: | 36 | feet |

*Site Data*

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

*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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | 0.70 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -13.66 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -10.37 | -4.51 | -1.20 | -5.16 | 0.000 | 0.000 |

*Unmitigated Noise Levels (without Topo and barrier attenuation)*

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 63.4 | 61.0 | 56.5 | 58.1 | 64.9 | 65.1 |
| Medium Trucks: | 60.1 | 58.7 | 48.4 | 51.0 | 59.3 | 59.4 |
| Heavy Trucks: | 68.2 | 66.3 | 63.6 | 59.0 | 67.3 | 67.8 |
| Vehicle Noise: | 69.9 | 68.0 | 64.5 | 61.9 | 69.7 | 70.0 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 96 | 206 | 444 | 956 |
| CNEL: | 101 | 217 | 467 | 1,007 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: GP Building (2035) w/o Project
Road Name: Heacock St.
Road Segment: n/o Cactus Av.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 18,600 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 1,860 | vehicles |
| Vehicle Speed: | 45 | mph |
| Near/Far Lane Distance: | 48 | feet |

*Site Data*

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

*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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | 0.39 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -13.98 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -10.69 | -4.43 | -1.20 | -5.16 | 0.000 | 0.000 |

*Unmitigated Noise Levels (without Topo and barrier attenuation)*

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 63.2 | 60.7 | 56.3 | 57.9 | 64.7 | 64.8 |
| Medium Trucks: | 59.8 | 58.4 | 48.1 | 50.8 | 59.1 | 59.1 |
| Heavy Trucks: | 67.9 | 66.1 | 63.3 | 58.8 | 67.1 | 67.6 |
| Vehicle Noise: | 69.7 | 67.7 | 64.2 | 61.7 | 69.5 | 69.8 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 92 | 199 | 428 | 923 |
| CNEL: | 97 | 209 | 451 | 972 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: GP Building (2035) w/o Project
Road Name: Heacock St.
Road Segment: s/o Cactus Av.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 28,100 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 2,810 | vehicles |
| Vehicle Speed: | 45 | mph |
| Near/Far Lane Distance: | 48 | feet |

*Site Data*

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

*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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | 2.18 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -12.18 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -8.90 | -4.43 | -1.20 | -5.16 | 0.000 | 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 | 62.5 | 58.1 | 59.7 | 66.5 | 66.6 |
| Medium Trucks: | 61.6 | 60.2 | 49.9 | 52.6 | 60.8 | 60.9 |
| Heavy Trucks: | 69.7 | 67.9 | 65.1 | 60.6 | 68.9 | 69.4 |
| Vehicle Noise: | 71.5 | 69.5 | 66.0 | 63.5 | 71.3 | 71.6 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 122 | 262 | 564 | 1,215 |
| CNEL: | 128 | 276 | 594 | 1,280 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: GP Building (2035) w/o Project
Road Name: Heacock St.
Road Segment: s/o John F. Kennedy Dr.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 27,200 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 2,720 | vehicles |
| Vehicle Speed: | 50 | mph |
| Near/Far Lane Distance: | 48 | feet |

*Site Data*

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

*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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 1.58 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -12.78 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -9.50 | -4.43 | -1.20 | -5.16 | 0.000 | 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 | 63.7 | 59.2 | 60.8 | 67.6 | 67.8 |
| Medium Trucks: | 62.6 | 61.2 | 50.9 | 53.5 | 61.8 | 61.9 |
| Heavy Trucks: | 70.3 | 68.4 | 65.7 | 61.1 | 69.4 | 69.9 |
| Vehicle Noise: | 72.2 | 70.2 | 66.7 | 64.3 | 72.0 | 72.4 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 137 | 295 | 636 | 1,370 |
| CNEL: | 144 | 310 | 669 | 1,440 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: GP Building (2035) w/o Project
Road Name: Heacock St.
Road Segment: s/o Gentian Av.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 24,000 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 2,400 | vehicles |
| Vehicle Speed: | 50 | mph |
| Near/Far Lane Distance: | 24 | feet |

*Site Data*

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

*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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 1.04 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -13.33 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -10.04 | -4.57 | -1.20 | -5.16 | 0.000 | 0.000 |

*Unmitigated Noise Levels (without Topo and barrier attenuation)*

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 65.5 | 63.0 | 58.5 | 60.1 | 66.9 | 67.1 |
| Medium Trucks: | 61.9 | 60.5 | 50.2 | 52.8 | 61.1 | 61.2 |
| Heavy Trucks: | 69.6 | 67.7 | 65.0 | 60.4 | 68.7 | 69.2 |
| Vehicle Noise: | 71.5 | 69.6 | 66.0 | 63.6 | 71.4 | 71.7 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 123 | 265 | 572 | 1,232 |
| CNEL: | 130 | 279 | 601 | 1,296 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: GP Building (2035) w/o Project
Road Name: Heacock St.
Road Segment: s/o Iris Av.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 23,300 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 2,330 | vehicles |
| Vehicle Speed: | 50 | mph |
| Near/Far Lane Distance: | 24 | feet |

*Site Data*

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

*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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 0.91 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -13.46 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -10.17 | -4.57 | -1.20 | -5.16 | 0.000 | 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 | 62.8 | 58.4 | 60.0 | 66.8 | 67.0 |
| Medium Trucks: | 61.8 | 60.4 | 50.1 | 52.7 | 61.0 | 61.1 |
| Heavy Trucks: | 69.4 | 67.6 | 64.8 | 60.3 | 68.6 | 69.1 |
| Vehicle Noise: | 71.4 | 69.4 | 65.9 | 63.5 | 71.2 | 71.6 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 121 | 260 | 561 | 1,208 |
| CNEL: | 127 | 274 | 590 | 1,270 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: GP Building (2035) w/o Project
Road Name: Heacock St.
Road Segment: s/o Krameria Av. (North)
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 23,900 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 2,390 | vehicles |
| Vehicle Speed: | 50 | mph |
| Near/Far Lane Distance: | 24 | feet |

*Site Data*

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

*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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 1.02 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -13.34 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -10.06 | -4.57 | -1.20 | -5.16 | 0.000 | 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 | 63.0 | 58.5 | 60.1 | 66.9 | 67.1 |
| Medium Trucks: | 61.9 | 60.5 | 50.2 | 52.8 | 61.1 | 61.2 |
| Heavy Trucks: | 69.5 | 67.7 | 65.0 | 60.4 | 68.7 | 69.2 |
| Vehicle Noise: | 71.5 | 69.5 | 66.0 | 63.6 | 71.3 | 71.7 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 123 | 265 | 570 | 1,229 |
| CNEL: | 129 | 278 | 600 | 1,292 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: GP Building (2035) w/o Project
Road Name: Heacock St.
Road Segment: n/o Cardinal Av.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 23,900 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 2,390 | vehicles |
| Vehicle Speed: | 40 | mph |
| Near/Far Lane Distance: | 48 | feet |

*Site Data*

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

*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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 66.51 | 1.99 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 77.72 | -12.38 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 82.99 | -9.09 | -4.43 | -1.20 | -5.16 | 0.000 | 0.000 |

*Unmitigated Noise Levels (without Topo and barrier attenuation)*

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 62.9 | 60.4 | 55.9 | 57.5 | 64.3 | 64.5 |
| Medium Trucks: | 59.7 | 58.3 | 48.0 | 50.6 | 58.9 | 59.0 |
| Heavy Trucks: | 68.3 | 66.4 | 63.7 | 59.1 | 67.4 | 67.9 |
| Vehicle Noise: | 69.8 | 67.9 | 64.5 | 61.7 | 69.6 | 69.9 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 93 | 201 | 434 | 935 |
| CNEL: | 99 | 212 | 458 | 986 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: GP Building (2035) w/o Project
Road Name: Heacock St.
Road Segment: s/o Cardinal Av.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 23,900 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 2,390 | vehicles |
| Vehicle Speed: | 40 | mph |
| Near/Far Lane Distance: | 48 | feet |

*Site Data*

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

*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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 66.51 | 1.99 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 77.72 | -12.38 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 82.99 | -9.09 | -4.43 | -1.20 | -5.16 | 0.000 | 0.000 |

*Unmitigated Noise Levels (without Topo and barrier attenuation)*

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 62.9 | 60.4 | 55.9 | 57.5 | 64.3 | 64.5 |
| Medium Trucks: | 59.7 | 58.3 | 48.0 | 50.6 | 58.9 | 59.0 |
| Heavy Trucks: | 68.3 | 66.4 | 63.7 | 59.1 | 67.4 | 67.9 |
| Vehicle Noise: | 69.8 | 67.9 | 64.5 | 61.7 | 69.6 | 69.9 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 93 | 201 | 434 | 935 |
| CNEL: | 99 | 212 | 458 | 986 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: GP Building (2035) w/o Project
Road Name: Heacock St.
Road Segment: s/o San Michele Rd.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 12,500 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 1,250 | vehicles |
| Vehicle Speed: | 50 | mph |
| Near/Far Lane Distance: | 24 | feet |

*Site Data*

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

*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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | -1.80 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -16.16 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -12.87 | -4.57 | -1.20 | -5.16 | 0.000 | 0.000 |

*Unmitigated Noise Levels (without Topo and barrier attenuation)*

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 62.6 | 60.1 | 55.7 | 57.3 | 64.1 | 64.3 |
| Medium Trucks: | 59.1 | 57.7 | 47.3 | 50.0 | 58.3 | 58.4 |
| Heavy Trucks: | 66.7 | 64.9 | 62.1 | 57.6 | 65.9 | 66.4 |
| Vehicle Noise: | 68.7 | 66.7 | 63.1 | 60.8 | 68.5 | 68.9 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 80 | 172 | 370 | 798 |
| CNEL: | 84 | 181 | 389 | 839 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: GP Building (2035) w/o Project
Road Name: Heacock St.
Road Segment: s/o Nandina Av.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 8,100 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 810 | vehicles |
| Vehicle Speed: | 25 | mph |
| Near/Far Lane Distance: | 24 | feet |

*Site Data*

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

*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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 58.73 | -0.67 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 70.80 | -15.03 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 77.97 | -11.75 | -4.57 | -1.20 | -5.16 | 0.000 | 0.000 |

*Unmitigated Noise Levels (without Topo and barrier attenuation)*

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 52.3 | 49.8 | 45.4 | 46.9 | 53.7 | 53.9 |
| Medium Trucks: | 50.0 | 48.6 | 38.3 | 40.9 | 49.2 | 49.3 |
| Heavy Trucks: | 60.5 | 58.6 | 55.9 | 51.3 | 59.6 | 60.1 |
| Vehicle Noise: | 61.4 | 59.5 | 56.3 | 52.9 | 60.9 | 61.3 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 25 | 53 | 115 | 248 |
| CNEL: | 26 | 57 | 122 | 263 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GP Building (2035) w/o Project
Road Name: Indian St.
Road Segment: n/o Krameria Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 13,400 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 1,340 vehicles |
| Vehicle Speed: | 50 mph |
| Near/Far Lane Distance: | 36 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | -1.50 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -15.86 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -12.57 | -4.51 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 63.0 | 60.5 | 56.1 | 57.6 | 64.5 | 64.6 |
| Medium Trucks: | 59.4 | 58.0 | 47.7 | 50.3 | 58.6 | 58.7 |
| Heavy Trucks: | 67.1 | 65.3 | 62.5 | 57.9 | 66.3 | 66.7 |
| Vehicle Noise: | 69.0 | 67.1 | 63.5 | 61.2 | 68.9 | 69.2 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 84 | 182 | 391 | 843 |
| CNEL: | 89 | 191 | 412 | 887 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GP Building (2035) w/o Project
Road Name: Indian St.
Road Segment: s/o Krameria Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 18,900 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 1,890 vehicles |
| Vehicle Speed: | 50 mph |
| Near/Far Lane Distance: | 36 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 0.00 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -14.36 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -11.08 | -4.51 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 64.5 | 62.0 | 57.6 | 59.1 | 65.9 | 66.1 |
| Medium Trucks: | 60.9 | 59.5 | 49.2 | 51.8 | 60.1 | 60.2 |
| Heavy Trucks: | 68.6 | 66.8 | 64.0 | 59.4 | 67.8 | 68.2 |
| Vehicle Noise: | 70.5 | 68.6 | 65.0 | 62.7 | 70.4 | 70.7 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 106 | 228 | 492 | 1,061 |
| CNEL: | 112 | 240 | 518 | 1,115 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GP Building (2035) w/o Project
Road Name: Cactus Av.
Road Segment: w/o Elsworth St.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 68,400 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 6,840 vehicles |
| Vehicle Speed: | 50 mph |
| Near/Far Lane Distance: | 36 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 5.58 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -8.78 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -5.49 | -4.51 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 70.1 | 67.6 | 63.2 | 64.7 | 71.5 | 71.7 |
| Medium Trucks: | 66.5 | 65.1 | 54.8 | 57.4 | 65.7 | 65.8 |
| Heavy Trucks: | 74.2 | 72.3 | 69.6 | 65.0 | 73.3 | 73.8 |
| Vehicle Noise: | 76.1 | 74.2 | 70.6 | 68.2 | 76.0 | 76.3 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 250 | 539 | 1,160 | 2,500 |
| CNEL: | 263 | 566 | 1,220 | 2,629 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GP Building (2035) w/o Project
Road Name: Cactus Av.
Road Segment: e/o Elsworth St.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 60,600 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 6,060 vehicles |
| Vehicle Speed: | 50 mph |
| Near/Far Lane Distance: | 36 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 5.06 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -9.30 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -6.02 | -4.51 | -1.20 | -5.16 | 0.000 | 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 | 67.1 | 62.6 | 64.2 | 71.0 | 71.2 |
| Medium Trucks: | 66.0 | 64.6 | 54.3 | 56.9 | 65.2 | 65.3 |
| Heavy Trucks: | 73.6 | 71.8 | 69.1 | 64.5 | 72.8 | 73.3 |
| Vehicle Noise: | 75.6 | 73.6 | 70.1 | 67.7 | 75.4 | 75.8 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 231 | 497 | 1,070 | 2,306 |
| CNEL: | 242 | 522 | 1,126 | 2,425 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: GP Building (2035) w/o Project
Road Name: Cactus Av.
Road Segment: e/o Frederick St.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 59,600 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 5,960 vehicles |
| Vehicle Speed: | 50 mph |
| Near/Far Lane Distance: | 36 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

**NOISE MODEL INPUTS**

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 4.99 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -9.38 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -6.09 | -4.51 | -1.20 | -5.16 | 0.000 | 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 | 67.0 | 62.6 | 64.1 | 70.9 | 71.1 |
| Medium Trucks: | 65.9 | 64.5 | 54.2 | 56.8 | 65.1 | 65.2 |
| Heavy Trucks: | 73.6 | 71.7 | 69.0 | 64.4 | 72.7 | 73.2 |
| Vehicle Noise: | 75.5 | 73.6 | 70.0 | 67.6 | 75.4 | 75.7 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 228 | 491 | 1,059 | 2,281 |
| CNEL: | 240 | 517 | 1,113 | 2,398 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: GP Building (2035) w/o Project
Road Name: Cactus Av.
Road Segment: e/o Graham St.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 50,800 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 5,080 vehicles |
| Vehicle Speed: | 50 mph |
| Near/Far Lane Distance: | 36 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

**NOISE MODEL INPUTS**

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 4.29 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -10.07 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -6.78 | -4.51 | -1.20 | -5.16 | 0.000 | 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 | 66.3 | 61.9 | 63.4 | 70.2 | 70.4 |
| Medium Trucks: | 65.2 | 63.8 | 53.5 | 56.1 | 64.4 | 64.5 |
| Heavy Trucks: | 72.9 | 71.0 | 68.3 | 63.7 | 72.0 | 72.5 |
| Vehicle Noise: | 74.8 | 72.9 | 69.3 | 67.0 | 74.7 | 75.0 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 205 | 442 | 952 | 2,050 |
| CNEL: | 216 | 464 | 1,001 | 2,156 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: GP Building (2035) w/o Project
Road Name: Cactus Av.
Road Segment: e/o Heacock St.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 43,600 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 4,360 vehicles |
| Vehicle Speed: | 45 mph |
| Near/Far Lane Distance: | 36 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

**NOISE MODEL INPUTS**

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | 4.09 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -10.28 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -6.99 | -4.51 | -1.20 | -5.16 | 0.000 | 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 | 64.3 | 59.9 | 61.5 | 68.3 | 68.5 |
| Medium Trucks: | 63.5 | 62.1 | 51.7 | 54.4 | 62.7 | 62.8 |
| Heavy Trucks: | 71.5 | 69.7 | 67.0 | 62.4 | 70.7 | 71.2 |
| Vehicle Noise: | 73.3 | 71.4 | 67.8 | 65.3 | 73.1 | 73.4 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 161 | 346 | 746 | 1,608 |
| CNEL: | 169 | 365 | 786 | 1,693 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: GP Building (2035) w/o Project
Road Name: John F. Kennedy Dr.
Road Segment: e/o Heacock St.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

**Highway Data**

| | |
|---|---|
| Average Daily Traffic (Adt): | 15,500 vehicles |
| Peak Hour Percentage: | 10% |
| Peak Hour Volume: | 1,550 vehicles |
| Vehicle Speed: | 45 mph |
| Near/Far Lane Distance: | 48 feet |

**Site Data**

| | |
|---|---|
| **Barrier Height:** | **0.0 feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 |
| Centerline Dist. to Barrier: | 100.0 feet |
| Centerline Dist. to Observer: | 100.0 feet |
| Barrier Distance to Observer: | 0.0 feet |
| Observer Height (Above Pad): | 5.0 feet |
| Pad Elevation: | 0.0 feet |
| Road Elevation: | 0.0 feet |
| Road Grade: | 0.0% |
| Left View: | -90.0 degrees |
| Right View: | 90.0 degrees |

**NOISE MODEL INPUTS**

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | -0.41 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -14.77 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -11.48 | -4.43 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 62.4 | 59.9 | 55.5 | 57.1 | 63.9 | 64.1 |
| Medium Trucks: | 59.1 | 57.7 | 47.3 | 50.0 | 58.3 | 58.4 |
| Heavy Trucks: | 67.1 | 65.3 | 62.6 | 58.0 | 66.3 | 66.8 |
| Vehicle Noise: | 68.9 | 67.0 | 63.4 | 60.9 | 68.7 | 69.0 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 82 | 176 | 379 | 817 |
| CNEL: | 86 | 185 | 400 | 861 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GP Building (2035) w/o Project
Road Name: Krameria Av.
Road Segment: e/o Indian St.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 8,100 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 810 | vehicles |
| Vehicle Speed: | 40 | mph |
| Near/Far Lane Distance: | 12 | feet |

**Site Data**

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 99.945 |
| Medium Trucks: | 99.856 |
| Heavy Trucks: | 99.865 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 66.51 | -2.71 | -4.62 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 77.72 | -17.07 | -4.61 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 82.99 | -13.79 | -4.61 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 58.0 | 55.5 | 51.1 | 52.6 | 59.4 | 59.6 |
| Medium Trucks: | 54.8 | 53.4 | 43.1 | 45.7 | 54.0 | 54.1 |
| Heavy Trucks: | 63.4 | 61.6 | 58.8 | 54.2 | 62.6 | 63.0 |
| Vehicle Noise: | 64.9 | 63.0 | 59.6 | 56.9 | 64.7 | 65.0 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 44 | 95 | 205 | 442 |
| CNEL: | 47 | 100 | 216 | 466 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GP Building (2035) w/o Project
Road Name: Harley Knox Bl.
Road Segment: w/o Patterson Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 35,500 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 3,550 | vehicles |
| Vehicle Speed: | 45 | mph |
| Near/Far Lane Distance: | 48 | feet |

**Site Data**

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | 3.19 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -11.17 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -7.88 | -4.43 | -1.20 | -5.16 | 0.000 | 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 | 63.5 | 59.1 | 60.7 | 67.5 | 67.6 |
| Medium Trucks: | 62.7 | 61.2 | 50.9 | 53.6 | 61.9 | 62.0 |
| Heavy Trucks: | 70.7 | 68.9 | 66.2 | 61.6 | 69.9 | 70.4 |
| Vehicle Noise: | 72.5 | 70.6 | 67.0 | 64.5 | 72.3 | 72.6 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 142 | 306 | 659 | 1,420 |
| CNEL: | 150 | 322 | 694 | 1,496 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GP Building (2035) w/o Project
Road Name: Harley Knox Bl.
Road Segment: w/o Webster Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 39,300 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 3,930 | vehicles |
| Vehicle Speed: | 45 | mph |
| Near/Far Lane Distance: | 24 | feet |

**Site Data**

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | 3.63 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -10.73 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -7.44 | -4.57 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 66.3 | 63.8 | 59.4 | 61.0 | 67.8 | 67.9 |
| Medium Trucks: | 62.9 | 61.5 | 51.2 | 53.9 | 62.2 | 62.3 |
| Heavy Trucks: | 71.0 | 69.2 | 66.4 | 61.9 | 70.2 | 70.7 |
| Vehicle Noise: | 72.8 | 70.9 | 67.3 | 64.8 | 72.6 | 72.9 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 149 | 320 | 690 | 1,486 |
| CNEL: | 157 | 337 | 727 | 1,565 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GP Building (2035) w/o Project
Road Name: Harley Knox Bl.
Road Segment: e/o Webster Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 39,600 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 3,960 | vehicles |
| Vehicle Speed: | 45 | mph |
| Near/Far Lane Distance: | 24 | feet |

**Site Data**

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.29% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 7.00% |

**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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | 3.67 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -10.69 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -7.41 | -4.57 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 66.3 | 63.9 | 59.4 | 61.0 | 67.8 | 68.0 |
| Medium Trucks: | 63.0 | 61.6 | 51.3 | 53.9 | 62.2 | 62.3 |
| Heavy Trucks: | 71.1 | 69.2 | 66.5 | 61.9 | 70.2 | 70.7 |
| Vehicle Noise: | 72.8 | 70.9 | 67.4 | 64.8 | 72.6 | 73.0 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 149 | 322 | 693 | 1,494 |
| CNEL: | 157 | 339 | 730 | 1,573 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GP Building (2035) w/ Project
Road Name: Graham St.
Road Segment: n/o Cactus Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 13,500 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 1,350 | vehicles |
| Vehicle Speed: | 45 | mph |
| Near/Far Lane Distance: | 36 | feet |

**Site Data**

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 90.09% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.16% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.74% |

**Noise Source Elevations (in feet)**

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

**Lane Equivalent Distance (in feet)**

| | |
|---|---|
| Autos: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | -0.99 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -15.53 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -12.25 | -4.51 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 61.8 | 59.3 | 54.8 | 56.4 | 63.2 | 63.4 |
| Medium Trucks: | 58.2 | 56.8 | 46.5 | 49.1 | 57.4 | 57.5 |
| Heavy Trucks: | 66.3 | 64.5 | 61.7 | 57.1 | 65.5 | 65.9 |
| Vehicle Noise: | 68.1 | 66.1 | 62.6 | 60.1 | 67.9 | 68.2 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 72 | 156 | 336 | 724 |
| CNEL: | 76 | 164 | 354 | 762 |



## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GP Building (2035) w/ Project
Road Name: Graham St.
Road Segment: s/o Cactus Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 22,900 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 2,290 | vehicles |
| Vehicle Speed: | 45 | mph |
| Near/Far Lane Distance: | 36 | feet |

**Site Data**

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 91.01% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 2.87% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.12% |

**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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | 1.35 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -13.66 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -10.37 | -4.51 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 64.1 | 61.6 | 57.2 | 58.7 | 65.6 | 65.7 |
| Medium Trucks: | 60.1 | 58.7 | 48.4 | 51.0 | 59.3 | 59.4 |
| Heavy Trucks: | 68.2 | 66.3 | 63.6 | 59.0 | 67.3 | 67.8 |
| Vehicle Noise: | 70.1 | 68.1 | 64.6 | 62.2 | 69.9 | 70.3 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 99 | 213 | 459 | 990 |
| CNEL: | 104 | 224 | 483 | 1,041 |



## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GP Building (2035) w/ Project
Road Name: Heacock St.
Road Segment: n/o Cactus Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 19,110 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 1,911 | vehicles |
| Vehicle Speed: | 45 | mph |
| Near/Far Lane Distance: | 48 | feet |

**Site Data**

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.93% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.21% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.85% |

**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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | 0.51 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -13.95 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -10.67 | -4.43 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 63.3 | 60.9 | 56.4 | 58.0 | 64.8 | 65.0 |
| Medium Trucks: | 59.9 | 58.5 | 48.1 | 50.8 | 59.1 | 59.2 |
| Heavy Trucks: | 68.0 | 66.1 | 63.4 | 58.8 | 67.1 | 67.6 |
| Vehicle Noise: | 69.7 | 67.8 | 64.3 | 61.8 | 69.5 | 69.9 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 93 | 201 | 432 | 931 |
| CNEL: | 98 | 211 | 455 | 981 |



## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GP Building (2035) w/ Project
Road Name: Heacock St.
Road Segment: s/o Cactus Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 31,050 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 3,105 | vehicles |
| Vehicle Speed: | 45 | mph |
| Near/Far Lane Distance: | 48 | feet |

**Site Data**

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 90.53% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.02% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.45% |

**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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | 2.65 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -12.12 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -8.82 | -4.43 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 65.5 | 63.0 | 58.6 | 60.1 | 66.9 | 67.1 |
| Medium Trucks: | 61.7 | 60.3 | 50.0 | 52.6 | 60.9 | 61.0 |
| Heavy Trucks: | 69.8 | 68.0 | 65.2 | 60.6 | 69.0 | 69.4 |
| Vehicle Noise: | 71.6 | 69.7 | 66.2 | 63.7 | 71.5 | 71.8 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 126 | 270 | 583 | 1,256 |
| CNEL: | 132 | 285 | 613 | 1,321 |

**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: GP Building (2035) w/ Project
Road Name: Heacock St.
Road Segment: s/o John F. Kennedy Dr.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 30,250 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 3,025 | vehicles |
| Vehicle Speed: | 50 | mph |
| Near/Far Lane Distance: | 48 | feet |

*Site Data*

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 90.58% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.00% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.42% |

*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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 2.08 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -12.72 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -9.42 | -4.43 | -1.20 | -5.16 | 0.000 | 0.000 |

*Unmitigated Noise Levels (without Topo and barrier attenuation)*

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 66.7 | 64.2 | 59.7 | 61.3 | 68.1 | 68.3 |
| Medium Trucks: | 62.7 | 61.3 | 50.9 | 53.6 | 61.9 | 62.0 |
| Heavy Trucks: | 70.3 | 68.5 | 65.7 | 61.2 | 69.5 | 70.0 |
| Vehicle Noise: | 72.4 | 70.4 | 66.8 | 64.6 | 72.3 | 72.6 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 142 | 306 | 659 | 1,420 |
| CNEL: | 149 | 322 | 693 | 1,492 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: GP Building (2035) w/ Project
Road Name: Heacock St.
Road Segment: s/o Gentian Av.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 27,050 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 2,705 | vehicles |
| Vehicle Speed: | 50 | mph |
| Near/Far Lane Distance: | 24 | feet |

*Site Data*

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 90.69% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 2.97% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.35% |

*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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 1.60 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -13.25 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -9.95 | -4.57 | -1.20 | -5.16 | 0.000 | 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 | 63.5 | 59.1 | 60.7 | 67.5 | 67.7 |
| Medium Trucks: | 62.0 | 60.6 | 50.3 | 52.9 | 61.2 | 61.3 |
| Heavy Trucks: | 69.7 | 67.8 | 65.1 | 60.5 | 68.8 | 69.3 |
| Vehicle Noise: | 71.7 | 69.8 | 66.2 | 63.9 | 71.6 | 71.9 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 128 | 277 | 596 | 1,284 |
| CNEL: | 135 | 291 | 626 | 1,349 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: GP Building (2035) w/ Project
Road Name: Heacock St.
Road Segment: s/o Iris Av.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 26,350 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 2,635 | vehicles |
| Vehicle Speed: | 50 | mph |
| Near/Far Lane Distance: | 24 | feet |

*Site Data*

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 90.71% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 2.96% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.33% |

*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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 1.49 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -13.38 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -10.07 | -4.57 | -1.20 | -5.16 | 0.000 | 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 | 63.4 | 59.0 | 60.6 | 67.4 | 67.5 |
| Medium Trucks: | 61.9 | 60.4 | 50.1 | 52.8 | 61.1 | 61.2 |
| Heavy Trucks: | 69.5 | 67.7 | 64.9 | 60.4 | 68.7 | 69.2 |
| Vehicle Noise: | 71.6 | 69.6 | 66.0 | 63.8 | 71.5 | 71.8 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 126 | 272 | 585 | 1,260 |
| CNEL: | 132 | 285 | 615 | 1,324 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: GP Building (2035) w/ Project
Road Name: Heacock St.
Road Segment: s/o Krameria Av. (North)
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 25,100 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 2,510 | vehicles |
| Vehicle Speed: | 50 | mph |
| Near/Far Lane Distance: | 24 | feet |

*Site Data*

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 90.20% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.13% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.67% |

*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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 1.25 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -13.34 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -10.06 | -4.57 | -1.20 | -5.16 | 0.000 | 0.000 |

*Unmitigated Noise Levels (without Topo and barrier attenuation)*

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 65.7 | 63.2 | 58.8 | 60.3 | 67.1 | 67.3 |
| Medium Trucks: | 61.9 | 60.5 | 50.2 | 52.8 | 61.1 | 61.2 |
| Heavy Trucks: | 69.5 | 67.7 | 65.0 | 60.4 | 68.7 | 69.2 |
| Vehicle Noise: | 71.5 | 69.6 | 66.0 | 63.7 | 71.4 | 71.8 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 125 | 268 | 578 | 1,245 |
| CNEL: | 131 | 282 | 607 | 1,309 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

*Scenario:* GP Building (2035) w/ Project
*Road Name:* Heacock St.
*Road Segment:* n/o Cardinal Av.
*Project Name:* MV Logistics Center
*Job Number:* 9303

**SITE SPECIFIC INPUT DATA**

***Highway Data***

| | | |
|---|---|---|
| *Average Daily Traffic (Adt):* | 25,700 | vehicles |
| *Peak Hour Percentage:* | 10% | |
| *Peak Hour Volume:* | 2,570 | vehicles |
| *Vehicle Speed:* | 40 | mph |
| *Near/Far Lane Distance:* | 48 | feet |

***Site Data***

| | | |
|---|---|---|
| ***Barrier Height:*** | **0.0** | **feet** |
| *Barrier Type (0-Wall, 1-Berm):* | 0.0 | |
| *Centerline Dist. to Barrier:* | 100.0 | feet |
| *Centerline Dist. to Observer:* | 100.0 | feet |
| *Barrier Distance to Observer:* | 0.0 | feet |
| *Observer Height (Above Pad):* | 5.0 | feet |
| *Pad Elevation:* | 0.0 | feet |
| *Road Elevation:* | 0.0 | feet |
| *Road Grade:* | 0.0% | |
| *Left View:* | -90.0 | degrees |
| *Right View:* | 90.0 | degrees |

**NOISE MODEL INPUTS**

***Site Conditions (Hard = 10, Soft = 15)***

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

***Vehicle Mix***

| *VehicleType* | *Day* | *Evening* | *Night* | *Daily* |
|---|---|---|---|---|
| *Autos:* | 67.7% | 6.1% | 26.2% | 90.43% |
| *Medium Trucks:* | 86.9% | 2.0% | 11.1% | 3.06% |
| *Heavy Trucks:* | 78.7% | 10.4% | 10.9% | 6.51% |

***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:* | 97.206 |
| *Medium Trucks:* | 97.115 |
| *Heavy Trucks:* | 97.124 |

***FHWA Noise Model Calculations***

| *VehicleType* | *REMEL* | *Traffic Flow* | *Distance* | *Finite Road* | *Fresnel* | *Barrier Atten* | *Berm Atten* |
|---|---|---|---|---|---|---|---|
| *Autos:* | 66.51 | 2.34 | -4.43 | -1.20 | *-4.77* | 0.000 | 0.000 |
| *Medium Trucks:* | 77.72 | -12.38 | -4.43 | -1.20 | *-4.88* | 0.000 | 0.000 |
| *Heavy Trucks:* | 82.99 | -9.09 | -4.43 | -1.20 | *-5.16* | 0.000 | 0.000 |

***Unmitigated Noise Levels (without Topo and barrier attenuation)***

| *VehicleType* | *Leq Peak Hour* | *Leq Day* | *Leq Evening* | *Leq Night* | *Ldn* | *CNEL* |
|---|---|---|---|---|---|---|
| *Autos:* | 63.2 | 60.7 | 56.3 | 57.9 | 64.7 | 64.8 |
| *Medium Trucks:* | 59.7 | 58.3 | 48.0 | 50.6 | 58.9 | 59.0 |
| *Heavy Trucks:* | 68.3 | 66.4 | 63.7 | 59.1 | 67.4 | 67.9 |
| *Vehicle Noise:* | 69.9 | 68.0 | 64.5 | 61.9 | 69.7 | 70.0 |

***Centerline Distance to Noise Contour (in feet)***

| | *70 dBA* | *65 dBA* | *60 dBA* | *55 dBA* |
|---|---|---|---|---|
| *Ldn:* | 95 | 205 | 441 | 950 |
| *CNEL:* | 100 | 216 | 465 | 1,002 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

*Scenario:* GP Building (2035) w/ Project
*Road Name:* Heacock St.
*Road Segment:* s/o Cardinal Av.
*Project Name:* MV Logistics Center
*Job Number:* 9303

**SITE SPECIFIC INPUT DATA**

***Highway Data***

| | | |
|---|---|---|
| *Average Daily Traffic (Adt):* | 25,830 | vehicles |
| *Peak Hour Percentage:* | 10% | |
| *Peak Hour Volume:* | 2,583 | vehicles |
| *Vehicle Speed:* | 40 | mph |
| *Near/Far Lane Distance:* | 48 | feet |

***Site Data***

| | | |
|---|---|---|
| ***Barrier Height:*** | **0.0** | **feet** |
| *Barrier Type (0-Wall, 1-Berm):* | 0.0 | |
| *Centerline Dist. to Barrier:* | 100.0 | feet |
| *Centerline Dist. to Observer:* | 100.0 | feet |
| *Barrier Distance to Observer:* | 0.0 | feet |
| *Observer Height (Above Pad):* | 5.0 | feet |
| *Pad Elevation:* | 0.0 | feet |
| *Road Elevation:* | 0.0 | feet |
| *Road Grade:* | 0.0% | |
| *Left View:* | -90.0 | degrees |
| *Right View:* | 90.0 | degrees |

**NOISE MODEL INPUTS**

***Site Conditions (Hard = 10, Soft = 15)***

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

***Vehicle Mix***

| *VehicleType* | *Day* | *Evening* | *Night* | *Daily* |
|---|---|---|---|---|
| *Autos:* | 67.7% | 6.1% | 26.2% | 90.36% |
| *Medium Trucks:* | 86.9% | 2.0% | 11.1% | 3.07% |
| *Heavy Trucks:* | 78.7% | 10.4% | 10.9% | 6.56% |

***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:* | 97.206 |
| *Medium Trucks:* | 97.115 |
| *Heavy Trucks:* | 97.124 |

***FHWA Noise Model Calculations***

| *VehicleType* | *REMEL* | *Traffic Flow* | *Distance* | *Finite Road* | *Fresnel* | *Barrier Atten* | *Berm Atten* |
|---|---|---|---|---|---|---|---|
| *Autos:* | 66.51 | 2.36 | -4.43 | -1.20 | *-4.77* | 0.000 | 0.000 |
| *Medium Trucks:* | 77.72 | -12.33 | -4.43 | -1.20 | *-4.88* | 0.000 | 0.000 |
| *Heavy Trucks:* | 82.99 | -9.03 | -4.43 | -1.20 | *-5.16* | 0.000 | 0.000 |

***Unmitigated Noise Levels (without Topo and barrier attenuation)***

| *VehicleType* | *Leq Peak Hour* | *Leq Day* | *Leq Evening* | *Leq Night* | *Ldn* | *CNEL* |
|---|---|---|---|---|---|---|
| *Autos:* | 63.2 | 60.7 | 56.3 | 57.9 | 64.7 | 64.9 |
| *Medium Trucks:* | 59.8 | 58.4 | 48.0 | 50.7 | 59.0 | 59.1 |
| *Heavy Trucks:* | 68.3 | 66.5 | 63.7 | 59.2 | 67.5 | 68.0 |
| *Vehicle Noise:* | 69.9 | 68.0 | 64.6 | 61.9 | 69.7 | 70.1 |

***Centerline Distance to Noise Contour (in feet)***

| | *70 dBA* | *65 dBA* | *60 dBA* | *55 dBA* |
|---|---|---|---|---|
| *Ldn:* | 96 | 206 | 444 | 957 |
| *CNEL:* | 101 | 217 | 468 | 1,009 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

*Scenario:* GP Building (2035) w/ Project
*Road Name:* Heacock St.
*Road Segment:* s/o San Michele Rd.
*Project Name:* MV Logistics Center
*Job Number:* 9303

**SITE SPECIFIC INPUT DATA**

***Highway Data***

| | | |
|---|---|---|
| *Average Daily Traffic (Adt):* | 14,430 | vehicles |
| *Peak Hour Percentage:* | 10% | |
| *Peak Hour Volume:* | 1,443 | vehicles |
| *Vehicle Speed:* | 50 | mph |
| *Near/Far Lane Distance:* | 24 | feet |

***Site Data***

| | | |
|---|---|---|
| ***Barrier Height:*** | **0.0** | **feet** |
| *Barrier Type (0-Wall, 1-Berm):* | 0.0 | |
| *Centerline Dist. to Barrier:* | 100.0 | feet |
| *Centerline Dist. to Observer:* | 100.0 | feet |
| *Barrier Distance to Observer:* | 0.0 | feet |
| *Observer Height (Above Pad):* | 5.0 | feet |
| *Pad Elevation:* | 0.0 | feet |
| *Road Elevation:* | 0.0 | feet |
| *Road Grade:* | 0.0% | |
| *Left View:* | -90.0 | degrees |
| *Right View:* | 90.0 | degrees |

**NOISE MODEL INPUTS**

***Site Conditions (Hard = 10, Soft = 15)***

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

***Vehicle Mix***

| *VehicleType* | *Day* | *Evening* | *Night* | *Daily* |
|---|---|---|---|---|
| *Autos:* | 67.7% | 6.1% | 26.2% | 90.88% |
| *Medium Trucks:* | 86.9% | 2.0% | 11.1% | 2.90% |
| *Heavy Trucks:* | 78.7% | 10.4% | 10.9% | 6.22% |

***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:* | 99.403 |
| *Medium Trucks:* | 99.314 |
| *Heavy Trucks:* | 99.323 |

***FHWA Noise Model Calculations***

| *VehicleType* | *REMEL* | *Traffic Flow* | *Distance* | *Finite Road* | *Fresnel* | *Barrier Atten* | *Berm Atten* |
|---|---|---|---|---|---|---|---|
| *Autos:* | 70.20 | -1.12 | -4.58 | -1.20 | *-4.77* | 0.000 | 0.000 |
| *Medium Trucks:* | 81.00 | -16.08 | -4.57 | -1.20 | *-4.88* | 0.000 | 0.000 |
| *Heavy Trucks:* | 85.38 | -12.77 | -4.57 | -1.20 | *-5.16* | 0.000 | 0.000 |

***Unmitigated Noise Levels (without Topo and barrier attenuation)***

| *VehicleType* | *Leq Peak Hour* | *Leq Day* | *Leq Evening* | *Leq Night* | *Ldn* | *CNEL* |
|---|---|---|---|---|---|---|
| *Autos:* | 63.3 | 60.8 | 56.4 | 58.0 | 64.8 | 64.9 |
| *Medium Trucks:* | 59.2 | 57.7 | 47.4 | 50.1 | 58.4 | 58.5 |
| *Heavy Trucks:* | 66.8 | 65.0 | 62.2 | 57.7 | 66.0 | 66.5 |
| *Vehicle Noise:* | 68.9 | 67.0 | 63.4 | 61.2 | 68.8 | 69.2 |

***Centerline Distance to Noise Contour (in feet)***

| | *70 dBA* | *65 dBA* | *60 dBA* | *55 dBA* |
|---|---|---|---|---|
| *Ldn:* | 84 | 181 | 389 | 838 |
| *CNEL:* | 88 | 190 | 408 | 880 |

Tuesday, November 17, 2015

**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

*Scenario:* GP Building (2035) w/ Project
*Road Name:* Heacock St.
*Road Segment:* s/o Nandina Av.
*Project Name:* MV Logistics Center
*Job Number:* 9303

**SITE SPECIFIC INPUT DATA**

***Highway Data***

| | | |
|---|---|---|
| *Average Daily Traffic (Adt):* | 10,030 | vehicles |
| *Peak Hour Percentage:* | 10% | |
| *Peak Hour Volume:* | 1,003 | vehicles |
| *Vehicle Speed:* | 25 | mph |
| *Near/Far Lane Distance:* | 24 | feet |

***Site Data***

| | | |
|---|---|---|
| ***Barrier Height:*** | **0.0** | **feet** |
| *Barrier Type (0-Wall, 1-Berm):* | 0.0 | |
| *Centerline Dist. to Barrier:* | 100.0 | feet |
| *Centerline Dist. to Observer:* | 100.0 | feet |
| *Barrier Distance to Observer:* | 0.0 | feet |
| *Observer Height (Above Pad):* | 5.0 | feet |
| *Pad Elevation:* | 0.0 | feet |
| *Road Elevation:* | 0.0 | feet |
| *Road Grade:* | 0.0% | |
| *Left View:* | -90.0 | degrees |
| *Right View:* | 90.0 | degrees |

**NOISE MODEL INPUTS**

***Site Conditions (Hard = 10, Soft = 15)***

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

***Vehicle Mix***

| *VehicleType* | *Day* | *Evening* | *Night* | *Daily* |
|---|---|---|---|---|
| *Autos:* | 67.7% | 6.1% | 26.2% | 91.39% |
| *Medium Trucks:* | 86.9% | 2.0% | 11.1% | 2.73% |
| *Heavy Trucks:* | 78.7% | 10.4% | 10.9% | 5.87% |

***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:* | 99.403 |
| *Medium Trucks:* | 99.314 |
| *Heavy Trucks:* | 99.323 |

***FHWA Noise Model Calculations***

| *VehicleType* | *REMEL* | *Traffic Flow* | *Distance* | *Finite Road* | *Fresnel* | *Barrier Atten* | *Berm Atten* |
|---|---|---|---|---|---|---|---|
| *Autos:* | 58.73 | 0.34 | -4.58 | -1.20 | *-4.77* | 0.000 | 0.000 |
| *Medium Trucks:* | 70.80 | -14.90 | -4.57 | -1.20 | *-4.88* | 0.000 | 0.000 |
| *Heavy Trucks:* | 77.97 | -11.58 | -4.57 | -1.20 | *-5.16* | 0.000 | 0.000 |

***Unmitigated Noise Levels (without Topo and barrier attenuation)***

| *VehicleType* | *Leq Peak Hour* | *Leq Day* | *Leq Evening* | *Leq Night* | *Ldn* | *CNEL* |
|---|---|---|---|---|---|---|
| *Autos:* | 53.3 | 50.8 | 46.4 | 47.9 | 54.8 | 54.9 |
| *Medium Trucks:* | 50.1 | 48.7 | 38.4 | 41.0 | 49.3 | 49.4 |
| *Heavy Trucks:* | 60.6 | 58.8 | 56.0 | 51.4 | 59.8 | 60.3 |
| *Vehicle Noise:* | 61.7 | 59.8 | 56.5 | 53.3 | 61.3 | 61.6 |

***Centerline Distance to Noise Contour (in feet)***

| | *70 dBA* | *65 dBA* | *60 dBA* | *55 dBA* |
|---|---|---|---|---|
| *Ldn:* | 26 | 56 | 121 | 261 |
| *CNEL:* | 28 | 60 | 129 | 277 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

*Scenario:* GP Building (2035) w/ Project
*Road Name:* Indian St.
*Road Segment:* n/o Krameria Av.
*Project Name:* MV Logistics Center
*Job Number:* 9303

**SITE SPECIFIC INPUT DATA**

***Highway Data***

| | | |
|---|---|---|
| *Average Daily Traffic (Adt):* | 13,800 | vehicles |
| *Peak Hour Percentage:* | 10% | |
| *Peak Hour Volume:* | 1,380 | vehicles |
| *Vehicle Speed:* | 50 | mph |
| *Near/Far Lane Distance:* | 36 | feet |

***Site Data***

| | | |
|---|---|---|
| ***Barrier Height:*** | **0.0** | **feet** |
| *Barrier Type (0-Wall, 1-Berm):* | 0.0 | |
| *Centerline Dist. to Barrier:* | 100.0 | feet |
| *Centerline Dist. to Observer:* | 100.0 | feet |
| *Barrier Distance to Observer:* | 0.0 | feet |
| *Observer Height (Above Pad):* | 5.0 | feet |
| *Pad Elevation:* | 0.0 | feet |
| *Road Elevation:* | 0.0 | feet |
| *Road Grade:* | 0.0% | |
| *Left View:* | -90.0 | degrees |
| *Right View:* | 90.0 | degrees |

**NOISE MODEL INPUTS**

***Site Conditions (Hard = 10, Soft = 15)***

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

***Vehicle Mix***

| *VehicleType* | *Day* | *Evening* | *Night* | *Daily* |
|---|---|---|---|---|
| *Autos:* | 67.7% | 6.1% | 26.2% | 90.01% |
| *Medium Trucks:* | 86.9% | 2.0% | 11.1% | 3.19% |
| *Heavy Trucks:* | 78.7% | 10.4% | 10.9% | 6.80% |

***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:* | 98.494 |
| *Medium Trucks:* | 98.404 |
| *Heavy Trucks:* | 98.413 |

***FHWA Noise Model Calculations***

| *VehicleType* | *REMEL* | *Traffic Flow* | *Distance* | *Finite Road* | *Fresnel* | *Barrier Atten* | *Berm Atten* |
|---|---|---|---|---|---|---|---|
| *Autos:* | 70.20 | -1.35 | -4.52 | -1.20 | *-4.77* | 0.000 | 0.000 |
| *Medium Trucks:* | 81.00 | -15.86 | -4.51 | -1.20 | *-4.88* | 0.000 | 0.000 |
| *Heavy Trucks:* | 85.38 | -12.57 | -4.51 | -1.20 | *-5.16* | 0.000 | 0.000 |

***Unmitigated Noise Levels (without Topo and barrier attenuation)***

| *VehicleType* | *Leq Peak Hour* | *Leq Day* | *Leq Evening* | *Leq Night* | *Ldn* | *CNEL* |
|---|---|---|---|---|---|---|
| *Autos:* | 63.1 | 60.6 | 56.2 | 57.8 | 64.6 | 64.8 |
| *Medium Trucks:* | 59.4 | 58.0 | 47.7 | 50.3 | 58.6 | 58.7 |
| *Heavy Trucks:* | 67.1 | 65.3 | 62.5 | 57.9 | 66.3 | 66.7 |
| *Vehicle Noise:* | 69.1 | 67.1 | 63.5 | 61.2 | 68.9 | 69.3 |

***Centerline Distance to Noise Contour (in feet)***

| | *70 dBA* | *65 dBA* | *60 dBA* | *55 dBA* |
|---|---|---|---|---|
| *Ldn:* | 85 | 183 | 395 | 850 |
| *CNEL:* | 89 | 192 | 415 | 894 |

Tuesday, November 17, 2015

**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

*Scenario:* GP Building (2035) w/ Project
*Road Name:* Indian St.
*Road Segment:* s/o Krameria Av.
*Project Name:* MV Logistics Center
*Job Number:* 9303

**SITE SPECIFIC INPUT DATA**

***Highway Data***

| | | |
|---|---|---|
| *Average Daily Traffic (Adt):* | 19,100 | vehicles |
| *Peak Hour Percentage:* | 10% | |
| *Peak Hour Volume:* | 1,910 | vehicles |
| *Vehicle Speed:* | 50 | mph |
| *Near/Far Lane Distance:* | 36 | feet |

***Site Data***

| | | |
|---|---|---|
| ***Barrier Height:*** | **0.0** | **feet** |
| *Barrier Type (0-Wall, 1-Berm):* | 0.0 | |
| *Centerline Dist. to Barrier:* | 100.0 | feet |
| *Centerline Dist. to Observer:* | 100.0 | feet |
| *Barrier Distance to Observer:* | 0.0 | feet |
| *Observer Height (Above Pad):* | 5.0 | feet |
| *Pad Elevation:* | 0.0 | feet |
| *Road Elevation:* | 0.0 | feet |
| *Road Grade:* | 0.0% | |
| *Left View:* | -90.0 | degrees |
| *Right View:* | 90.0 | degrees |

**NOISE MODEL INPUTS**

***Site Conditions (Hard = 10, Soft = 15)***

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

***Vehicle Mix***

| *VehicleType* | *Day* | *Evening* | *Night* | *Daily* |
|---|---|---|---|---|
| *Autos:* | 67.7% | 6.1% | 26.2% | 89.82% |
| *Medium Trucks:* | 86.9% | 2.0% | 11.1% | 3.25% |
| *Heavy Trucks:* | 78.7% | 10.4% | 10.9% | 6.93% |

***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:* | 98.494 |
| *Medium Trucks:* | 98.404 |
| *Heavy Trucks:* | 98.413 |

***FHWA Noise Model Calculations***

| *VehicleType* | *REMEL* | *Traffic Flow* | *Distance* | *Finite Road* | *Fresnel* | *Barrier Atten* | *Berm Atten* |
|---|---|---|---|---|---|---|---|
| *Autos:* | 70.20 | 0.05 | -4.52 | -1.20 | *-4.77* | 0.000 | 0.000 |
| *Medium Trucks:* | 81.00 | -14.36 | -4.51 | -1.20 | *-4.88* | 0.000 | 0.000 |
| *Heavy Trucks:* | 85.38 | -11.08 | -4.51 | -1.20 | *-5.16* | 0.000 | 0.000 |

***Unmitigated Noise Levels (without Topo and barrier attenuation)***

| *VehicleType* | *Leq Peak Hour* | *Leq Day* | *Leq Evening* | *Leq Night* | *Ldn* | *CNEL* |
|---|---|---|---|---|---|---|
| *Autos:* | 64.5 | 62.0 | 57.6 | 59.2 | 66.0 | 66.2 |
| *Medium Trucks:* | 60.9 | 59.5 | 49.2 | 51.8 | 60.1 | 60.2 |
| *Heavy Trucks:* | 68.6 | 66.8 | 64.0 | 59.4 | 67.8 | 68.2 |
| *Vehicle Noise:* | 70.5 | 68.6 | 65.0 | 62.7 | 70.4 | 70.7 |

***Centerline Distance to Noise Contour (in feet)***

| | *70 dBA* | *65 dBA* | *60 dBA* | *55 dBA* |
|---|---|---|---|---|
| *Ldn:* | 106 | 229 | 494 | 1,064 |
| *CNEL:* | 112 | 241 | 519 | 1,118 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

*Scenario:* GP Building (2035) w/ Project
*Road Name:* Cactus Av.
*Road Segment:* w/o Elsworth St.
*Project Name:* MV Logistics Center
*Job Number:* 9303

**SITE SPECIFIC INPUT DATA**

***Highway Data***

| | | |
|---|---|---|
| *Average Daily Traffic (Adt):* | 70,340 | vehicles |
| *Peak Hour Percentage:* | 10% | |
| *Peak Hour Volume:* | 7,034 | vehicles |
| *Vehicle Speed:* | 50 | mph |
| *Near/Far Lane Distance:* | 36 | feet |

***Site Data***

| | | |
|---|---|---|
| ***Barrier Height:*** | **0.0** | **feet** |
| *Barrier Type (0-Wall, 1-Berm):* | 0.0 | |
| *Centerline Dist. to Barrier:* | 100.0 | feet |
| *Centerline Dist. to Observer:* | 100.0 | feet |
| *Barrier Distance to Observer:* | 0.0 | feet |
| *Observer Height (Above Pad):* | 5.0 | feet |
| *Pad Elevation:* | 0.0 | feet |
| *Road Elevation:* | 0.0 | feet |
| *Road Grade:* | 0.0% | |
| *Left View:* | -90.0 | degrees |
| *Right View:* | 90.0 | degrees |

**NOISE MODEL INPUTS**

***Site Conditions (Hard = 10, Soft = 15)***

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

***Vehicle Mix***

| *VehicleType* | *Day* | *Evening* | *Night* | *Daily* |
|---|---|---|---|---|
| *Autos:* | 67.7% | 6.1% | 26.2% | 89.94% |
| *Medium Trucks:* | 86.9% | 2.0% | 11.1% | 3.21% |
| *Heavy Trucks:* | 78.7% | 10.4% | 10.9% | 6.85% |

***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:* | 98.494 |
| *Medium Trucks:* | 98.404 |
| *Heavy Trucks:* | 98.413 |

***FHWA Noise Model Calculations***

| *VehicleType* | *REMEL* | *Traffic Flow* | *Distance* | *Finite Road* | *Fresnel* | *Barrier Atten* | *Berm Atten* |
|---|---|---|---|---|---|---|---|
| *Autos:* | 70.20 | 5.72 | -4.52 | -1.20 | *-4.77* | 0.000 | 0.000 |
| *Medium Trucks:* | 81.00 | -8.76 | -4.51 | -1.20 | *-4.88* | 0.000 | 0.000 |
| *Heavy Trucks:* | 85.38 | -5.47 | -4.51 | -1.20 | *-5.16* | 0.000 | 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 | 67.7 | 63.3 | 64.8 | 71.7 | 71.8 |
| *Medium Trucks:* | 66.5 | 65.1 | 54.8 | 57.4 | 65.7 | 65.8 |
| *Heavy Trucks:* | 74.2 | 72.4 | 69.6 | 65.0 | 73.4 | 73.8 |
| *Vehicle Noise:* | 76.2 | 74.2 | 70.6 | 68.3 | 76.0 | 76.4 |

***Centerline Distance to Noise Contour (in feet)***

| | *70 dBA* | *65 dBA* | *60 dBA* | *55 dBA* |
|---|---|---|---|---|
| *Ldn:* | 252 | 544 | 1,172 | 2,525 |
| *CNEL:* | 265 | 572 | 1,232 | 2,654 |

Tuesday, November 17, 2015

**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

*Scenario:* GP Building (2035) w/ Project
*Road Name:* Cactus Av.
*Road Segment:* e/o Elsworth St.
*Project Name:* MV Logistics Center
*Job Number:* 9303

**SITE SPECIFIC INPUT DATA**

***Highway Data***

| | | |
|---|---|---|
| *Average Daily Traffic (Adt):* | 62,540 | vehicles |
| *Peak Hour Percentage:* | 10% | |
| *Peak Hour Volume:* | 6,254 | vehicles |
| *Vehicle Speed:* | 50 | mph |
| *Near/Far Lane Distance:* | 36 | feet |

***Site Data***

| | | |
|---|---|---|
| ***Barrier Height:*** | **0.0** | **feet** |
| *Barrier Type (0-Wall, 1-Berm):* | 0.0 | |
| *Centerline Dist. to Barrier:* | 100.0 | feet |
| *Centerline Dist. to Observer:* | 100.0 | feet |
| *Barrier Distance to Observer:* | 0.0 | feet |
| *Observer Height (Above Pad):* | 5.0 | feet |
| *Pad Elevation:* | 0.0 | feet |
| *Road Elevation:* | 0.0 | feet |
| *Road Grade:* | 0.0% | |
| *Left View:* | -90.0 | degrees |
| *Right View:* | 90.0 | degrees |

**NOISE MODEL INPUTS**

***Site Conditions (Hard = 10, Soft = 15)***

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

***Vehicle Mix***

| *VehicleType* | *Day* | *Evening* | *Night* | *Daily* |
|---|---|---|---|---|
| *Autos:* | 67.7% | 6.1% | 26.2% | 89.97% |
| *Medium Trucks:* | 86.9% | 2.0% | 11.1% | 3.20% |
| *Heavy Trucks:* | 78.7% | 10.4% | 10.9% | 6.83% |

***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:* | 98.494 |
| *Medium Trucks:* | 98.404 |
| *Heavy Trucks:* | 98.413 |

***FHWA Noise Model Calculations***

| *VehicleType* | *REMEL* | *Traffic Flow* | *Distance* | *Finite Road* | *Fresnel* | *Barrier Atten* | *Berm Atten* |
|---|---|---|---|---|---|---|---|
| *Autos:* | 70.20 | 5.21 | -4.52 | -1.20 | *-4.77* | 0.000 | 0.000 |
| *Medium Trucks:* | 81.00 | -9.28 | -4.51 | -1.20 | *-4.88* | 0.000 | 0.000 |
| *Heavy Trucks:* | 85.38 | -5.99 | -4.51 | -1.20 | *-5.16* | 0.000 | 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 | 67.2 | 62.8 | 64.3 | 71.2 | 71.3 |
| *Medium Trucks:* | 66.0 | 64.6 | 54.3 | 56.9 | 65.2 | 65.3 |
| *Heavy Trucks:* | 73.7 | 71.8 | 69.1 | 64.5 | 72.8 | 73.3 |
| *Vehicle Noise:* | 75.6 | 73.7 | 70.1 | 67.8 | 75.5 | 75.8 |

***Centerline Distance to Noise Contour (in feet)***

| | *70 dBA* | *65 dBA* | *60 dBA* | *55 dBA* |
|---|---|---|---|---|
| *Ldn:* | 233 | 502 | 1,082 | 2,332 |
| *CNEL:* | 245 | 528 | 1,138 | 2,451 |

Tuesday, November 17, 2015

**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: GP Building (2035) w/ Project
Road Name: Cactus Av.
Road Segment: e/o Frederick St.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 61,540 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 6,154 | vehicles |
| Vehicle Speed: | 50 | mph |
| Near/Far Lane Distance: | 36 | feet |

*Site Data*

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.97% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.20% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.83% |

*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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 5.14 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -9.35 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -6.06 | -4.51 | -1.20 | -5.16 | 0.000 | 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 | 67.1 | 62.7 | 64.3 | 71.1 | 71.3 |
| Medium Trucks: | 65.9 | 64.5 | 54.2 | 56.8 | 65.1 | 65.2 |
| Heavy Trucks: | 73.6 | 71.8 | 69.0 | 64.4 | 72.8 | 73.2 |
| Vehicle Noise: | 75.6 | 73.6 | 70.0 | 67.7 | 75.4 | 75.8 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 231 | 497 | 1,071 | 2,306 |
| CNEL: | 242 | 522 | 1,125 | 2,425 |

Tuesday, November 17, 2015

**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: GP Building (2035) w/ Project
Road Name: Cactus Av.
Road Segment: e/o Graham St.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 52,740 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 5,274 | vehicles |
| Vehicle Speed: | 50 | mph |
| Near/Far Lane Distance: | 36 | feet |

*Site Data*

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 90.01% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.19% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.80% |

*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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 70.20 | 4.47 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 81.00 | -10.04 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 85.38 | -6.75 | -4.51 | -1.20 | -5.16 | 0.000 | 0.000 |

*Unmitigated Noise Levels (without Topo and barrier attenuation)*

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 69.0 | 66.5 | 62.0 | 63.6 | 70.4 | 70.6 |
| Medium Trucks: | 65.2 | 63.8 | 53.5 | 56.2 | 64.5 | 64.5 |
| Heavy Trucks: | 72.9 | 71.1 | 68.3 | 63.7 | 72.1 | 72.6 |
| Vehicle Noise: | 74.9 | 72.9 | 69.4 | 67.1 | 74.8 | 75.1 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 208 | 448 | 964 | 2,077 |
| CNEL: | 218 | 471 | 1,014 | 2,184 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: GP Building (2035) w/ Project
Road Name: Cactus Av.
Road Segment: e/o Heacock St.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 44,100 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 4,410 | vehicles |
| Vehicle Speed: | 45 | mph |
| Near/Far Lane Distance: | 36 | feet |

*Site Data*

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.83% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.25% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.92% |

*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: | 98.494 |
| Medium Trucks: | 98.404 |
| Heavy Trucks: | 98.413 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | 4.14 | -4.52 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -10.28 | -4.51 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -6.99 | -4.51 | -1.20 | -5.16 | 0.000 | 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 | 64.4 | 60.0 | 61.5 | 68.3 | 68.5 |
| Medium Trucks: | 63.5 | 62.1 | 51.7 | 54.4 | 62.7 | 62.8 |
| Heavy Trucks: | 71.5 | 69.7 | 67.0 | 62.4 | 70.7 | 71.2 |
| Vehicle Noise: | 73.3 | 71.4 | 67.9 | 65.3 | 73.1 | 73.4 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 161 | 347 | 748 | 1,612 |
| CNEL: | 170 | 366 | 788 | 1,698 |

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**FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL**

Scenario: GP Building (2035) w/ Project
Road Name: John F. Kennedy Dr.
Road Segment: e/o Heacock St.
Project Name: MV Logistics Center
Job Number: 9303

**SITE SPECIFIC INPUT DATA**

*Highway Data*

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 15,600 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 1,560 | vehicles |
| Vehicle Speed: | 45 | mph |
| Near/Far Lane Distance: | 48 | feet |

*Site Data*

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

**NOISE MODEL INPUTS**

*Site Conditions (Hard = 10, Soft = 15)*

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

*Vehicle Mix*

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.78% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.26% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.96% |

*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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

*FHWA Noise Model Calculations*

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | -0.37 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -14.77 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -11.48 | -4.43 | -1.20 | -5.16 | 0.000 | 0.000 |

*Unmitigated Noise Levels (without Topo and barrier attenuation)*

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 62.5 | 60.0 | 55.5 | 57.1 | 63.9 | 64.1 |
| Medium Trucks: | 59.1 | 57.7 | 47.3 | 50.0 | 58.3 | 58.4 |
| Heavy Trucks: | 67.1 | 65.3 | 62.6 | 58.0 | 66.3 | 66.8 |
| Vehicle Noise: | 68.9 | 67.0 | 63.4 | 60.9 | 68.7 | 69.0 |

*Centerline Distance to Noise Contour (in feet)*

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 82 | 176 | 380 | 819 |
| CNEL: | 86 | 186 | 400 | 862 |

Tuesday, November 17, 2015

## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GP Building (2035) w/ Project
Road Name: Krameria Av.
Road Segment: e/o Indian St.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 8,600 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 860 | vehicles |
| Vehicle Speed: | 40 | mph |
| Near/Far Lane Distance: | 12 | feet |

**Site Data**

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 90.31% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.09% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.60% |

**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: | 99.945 |
| Medium Trucks: | 99.856 |
| Heavy Trucks: | 99.865 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 66.51 | -2.42 | -4.62 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 77.72 | -17.07 | -4.61 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 82.99 | -13.79 | -4.61 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 58.3 | 55.8 | 51.4 | 52.9 | 59.7 | 59.9 |
| Medium Trucks: | 54.8 | 53.4 | 43.1 | 45.7 | 54.0 | 54.1 |
| Heavy Trucks: | 63.4 | 61.6 | 58.8 | 54.2 | 62.6 | 63.0 |
| Vehicle Noise: | 65.0 | 63.1 | 59.6 | 57.0 | 64.8 | 65.1 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 45 | 97 | 208 | 448 |
| CNEL: | 47 | 102 | 219 | 472 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GP Building (2035) w/ Project
Road Name: Harley Knox Bl.
Road Segment: w/o Patterson Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 38,350 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 3,835 | vehicles |
| Vehicle Speed: | 45 | mph |
| Near/Far Lane Distance: | 48 | feet |

**Site Data**

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 90.35% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.08% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.58% |

**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: | 97.206 |
| Medium Trucks: | 97.115 |
| Heavy Trucks: | 97.124 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | 3.56 | -4.43 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -11.12 | -4.43 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -7.82 | -4.43 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 66.4 | 63.9 | 59.5 | 61.0 | 67.8 | 68.0 |
| Medium Trucks: | 62.7 | 61.3 | 51.0 | 53.6 | 61.9 | 62.0 |
| Heavy Trucks: | 70.8 | 69.0 | 66.2 | 61.6 | 70.0 | 70.4 |
| Vehicle Noise: | 72.6 | 70.7 | 67.2 | 64.7 | 72.4 | 72.8 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 146 | 314 | 676 | 1,457 |
| CNEL: | 153 | 330 | 712 | 1,533 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GP Building (2035) w/ Project
Road Name: Harley Knox Bl.
Road Segment: w/o Webster Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 42,350 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 4,235 | vehicles |
| Vehicle Speed: | 45 | mph |
| Near/Far Lane Distance: | 24 | feet |

**Site Data**

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 90.33% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.08% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.58% |

**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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | 3.99 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -10.68 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -7.38 | -4.57 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 66.7 | 64.2 | 59.8 | 61.3 | 68.1 | 68.3 |
| Medium Trucks: | 63.0 | 61.6 | 51.3 | 53.9 | 62.2 | 62.3 |
| Heavy Trucks: | 71.1 | 69.3 | 66.5 | 61.9 | 70.3 | 70.7 |
| Vehicle Noise: | 72.9 | 71.0 | 67.4 | 65.0 | 72.7 | 73.1 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 152 | 328 | 707 | 1,522 |
| CNEL: | 160 | 345 | 744 | 1,602 |

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## FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL

Scenario: GP Building (2035) w/ Project
Road Name: Harley Knox Bl.
Road Segment: e/o Webster Av.
Project Name: MV Logistics Center
Job Number: 9303

### SITE SPECIFIC INPUT DATA

**Highway Data**

| | | |
|---|---|---|
| Average Daily Traffic (Adt): | 40,720 | vehicles |
| Peak Hour Percentage: | 10% | |
| Peak Hour Volume: | 4,072 | vehicles |
| Vehicle Speed: | 45 | mph |
| Near/Far Lane Distance: | 24 | feet |

**Site Data**

| | | |
|---|---|---|
| **Barrier Height:** | **0.0** | **feet** |
| Barrier Type (0-Wall, 1-Berm): | 0.0 | |
| Centerline Dist. to Barrier: | 100.0 | feet |
| Centerline Dist. to Observer: | 100.0 | feet |
| Barrier Distance to Observer: | 0.0 | feet |
| Observer Height (Above Pad): | 5.0 | feet |
| Pad Elevation: | 0.0 | feet |
| Road Elevation: | 0.0 | feet |
| Road Grade: | 0.0% | |
| Left View: | -90.0 | degrees |
| Right View: | 90.0 | degrees |

### NOISE MODEL INPUTS

**Site Conditions (Hard = 10, Soft = 15)**

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

**Vehicle Mix**

| VehicleType | Day | Evening | Night | Daily |
|---|---|---|---|---|
| Autos: | 67.7% | 6.1% | 26.2% | 89.95% |
| Medium Trucks: | 86.9% | 2.0% | 11.1% | 3.21% |
| Heavy Trucks: | 78.7% | 10.4% | 10.9% | 6.84% |

**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: | 99.403 |
| Medium Trucks: | 99.314 |
| Heavy Trucks: | 99.323 |

**FHWA Noise Model Calculations**

| VehicleType | REMEL | Traffic Flow | Distance | Finite Road | Fresnel | Barrier Atten | Berm Atten |
|---|---|---|---|---|---|---|---|
| Autos: | 68.46 | 3.80 | -4.58 | -1.20 | -4.77 | 0.000 | 0.000 |
| Medium Trucks: | 79.45 | -10.67 | -4.57 | -1.20 | -4.88 | 0.000 | 0.000 |
| Heavy Trucks: | 84.25 | -7.39 | -4.57 | -1.20 | -5.16 | 0.000 | 0.000 |

**Unmitigated Noise Levels (without Topo and barrier attenuation)**

| VehicleType | Leq Peak Hour | Leq Day | Leq Evening | Leq Night | Ldn | CNEL |
|---|---|---|---|---|---|---|
| Autos: | 66.5 | 64.0 | 59.6 | 61.1 | 67.9 | 68.1 |
| Medium Trucks: | 63.0 | 61.6 | 51.3 | 53.9 | 62.2 | 62.3 |
| Heavy Trucks: | 71.1 | 69.3 | 66.5 | 61.9 | 70.3 | 70.7 |
| Vehicle Noise: | 72.9 | 70.9 | 67.4 | 64.9 | 72.7 | 73.0 |

**Centerline Distance to Noise Contour (in feet)**

| | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|---|---|---|---|---|
| Ldn: | 151 | 325 | 700 | 1,507 |
| CNEL: | 159 | 342 | 737 | 1,587 |

Tuesday, November 17, 2015

# APPENDIX 9.1:

# REFERENCE NOISE SOURCE PHOTOS

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URBAN CROSSROADS
41 Corporate Park | Suite 300 | Irvine, CA 92606 | (949) 660-1994
www.urbanXroads.com

## SUBJECT: OPERATIONAL REFERENCE NOISE LEVEL MEASUREMENTS MEMO

The following reference noise level measurements were collected to represent the operational noise sources within the Project site. This appendix includes reference noise source descriptions and photos for each location.

### NATURE'S BEST DISTRIBUTION FACILITY (COLD STORAGE)

On Wednesday, January 7th, 2015, Urban Crossroads, Inc. collected short-term operational noise level measurements at the Nature's Best distribution facility located at 16081 Fern Avenue in the City of Chino. Operations at the Nature's Best distribution facility measurements represent the typical weekday logistics warehouse activities with both dry goods and cold storage from a single building with loading dock areas located on both sides of the building. To describe the loading dock activities, a reference noise level measurement was collected to represent the truck idling/reefer activity. A second reference noise level measurement at this location was collected to assess the entry gate noise source activity.

#### TRUCK IDLING/REEFER ACTIVITY

During the fourteen minute truck idling/reefer activity reference noise level measurement, approximately twenty delivery trucks were docked, idling, or parked in the northern loading dock area. The truck idling/reefer activity 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 70.1 dBA Leq.

Specifically, the truck idling/reefer activity reference noise level measurement represents one truck located approximately thirty 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.

#### ENTRY GATE ACTIVITY

The entry gate activity reference noise level measurement was taken over a ten minute period and represents the multiple noise sources associated with the eastern entry gate to the loading dock area of the Nature's Best distribution center producing a reference noise level of 69.2 dBA Leq. The entry gate activity noise sources included in this measurement account for the sound of the gates rattling and squeaking during normal opening and closing operations, the gate closure equipment, as well as the associated noise as trucks approach and stop at the gate.

### MOTIVATIONAL FULFILLMENT & LOGISTICS SERVICES DISTRIBUTION FACILITY (DRY GOODS)

Additional short-term reference noise level measurements were collected on Wednesday, January 7th, 2015, by Urban Crossroads, Inc. at the Motivational Fulfillment & Logistics Services distribution facility

located at 6810 Bickmore Avenue in the City of Chino. The noise level measurements represent the typical weekday dry goods logistics warehouse operation in a single building with a loading dock area on the western side of the building façade. Two reference noise level measurements were taken at this location, including entry gate activity and unloading/docking activity noise sources. Up to ten trucks were observed in the loading dock area including a combination of track trailer semi-trucks, two-axle delivery trucks, and background forklift operations.

**ENTRY GATE ACTIVITY**

The entry gate activity noise level measurement was taken at the southern entry gate over a fifteen minute period and represents multiple noise sources producing a reference noise level of 64.0 dBA Leq. The noise sources included at this measurement location account for the rattling and squeaking during normal opening and closing operations, the gate closure equipment, truck engines idling outside the entry gate, and background forklift backup alarm noise.

**UNLOADING/DOCKING ACTIVITY**

The unloading/docking activity noise level measurement was taken over a fifteen minute period and represents multiple noise sources taken from the center of loading dock activities generating a reference noise level of 67.2 dBA Leq. At this measurement location, the noise sources associated with employees unloading a docked truck container included the squeaking of the truck's shocks when weight was removed from the truck, employees playing music over a radio, as well as a forklift horn and backup alarm. In addition, during the noise level measurement a truck entered the loading dock area and proceeded to reverse and dock in a nearby loading bay, adding truck engine and air brakes noise.

**VEGFRESH FARMS / FEDEX DISTRIBUTION FACILITY**

A fifth noise level measurement, taken on Tuesday, January 22, 2013, by Urban Crossroads, Inc. included 24-hour operational noise level measurements at the Veg Fresh Farms and FedEx distribution facility located at 500 East Orangethorpe Avenue in the City of Anaheim. The Veg Fresh Farms that includes cold storage and FedEx distribution center noise level measurement represent the typical weekday logistics warehouse operation over a 24-hour period consisting of buildings with over 150 loading bays (docks). The reference noise level measurement collected at this location was 69.1 dBA Leq.

While the specific noise levels at the Project site will depend on the actual tenant, the intensity and the daytime / nighttime hours of operation, the worst-case reference noise level is used to describe the peak Project operational noise activity since it represents similar operational characteristics. The reference noise levels are intended to describe noise level impacts associated with the expected typical warehouse and distribution storage operations at the Project site.

Prepared by:

URBAN CROSSROADS, INC.

Bill Lawson, P.E., INCE
Principal

Alex Wolfe
Assistant Analyst

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# Reference Measurement: Nature's Best
# 16081 Fern Avenue, Chino

Nature's Best_01

Nature's Best_02

Nature's Best_03

Nature's Best_04

Nature's Best_05

Nature's Best_06

# Reference Measurement: Nature's Best
# 16081 Fern Avenue, Chino

Nature's Best_07

Nature's Best_08

Nature's Best_09

Nature's Best_10

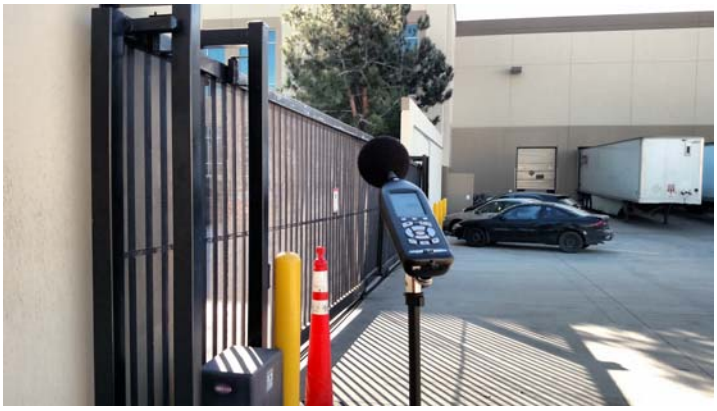
Source_1-1

Source_1-2

Reference Measurement: Nature's Best
16081 Fern Avenue, Chino

Source_1-3

Source_1-4



Source_2-1

Source_2-2

Source_2-3

Source_2-4

Reference Measurement: Nature's Best
16081 Fern Avenue, Chino

Source_2-5

Source_2-6

Source_2-7

Source_2-8

Reference Measurement: Motivational Fulfillment
6810 Bickmore Avenue, Chino

Motivational Fulfillment_01

Motivational Fulfillment_02

Motivational Fulfillment_03

Source_1-1

Source_1-2

Source_1-3

Reference Measurement: Motivational Fulfillment
6810 Bickmore Avenue, Chino

Source_1-4

Source_2-1

Source_2-2

Source_2-3

Source_2-4

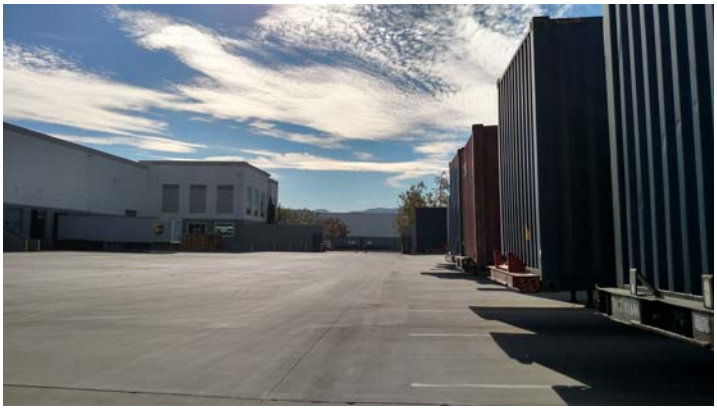
Source_2-5

Reference Measurement: Motivational Fulfillment
6810 Bickmore Avenue, Chino

Source_2-6

Source_2-7

Source_2-8



Source_2-9

Reference **Measurement: Veg Fresh Farms / FedEx**

IMG_0857
33, 51' 31.200000", 117, 54' 48.000000"

IMG_0862
33, 51' 30.600000", 117, 54' 48.600000"

IMG_0863
33, 51' 30.600000", 117, 54' 48.000000"

IMG_0872
33, 51' 33.000000", 117, 54' 42.600000"

# APPENDIX 9.2:

# STATIONARY-SOURCE NOISE CALCULATIONS

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## STATIONARY SOURCE NOISE PREDICTION MODEL

10/8/2015

***Observer Location:*** **R1**
*Source:* Truck Idle/Reefer Activity
*Condition:* Operational

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 3,042.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 3,032.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,510.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,485.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,510.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 30.0 | 70.1 | 69.6 | 70.9 | 71.9 | 73.7 | 80.6 |
| Distance Attenuation | 3,042.0 | -40.1 | -40.1 | -40.1 | -40.1 | -40.1 | -40.1 |
| Shielding (Barrier Attenuation) | 3,032.0 | -5.6 | -5.6 | -5.6 | -5.6 | -5.6 | -5.6 |
| Raw (Distance + Barrier) | | 24.4 | 23.9 | 25.2 | 26.2 | 28.0 | 34.9 |
| **60 Minute Hourly Adjustment** | | **24.4** | **23.9** | **25.2** | **26.2** | **28.0** | **34.9** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

10/8/2015

***Observer Location:*** **R2**
*Source:* Truck Idle/Reefer Activity
*Condition:* Operational

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 3,098.0 | feet | ***Barrier Height:*** | **0.0 feet** |
| *Noise Distance to Barrier:* | 3,098.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 0.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,504.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,487.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,504.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 30.0 | 70.1 | 69.6 | 70.9 | 71.9 | 73.7 | 80.6 |
| Distance Attenuation | 3,098.0 | -40.3 | -40.3 | -40.3 | -40.3 | -40.3 | -40.3 |
| Shielding (Barrier Attenuation) | 3,098.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Raw (Distance + Barrier) | | 29.8 | 29.3 | 30.6 | 31.6 | 33.4 | 40.3 |
| **60 Minute Hourly Adjustment** | | **29.8** | **29.3** | **30.6** | **31.6** | **33.4** | **40.3** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

10/8/2015

***Observer Location:*** **R3**
*Source:* Truck Idle/Reefer Activity
*Condition:* Operational

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 1,792.0 | feet | ***Barrier Height:*** | **0.0 feet** |
| *Noise Distance to Barrier:* | 1,792.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 0.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,495.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,487.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,495.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 30.0 | 70.1 | 69.6 | 70.9 | 71.9 | 73.7 | 80.6 |
| Distance Attenuation | 1,792.0 | -35.5 | -35.5 | -35.5 | -35.5 | -35.5 | -35.5 |
| Shielding (Barrier Attenuation) | 1,792.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Raw (Distance + Barrier) | | 34.6 | 34.1 | 35.4 | 36.4 | 38.2 | 45.1 |
| **60 Minute Hourly Adjustment** | | **34.6** | **34.1** | **35.4** | **36.4** | **38.2** | **45.1** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

10/8/2015

***Observer Location:*** **R4**
*Source:* Truck Idle/Reefer Activity
*Condition:* Operational

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 726.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 716.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,489.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,487.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,489.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 30.0 | 70.1 | 69.6 | 70.9 | 71.9 | 73.7 | 80.6 |
| Distance Attenuation | 726.0 | -27.7 | -27.7 | -27.7 | -27.7 | -27.7 | -27.7 |
| Shielding (Barrier Attenuation) | 716.0 | -5.5 | -5.5 | -5.5 | -5.5 | -5.5 | -5.5 |
| Raw (Distance + Barrier) | | 36.9 | 36.4 | 37.7 | 38.7 | 40.5 | 47.4 |
| **60 Minute Hourly Adjustment** | | **36.9** | **36.4** | **37.7** | **38.7** | **40.5** | **47.4** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

10/8/2015

***Observer Location:*** **R5**
*Source:* Truck Idle/Reefer Activity
*Condition:* Operational

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 307.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 297.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,486.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,487.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,486.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 30.0 | 70.1 | 69.6 | 70.9 | 71.9 | 73.7 | 80.6 |
| Distance Attenuation | 307.0 | -20.2 | -20.2 | -20.2 | -20.2 | -20.2 | -20.2 |
| Shielding (Barrier Attenuation) | 297.0 | -5.4 | -5.4 | -5.4 | -5.4 | -5.4 | -5.4 |
| Raw (Distance + Barrier) | | 44.5 | 44.0 | 45.3 | 46.3 | 48.1 | 55.0 |
| **60 Minute Hourly Adjustment** | | **44.5** | **44.0** | **45.3** | **46.3** | **48.1** | **55.0** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

10/8/2015

***Observer Location:*** **R6**
*Source:* Truck Idle/Reefer Activity
*Condition:* Operational

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 264.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 254.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,484.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,485.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,484.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 30.0 | 70.1 | 69.6 | 70.9 | 71.9 | 73.7 | 80.6 |
| Distance Attenuation | 264.0 | -18.9 | -18.9 | -18.9 | -18.9 | -18.9 | -18.9 |
| Shielding (Barrier Attenuation) | 254.0 | -5.4 | -5.4 | -5.4 | -5.4 | -5.4 | -5.4 |
| Raw (Distance + Barrier) | | 45.8 | 45.3 | 46.6 | 47.6 | 49.4 | 56.3 |
| **60 Minute Hourly Adjustment** | | **45.8** | **45.3** | **46.6** | **47.6** | **49.4** | **56.3** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

10/8/2015

***Observer Location:*** **R7**
*Source:* Truck Idle/Reefer Activity
*Condition:* Operational

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | |
|---|---|---|---|
| *Noise Distance to Observer* | 241.0 feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 231.0 feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,480.0 feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,480.0 feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,480.0 feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 30.0 | 70.1 | 69.6 | 70.9 | 71.9 | 73.7 | 80.6 |
| Distance Attenuation | 241.0 | -18.1 | -18.1 | -18.1 | -18.1 | -18.1 | -18.1 |
| Shielding (Barrier Attenuation) | 231.0 | -5.4 | -5.4 | -5.4 | -5.4 | -5.4 | -5.4 |
| Raw (Distance + Barrier) | | 46.6 | 46.1 | 47.4 | 48.4 | 50.2 | 57.1 |
| **60 Minute Hourly Adjustment** | | **46.6** | **46.1** | **47.4** | **48.4** | **50.2** | **57.1** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

10/8/2015

***Observer Location:*** **R8**
*Source:* Truck Idle/Reefer Activity
*Condition:* Operational

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | |
|---|---|---|---|
| *Noise Distance to Observer* | 518.0 feet | ***Barrier Height:*** | **0.0 feet** |
| *Noise Distance to Barrier:* | 518.0 feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 0.0 feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,484.0 feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,476.0 feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,484.0 feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 30.0 | 70.1 | 69.6 | 70.9 | 71.9 | 73.7 | 80.6 |
| Distance Attenuation | 518.0 | -24.7 | -24.7 | -24.7 | -24.7 | -24.7 | -24.7 |
| Shielding (Barrier Attenuation) | 518.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Raw (Distance + Barrier) | | 45.4 | 44.9 | 46.2 | 47.2 | 49.0 | 55.9 |
| **60 Minute Hourly Adjustment** | | **45.4** | **44.9** | **46.2** | **47.2** | **49.0** | **55.9** |

# APPENDIX 10.1:

# CONSTRUCTION REFERENCE NOISE LEVEL MEASUREMENTS MEMO

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URBAN CROSSROADS
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www.urbanXroads.com

**SUBJECT: CONSTRUCTION REFERENCE NOISE LEVEL MEASUREMENTS MEMO**

This Construction Reference Noise Level Measurements Memo has been prepared to summarize the sample reference noise level measurements collected by Urban Crossroads, Inc. To describe peak construction noise activities, we have historically relied on reference noise level measurements provided in the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM). However, our experience demonstrates that the RCNM significantly overstates the predicted construction noise levels. This is largely due the fact that RCNM is based on construction equipment data collected from the Central Artery/Tunnel project in Boston, Massachusetts in the early 1990's. Due to substantial changes in the air quality emission requirements in the State of California Air Resources Board (ARB), the RCNM reference noise level measurements do not adequately describe modern construction equipment noise levels. In addition, the RCNM methodology places all construction equipment at a single point near the property line. This scenario simply does not occur in the real world as typical construction activity represents a variety of equipment operating at different locations throughout the project site.

## REFERENCE NOISE LEVEL MEASUREMENTS

To estimate a project's construction-related noise levels, sample reference noise level measurements of similar construction activities were collected by Urban Crossroads, Inc. to describe the different stages of construction. The reference noise levels are intended to represent typical construction noise levels when multiple pieces of equipment are operating simultaneously at a construction site. The following reference noise level measurements were collected from existing construction operations with similar equipment as those expected with future construction of comparable land uses. Appendix A includes the data collected from each of the reference noise level measurements adjusted to present noise levels at a uniform reference distance of 50 feet. Appendix B includes the reference noise source photos by identification number ("ID"). Table 1 summarizes the reference noise level measurements. The reference noise level measurements are identified by land use type and location below.

### BUSINESS PARK CONSTRUCTION SITE, CITY OF IRVINE

On Wednesday, October 14th, 2015, Urban Crossroads, Inc. collected short-term construction noise level measurements at a business park construction site located at the northwest corner of Barranca Parkway and Alton Parkway in the City of Irvine. The reference noise level measurements include the following noise source activities: a truck pass-by and background dozer activity (ID 1) and dozer activity (ID 2). Both measurements were taken at a distance of approximately 30 feet from the source and represent typical construction activities during the grading stage of construction.

## RESIDENTIAL CONSTRUCTION SITE, CITY OF RANCHO MISSION VIEJO

On Tuesday, October 20th, 2015, Urban Crossroads, Inc. collected short-term construction noise level measurements at a residential construction site located in the unincorporated area within the County of Orange known as Rancho Mission Viejo. The reference noise level measurements include the following noise source activities: construction vehicle maintenance (ID 3), foundation trenching (ID 4), rough grading activities (ID 5), and residential building framing (ID 6). All reference measurements were taken at this location at a distance of approximately 30 feet from the noise source.

## INDUSTRIAL SITE, CITY OF ONTARIO

Additional short-term reference noise level measurements were collected on Friday, October 30th, 2015, by Urban Crossroads, Inc. at an active industrial construction site in the City of Ontario. The reference noise level measurements represent the grading activities associated with industrial/warehousing construction. Five reference noise level measurements were taken at this location to describe: a water truck pass-by and backup alarm (ID 7), a dozer pass-by (ID 8), two scrapers and a water truck pass-by (ID 9), two scrapers pass-by (ID 10), and scraper, water truck and dozer activities over a 30-minute period (ID 11). All reference measurements taken at this location were at a distance of approximately 30 feet from the source.

## INDUSTRIAL SITE, CITY OF REDLANDS

On July 1st, 2015, Urban Crossroads, Inc. collected short-term construction noise level measurements of a nighttime concrete pour at an industrial construction site located at 27334 San Bernardino Avenue in the City of Redlands. The reference noise level measurements include the following nighttime building construction and paving-related noise source activities: concrete mixer truck movements (ID 12), concrete paver activities (ID 13), concrete mixer pour & paving activities (ID 14), concrete mixer backup alarms and air brakes (ID 15), and a one-hour measurement over the duration of all reference measurements at this location of concrete mixer pour activities (ID 16).

**TABLE 1: CONSTRUCTION REFERENCE NOISE LEVEL MEASUREMENTS SUMMARY**

| ID | Noise Source | Reference Distance From Source (Feet) | Reference Noise Levels @ Reference Distance | | Reference Noise Levels @ 50 Feet[6] | |
|---|---|---|---|---|---|---|
| | | | dBA Leq | dBA Lmax | dBA Leq | dBA Lmax |
| 1 | Truck Pass-Bys & Dozer Activity[1] | 30' | 63.6 | 68.1 | 59.2 | 63.7 |
| 2 | Dozer Activity[1] | 30' | 68.6 | 76.4 | 64.2 | 72.0 |
| 3 | Construction Vehicle Maintenance Activities[2] | 30' | 71.9 | 74.8 | 67.5 | 70.4 |
| 4 | Foundation Trenching[2] | 30' | 72.6 | 74.9 | 68.2 | 70.5 |
| 5 | Rough Grading Activities[2] | 30' | 77.9 | 84.8 | 73.5 | 80.4 |
| 6 | Residential Framing[3] | 30' | 66.7 | 76.7 | 62.3 | 72.3 |
| 7 | Water Truck Pass-By & Backup Alarm[4] | 30' | 76.3 | 82.3 | 71.9 | 77.9 |
| 8 | Dozer Pass-By[4] | 30' | 84.0 | 89.9 | 79.6 | 85.5 |
| 9 | Two Scrapers & Water Truck Pass-By[4] | 30' | 83.4 | 89.0 | 79.0 | 84.6 |
| 10 | Two Scrapers Pass-By[4] | 30' | 83.7 | 86.9 | 79.3 | 82.5 |
| 11 | Scraper, Water Truck, & Dozer Activity[4] | 30' | 79.7 | 87.7 | 75.3 | 83.3 |
| 12 | Concrete Mixer Truck Movements[5] | 50' | 71.2 | 73.1 | 71.2 | 73.1 |
| 13 | Concrete Paver Activities[5] | 30' | 70.0 | 75.7 | 65.6 | 71.3 |
| 14 | Concrete Mixer Pour & Paving Activities[5] | 30' | 70.3 | 76.3 | 65.9 | 71.9 |
| 15 | Concrete Mixer Backup Alarms & Air Brakes[5] | 50' | 71.6 | 78.8 | 71.6 | 78.8 |
| 16 | Concrete Mixer Pour Activities[5] | 50' | 67.7 | 79.2 | 67.7 | 79.2 |

[1] As measured by Urban Crossroads, Inc. on 10/14/15 at a business park construction site located at the northwest corner of Barranca Parkway and Alton Parkway in the City of Irvine.
[2] As measured by Urban Crossroads, Inc. on 10/20/15 at a construction site located in Rancho Mission Viejo.
[3] As measured by Urban Crossroads, Inc. on 10/20/15 at a residential construction site located in Rancho Mission Viejo.
[4] As measured by Urban Crossroads, Inc. on 10/30/15 during grading operations within an industrial construction site located in the City of Ontario.
[5] Reference noise level measurements were collected from a nighttime concrete pour at an industrial construction site, located at 27334 San Bernardino Avenue in the City of Redlands, between 1:00 a.m. to 2:00 a.m. on 7/1/15.
[6] Reference noise levels are calculated at 50 feet using a drop off rate of 6 dBA per doubling of distance (point source).

## MODELED AND MEASURED CONSTRUCTION NOISE LEVELS

A RCNM construction noise analysis was prepared by Urban Crossroads, Inc. on October 17th, 2014 for an industrial project site in the City of Ontario. The noise levels due to construction in the industrial portion of the project site (Planning Area 1) were estimated at up to thirteen receiver locations to determine the potential noise impacts at adjacent sensitive land uses. Returning to the same industrial project site over a year later, in October 2015, Urban Crossroads, Inc. collected noise level measurements at the same receiver locations to validate the modeled RCNM construction noise levels with actual construction noise level measurements collected in the field. The grading stage of construction was chosen for this comparison since grading activities typically represent the worst-case construction activities due to the number and size of the mobile equipment used in the grading process.

## MODELED CONSTRUCTION NOISE LEVELS

As shown on Table 2, the modeled RCNM noise levels during the grading stage of construction were estimated to produce a noise level approaching 92.6 dBA Leq at a distance of 50 feet from the project site boundary. The RCNM noise levels reflect the combined construction noise level impacts of excavators, graders, tractors, loaders, backhoes, rubber tired dozers, and scrapers producing a noise level of 92.6 dBA Leq. At nearby receiver locations, this results in a short-term construction noise level approaching 88.2 dBA Leq.

**TABLE 2: RCNM MODELED CONSTRUCTION NOISE LEVELS**

| Equipment Type[1] | Quantity | Usage Factor[2] | Hours Of Operation[3] | Reference Noise Level @ 50 Feet (dBA Leq) | Combined Level @ 50 Feet (dBA Leq) |
|---|---|---|---|---|---|
| Excavator | 2 | 40% | 3.2 | 81.0 | 80.0 |
| Grader | 8 | 40% | 3.2 | 85.0 | 90.1 |
| Tractor/Loader/Backhoe | 5 | 40% | 3.2 | 78.0 | 81.0 |
| Rubber Tired Dozer | 2 | 40% | 3.2 | 79.0 | 78.0 |
| Scraper | 5 | 40% | 3.2 | 84.0 | 87.0 |
| Combined Hourly Noise Levels 50 Feet (Leq dBA) | | | | | 92.6 |

| Receiver Location | Distance To Property Line (Feet)[4] | Distance Attenuation (dBA Leq)[5] | Estimated Noise Barrier Attenuation (dBA Leq) | Construction Noise Level (dBA Leq) |
|---|---|---|---|---|
| R2 | 83' | -4.4 | 0.0 | 88.2 |
| R3 | 78' | -3.9 | -5.6 | 83.1 |

[1] Source: FHWA's Roadway Construction Noise Model, January 2006.
[2] Estimates the fraction of time each piece of equipment is operating at full power during a construction operation.
[3] Represents the actual hours of peak construction equipment activity out of a typical 8 hour workday.
[4] Distance from the nearest point of construction activity to the nearest receiver.
[5] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.

## MEASURED CONSTRUCTION NOISE LEVELS

To describe the actual construction noise levels based on typical conditions, short-term construction noise level measurements were collected in the field during grading activities at receiver locations R2 and R3. Appendix C includes study area photos of the measurement locations and the construction activities observed from each location at the project site. To validate the construction noise levels, measurements were collected during continuous on-site grading activities on Friday, October 30th, and again on Friday, November 6th, 2015.

Grading activities observed on the site during the short-term noise level measurements include water trucks queuing and refilling at a stationary tank, trencher activity, up to three scrapers operating simultaneously, and dozer activity. The water truck queuing activity was the closest equipment observed near the project site boundaries due to the stationary location of the water refill tank, at a distance of approximately 100 feet from the receiver locations. The trencher was observed at a distance of roughly 600 feet from the receiver locations, and the scrapers and dozer activities were at approximately 900 feet from the receiver locations. Additional stationary scrapers were located at a distance of approximately 700 feet from the receiver locations. Additional background construction noise sources include forklifts, cranes, and man lifts used in the building construction stage of a portion of the site located roughly 900 feet southeast of the receiver locations. The construction activities observed during the short-term measurements represent typical grading activities within an industrial construction site, with multiple pieces of equipment operating at varying distances from the project site boundaries.

Table 3 shows the modeled RCNM noise levels using the actual distances from each receiver location to the nearest equipment activity observed during the short-term noise level measurements. Based on the RCNM model, the peak grading construction noise levels would range from 80.9 to 86.5 dBA Leq when equipment is located at 100 feet from each receiver location. By calculating the modeled RCNM noise level at each location, a comparison can be made between the modeled and measured grading construction noise levels to calibrate the construction noise model.

**TABLE 3: MODELED CONSTRUCTION NOISE LEVELS BASED ON ACTUAL EQUIPMENT DISTANCES**

| Equipment Type[1] | Quantity | Usage Factor[2] | Hours Of Operation[3] | Reference Noise Level @ 50 Feet (dBA Leq) | Combined Level @ 50 Feet (dBA Leq) |
|---|---|---|---|---|---|
| Excavator | 2 | 40% | 3.2 | 81.0 | 80.0 |
| Grader | 8 | 40% | 3.2 | 85.0 | 90.1 |
| Tractor/Loader/Backhoe | 5 | 40% | 3.2 | 78.0 | 81.0 |
| Rubber Tired Dozer | 2 | 40% | 3.2 | 79.0 | 78.0 |
| Scraper | 5 | 40% | 3.2 | 84.0 | 87.0 |
| Combined Hourly Noise Levels 50 Feet (Leq dBA) | | | | | 92.6 |

| Receiver Location | Distance To Closest Equipment Activity (Feet)[4] | Distance Attenuation (dBA Leq)[5] | Estimated Noise Barrier Attenuation (dBA Leq) | Construction Noise Level (dBA Leq) |
|---|---|---|---|---|
| R2 | 100' | -6.0 | 0.0 | 86.5 |
| R3 | 100' | -6.0 | -5.6 | 80.9 |

[1] Source: FHWA's Roadway Construction Noise Model, January 2006.
[2] Estimates the fraction of time each piece of equipment is operating at full power during a construction operation.
[3] Represents the actual hours of peak construction equipment activity out of a typical 8 hour workday.
[4] Distance from the nearest point of construction activity to the nearest receiver.
[5] Point (stationary) source drop off rate of 6.0 dBA per doubling of distance.

To determine the project-only construction noise levels at each receiver location during the grading activities observed at the project site, the ambient without project noise level measurements are compared to the short-term with project noise level measurements. The ambient noise level measurements from the original noise study are shown on Table 4 in addition to the new short-term noise level measurements collected during typical grading activity at the receiver locations on Day 1, Friday, October 30th 2015. By subtracting the previous ambient noise level from the new combined (project construction plus ambient) noise level measurements at each receiver, the project-only construction noise levels can be logarithmically calculated. Table 4 shows the project-only construction noise levels ranged from 61.4 to 63.4 dBA Leq, and are significantly lower than those modeled with the RCNM at the same receiver locations.

Based on the Day 1 analysis, the differences between the peak RCNM model and typical measured construction noise levels range from 19.6 to 23.2 dBA Leq. This analysis demonstrates how the RCNM overstates the potential construction noise level impacts by placing all equipment at a single point at the project site boundary. In reality, the grading equipment within the project site was observed to operate in different locations throughout the project site. . In addition, the typical construction noise levels

measured at the receiver locations reflect modern construction equipment noise level emissions that are largely overstated using the older RCNM reference noise levels.

**TABLE 4: DAY 1 CONSTRUCTION NOISE LEVEL COMPARISON**

| Original Noise Study | | | Calibration | | | |
|---|---|---|---|---|---|---|
| Receiver Location[1] | Measured Daytime Ambient Noise Levels (dBA Leq)[2] | Peak Modeled RCNM Grading Construction Noise Levels (dBA Leq)[3] | Calculated RCNM Noise Levels to Closest Observed Equipment (dBA Leq)[4] | Measured Typical Grading Construction Noise Levels at Receivers (dBA Leq)[5] | Calculated Project-Only Construction Noise Levels (dBA Leq)[6] | Difference Between Modeled & Measured Noise Levels (dBA Leq)[7] |
| R2 | 70.3 | 88.2 | 86.5 | 71.1 | 63.4 | 23.2 |
| R3 | 68.3 | 83.1 | 80.9 | 69.1 | 61.4 | 19.6 |

[1] Receiver locations from the construction noise analysis which are closest to the Planning Area 1 construction activities.
[2] Ambient noise level measurements taken on 3/13/14 at the receiver locations during the Ontario industrial project noise study.
[3] Estimated construction noise levels based on the RCNM peak construction noise analysis methodology. These conditions are not likely to occur as the RCNM assumes all equipment is operating simultaneously at a single point at the project site boundary.
[4] Modeled RCNM construction noise levels at each receiver location based on the observed distance to the nearest construction equipment activity during the noise level measurements, shown on Table 3.
[5] Measured noise levels at the receiver locations during one hour of typical grading activities in the center of the construction site.
[6] Project only construction noise levels calculated based on the logarithmic noise level difference between the measured noise levels during grading activity and the ambient without project noise levels measured at each receiver location.
[7] Difference between the peak RCNM modeled noise levels and the typical noise levels measured at the receiver locations during typical grading activities.

Similarly, the Day 2 short-term construction noise level measurements are shown on Table 5 in relation to the RCNM modeled noise levels. Table 5 shows the project-only construction noise levels ranged from 64.1 to 65.3 dBA Leq, and are significantly lower than those modeled with the RCNM at the same receiver locations. Based on the Day 2 analysis, the differences between the peak RCNM model and typical measured construction noise levels range from 16.8 to 21.2 dBA Leq. This Day 2 analysis is consistent with the Day 1 typical grading construction noise level measurements taken a week later at the same receiver locations.

**TABLE 5: DAY 2 CONSTRUCTION NOISE LEVEL COMPARISON**

| Original Noise Study | | | Calibration | | | |
|---|---|---|---|---|---|---|
| Receiver Location[1] | Measured Daytime Ambient Noise Levels (dBA Leq)[2] | Peak Modeled RCNM Grading Construction Noise Levels (dBA Leq)[3] | Calculated RCNM Noise Levels to Closest Observed Equipment (dBA Leq)[4] | Measured Typical Grading Construction Noise Levels at Receivers (dBA Leq)[5] | Calculated Project-Only Construction Noise Levels (dBA Leq)[6] | Difference Between Modeled & Measured Noise Levels (dBA Leq)[7] |
| R2 | 70.3 | 88.2 | 86.5 | 71.5 | 65.3 | 21.2 |
| R3 | 68.3 | 83.1 | 80.9 | 69.7 | 64.1 | 16.8 |

[1] Receiver locations from the construction noise analysis which are closest to the Planning Area 1 construction activities.
[2] Ambient noise level measurements taken on 3/13/14 at the receiver locations during the Ontario industrial project noise study.
[3] Estimated construction noise levels based on the RCNM peak construction noise analysis methodology. These conditions are not likely to occur as the RCNM assumes all equipment is operating simultaneously at a single point at the project site boundary.
[4] Modeled RCNM construction noise levels at each receiver location based on the observed distance to the nearest construction equipment activity during the noise level measurements, shown on Table 3.
[5] Measured noise levels at the receiver locations during one hour of typical grading activities in the center of the construction site.
[6] Project only construction noise levels calculated based on the logarithmic noise level difference between the measured noise levels during grading activity and the ambient without project noise levels measured at each receiver location.
[7] Difference between the peak RCNM modeled noise levels and the typical noise levels measured at the receiver locations during typical grading activities.

## CONCLUSIONS

The sample reference noise level measurements were taken by Urban Crossroads, Inc. in order to better describe the noise levels from various typical construction activities at different land use types. To quantify the difference between the modeled RCNM and measured construction noise levels in the field, Urban Crossroads, Inc. compared the modeled results of a RCNM construction noise level analysis with the actual measured noise levels observed in the field during typical grading activities at the same project site. While the RCNM equipment database and methodology provides conservative, worst-case, construction noise levels for specific pieces of equipment, our field measurements show how the RCNM methodology overstates the noise levels experienced at the nearby receiver locations during actual construction activities.

This analysis demonstrates how the RCNM overstates the potential construction noise level impacts by placing all equipment at a single point at the project site boundary. In reality based on our observations in the field, the grading equipment within the project site was observed to operate at different locations throughout the project site. In addition, the typical construction noise levels measured at the receiver locations reflect modern construction equipment noise level emissions that are largely overstated using the older RCNM reference noise levels. The reference noise level measurements presented in this memo are, therefore, representative of typical construction noise levels to accurately describe potential construction noise impacts at nearby receiver locations for a given project. This memo presents typical construction activity reference noise levels. Detailed site specific analysis is needed to assess potential

construction noise level impacts at nearby sensitive receiver locations on a project by project basis and to identify the appropriate mitigation measures as needed at future construction sites.

Prepared by:

URBAN CROSSROADS, INC.

Bill Lawson, P.E., INCE
Principal

Alex Wolfe
Assistant Analyst

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# APPENDIX A

## REFERENCE NOISE LEVEL MEASUREMENTS SUMMARY TABLE

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## Appendix A

### Construction Equipment Reference Noise Levels

| ID | Reference Source | Type of Project (Land Use) | Typical Construction Stage(s) | Reference Measurement Duration (h:mm:ss) | Reference Distance From Source (Feet) | Reference Noise Levels | | Reference Noise Levels @ 50 Feet | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | dBA Leq | dBA Lmax | dBA Leq | dBA Lmax |
| 1 | Truck Pass-Bys & Dozer Activity | Business Park | Grading | 0:01:15 | 30' | 63.6 | 68.1 | 59.2 | 63.7 |
| 2 | Dozer Activity | Business Park | Grading | 0:01:00 | 30' | 68.6 | 76.4 | 64.2 | 72.0 |
| 3 | Construction Vehicle Maintenance Activities | Residential | Grading | 0:01:00 | 30' | 71.9 | 74.8 | 67.5 | 70.4 |
| 4 | Foundation Trenching | Residential | Trenching, Building Const. | 0:01:01 | 30' | 72.6 | 74.9 | 68.2 | 70.5 |
| 5 | Rough Grading Activities | Residential | Grading | 0:05:00 | 30' | 77.9 | 84.8 | 73.5 | 80.4 |
| 6 | Residential Framing | Residential | Building Const. | 0:02:00 | 30' | 66.7 | 76.7 | 62.3 | 72.3 |
| 7 | Water Truck Pass-By & Backup Alarm | Industrial | Grading | 0:00:45 | 30' | 76.3 | 82.3 | 71.9 | 77.9 |
| 8 | Dozer Pass-By | Industrial | Grading | 0:00:32 | 30' | 84.0 | 89.9 | 79.6 | 85.5 |
| 9 | Two Scrapers & Water Truck Pass-By | Industrial | Grading | 0:00:32 | 30' | 83.4 | 89.0 | 79.0 | 84.6 |
| 10 | Two Scrapers Pass-By | Industrial | Grading | 0:00:30 | 30' | 83.7 | 86.9 | 79.3 | 82.5 |
| 11 | Scraper, Water Truck, & Dozer Activity | Industrial | Grading | 0:30:00 | 30' | 79.7 | 87.7 | 75.3 | 83.3 |
| 12 | Concrete Mixer Truck Movements | Industrial | Building Const., Paving | 0:01:00 | 50' | 71.2 | *73.1* | 71.2 | 73.1 |
| 13 | Concrete Paver Activities | Industrial | Building Const., Paving | 0:01:00 | 30' | 70.0 | *75.7* | 65.6 | 71.3 |
| 14 | Concrete Mixer Pour & Paving Activities | Industrial | Building Const., Paving | 0:01:00 | 30' | 70.3 | *76.3* | 65.9 | 71.9 |
| 15 | Concrete Mixer Backup Alarms & Air Brakes | Industrial | Building Const., Paving | 0:00:20 | 50' | 71.6 | *78.8* | 71.6 | 78.8 |
| 16 | Concrete Mixer Pour Activities | Industrial | Building Const., Paving | 1:00:00 | 50' | 67.7 | 79.2 | 67.7 | 79.2 |

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# APPENDIX B

# REFERENCE NOISE SOURCE PHOTOS

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# Construction Reference Noise Source Photos

1.1_TruckPass-By&DozerActivity
33, 39' 0.101600", 117, 43' 56.773600"

2.1_DozerActivity
33, 39' 0.101600", 117, 43' 56.773600"

3.1_ConstructionVehicleMaintenance
33, 31' 16.600000", 117, 36' 58.060000"

4.1_FoundationTrenching
33, 32' 8.530000", 117, 35' 55.490000"

4.2_FoundationTrenching
33, 32' 8.540000", 117, 35' 55.710000"

5.1_RoughGradingActivities
33, 31' 16.710000", 117, 37' 0.530000"

# Construction Reference Noise Source Photos

5.2_RoughGradingActivities
33, 31' 16.600000", 117, 37' 0.450000"

5.3_RoughGradingActivities
33, 31' 16.570000", 117, 37' 0.450000"

5.4_RoughGradingActivities
33, 31' 16.660000", 117, 37' 0.310000"

6.1_ResidentialFraming
33, 32' 15.610000", 117, 36' 2.740000"

7.1_WaterTruckPassBy&BackupAlarm
34, 4' 19.318500", 117, 36' 25.015800"

8.1_DozerPass-By
34, 4' 19.373400", 117, 36' 24.988400"

# Construction Reference Noise Source Photos

9.1_TwoScrapers&WaterTruckPass-By
34, 4' 19.332200", 117, 36' 24.988400"

10.1_TwoScrapersPass-By
34, 4' 19.373400", 117, 36' 25.070800"

10.2_TwoScrapersPass-By
34, 4' 19.373400", 117, 36' 25.070800"

11.1_Scraper,WaterTruck,&DozerActivity
34, 4' 19.373400", 117, 36' 25.070800"

11.2_Scraper,WaterTruck,&DozerActivity
34, 4' 19.318500", 117, 36' 25.125700"

11.3_Scraper,WaterTruck,&DozerActivity
34, 4' 19.346000", 117, 36' 25.043300"

# Construction Reference Noise Source Photos

11.4_Scraper,WaterTruck,&DozerActivity
34, 4' 19.291000", 117, 36' 25.070800"

12.1_ConcreteMixerTruckMovements
34, 4' 43.200000", 117, 12' 25.779400"

13.1_ConcretePaverActivities
34, 4' 43.625700", 117, 12' 25.312500"

14.1_ConcreteMixerPour&PavingActivities
34, 4' 42.746800", 117, 12' 24.955400"

15.1_ConcreteMixerBackupAlarms&AirBrakes
34, 4' 43.666900", 117, 12' 24.763100"

16.1_ConcreteMixerPourActivities
34, 4' 43.158800", 117, 12' 25.944200"

# APPENDIX C

## SHORT-TERM MEASUREMENTS & CONSTRUCTION ACTIVITY PHOTOS

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ConstructionSite_1
34, 4' 39.808000", 117, 36' 22.955900"

ConstructionSite_2
34, 4' 39.808000", 117, 36' 22.955900"

ConstructionSite_3
34, 4' 39.533300", 117, 36' 23.312900"

ConstructionSite_4
34, 4' 39.533300", 117, 36' 23.312900"

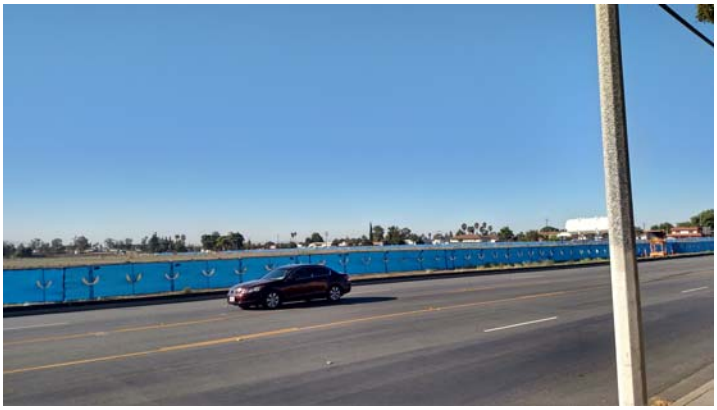
ConstructionSite_5
34, 4' 39.341100", 117, 36' 28.064500"

ConstructionSite_6
34, 4' 39.684400", 117, 36' 23.477700"

ConstructionSite_7
34, 4' 39.684400", 117, 36' 23.477700"

R2
34, 4' 39.341100", 117, 36' 28.064500"

R2_South
34, 4' 39.217500", 117, 36' 29.108200"

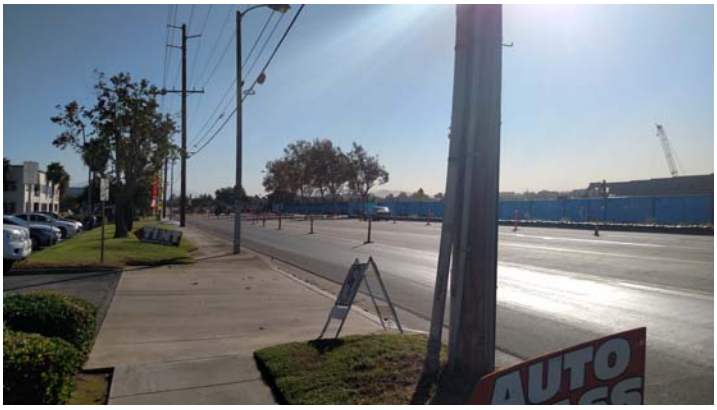


R2_Southwest
34, 4' 39.217500", 117, 36' 29.108200"

R2_Southwest2
34, 4' 39.505900", 117, 36' 28.970900"

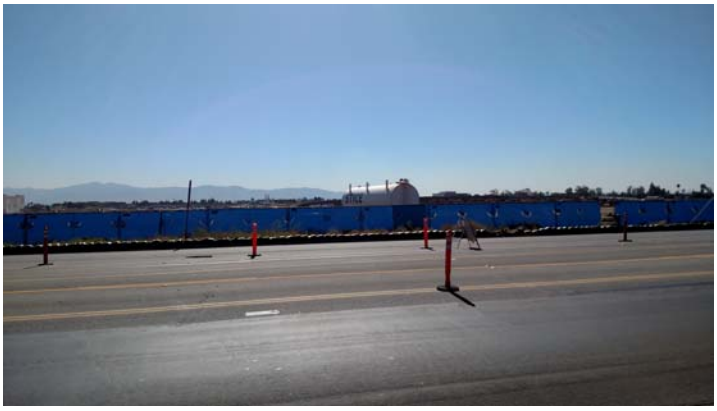
R2_West
34, 4' 39.217500", 117, 36' 29.108200"

R3
34, 4' 39.972800", 117, 36' 16.803500"

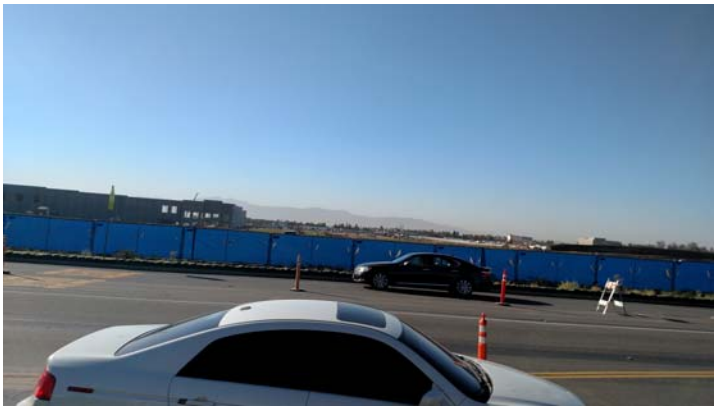



R3_E
34, 4' 39.972800", 117, 36' 16.803500"

R3_South
34, 4' 39.972800", 117, 36' 16.803500"



R3_South2
34, 4' 39.519600", 117, 36' 17.050700"



R3_South3
34, 4' 39.698100", 117, 36' 14.221800"

R3_Southeast
34, 4' 39.698100", 117, 36' 14.221800"

R3_Southwest
34, 4' 39.972800", 117, 36' 16.803500"

# APPENDIX 10.2:

# CONSTRUCTION EXISTING BARRIER ATTENUATION CALCULATIONS

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## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R1**
*Source:* Grading
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 2,743.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 2,733.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,510.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,489.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,510.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 2,743.0 | -22.7 | -22.7 | -22.7 | -22.7 | -22.7 | -22.7 |
| Shielding (Barrier Attenuation) | 2,733.0 | -5.6 | -5.6 | -5.6 | -5.6 | -5.6 | -5.6 |
| Raw (Distance + Barrier) | | 39.2 | -28.3 | -28.3 | -28.3 | -28.3 | -28.3 |
| **60 Minute Hourly Adjustment** | | **39.2** | **-28.3** | **-28.3** | **-28.3** | **-28.3** | **-28.3** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R1**
*Source:* Trenching
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 2,743.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 2,733.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,510.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,489.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,510.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 61.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 2,743.0 | -22.7 | -22.7 | -22.7 | -22.7 | -22.7 | -22.7 |
| Shielding (Barrier Attenuation) | 2,733.0 | -5.6 | -5.6 | -5.6 | -5.6 | -5.6 | -5.6 |
| Raw (Distance + Barrier) | | 33.1 | -28.3 | -28.3 | -28.3 | -28.3 | -28.3 |
| **60 Minute Hourly Adjustment** | | **33.1** | **-28.3** | **-28.3** | **-28.3** | **-28.3** | **-28.3** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R1**
*Source:* Building Construction
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 2,813.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 2,803.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,510.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,490.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,510.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 2,813.0 | -23.0 | -23.0 | -23.0 | -23.0 | -23.0 | -23.0 |
| Shielding (Barrier Attenuation) | 2,803.0 | -5.6 | -5.6 | -5.6 | -5.6 | -5.6 | -5.6 |
| Raw (Distance + Barrier) | | 38.9 | -28.6 | -28.6 | -28.6 | -28.6 | -28.6 |
| **60 Minute Hourly Adjustment** | | **38.9** | **-28.6** | **-28.6** | **-28.6** | **-28.6** | **-28.6** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R1**
*Source:* Architectural Coating
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 2,813.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 2,803.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,510.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,490.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,510.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 2,813.0 | -23.0 | -23.0 | -23.0 | -23.0 | -23.0 | -23.0 |
| Shielding (Barrier Attenuation) | 2,803.0 | -5.6 | -5.6 | -5.6 | -5.6 | -5.6 | -5.6 |
| Raw (Distance + Barrier) | | 38.9 | -28.6 | -28.6 | -28.6 | -28.6 | -28.6 |
| **60 Minute Hourly Adjustment** | | **38.9** | **-28.6** | **-28.6** | **-28.6** | **-28.6** | **-28.6** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R1**
*Source:* Paving
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 2,743.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 2,733.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,510.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,489.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,510.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 2,743.0 | -22.7 | -22.7 | -22.7 | -22.7 | -22.7 | -22.7 |
| Shielding (Barrier Attenuation) | 2,733.0 | -5.6 | -5.6 | -5.6 | -5.6 | -5.6 | -5.6 |
| Raw (Distance + Barrier) | | 39.2 | -28.3 | -28.3 | -28.3 | -28.3 | -28.3 |
| **60 Minute Hourly Adjustment** | | **39.2** | **-28.3** | **-28.3** | **-28.3** | **-28.3** | **-28.3** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R2**
*Source:* Grading
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 2,844.0 | feet | ***Barrier Height:*** | **0.0 feet** |
| *Noise Distance to Barrier:* | 2,844.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 0.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,504.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,488.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,504.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 2,844.0 | -23.1 | -23.1 | -23.1 | -23.1 | -23.1 | -23.1 |
| Shielding (Barrier Attenuation) | 2,844.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Raw (Distance + Barrier) | | 44.4 | -23.1 | -23.1 | -23.1 | -23.1 | -23.1 |
| **60 Minute Hourly Adjustment** | | **44.4** | **-23.1** | **-23.1** | **-23.1** | **-23.1** | **-23.1** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R2**
*Source:* Trenching
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 2,844.0 | feet | ***Barrier Height:*** | **0.0 feet** |
| *Noise Distance to Barrier:* | 2,844.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 0.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,504.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,488.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,504.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 61.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 2,844.0 | -23.1 | -23.1 | -23.1 | -23.1 | -23.1 | -23.1 |
| Shielding (Barrier Attenuation) | 2,844.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Raw (Distance + Barrier) | | 38.3 | -23.1 | -23.1 | -23.1 | -23.1 | -23.1 |
| **60 Minute Hourly Adjustment** | | **38.3** | **-23.1** | **-23.1** | **-23.1** | **-23.1** | **-23.1** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R2**
*Source:* Building Construction
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 2,987.0 | feet | ***Barrier Height:*** | **0.0 feet** |
| *Noise Distance to Barrier:* | 2,987.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 0.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,504.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,490.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,504.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 2,987.0 | -23.5 | -23.5 | -23.5 | -23.5 | -23.5 | -23.5 |
| Shielding (Barrier Attenuation) | 2,987.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Raw (Distance + Barrier) | | 44.0 | -23.5 | -23.5 | -23.5 | -23.5 | -23.5 |
| **60 Minute Hourly Adjustment** | | **44.0** | **-23.5** | **-23.5** | **-23.5** | **-23.5** | **-23.5** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R2**
*Source:* Architectural Coating
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 2,987.0 | feet | ***Barrier Height:*** | **0.0 feet** |
| *Noise Distance to Barrier:* | 2,987.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 0.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,504.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,490.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,504.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 2,987.0 | -23.5 | -23.5 | -23.5 | -23.5 | -23.5 | -23.5 |
| Shielding (Barrier Attenuation) | 2,987.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Raw (Distance + Barrier) | | 44.0 | -23.5 | -23.5 | -23.5 | -23.5 | -23.5 |
| **60 Minute Hourly Adjustment** | | **44.0** | **-23.5** | **-23.5** | **-23.5** | **-23.5** | **-23.5** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R2**
*Source:* Paving
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 2,844.0 | feet | ***Barrier Height:*** | **0.0 feet** |
| *Noise Distance to Barrier:* | 2,844.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 0.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,504.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,488.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,504.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 2,844.0 | -23.1 | -23.1 | -23.1 | -23.1 | -23.1 | -23.1 |
| Shielding (Barrier Attenuation) | 2,844.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Raw (Distance + Barrier) | | 44.4 | -23.1 | -23.1 | -23.1 | -23.1 | -23.1 |
| **60 Minute Hourly Adjustment** | | **44.4** | **-23.1** | **-23.1** | **-23.1** | **-23.1** | **-23.1** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R3**
*Source:* Grading
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 1,543.0 | feet | ***Barrier Height:*** | **0.0 feet** |
| *Noise Distance to Barrier:* | 1,543.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 0.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,495.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,488.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,495.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 1,543.0 | -17.7 | -17.7 | -17.7 | -17.7 | -17.7 | -17.7 |
| Shielding (Barrier Attenuation) | 1,543.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Raw (Distance + Barrier) | | 49.8 | -17.7 | -17.7 | -17.7 | -17.7 | -17.7 |
| **60 Minute Hourly Adjustment** | | **49.8** | **-17.7** | **-17.7** | **-17.7** | **-17.7** | **-17.7** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R3**
*Source:* Trenching
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 1,543.0 | feet | ***Barrier Height:*** | **0.0 feet** |
| *Noise Distance to Barrier:* | 1,543.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 0.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,495.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,488.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,495.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 61.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 1,543.0 | -17.7 | -17.7 | -17.7 | -17.7 | -17.7 | -17.7 |
| Shielding (Barrier Attenuation) | 1,543.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Raw (Distance + Barrier) | | 43.7 | -17.7 | -17.7 | -17.7 | -17.7 | -17.7 |
| **60 Minute Hourly Adjustment** | | **43.7** | **-17.7** | **-17.7** | **-17.7** | **-17.7** | **-17.7** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R3**
*Source:* Building Construction
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 1,696.0 | feet | ***Barrier Height:*** | **0.0 feet** |
| *Noise Distance to Barrier:* | 1,696.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 0.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,495.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,490.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,495.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 1,696.0 | -18.6 | -18.6 | -18.6 | -18.6 | -18.6 | -18.6 |
| Shielding (Barrier Attenuation) | 1,696.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Raw (Distance + Barrier) | | 48.9 | -18.6 | -18.6 | -18.6 | -18.6 | -18.6 |
| **60 Minute Hourly Adjustment** | | **48.9** | **-18.6** | **-18.6** | **-18.6** | **-18.6** | **-18.6** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R3**
*Source:* Architectural Coating
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 1,696.0 | feet | ***Barrier Height:*** | **0.0 feet** |
| *Noise Distance to Barrier:* | 1,696.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 0.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,495.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,490.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,495.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 1,696.0 | -18.6 | -18.6 | -18.6 | -18.6 | -18.6 | -18.6 |
| Shielding (Barrier Attenuation) | 1,696.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Raw (Distance + Barrier) | | 48.9 | -18.6 | -18.6 | -18.6 | -18.6 | -18.6 |
| **60 Minute Hourly Adjustment** | | **48.9** | **-18.6** | **-18.6** | **-18.6** | **-18.6** | **-18.6** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R3**
*Source:* Paving
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 1,543.0 | feet | ***Barrier Height:*** | **0.0 feet** |
| *Noise Distance to Barrier:* | 1,543.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 0.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,495.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,488.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,495.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 1,543.0 | -17.7 | -17.7 | -17.7 | -17.7 | -17.7 | -17.7 |
| Shielding (Barrier Attenuation) | 1,543.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Raw (Distance + Barrier) | | 49.8 | -17.7 | -17.7 | -17.7 | -17.7 | -17.7 |
| **60 Minute Hourly Adjustment** | | **49.8** | **-17.7** | **-17.7** | **-17.7** | **-17.7** | **-17.7** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R4**
*Source:* Grading
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 471.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 461.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,489.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,488.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,489.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 471.0 | -7.4 | -7.4 | -7.4 | -7.4 | -7.4 | -7.4 |
| Shielding (Barrier Attenuation) | 461.0 | -5.5 | -5.5 | -5.5 | -5.5 | -5.5 | -5.5 |
| Raw (Distance + Barrier) | | 54.6 | -12.9 | -12.9 | -12.9 | -12.9 | -12.9 |
| **60 Minute Hourly Adjustment** | | **54.6** | **-12.9** | **-12.9** | **-12.9** | **-12.9** | **-12.9** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R4**
*Source:* Trenching
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 471.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 461.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,489.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,488.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,489.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 61.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 471.0 | -7.4 | -7.4 | -7.4 | -7.4 | -7.4 | -7.4 |
| Shielding (Barrier Attenuation) | 461.0 | -5.5 | -5.5 | -5.5 | -5.5 | -5.5 | -5.5 |
| Raw (Distance + Barrier) | | 48.5 | -12.9 | -12.9 | -12.9 | -12.9 | -12.9 |
| **60 Minute Hourly Adjustment** | | **48.5** | **-12.9** | **-12.9** | **-12.9** | **-12.9** | **-12.9** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R4**
*Source:* Building Construction
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 678.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 668.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,489.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,490.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,489.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 678.0 | -10.6 | -10.6 | -10.6 | -10.6 | -10.6 | -10.6 |
| Shielding (Barrier Attenuation) | 668.0 | -5.4 | -5.4 | -5.4 | -5.4 | -5.4 | -5.4 |
| Raw (Distance + Barrier) | | 51.5 | -16.0 | -16.0 | -16.0 | -16.0 | -16.0 |
| **60 Minute Hourly Adjustment** | | **51.5** | **-16.0** | **-16.0** | **-16.0** | **-16.0** | **-16.0** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R4**
*Source:* Architectural Coating
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 678.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 668.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,489.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,490.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,489.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 678.0 | -10.6 | -10.6 | -10.6 | -10.6 | -10.6 | -10.6 |
| Shielding (Barrier Attenuation) | 668.0 | -5.4 | -5.4 | -5.4 | -5.4 | -5.4 | -5.4 |
| Raw (Distance + Barrier) | | 51.5 | -16.0 | -16.0 | -16.0 | -16.0 | -16.0 |
| **60 Minute Hourly Adjustment** | | **51.5** | **-16.0** | **-16.0** | **-16.0** | **-16.0** | **-16.0** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R4**
*Source:* Paving
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 471.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 461.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,489.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,488.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,489.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 471.0 | -7.4 | -7.4 | -7.4 | -7.4 | -7.4 | -7.4 |
| Shielding (Barrier Attenuation) | 461.0 | -5.5 | -5.5 | -5.5 | -5.5 | -5.5 | -5.5 |
| Raw (Distance + Barrier) | | 54.6 | -12.9 | -12.9 | -12.9 | -12.9 | -12.9 |
| **60 Minute Hourly Adjustment** | | **54.6** | **-12.9** | **-12.9** | **-12.9** | **-12.9** | **-12.9** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R5**
*Source:* Grading
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 152.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 142.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,486.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,488.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,486.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 152.0 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 |
| Shielding (Barrier Attenuation) | 142.0 | -5.2 | -5.2 | -5.2 | -5.2 | -5.2 | -5.2 |
| Raw (Distance + Barrier) | | 64.7 | -2.8 | -2.8 | -2.8 | -2.8 | -2.8 |
| **60 Minute Hourly Adjustment** | | **64.7** | **-2.8** | **-2.8** | **-2.8** | **-2.8** | **-2.8** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R5**
*Source:* Trenching
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 152.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 142.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,486.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,488.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,486.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 61.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 152.0 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 |
| Shielding (Barrier Attenuation) | 142.0 | -5.2 | -5.2 | -5.2 | -5.2 | -5.2 | -5.2 |
| Raw (Distance + Barrier) | | 58.6 | -2.8 | -2.8 | -2.8 | -2.8 | -2.8 |
| **60 Minute Hourly Adjustment** | | **58.6** | **-2.8** | **-2.8** | **-2.8** | **-2.8** | **-2.8** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R5**
*Source:* Building Construction
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 392.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 382.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,486.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,490.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,486.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 392.0 | -5.8 | -5.8 | -5.8 | -5.8 | -5.8 | -5.8 |
| Shielding (Barrier Attenuation) | 382.0 | -5.3 | -5.3 | -5.3 | -5.3 | -5.3 | -5.3 |
| Raw (Distance + Barrier) | | 56.4 | -11.1 | -11.1 | -11.1 | -11.1 | -11.1 |
| **60 Minute Hourly Adjustment** | | **56.4** | **-11.1** | **-11.1** | **-11.1** | **-11.1** | **-11.1** |


## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015


***Observer Location:*** **R5**
*Source:* Architectural Coating
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe


### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 392.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 382.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,486.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,490.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,486.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 392.0 | -5.8 | -5.8 | -5.8 | -5.8 | -5.8 | -5.8 |
| Shielding (Barrier Attenuation) | 382.0 | -5.3 | -5.3 | -5.3 | -5.3 | -5.3 | -5.3 |
| Raw (Distance + Barrier) | | 56.4 | -11.1 | -11.1 | -11.1 | -11.1 | -11.1 |
| **60 Minute Hourly Adjustment** | | **56.4** | **-11.1** | **-11.1** | **-11.1** | **-11.1** | **-11.1** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R5**
*Source:* Paving
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 152.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 142.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,486.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,488.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,486.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 152.0 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 |
| Shielding (Barrier Attenuation) | 142.0 | -5.2 | -5.2 | -5.2 | -5.2 | -5.2 | -5.2 |
| Raw (Distance + Barrier) | | 64.7 | -2.8 | -2.8 | -2.8 | -2.8 | -2.8 |
| **60 Minute Hourly Adjustment** | | **64.7** | **-2.8** | **-2.8** | **-2.8** | **-2.8** | **-2.8** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R6**
*Source:* Grading
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 176.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 166.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,484.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,480.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,484.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 176.0 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| Shielding (Barrier Attenuation) | 166.0 | -5.6 | -5.6 | -5.6 | -5.6 | -5.6 | -5.6 |
| Raw (Distance + Barrier) | | 63.0 | -4.5 | -4.5 | -4.5 | -4.5 | -4.5 |
| **60 Minute Hourly Adjustment** | | **63.0** | **-4.5** | **-4.5** | **-4.5** | **-4.5** | **-4.5** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R6**
*Source:* Trenching
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 176.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 166.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,484.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,480.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,484.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 61.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 176.0 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| Shielding (Barrier Attenuation) | 166.0 | -5.6 | -5.6 | -5.6 | -5.6 | -5.6 | -5.6 |
| Raw (Distance + Barrier) | | 56.9 | -4.5 | -4.5 | -4.5 | -4.5 | -4.5 |
| **60 Minute Hourly Adjustment** | | **56.9** | **-4.5** | **-4.5** | **-4.5** | **-4.5** | **-4.5** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R6**
*Source:* Building Construction
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 429.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 419.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,484.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,481.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,484.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 429.0 | -6.6 | -6.6 | -6.6 | -6.6 | -6.6 | -6.6 |
| Shielding (Barrier Attenuation) | 419.0 | -5.5 | -5.5 | -5.5 | -5.5 | -5.5 | -5.5 |
| Raw (Distance + Barrier) | | 55.4 | -12.1 | -12.1 | -12.1 | -12.1 | -12.1 |
| **60 Minute Hourly Adjustment** | | **55.4** | **-12.1** | **-12.1** | **-12.1** | **-12.1** | **-12.1** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R6**
*Source:* Architectural Coating
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 429.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 419.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,484.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,481.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,484.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 429.0 | -6.6 | -6.6 | -6.6 | -6.6 | -6.6 | -6.6 |
| Shielding (Barrier Attenuation) | 419.0 | -5.5 | -5.5 | -5.5 | -5.5 | -5.5 | -5.5 |
| Raw (Distance + Barrier) | | 55.4 | -12.1 | -12.1 | -12.1 | -12.1 | -12.1 |
| **60 Minute Hourly Adjustment** | | **55.4** | **-12.1** | **-12.1** | **-12.1** | **-12.1** | **-12.1** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R6**
*Source:* Paving
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 176.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 166.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,484.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,480.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,484.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 176.0 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| Shielding (Barrier Attenuation) | 166.0 | -5.6 | -5.6 | -5.6 | -5.6 | -5.6 | -5.6 |
| Raw (Distance + Barrier) | | 63.0 | -4.5 | -4.5 | -4.5 | -4.5 | -4.5 |
| **60 Minute Hourly Adjustment** | | **63.0** | **-4.5** | **-4.5** | **-4.5** | **-4.5** | **-4.5** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R7**
*Source:* Grading
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 153.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 143.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,480.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,480.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,480.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 153.0 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 |
| Shielding (Barrier Attenuation) | 143.0 | -5.3 | -5.3 | -5.3 | -5.3 | -5.3 | -5.3 |
| Raw (Distance + Barrier) | | 64.5 | -3.0 | -3.0 | -3.0 | -3.0 | -3.0 |
| **60 Minute Hourly Adjustment** | | **64.5** | **-3.0** | **-3.0** | **-3.0** | **-3.0** | **-3.0** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R7**
*Source:* Trenching
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 153.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 143.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,480.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,480.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,480.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 61.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 153.0 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 |
| Shielding (Barrier Attenuation) | 143.0 | -5.3 | -5.3 | -5.3 | -5.3 | -5.3 | -5.3 |
| Raw (Distance + Barrier) | | 58.4 | -3.0 | -3.0 | -3.0 | -3.0 | -3.0 |
| **60 Minute Hourly Adjustment** | | **58.4** | **-3.0** | **-3.0** | **-3.0** | **-3.0** | **-3.0** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R7**
*Source:* Building Construction
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | |
|---|---|---|---|
| *Noise Distance to Observer* | 362.0 feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 352.0 feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,480.0 feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,481.0 feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,480.0 feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 362.0 | -5.2 | -5.2 | -5.2 | -5.2 | -5.2 | -5.2 |
| Shielding (Barrier Attenuation) | 352.0 | -5.4 | -5.4 | -5.4 | -5.4 | -5.4 | -5.4 |
| Raw (Distance + Barrier) | | 56.9 | -10.6 | -10.6 | -10.6 | -10.6 | -10.6 |
| **60 Minute Hourly Adjustment** | | **56.9** | **-10.6** | **-10.6** | **-10.6** | **-10.6** | **-10.6** |


## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R7**
*Source:* Architectural Coating
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | |
|---|---|---|---|
| *Noise Distance to Observer* | 362.0 feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 352.0 feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,480.0 feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,481.0 feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,480.0 feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 362.0 | -5.2 | -5.2 | -5.2 | -5.2 | -5.2 | -5.2 |
| Shielding (Barrier Attenuation) | 352.0 | -5.4 | -5.4 | -5.4 | -5.4 | -5.4 | -5.4 |
| Raw (Distance + Barrier) | | 56.9 | -10.6 | -10.6 | -10.6 | -10.6 | -10.6 |
| **60 Minute Hourly Adjustment** | | **56.9** | **-10.6** | **-10.6** | **-10.6** | **-10.6** | **-10.6** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R7**
*Source:* Paving
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 153.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 143.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,480.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,480.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,480.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 153.0 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 |
| Shielding (Barrier Attenuation) | 143.0 | -5.3 | -5.3 | -5.3 | -5.3 | -5.3 | -5.3 |
| Raw (Distance + Barrier) | | 64.5 | -3.0 | -3.0 | -3.0 | -3.0 | -3.0 |
| **60 Minute Hourly Adjustment** | | **64.5** | **-3.0** | **-3.0** | **-3.0** | **-3.0** | **-3.0** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R8**
*Source:* Grading
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 207.0 | feet | ***Barrier Height:*** | **0.0 feet** |
| *Noise Distance to Barrier:* | 207.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 0.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,484.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,480.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,484.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 207.0 | -0.3 | -0.3 | -0.3 | -0.3 | -0.3 | -0.3 |
| Shielding (Barrier Attenuation) | 207.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Raw (Distance + Barrier) | | 67.2 | -0.3 | -0.3 | -0.3 | -0.3 | -0.3 |
| **60 Minute Hourly Adjustment** | | **67.2** | **-0.3** | **-0.3** | **-0.3** | **-0.3** | **-0.3** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R8**
*Source:* Trenching
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 207.0 | feet | ***Barrier Height:*** | **0.0 feet** |
| *Noise Distance to Barrier:* | 207.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 0.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,484.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,480.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,484.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 61.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 207.0 | -0.3 | -0.3 | -0.3 | -0.3 | -0.3 | -0.3 |
| Shielding (Barrier Attenuation) | 207.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Raw (Distance + Barrier) | | 61.1 | -0.3 | -0.3 | -0.3 | -0.3 | -0.3 |
| **60 Minute Hourly Adjustment** | | **61.1** | **-0.3** | **-0.3** | **-0.3** | **-0.3** | **-0.3** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R8**
*Source:* Building Construction
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 492.0 | feet | ***Barrier Height:*** | **0.0 feet** |
| *Noise Distance to Barrier:* | 492.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 0.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,484.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,481.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,484.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 492.0 | -7.8 | -7.8 | -7.8 | -7.8 | -7.8 | -7.8 |
| Shielding (Barrier Attenuation) | 492.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Raw (Distance + Barrier) | | 59.7 | -7.8 | -7.8 | -7.8 | -7.8 | -7.8 |
| **60 Minute Hourly Adjustment** | | **59.7** | **-7.8** | **-7.8** | **-7.8** | **-7.8** | **-7.8** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R8**
*Source:* Architectural Coating
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 492.0 | feet | ***Barrier Height:*** | **0.0 feet** |
| *Noise Distance to Barrier:* | 492.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 0.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,484.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,481.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,484.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 492.0 | -7.8 | -7.8 | -7.8 | -7.8 | -7.8 | -7.8 |
| Shielding (Barrier Attenuation) | 492.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Raw (Distance + Barrier) | | 59.7 | -7.8 | -7.8 | -7.8 | -7.8 | -7.8 |
| **60 Minute Hourly Adjustment** | | **59.7** | **-7.8** | **-7.8** | **-7.8** | **-7.8** | **-7.8** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R8**
*Source:* Paving
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 207.0 | feet | ***Barrier Height:*** | **0.0 feet** |
| *Noise Distance to Barrier:* | 207.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 0.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,484.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,480.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,484.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 207.0 | -0.3 | -0.3 | -0.3 | -0.3 | -0.3 | -0.3 |
| Shielding (Barrier Attenuation) | 207.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Raw (Distance + Barrier) | | 67.2 | -0.3 | -0.3 | -0.3 | -0.3 | -0.3 |
| **60 Minute Hourly Adjustment** | | **67.2** | **-0.3** | **-0.3** | **-0.3** | **-0.3** | **-0.3** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R1**
*Source:* Grading
*Condition:* Construction Phase 2

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 3,006.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 2,996.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,510.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,489.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,510.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 3,006.0 | -23.5 | -23.5 | -23.5 | -23.5 | -23.5 | -23.5 |
| Shielding (Barrier Attenuation) | 2,996.0 | -5.6 | -5.6 | -5.6 | -5.6 | -5.6 | -5.6 |
| Raw (Distance + Barrier) | | 38.4 | -29.1 | -29.1 | -29.1 | -29.1 | -29.1 |
| **60 Minute Hourly Adjustment** | | **38.4** | **-29.1** | **-29.1** | **-29.1** | **-29.1** | **-29.1** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R1**
*Source:* Trenching
*Condition:* Construction Phase 2

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 3,006.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 2,996.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,510.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,489.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,510.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 61.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 3,006.0 | -23.5 | -23.5 | -23.5 | -23.5 | -23.5 | -23.5 |
| Shielding (Barrier Attenuation) | 2,996.0 | -5.6 | -5.6 | -5.6 | -5.6 | -5.6 | -5.6 |
| Raw (Distance + Barrier) | | 32.3 | -29.1 | -29.1 | -29.1 | -29.1 | -29.1 |
| **60 Minute Hourly Adjustment** | | **32.3** | **-29.1** | **-29.1** | **-29.1** | **-29.1** | **-29.1** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R1**
*Source:* Building Construction
*Condition:* Construction Phase 2

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 3,088.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 3,078.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,510.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,490.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,510.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 3,088.0 | -23.8 | -23.8 | -23.8 | -23.8 | -23.8 | -23.8 |
| Shielding (Barrier Attenuation) | 3,078.0 | -5.5 | -5.5 | -5.5 | -5.5 | -5.5 | -5.5 |
| Raw (Distance + Barrier) | | 38.2 | -29.3 | -29.3 | -29.3 | -29.3 | -29.3 |
| **60 Minute Hourly Adjustment** | | **38.2** | **-29.3** | **-29.3** | **-29.3** | **-29.3** | **-29.3** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R1**
*Source:* Architectural Coating
*Condition:* Construction Phase 2

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 3,088.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 3,078.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,510.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,490.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,510.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 3,088.0 | -23.8 | -23.8 | -23.8 | -23.8 | -23.8 | -23.8 |
| Shielding (Barrier Attenuation) | 3,078.0 | -5.5 | -5.5 | -5.5 | -5.5 | -5.5 | -5.5 |
| Raw (Distance + Barrier) | | 38.2 | -29.3 | -29.3 | -29.3 | -29.3 | -29.3 |
| **60 Minute Hourly Adjustment** | | **38.2** | **-29.3** | **-29.3** | **-29.3** | **-29.3** | **-29.3** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R1**
*Source:* Paving
*Condition:* Construction Phase 2

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 3,006.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 2,996.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,510.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,489.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,510.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 3,006.0 | -23.5 | -23.5 | -23.5 | -23.5 | -23.5 | -23.5 |
| Shielding (Barrier Attenuation) | 2,996.0 | -5.6 | -5.6 | -5.6 | -5.6 | -5.6 | -5.6 |
| Raw (Distance + Barrier) | | 38.4 | -29.1 | -29.1 | -29.1 | -29.1 | -29.1 |
| **60 Minute Hourly Adjustment** | | **38.4** | **-29.1** | **-29.1** | **-29.1** | **-29.1** | **-29.1** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R2**
*Source:* Grading
*Condition:* Construction Phase 2

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 3,692.0 | feet | ***Barrier Height:*** | **30.0 feet** |
| *Noise Distance to Barrier:* | 1,907.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 1,785.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,504.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,489.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,490.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 3,692.0 | -25.3 | -25.3 | -25.3 | -25.3 | -25.3 | -25.3 |
| Shielding (Barrier Attenuation) | 1,907.0 | -6.4 | -6.4 | -6.4 | -6.4 | -6.4 | -6.4 |
| Raw (Distance + Barrier) | | 35.8 | -31.7 | -31.7 | -31.7 | -31.7 | -31.7 |
| **60 Minute Hourly Adjustment** | | **35.8** | **-31.7** | **-31.7** | **-31.7** | **-31.7** | **-31.7** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R2**
*Source:* Trenching
*Condition:* Construction Phase 2

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | |
|---|---|---|---|
| *Noise Distance to Observer* | 3,692.0 feet | ***Barrier Height:*** | **30.0 feet** |
| *Noise Distance to Barrier:* | 1,907.0 feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 1,785.0 feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,504.0 feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,489.0 feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,490.0 feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 61.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 3,692.0 | -25.3 | -25.3 | -25.3 | -25.3 | -25.3 | -25.3 |
| Shielding (Barrier Attenuation) | 1,907.0 | -6.4 | -6.4 | -6.4 | -6.4 | -6.4 | -6.4 |
| Raw (Distance + Barrier) | | 29.7 | -31.7 | -31.7 | -31.7 | -31.7 | -31.7 |
| **60 Minute Hourly Adjustment** | | **29.7** | **-31.7** | **-31.7** | **-31.7** | **-31.7** | **-31.7** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R2**
*Source:* Building Construction
*Condition:* Construction Phase 2

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | |
|---|---|---|---|
| *Noise Distance to Observer* | 3,773.0 feet | ***Barrier Height:*** | **30.0 feet** |
| *Noise Distance to Barrier:* | 1,950.0 feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 1,823.0 feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,504.0 feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,490.0 feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,490.0 feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 3,773.0 | -25.5 | -25.5 | -25.5 | -25.5 | -25.5 | -25.5 |
| Shielding (Barrier Attenuation) | 1,950.0 | -6.3 | -6.3 | -6.3 | -6.3 | -6.3 | -6.3 |
| Raw (Distance + Barrier) | | 35.7 | -31.8 | -31.8 | -31.8 | -31.8 | -31.8 |
| **60 Minute Hourly Adjustment** | | **35.7** | **-31.8** | **-31.8** | **-31.8** | **-31.8** | **-31.8** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R2**
*Source:* Architectural Coating
*Condition:* Construction Phase 2

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | |
|---|---|---|---|
| *Noise Distance to Observer* | 3,773.0 feet | ***Barrier Height:*** | **30.0 feet** |
| *Noise Distance to Barrier:* | 1,950.0 feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 1,823.0 feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,504.0 feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,490.0 feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,490.0 feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 3,773.0 | -25.5 | -25.5 | -25.5 | -25.5 | -25.5 | -25.5 |
| Shielding (Barrier Attenuation) | 1,950.0 | -6.3 | -6.3 | -6.3 | -6.3 | -6.3 | -6.3 |
| Raw (Distance + Barrier) | | 35.7 | -31.8 | -31.8 | -31.8 | -31.8 | -31.8 |
| **60 Minute Hourly Adjustment** | | **35.7** | **-31.8** | **-31.8** | **-31.8** | **-31.8** | **-31.8** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R2**
*Source:* Paving
*Condition:* Construction Phase 2

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | |
|---|---|---|---|
| *Noise Distance to Observer* | 3,692.0 feet | ***Barrier Height:*** | **30.0 feet** |
| *Noise Distance to Barrier:* | 1,907.0 feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 1,785.0 feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,504.0 feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,489.0 feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,490.0 feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 3,692.0 | -25.3 | -25.3 | -25.3 | -25.3 | -25.3 | -25.3 |
| Shielding (Barrier Attenuation) | 1,907.0 | -6.4 | -6.4 | -6.4 | -6.4 | -6.4 | -6.4 |
| Raw (Distance + Barrier) | | 35.8 | -31.7 | -31.7 | -31.7 | -31.7 | -31.7 |
| **60 Minute Hourly Adjustment** | | **35.8** | **-31.7** | **-31.7** | **-31.7** | **-31.7** | **-31.7** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R3**
*Source:* Grading
*Condition:* Construction Phase 2

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 2,782.0 | feet | ***Barrier Height:*** | **30.0 feet** |
| *Noise Distance to Barrier:* | 1,459.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 1,323.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,495.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,489.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,490.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 2,782.0 | -22.9 | -22.9 | -22.9 | -22.9 | -22.9 | -22.9 |
| Shielding (Barrier Attenuation) | 1,459.0 | -7.6 | -7.6 | -7.6 | -7.6 | -7.6 | -7.6 |
| Raw (Distance + Barrier) | | 37.0 | -30.5 | -30.5 | -30.5 | -30.5 | -30.5 |
| **60 Minute Hourly Adjustment** | | **37.0** | **-30.5** | **-30.5** | **-30.5** | **-30.5** | **-30.5** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R3**
*Source:* Trenching
*Condition:* Construction Phase 2

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 2,782.0 | feet | ***Barrier Height:*** | **30.0 feet** |
| *Noise Distance to Barrier:* | 1,459.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 1,323.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,495.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,489.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,490.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 61.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 2,782.0 | -22.9 | -22.9 | -22.9 | -22.9 | -22.9 | -22.9 |
| Shielding (Barrier Attenuation) | 1,459.0 | -7.6 | -7.6 | -7.6 | -7.6 | -7.6 | -7.6 |
| Raw (Distance + Barrier) | | 30.9 | -30.5 | -30.5 | -30.5 | -30.5 | -30.5 |
| **60 Minute Hourly Adjustment** | | **30.9** | **-30.5** | **-30.5** | **-30.5** | **-30.5** | **-30.5** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R3**
*Source:* Building Construction
*Condition:* Construction Phase 2

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 2,864.0 | feet | ***Barrier Height:*** | **30.0 feet** |
| *Noise Distance to Barrier:* | 1,482.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 1,382.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,495.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,490.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,490.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 2,864.0 | -23.1 | -23.1 | -23.1 | -23.1 | -23.1 | -23.1 |
| Shielding (Barrier Attenuation) | 1,482.0 | -7.5 | -7.5 | -7.5 | -7.5 | -7.5 | -7.5 |
| Raw (Distance + Barrier) | | 36.9 | -30.6 | -30.6 | -30.6 | -30.6 | -30.6 |
| **60 Minute Hourly Adjustment** | | **36.9** | **-30.6** | **-30.6** | **-30.6** | **-30.6** | **-30.6** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R3**
*Source:* Architectural Coating
*Condition:* Construction Phase 2

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 2,864.0 | feet | ***Barrier Height:*** | **30.0 feet** |
| *Noise Distance to Barrier:* | 1,482.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 1,382.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,495.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,490.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,490.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 2,864.0 | -23.1 | -23.1 | -23.1 | -23.1 | -23.1 | -23.1 |
| Shielding (Barrier Attenuation) | 1,482.0 | -7.5 | -7.5 | -7.5 | -7.5 | -7.5 | -7.5 |
| Raw (Distance + Barrier) | | 36.9 | -30.6 | -30.6 | -30.6 | -30.6 | -30.6 |
| **60 Minute Hourly Adjustment** | | **36.9** | **-30.6** | **-30.6** | **-30.6** | **-30.6** | **-30.6** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R3**
*Source:* Paving
*Condition:* Construction Phase 2

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 2,782.0 | feet | ***Barrier Height:*** | **30.0 feet** |
| *Noise Distance to Barrier:* | 1,459.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 1,323.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,495.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,489.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,490.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 2,782.0 | -22.9 | -22.9 | -22.9 | -22.9 | -22.9 | -22.9 |
| Shielding (Barrier Attenuation) | 1,459.0 | -7.6 | -7.6 | -7.6 | -7.6 | -7.6 | -7.6 |
| Raw (Distance + Barrier) | | 37.0 | -30.5 | -30.5 | -30.5 | -30.5 | -30.5 |
| **60 Minute Hourly Adjustment** | | **37.0** | **-30.5** | **-30.5** | **-30.5** | **-30.5** | **-30.5** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R4**
*Source:* Grading
*Condition:* Construction Phase 2

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 2,245.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 2,235.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,489.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,489.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,489.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 2,245.0 | -21.0 | -21.0 | -21.0 | -21.0 | -21.0 | -21.0 |
| Shielding (Barrier Attenuation) | 2,235.0 | -5.5 | -5.5 | -5.5 | -5.5 | -5.5 | -5.5 |
| Raw (Distance + Barrier) | | 41.0 | -26.5 | -26.5 | -26.5 | -26.5 | -26.5 |
| **60 Minute Hourly Adjustment** | | **41.0** | **-26.5** | **-26.5** | **-26.5** | **-26.5** | **-26.5** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R4**
*Source:* Trenching
*Condition:* Construction Phase 2

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 2,245.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 2,235.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,489.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,489.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,489.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 61.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 2,245.0 | -21.0 | -21.0 | -21.0 | -21.0 | -21.0 | -21.0 |
| Shielding (Barrier Attenuation) | 2,235.0 | -5.5 | -5.5 | -5.5 | -5.5 | -5.5 | -5.5 |
| Raw (Distance + Barrier) | | 34.9 | -26.5 | -26.5 | -26.5 | -26.5 | -26.5 |
| **60 Minute Hourly Adjustment** | | **34.9** | **-26.5** | **-26.5** | **-26.5** | **-26.5** | **-26.5** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R4**
*Source:* Building Construction
*Condition:* Construction Phase 2

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 2,422.0 | feet | ***Barrier Height:*** | **30.0 feet** |
| *Noise Distance to Barrier:* | 1,619.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 803.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,489.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,490.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,489.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 2,422.0 | -21.7 | -21.7 | -21.7 | -21.7 | -21.7 | -21.7 |
| Shielding (Barrier Attenuation) | 1,619.0 | -8.5 | -8.5 | -8.5 | -8.5 | -8.5 | -8.5 |
| Raw (Distance + Barrier) | | 37.3 | -30.2 | -30.2 | -30.2 | -30.2 | -30.2 |
| **60 Minute Hourly Adjustment** | | **37.3** | **-30.2** | **-30.2** | **-30.2** | **-30.2** | **-30.2** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R4**
*Source:* Architectural Coating
*Condition:* Construction Phase 2

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 2,422.0 | feet | ***Barrier Height:*** | **30.0 feet** |
| *Noise Distance to Barrier:* | 1,619.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 803.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,489.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,490.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,489.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 2,422.0 | -21.7 | -21.7 | -21.7 | -21.7 | -21.7 | -21.7 |
| Shielding (Barrier Attenuation) | 1,619.0 | -8.5 | -8.5 | -8.5 | -8.5 | -8.5 | -8.5 |
| Raw (Distance + Barrier) | | 37.3 | -30.2 | -30.2 | -30.2 | -30.2 | -30.2 |
| **60 Minute Hourly Adjustment** | | **37.3** | **-30.2** | **-30.2** | **-30.2** | **-30.2** | **-30.2** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R4**
*Source:* Paving
*Condition:* Construction Phase 2

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 2,245.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 2,235.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,489.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,489.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,489.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 2,245.0 | -21.0 | -21.0 | -21.0 | -21.0 | -21.0 | -21.0 |
| Shielding (Barrier Attenuation) | 2,235.0 | -5.5 | -5.5 | -5.5 | -5.5 | -5.5 | -5.5 |
| Raw (Distance + Barrier) | | 41.0 | -26.5 | -26.5 | -26.5 | -26.5 | -26.5 |
| **60 Minute Hourly Adjustment** | | **41.0** | **-26.5** | **-26.5** | **-26.5** | **-26.5** | **-26.5** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R5**
*Source:* Grading
*Condition:* Construction Phase 2

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | | |
|---|---|---|---|---|---|
| *Noise Distance to Observer* | 2,022.0 | feet | ***Barrier Height:*** | **30.0** | **feet** |
| *Noise Distance to Barrier:* | 879.0 | feet | *Noise Source Height:* | 8.0 | feet |
| *Barrier Distance to Observer:* | 1,143.0 | feet | *Observer Height:* | 5.0 | feet |
| *Observer Elevation:* | 1,486.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 | |
| *Noise Source Elevation:* | 1,489.0 | feet | *Drop Off Coefficient:* | 20.0 | |
| *Barrier Elevation:* | 1,486.0 | feet | | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 2,022.0 | -20.1 | -20.1 | -20.1 | -20.1 | -20.1 | -20.1 |
| Shielding (Barrier Attenuation) | 879.0 | -8.3 | -8.3 | -8.3 | -8.3 | -8.3 | -8.3 |
| Raw (Distance + Barrier) | | 39.1 | -28.4 | -28.4 | -28.4 | -28.4 | -28.4 |
| **60 Minute Hourly Adjustment** | | **39.1** | **-28.4** | **-28.4** | **-28.4** | **-28.4** | **-28.4** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R5**
*Source:* Trenching
*Condition:* Construction Phase 2

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | | |
|---|---|---|---|---|---|
| *Noise Distance to Observer* | 2,022.0 | feet | ***Barrier Height:*** | **30.0** | **feet** |
| *Noise Distance to Barrier:* | 879.0 | feet | *Noise Source Height:* | 8.0 | feet |
| *Barrier Distance to Observer:* | 1,143.0 | feet | *Observer Height:* | 5.0 | feet |
| *Observer Elevation:* | 1,486.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 | |
| *Noise Source Elevation:* | 1,489.0 | feet | *Drop Off Coefficient:* | 20.0 | |
| *Barrier Elevation:* | 1,486.0 | feet | | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 61.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 2,022.0 | -20.1 | -20.1 | -20.1 | -20.1 | -20.1 | -20.1 |
| Shielding (Barrier Attenuation) | 879.0 | -8.3 | -8.3 | -8.3 | -8.3 | -8.3 | -8.3 |
| Raw (Distance + Barrier) | | 33.0 | -28.4 | -28.4 | -28.4 | -28.4 | -28.4 |
| **60 Minute Hourly Adjustment** | | **33.0** | **-28.4** | **-28.4** | **-28.4** | **-28.4** | **-28.4** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R5**
*Source:* Building Construction
*Condition:* Construction Phase 2

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | |
|---|---|---|---|
| *Noise Distance to Observer* | 2,318.0 feet | ***Barrier Height:*** | **30.0 feet** |
| *Noise Distance to Barrier:* | 1,195.0 feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 1,123.0 feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,486.0 feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,490.0 feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,486.0 feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 2,318.0 | -21.3 | -21.3 | -21.3 | -21.3 | -21.3 | -21.3 |
| Shielding (Barrier Attenuation) | 1,195.0 | -7.9 | -7.9 | -7.9 | -7.9 | -7.9 | -7.9 |
| Raw (Distance + Barrier) | | 38.3 | -29.2 | -29.2 | -29.2 | -29.2 | -29.2 |
| **60 Minute Hourly Adjustment** | | **38.3** | **-29.2** | **-29.2** | **-29.2** | **-29.2** | **-29.2** |


## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R5**
*Source:* Architectural Coating
*Condition:* Construction Phase 2

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | |
|---|---|---|---|
| *Noise Distance to Observer* | 2,318.0 feet | ***Barrier Height:*** | **30.0 feet** |
| *Noise Distance to Barrier:* | 1,195.0 feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 1,123.0 feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,486.0 feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,490.0 feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,486.0 feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 2,318.0 | -21.3 | -21.3 | -21.3 | -21.3 | -21.3 | -21.3 |
| Shielding (Barrier Attenuation) | 1,195.0 | -7.9 | -7.9 | -7.9 | -7.9 | -7.9 | -7.9 |
| Raw (Distance + Barrier) | | 38.3 | -29.2 | -29.2 | -29.2 | -29.2 | -29.2 |
| **60 Minute Hourly Adjustment** | | **38.3** | **-29.2** | **-29.2** | **-29.2** | **-29.2** | **-29.2** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R5**
*Source:* Paving
*Condition:* Construction Phase 2

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | | |
|---|---|---|---|---|---|
| *Noise Distance to Observer* | 2,022.0 | feet | ***Barrier Height:*** | **30.0** | **feet** |
| *Noise Distance to Barrier:* | 879.0 | feet | *Noise Source Height:* | 8.0 | feet |
| *Barrier Distance to Observer:* | 1,143.0 | feet | *Observer Height:* | 5.0 | feet |
| *Observer Elevation:* | 1,486.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 | |
| *Noise Source Elevation:* | 1,489.0 | feet | *Drop Off Coefficient:* | 20.0 | |
| *Barrier Elevation:* | 1,486.0 | feet | | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 2,022.0 | -20.1 | -20.1 | -20.1 | -20.1 | -20.1 | -20.1 |
| Shielding (Barrier Attenuation) | 879.0 | -8.3 | -8.3 | -8.3 | -8.3 | -8.3 | -8.3 |
| Raw (Distance + Barrier) | | 39.1 | -28.4 | -28.4 | -28.4 | -28.4 | -28.4 |
| **60 Minute Hourly Adjustment** | | **39.1** | **-28.4** | **-28.4** | **-28.4** | **-28.4** | **-28.4** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R6**
*Source:* Grading
*Condition:* Construction Phase 2

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | | |
|---|---|---|---|---|---|
| *Noise Distance to Observer* | 1,654.0 | feet | ***Barrier Height:*** | **30.0** | **feet** |
| *Noise Distance to Barrier:* | 361.0 | feet | *Noise Source Height:* | 8.0 | feet |
| *Barrier Distance to Observer:* | 1,293.0 | feet | *Observer Height:* | 5.0 | feet |
| *Observer Elevation:* | 1,484.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 | |
| *Noise Source Elevation:* | 1,480.0 | feet | *Drop Off Coefficient:* | 20.0 | |
| *Barrier Elevation:* | 1,484.0 | feet | | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 1,654.0 | -18.4 | -18.4 | -18.4 | -18.4 | -18.4 | -18.4 |
| Shielding (Barrier Attenuation) | 361.0 | -10.6 | -10.6 | -10.6 | -10.6 | -10.6 | -10.6 |
| Raw (Distance + Barrier) | | 38.5 | -29.0 | -29.0 | -29.0 | -29.0 | -29.0 |
| **60 Minute Hourly Adjustment** | | **38.5** | **-29.0** | **-29.0** | **-29.0** | **-29.0** | **-29.0** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R6**
*Source:* Trenching
*Condition:* Construction Phase 2

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 1,654.0 | feet | ***Barrier Height:*** | **30.0 feet** |
| *Noise Distance to Barrier:* | 361.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 1,293.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,484.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,480.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,484.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 61.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 1,654.0 | -18.4 | -18.4 | -18.4 | -18.4 | -18.4 | -18.4 |
| Shielding (Barrier Attenuation) | 361.0 | -10.6 | -10.6 | -10.6 | -10.6 | -10.6 | -10.6 |
| Raw (Distance + Barrier) | | 32.4 | -29.0 | -29.0 | -29.0 | -29.0 | -29.0 |
| **60 Minute Hourly Adjustment** | | **32.4** | **-29.0** | **-29.0** | **-29.0** | **-29.0** | **-29.0** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R6**
*Source:* Building Construction
*Condition:* Construction Phase 2

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 1,792.0 | feet | ***Barrier Height:*** | **30.0 feet** |
| *Noise Distance to Barrier:* | 323.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 1,469.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,484.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,481.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,484.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 1,792.0 | -19.0 | -19.0 | -19.0 | -19.0 | -19.0 | -19.0 |
| Shielding (Barrier Attenuation) | 323.0 | -10.6 | -10.6 | -10.6 | -10.6 | -10.6 | -10.6 |
| Raw (Distance + Barrier) | | 37.9 | -29.6 | -29.6 | -29.6 | -29.6 | -29.6 |
| **60 Minute Hourly Adjustment** | | **37.9** | **-29.6** | **-29.6** | **-29.6** | **-29.6** | **-29.6** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R6**
*Source:* Architectural Coating
*Condition:* Construction Phase 2

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 1,792.0 | feet | ***Barrier Height:*** | **30.0 feet** |
| *Noise Distance to Barrier:* | 323.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 1,469.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,484.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,481.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,484.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 1,792.0 | -19.0 | -19.0 | -19.0 | -19.0 | -19.0 | -19.0 |
| Shielding (Barrier Attenuation) | 323.0 | -10.6 | -10.6 | -10.6 | -10.6 | -10.6 | -10.6 |
| Raw (Distance + Barrier) | | 37.9 | -29.6 | -29.6 | -29.6 | -29.6 | -29.6 |
| **60 Minute Hourly Adjustment** | | **37.9** | **-29.6** | **-29.6** | **-29.6** | **-29.6** | **-29.6** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R6**
*Source:* Paving
*Condition:* Construction Phase 2

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 1,654.0 | feet | ***Barrier Height:*** | **30.0 feet** |
| *Noise Distance to Barrier:* | 361.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 1,293.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,484.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,480.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,484.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 1,654.0 | -18.4 | -18.4 | -18.4 | -18.4 | -18.4 | -18.4 |
| Shielding (Barrier Attenuation) | 361.0 | -10.6 | -10.6 | -10.6 | -10.6 | -10.6 | -10.6 |
| Raw (Distance + Barrier) | | 38.5 | -29.0 | -29.0 | -29.0 | -29.0 | -29.0 |
| **60 Minute Hourly Adjustment** | | **38.5** | **-29.0** | **-29.0** | **-29.0** | **-29.0** | **-29.0** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R7**
*Source:* Grading
*Condition:* Construction Phase 2

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 962.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 952.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,480.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,480.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,480.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 962.0 | -13.6 | -13.6 | -13.6 | -13.6 | -13.6 | -13.6 |
| Shielding (Barrier Attenuation) | 952.0 | -5.5 | -5.5 | -5.5 | -5.5 | -5.5 | -5.5 |
| Raw (Distance + Barrier) | | 48.4 | -19.1 | -19.1 | -19.1 | -19.1 | -19.1 |
| **60 Minute Hourly Adjustment** | | **48.4** | **-19.1** | **-19.1** | **-19.1** | **-19.1** | **-19.1** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R7**
*Source:* Trenching
*Condition:* Construction Phase 2

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 962.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 952.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,480.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,480.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,480.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 61.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 962.0 | -13.6 | -13.6 | -13.6 | -13.6 | -13.6 | -13.6 |
| Shielding (Barrier Attenuation) | 952.0 | -5.5 | -5.5 | -5.5 | -5.5 | -5.5 | -5.5 |
| Raw (Distance + Barrier) | | 42.3 | -19.1 | -19.1 | -19.1 | -19.1 | -19.1 |
| **60 Minute Hourly Adjustment** | | **42.3** | **-19.1** | **-19.1** | **-19.1** | **-19.1** | **-19.1** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R7**
*Source:* Building Construction
*Condition:* Construction Phase 2

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 1,184.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 1,174.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,480.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,481.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,480.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 1,184.0 | -15.4 | -15.4 | -15.4 | -15.4 | -15.4 | -15.4 |
| Shielding (Barrier Attenuation) | 1,174.0 | -5.5 | -5.5 | -5.5 | -5.5 | -5.5 | -5.5 |
| Raw (Distance + Barrier) | | 46.6 | -20.9 | -20.9 | -20.9 | -20.9 | -20.9 |
| **60 Minute Hourly Adjustment** | | **46.6** | **-20.9** | **-20.9** | **-20.9** | **-20.9** | **-20.9** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R7**
*Source:* Architectural Coating
*Condition:* Construction Phase 2

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 1,184.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 1,174.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,480.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,481.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,480.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 1,184.0 | -15.4 | -15.4 | -15.4 | -15.4 | -15.4 | -15.4 |
| Shielding (Barrier Attenuation) | 1,174.0 | -5.5 | -5.5 | -5.5 | -5.5 | -5.5 | -5.5 |
| Raw (Distance + Barrier) | | 46.6 | -20.9 | -20.9 | -20.9 | -20.9 | -20.9 |
| **60 Minute Hourly Adjustment** | | **46.6** | **-20.9** | **-20.9** | **-20.9** | **-20.9** | **-20.9** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R7**
*Source:* Paving
*Condition:* Construction Phase 2

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 962.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 952.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,480.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,480.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,480.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 962.0 | -13.6 | -13.6 | -13.6 | -13.6 | -13.6 | -13.6 |
| Shielding (Barrier Attenuation) | 952.0 | -5.5 | -5.5 | -5.5 | -5.5 | -5.5 | -5.5 |
| Raw (Distance + Barrier) | | 48.4 | -19.1 | -19.1 | -19.1 | -19.1 | -19.1 |
| **60 Minute Hourly Adjustment** | | **48.4** | **-19.1** | **-19.1** | **-19.1** | **-19.1** | **-19.1** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R8**
*Source:* Grading
*Condition:* Construction Phase 2

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 629.0 | feet | ***Barrier Height:*** | **0.0 feet** |
| *Noise Distance to Barrier:* | 619.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,484.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,480.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,484.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 629.0 | -10.0 | -10.0 | -10.0 | -10.0 | -10.0 | -10.0 |
| Shielding (Barrier Attenuation) | 619.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Raw (Distance + Barrier) | | 57.5 | -10.0 | -10.0 | -10.0 | -10.0 | -10.0 |
| **60 Minute Hourly Adjustment** | | **57.5** | **-10.0** | **-10.0** | **-10.0** | **-10.0** | **-10.0** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R8**
*Source:* Trenching
*Condition:* Construction Phase 2

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 629.0 | feet | ***Barrier Height:*** | **0.0 feet** |
| *Noise Distance to Barrier:* | 619.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,484.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,480.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,484.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 61.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 629.0 | -10.0 | -10.0 | -10.0 | -10.0 | -10.0 | -10.0 |
| Shielding (Barrier Attenuation) | 619.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Raw (Distance + Barrier) | | 51.4 | -10.0 | -10.0 | -10.0 | -10.0 | -10.0 |
| **60 Minute Hourly Adjustment** | | **51.4** | **-10.0** | **-10.0** | **-10.0** | **-10.0** | **-10.0** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R8**
*Source:* Building Construction
*Condition:* Construction Phase 2

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 1,008.0 | feet | ***Barrier Height:*** | **0.0 feet** |
| *Noise Distance to Barrier:* | 998.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,484.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,481.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,484.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 1,008.0 | -14.0 | -14.0 | -14.0 | -14.0 | -14.0 | -14.0 |
| Shielding (Barrier Attenuation) | 998.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Raw (Distance + Barrier) | | 53.5 | -14.0 | -14.0 | -14.0 | -14.0 | -14.0 |
| **60 Minute Hourly Adjustment** | | **53.5** | **-14.0** | **-14.0** | **-14.0** | **-14.0** | **-14.0** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R8**
*Source:* Architectural Coating
*Condition:* Construction Phase 2

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 1,008.0 | feet | ***Barrier Height:*** | **0.0 feet** |
| *Noise Distance to Barrier:* | 998.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,484.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,481.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,484.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 1,008.0 | -14.0 | -14.0 | -14.0 | -14.0 | -14.0 | -14.0 |
| Shielding (Barrier Attenuation) | 998.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Raw (Distance + Barrier) | | 53.5 | -14.0 | -14.0 | -14.0 | -14.0 | -14.0 |
| **60 Minute Hourly Adjustment** | | **53.5** | **-14.0** | **-14.0** | **-14.0** | **-14.0** | **-14.0** |

## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R8**
*Source:* Paving
*Condition:* Construction Phase 2

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 629.0 | feet | ***Barrier Height:*** | **0.0 feet** |
| *Noise Distance to Barrier:* | 619.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 10.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,484.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,480.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,484.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 629.0 | -10.0 | -10.0 | -10.0 | -10.0 | -10.0 | -10.0 |
| Shielding (Barrier Attenuation) | 619.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Raw (Distance + Barrier) | | 57.5 | -10.0 | -10.0 | -10.0 | -10.0 | -10.0 |
| **60 Minute Hourly Adjustment** | | **57.5** | **-10.0** | **-10.0** | **-10.0** | **-10.0** | **-10.0** |

# APPENDIX 10.3:

# CONSTRUCTION TEMPORARY BARRIER ATTENUATION CALCULATIONS

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## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R8**
*Source:* Grading
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 207.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 10.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 197.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,484.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,480.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,480.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 207.0 | -0.3 | -0.3 | -0.3 | -0.3 | -0.3 | -0.3 |
| Shielding (Barrier Attenuation) | 10.0 | -6.9 | -6.9 | -6.9 | -6.9 | -6.9 | -6.9 |
| Raw (Distance + Barrier) | | 60.3 | -7.2 | -7.2 | -7.2 | -7.2 | -7.2 |
| **60 Minute Hourly Adjustment** | | **60.3** | **-7.2** | **-7.2** | **-7.2** | **-7.2** | **-7.2** |


## STATIONARY SOURCE NOISE PREDICTION MODEL

11/6/2015

***Observer Location:*** **R8**
*Source:* Paving
*Condition:* Construction Phase 1

*Project Name:* MV Logistics
*Job Number:* 9303
*Analyst:* A. Wolfe

### NOISE MODEL INPUTS

| | | | | |
|---|---|---|---|---|
| *Noise Distance to Observer* | 207.0 | feet | ***Barrier Height:*** | **6.0 feet** |
| *Noise Distance to Barrier:* | 10.0 | feet | *Noise Source Height:* | 8.0 feet |
| *Barrier Distance to Observer:* | 197.0 | feet | *Observer Height:* | 5.0 feet |
| *Observer Elevation:* | 1,484.0 | feet | *Barrier Type (0-Wall, 1-Berm):* | 0 |
| *Noise Source Elevation:* | 1,480.0 | feet | *Drop Off Coefficient:* | 20.0 |
| *Barrier Elevation:* | 1,480.0 | feet | | |

20 = 6 dBA per doubling of distance
15 = 4.5 dBA per doubling of distance

### NOISE MODEL PROJECTIONS

| *Noise Level* | *Distance (feet)* | *Leq* | *L50* | *L25* | *L8* | *L2* | *Lmax* |
|---|---|---|---|---|---|---|---|
| Reference (Sample) | 200.0 | 67.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Distance Attenuation | 207.0 | -0.3 | -0.3 | -0.3 | -0.3 | -0.3 | -0.3 |
| Shielding (Barrier Attenuation) | 10.0 | -6.9 | -6.9 | -6.9 | -6.9 | -6.9 | -6.9 |
| Raw (Distance + Barrier) | | 60.3 | -7.2 | -7.2 | -7.2 | -7.2 | -7.2 |
| **60 Minute Hourly Adjustment** | | **60.3** | **-7.2** | **-7.2** | **-7.2** | **-7.2** | **-7.2** |

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