

# APPENDIX G: NOISE IMPACT STUDY

## Lancaster Travel Center Project Draft IS/MND



*Lead Agency*

**City of Lancaster**

44933 Fern Avenue  
Lancaster, CA 93534

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# Truck Stop Project Noise Impact Study City of Lancaster, CA

Prepared for:

Ms. Jenni Duke  
**Duke Engineering**  
759 W Lancaster  
Lancaster, CA 93534

Prepared by:

**MD Acoustics, LLC**  
Naomi Jensen, INCE-USA  
Bethany Wu, INCE-USA  
1197 Los Angeles Ave, Ste C-256  
Simi Valley, CA 93065

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P) AZ - 602.774.1950

P) CA - 805.426.4477

[www.mdacoustics.com](http://www.mdacoustics.com)  
[info@mdacoustics.com](mailto:info@mdacoustics.com)

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## **1.0 Introduction**

### **1.1 Purpose of Analysis and Study Objectives**

This noise assessment was prepared to evaluate the potential noise impacts for the project study area and to recommend noise mitigation measures, if necessary, to minimize the potential noise impacts. The assessment was conducted and compared to the noise standards set forth by the Federal, State, and Local agencies. Consistent with the City's Noise Guidelines, the project must demonstrate compliance with the applicable noise criterion as outlined within the City's Noise Element and Municipal Code.

The following is provided in this report:

- A description of the study area and the proposed project
- Information regarding the fundamentals of noise
- A description of the local noise guidelines and standards
- An analysis of traffic noise impacts to and from the project site
- An analysis of construction noise impacts

### **1.2 Site Location and Study Area**

The project site is located at the southeast corner of 25<sup>th</sup> St W and W Avenue H in the City of Lancaster, CA (APNs: 3114-012-066, 3114-012-064, 3444-012-062, 3114-012-029), as shown in Exhibit A. The site is currently zoned as Light Industrial by the City of Lancaster. Land uses surrounding the site include residential to the east across Highway 14, vacant land to the north and west, and commercial/industrial uses to the south. The nearest existing residences are located approximately 1,150 feet to the southeast of the project site. The closest airport, the General William J. Fox Airfield, is over 2 miles away from the project site. W Avenue H is to the north, 25<sup>th</sup> St W is to the west, Highway 14 is to the east, and Avenue H2 is to the south.

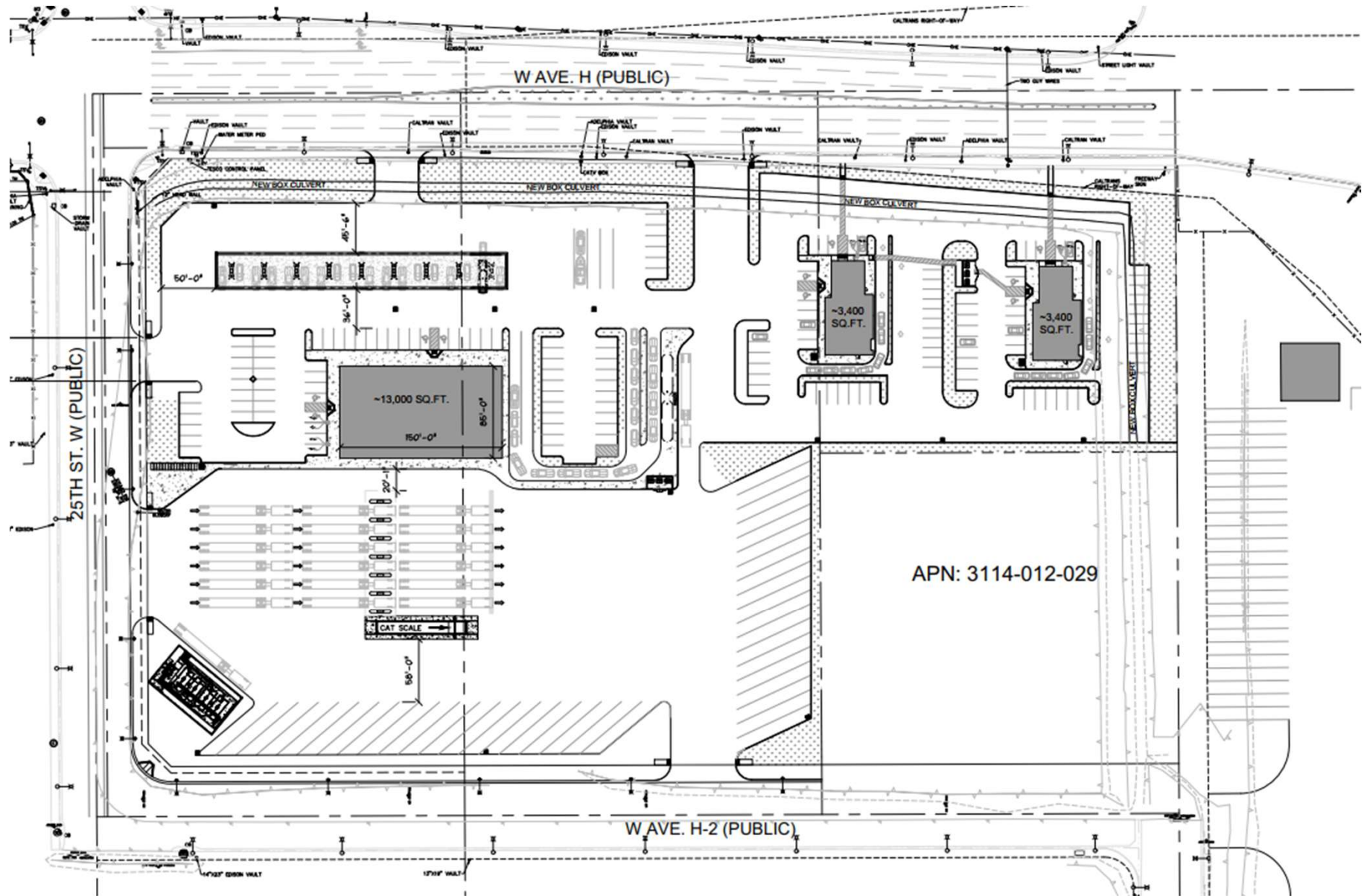
### **1.3 Proposed Project Description**

The project proposes to develop a truck stop with an approximately 11,900 sq ft store, two (2) 3,400 sq ft quick service restaurants, eighteen (18) fueling stations under two (2) canopies, forty (40) diesel truck parking spaces, one hundred and forty-four (144) car parking spaces, six (6) diesel truck fueling stations, and a truck scale on approximately eleven (11) acres. Exhibit B demonstrates the site plan for the project. This report assumes 24-hour operation for all proposed uses as a worst-case scenario.

## Exhibit A Location Map



## Exhibit B Site Plan



## 2.0 Fundamentals of Noise

This section of the report provides basic information about noise and presents some of the terms used within the report.

### 2.1 Sound, Noise, and Acoustics

Sound is a disturbance created by a moving or vibrating source and is capable of being detected by the hearing organs. Sound may be thought of as the mechanical energy of a moving object transmitted by pressure waves through a medium to a human ear. For traffic or stationary noise, the medium of concern is air. *Noise* is defined as sound that is loud, unpleasant, unexpected, or unwanted.

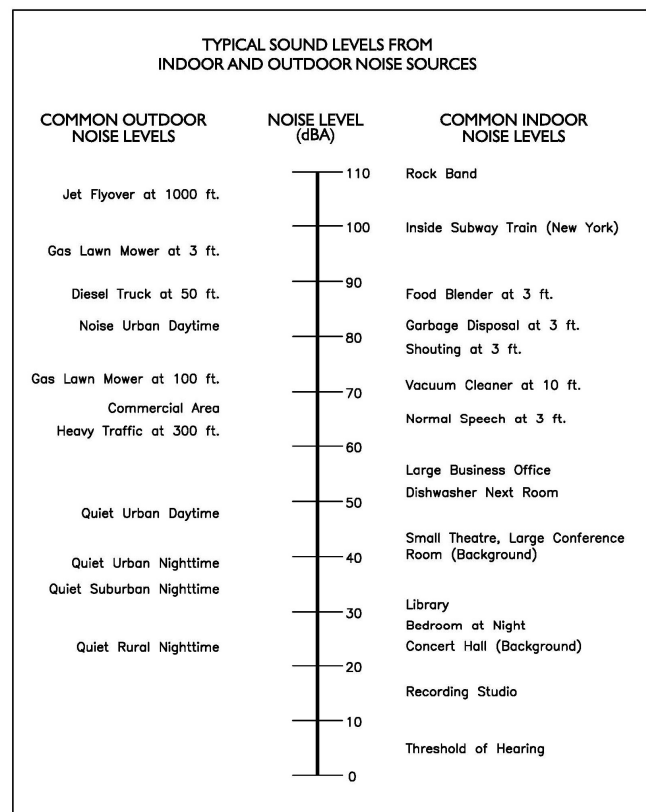
### 2.2 Frequency and Hertz

A continuous sound is described by its *frequency* (pitch) and its *amplitude* (loudness). Frequency relates to the number of pressure oscillations per second. Low-frequency sounds are low in pitch (bass sounding), and high-frequency sounds are high in pitch (squeak). These oscillations per second (cycles) are commonly referred to as Hertz (Hz). The human ear can hear from the bass pitch starting at 20 Hz all the way to the high pitch of 20,000 Hz.

### 2.3 Sound Pressure Levels and Decibels

The *amplitude* of a sound determines its loudness. The loudness of sound increases or decreases as the amplitude increases or decreases. Sound pressure amplitude is measured in units of micro-Newton per square inch meter (N/m<sup>2</sup>), also called micro-Pascal (μPa). One μPa is approximately one hundred billionths (0.0000000001) of normal atmospheric pressure. Sound pressure level (SPL or L<sub>p</sub>) is used to describe in logarithmic units the ratio of actual sound pressures to a reference pressure squared. These units are called decibels, abbreviated dB. Exhibit C illustrates reference sound levels for different noise sources.

#### Exhibit C: Typical A-Weighted Noise Levels



### 2.4 Addition of Decibels

Because decibels are on a logarithmic scale, sound pressure levels cannot be added or subtracted by simple plus or minus addition. When two sounds or equal SPL are combined, they will produce an SPL 3 dB greater than the original single SPL. In other words, sound energy must be doubled to produce a 3 dB increase. If two sounds differ by approximately 10 dB, the higher sound level is the predominant sound.

## 2.5 Human Response to Changes in Noise Levels

In general, the healthy human ear is most sensitive to sounds between 1,000 Hz and 5,000 Hz (A-weighted scale), and it perceives a sound within that range as being more intense than a sound with a higher or lower frequency with the same magnitude. For purposes of this report, as well as with most environmental documents, the A-scale weighting is typically reported in terms of A-weighted decibel (dBA). Typically, the human ear can barely perceive a change in noise level of 3 dB. A change in 5 dB is readily perceptible, and a change in 10 dB is perceived as being twice or half as loud. As previously discussed, a doubling of sound energy results in a 3 dB increase in sound, which means that a doubling of sound energy (e.g., doubling the volume of traffic on a highway) would result in a barely perceptible change in sound level.

| Changes in Intensity Level, dBA | Changes in Apparent Loudness |
|---------------------------------|------------------------------|
| 1                               | Not perceptible              |
| 3                               | Just perceptible             |
| 5                               | Clearly noticeable           |
| 10                              | Twice (or half) as loud      |

[https://www.fhwa.dot.gov/environMent/noise/regulations\\_and\\_guidance/polguide/polguide02.cfm](https://www.fhwa.dot.gov/environMent/noise/regulations_and_guidance/polguide/polguide02.cfm)

## 2.6 Noise Descriptors

Noise in our daily environment fluctuates over time. Some noise levels occur in regular patterns, others are random. Some noise levels are constant, while others are sporadic. Noise descriptors were created to describe the different time-varying noise levels.

**A-Weighted Sound Level:** The sound pressure level in decibels as measured on a sound level meter using the A-weighted filter network. The A-weighting filter de-emphasizes the very low and very high-frequency components of the sound in a manner similar to the response of the human ear. A numerical method of rating human judgment of loudness.

**Ambient Noise Level:** The composite of noise from all sources, near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

**Community Noise Equivalent Level (CNEL):** The average equivalent A-weighted sound level during a 24-hour day, obtained after the addition of five (5) decibels to sound levels in the evening from 7:00 to 10:00 PM and after the addition of ten (10) decibels to sound levels in the night before 7:00 AM and after 10:00 PM.

**Decibel (dB):** A unit for measuring the amplitude of a sound equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micro-pascals.

**dB(A):** A-weighted sound level (see definition above).

**Equivalent Sound Level (LEQ):** The sound level corresponding to a steady noise level over a given sample period with the same amount of acoustic energy as the actual time-varying noise level. The energy average noise level during the sample period.

**Habitable Room:** Any room meeting the requirements of the Uniform Building Code or other applicable regulations which is intended to be used for sleeping, living, cooking, or dining purposes, excluding such enclosed spaces as closets, pantries, bath or toilet rooms, service rooms, connecting corridors, laundries, unfinished attics, foyers, storage spaces, cellars, utility rooms, and similar spaces.

**L(n):** The A-weighted sound level exceeded during a certain percentage of the sample time. For example, L10 in the sound level exceeded 10 percent of the sample time. Similarly L50, L90 and L99, etc.

**Noise:** Any unwanted sound or sound which is undesirable because it interferes with speech and hearing, or is intense enough to damage hearing, or is otherwise annoying. The State Noise Control Act defines noise as "...excessive undesirable sound...".

**Outdoor Living Area:** Outdoor spaces that are associated with residential land uses typically used for passive recreational activities or other noise-sensitive uses. Such spaces include patio areas, barbecue areas, jacuzzi areas, etc., associated with residential uses; outdoor patient recovery or resting areas associated with hospitals, convalescent hospitals, or rest homes; outdoor areas associated with places of worship which have a significant role in services or other noise-sensitive activities; and outdoor school facilities routinely used for educational purposes which may be adversely impacted by noise. Outdoor areas usually not included in this definition are: front yard areas, driveways, greenbelts, maintenance areas and storage areas associated with residential land uses; exterior areas at hospitals that are not used for patient activities; outdoor areas associated with places of worship and principally used for short-term social gatherings; and, outdoor areas associated with school facilities that are not typically associated with educational uses prone to adverse noise impacts (for example, school play yard areas).

**Percent Noise Levels:** See L(n).

**Sound Level (Noise Level):** The weighted sound pressure level obtained by use of a sound level meter having a standard frequency-filter for attenuating part of the sound spectrum.

**Sound Level Meter:** An instrument, including a microphone, an amplifier, an output meter, and frequency weighting networks for the measurement and determination of noise and sound levels.

**Single Event Noise Exposure Level (SENEL):** The dB(A) level which, if it lasted for one second, would produce the same A-weighted sound energy as the actual event.

## 2.7 Traffic Noise Prediction

Noise levels associated with traffic depends on a variety of factors: (1) volume of traffic, (2) speed of traffic, (3) auto, medium truck (2 axle) and heavy truck percentage (3 axle and greater), and sound propagation. The greater the volume of traffic, higher speeds and truck percentages equate to a louder

volume in noise. A doubling of the Average Daily Traffic (ADT) along a roadway will increase noise levels by approximately 3 dB; reasons for this are discussed in the sections above.

## **2.8 Sound Propagation**

As sound propagates from a source it spreads geometrically. Sound from a small, localized source (i.e., a point source) radiates uniformly outward as it travels away from the source in a spherical pattern. The sound level attenuates at a rate of 6 dB per doubling of distance. The movement of vehicles down a roadway makes the source of the sound appear to propagate from a line (i.e., line source) rather than a point source. This line source results in the noise propagating from a roadway in a cylindrical spreading versus a spherical spreading that results from a point source. The sound level attenuates for a line source at a rate of 3 dB per doubling of distance.

As noise propagates from the source, it is affected by the ground and atmosphere. Noise models use hard site (reflective surfaces) and soft site (absorptive surfaces) to help calculate predicted noise levels. Hard site conditions assume no excessive ground absorption between the noise source and the receiver. Soft site conditions such as grass, soft dirt or landscaping attenuate noise at a rate of 1.5 dB per doubling of distance. When added to the geometric spreading, the excess ground attenuation results in an overall noise attenuation of 4.5 dB per doubling of distance for a line source and 7.5 dB per doubling of distance for a point source.

Research has demonstrated that atmospheric conditions can have a significant effect on noise levels when noise receivers are located 200 feet or more from a noise source. Wind, temperature, air humidity and turbulence can further impact how far sound can travel.

## 3.0 Ground-Borne Vibration Fundamentals

### 3.1 Vibration Descriptors

Ground-borne vibrations consist of rapidly fluctuating motions within the ground that have an average motion of zero. The effects of ground-borne vibrations typically only cause a nuisance to people, but at extreme vibration levels, damage to buildings may occur. Although ground-borne vibration can be felt outdoors, it is typically only an annoyance to people indoors where the associated effects of the shaking of a building can be notable. Ground-borne noise is an effect of ground-borne vibration and only exists indoors, since it is produced from noise radiated from the motion of the walls and floors of a room and may also consist of the rattling of windows or dishes on shelves.

Several different methods are used to quantify vibration amplitude.

**PPV** – Known as the peak particle velocity (PPV) which is the maximum instantaneous peak in vibration velocity, typically given in inches per second.

**RMS** – Known as root mean squared (RMS) can be used to denote vibration amplitude

**VdB** – A commonly used abbreviation to describe the vibration level (VdB) for a vibration source.

### 3.2 Vibration Perception

Typically, developed areas are continuously affected by vibration velocities of 50 VdB or lower. These continuous vibrations are not noticeable to humans whose threshold of perception is around 65 VdB. Outdoor sources that may produce perceptible vibrations are usually caused by construction equipment, steel-wheeled trains, and traffic on rough roads, while smooth roads rarely produce perceptible ground-borne noise or vibration. To counter the effects of ground-borne vibration, the Federal Transit Administration (FTA) has published guidance relative to vibration impacts. According to the FTA, fragile buildings can be exposed to ground-borne vibration levels of 0.3 inches per second without experiencing structural damage.

There are three main types of vibration propagation: surface, compression, and shear waves. Surface waves, or Rayleigh waves, travel along the ground's surface. These waves carry most of their energy along an expanding circular wave front, similar to ripples produced by throwing a rock into a pool of water. P-waves, or compression waves, are body waves that carry their energy along an expanding spherical wave front. The particle motion in these waves is longitudinal (i.e., in a "push-pull" fashion). P-waves are analogous to airborne sound waves. S-waves, or shear waves, are also body waves that carry energy along an expanding spherical wave front. However, unlike P-waves, the particle motion is transverse, or side-to-side and perpendicular to the direction of propagation.

As vibration waves propagate from a source, the vibration energy decreases in a logarithmic nature and the vibration levels typically decrease by 6 VdB per doubling of the distance from the vibration source. As stated above, this drop-off rate can vary greatly depending on the soil but has been shown to be

effective enough for screening purposes, in order to identify potential vibration impacts that may need to be studied through actual field tests.

## **4.0 Regulatory Setting**

The proposed project is located in the City of Lancaster and noise regulations are addressed through the efforts of various federal, state and local government agencies. The agencies responsible for regulating noise are discussed below.

### **4.1 Federal Regulations**

The adverse impact of noise was officially recognized by the federal government in the Noise Control Act of 1972, which serves three purposes:

- Publicize noise emission standards for interstate commerce
- Assist state and local abatement efforts
- Promote noise education and research

The Federal Office of Noise Abatement and Control (ONAC) originally was tasked with implementing the Noise Control Act. However, it was eventually eliminated leaving other federal agencies and committees to develop noise policies and programs. Some examples of these agencies are as follows: The Department of Transportation (DOT) assumed a significant role in noise control through its various agencies. The Federal Aviation Agency (FAA) is responsible to regulate noise from aircraft and airports. The Federal Highway Administration (FHWA) is responsible to regulate noise from the interstate highway system. The Occupational Safety and Health Administration (OSHA) is responsible for the prohibition of excessive noise exposure to workers.

The federal government advocates that local jurisdiction use their land use regulatory authority to arrange new development in such a way that “noise sensitive” uses are either prohibited from being constructed adjacent to a highway or, or alternatively that the developments are planned and constructed in such a manner that potential noise impacts are minimized.

Since the federal government has preempted the setting of standards for noise levels that can be emitted by the transportation source, the City is restricted to regulating the noise generated by the transportation system through nuisance abatement ordinances and land use planning.

### **4.2 State Regulations**

Established in 1973, the California Department of Health Services Office of Noise Control (ONC) was instrumental in developing regularity tools to control and abate noise for use by local agencies. One significant model is the “Land Use Compatibility for Community Noise Environments Matrix.” The matrix allows the local jurisdiction to clearly delineate compatibility of sensitive uses with various incremental levels of noise.

The State of California has established noise insulation standards as outlined in Title 24 and the Uniform Building Code (UBC) which in some cases requires acoustical analyses to outline exterior noise levels and to ensure interior noise levels do not exceed the interior threshold. The State mandates that the legislative body of each county and city adopt a noise element as part of its comprehensive general plan.

The local noise element must recognize the land use compatibility guidelines published by the State Department of Health Services. The guidelines rank noise land use compatibility in terms of normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable.

### 4.3 City of Lancaster Noise Regulations

The City of Lancaster outlines its noise regulations and standards within the Noise Element from the General Plan and the Noise Ordinance from the Municipal Code.

#### City of Lancaster General Plan

Applicable policies and standards governing environmental noise in the City are set forth in the General Plan's Noise Element. Table 3-1 (Exhibit D of this report) outlines the City's land use compatibility and interior and exterior noise levels for community noise environments.

#### Exhibit D: Noise/Land Use Compatibility Matrix

**Table 3-1**  
**Noise Compatible Land Use Objectives**

| Land Use                                          | Maximum Exterior CNEL | Maximum Interior CNEL |
|---------------------------------------------------|-----------------------|-----------------------|
| Rural, Single Family, Multiple Family Residential | 65 dBA                | 45 dBA                |
| Schools:                                          |                       |                       |
| Classrooms                                        | 65 dBA                | 45 dBA                |
| Playgrounds                                       | 70 dBA                | --                    |
| Libraries                                         | --                    | 50 dBA                |
| Hospitals/Convalescent Facilities:                |                       |                       |
| Living Areas                                      | --                    | 50 dBA                |
| Sleeping Areas                                    | --                    | 40 dBA                |
| Commercial and Industrial                         | 70 dBA                | --                    |
| Office Areas                                      | --                    | 50 dBA                |

In addition to these noise standards, the City has outlined goals and implementation policies to reduce potential noise impacts, which are presented below:

#### **Policies and Specific Actions**

Policies and specific actions from the noise section that would mitigate potential impacts on noise include the following.

**Policy 4.3.1:** Ensure that noise-sensitive land uses and noise generators are located and designed in such a manner that City noise objectives will be achieved.

**Specific Actions**

- 4.3.1(a):** Where new development is proposed for areas within which the exterior or interior noise levels outlined in Table 3-1 are likely to be exceeded by existing or planned land uses, require a detailed noise attenuation study to be prepared by a qualified acoustical engineer, in order to determine appropriate mitigation and ways to incorporate such mitigation into project design.
- 4.3.1(d):** When proposed projects include uses that could be potentially significant noise generators, require noise analyses to be prepared by an acoustical expert, including specific recommendations for mitigation when: 1) the project is located in close proximity to noise sensitive land uses or land which is planned for noise sensitive land uses, or 2) the proposed noise source could violate the noise provisions of the General Plan or Municipal Code.
- 4.3.1(e):** For purposes of consistency, require that noise reports incorporate the following methodology:
- Assume three (3) dBA attenuation with doubling of distance for the natural attenuation of noise emanating from roadways (with the exception of freeways where a 4.5 dBA attenuation with doubling of distance may be utilized).
  - Use the daily design capacity of roadways as outlined in the City of Lancaster Transportation Master Plan and the posted speed limit to quantify the design noise levels adjacent to master planned transportation routes for mitigation purposes.
- 4.3.1(f):** Minimize motor vehicle noise impacts from streets and highways through proper route location and sensitive roadway design.
- Consideration shall be given to the location of truck routes, effects of truck mix, and future motor vehicle volumes on noise levels adjacent to master planned roadways when improvements to the circulation system are planned.
  - Traffic volumes and speed through residential neighborhoods shall be minimized.
  - Street or street improvements that exceed the ultimate right-of-way width specified in the City of Lancaster Transportation Master Plan shall be required to evaluate potential noise impacts on existing and future land uses in the area.

- The City will work closely with Caltrans in the early stages of freeway improvements and design modifications to ensure that proper consideration is given to potential noise impacts on the City.

**4.3.1(h):** Ensure that new commercial and industrial activities (including the placement of mechanical equipment) are designed so that activities comply with the maximum noise level standards at the property line of adjacent uses, thereby minimizing impacts on adjacent uses (see Table 3-1).

**Policy 4.3.2:** **Wherever feasible, manage the generation of single event noise levels (SENL) from motor vehicles, trains, aircraft, commercial, industrial, construction, and other activities such that SENL levels are no greater than 15 dBA above the noise objectives included in the Plan for Public Health and Safety.**

### Specific Actions

**4.3.2(d):** As a condition of approval, limit non-emergency construction activities to daylight hours between sunrise and 8:00 pm.

### City of Lancaster Municipal Code

The City's Municipal Code outlines the City's noise regulations as it relates to stationary noise sources in Chapter 8.24 – Noise Regulations.

8.24.030 - Loud, unnecessary and unusual noises prohibited.

Notwithstanding any other provision of this chapter, and in addition thereto, no person shall make, cause or suffer, or permit to be made upon any premises owned, occupied or controlled by him/her any unnecessary noises or sounds which are physically annoying to persons of ordinary sensitiveness which are so harsh or so prolonged or unnatural or unusual in their use, time, or place as to occasion physical discomfort to the inhabitants of any neighborhood. All animals shall be so maintained.

8.24.040 - Loud, unnecessary and unusual noises prohibited—Construction and building.

Except as otherwise provided in this chapter, a person at any time on Sunday or any day between the hours of eight p.m. and seven a.m. shall not perform any construction or repair work of any kind upon any building or structure or perform any earth excavating, filling or moving where any of the foregoing entails the use of any air compressor, jack hammer, power-driven drill, riveting machine, excavator, diesel-powered truck, tractor or other earth-moving equipment, hard hammers on steel or iron or any other machine tool, device or equipment which makes loud noises within five hundred (500) feet of an occupied dwelling, apartment, hotel, mobile home or other place of residence.

## **5.0 Study Method and Procedure**

The following section describes the noise modeling procedures and assumptions used for this assessment.

### **5.1 Noise Measurement Procedure and Criteria**

Noise measurements are taken to determine the existing noise levels. A noise receiver or receptor is any location in the noise analysis in which noise might produce an impact. The following criteria are used to select measurement locations and receptors:

- Locations expected to receive the highest noise impacts, such as the first row of houses
- Locations that are acoustically representative and equivalent of the area of concern
- Human land usage
- Sites clear of major obstruction and contamination

MD conducted the sound level measurements in accordance to the County's and Caltrans (TeNS) technical noise specifications. All measurement equipment meets American National Standards Institute (ANSI) specifications for sound level meters (S1.4-1983 identified in Chapter 19.68.020.AA). The following gives a brief description of the Caltrans Technical Noise Supplement procedures for sound level measurements:

- Microphones for sound level meters were placed 5-feet above the ground for all measurements
- Sound level meters were calibrated (Larson Davis CAL 200) before and after each measurement
- Following the calibration of equipment, a windscreen was placed over the microphone
- Frequency weighting was set on "A" and slow response
- Results of the long-term noise measurements were recorded on field data sheets
- During any short-term noise measurements, any noise contaminations such as barking dogs, local traffic, lawnmowers, or aircraft fly-overs were noted
- Temperature and sky conditions were observed and documented

### **5.2 Noise Measurement Locations**

The noise monitoring location was selected based on the nearest sensitive receptors relative to the proposed noise sources impacting the area. One (1) 15-minute noise measurement was conducted at the project site and is illustrated in Exhibit E. Appendix A includes photos, field sheet, and measured noise data.

### **5.3 FHWA Traffic Noise Prediction Model**

Traffic noise from vehicular traffic was projected using the FHWA Traffic Noise Prediction Model (FHWA-RD-77-108) standards. The FHWA model arrives at the predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). Project counts were obtained from the traffic study prepared for this project by Ruettggers & Schuler Civil Engineers. The referenced traffic data was applied to the model and is in Appendix B. The following outlines the key adjustments made to the REMEL for the roadway inputs:

- Roadway classification – (e.g., freeway, major arterial, arterial, secondary, collector, etc.),

- Roadway Active Width – (distance between the center of the outermost travel lanes on each side of the roadway)
- Average Daily Traffic Volumes (ADT), Travel Speeds, Percentages of automobiles, medium trucks and heavy trucks
- Roadway grade and angle of view
- Site Conditions (e.g., soft vs. hard)
- Percentage of total ADT which flows each hour throughout a 24-hour period

Table 1 indicates the roadway parameters and vehicle distribution utilized for this study.

**Table 1: Roadway Parameters and Vehicle Distribution**

| Roadway                                                                                                                                                                                                                                                                                | Segment                       | Existing ADT               | Existing + Project ADT <sup>3</sup> | Speed (MPH)                | Site Conditions            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|----------------------------|-------------------------------------|----------------------------|----------------------------|
| W Avenue H                                                                                                                                                                                                                                                                             | East of 30 <sup>th</sup> St W | 16,851 <sup>1</sup>        | 20,708                              | 55                         | Hard                       |
| Highway 14                                                                                                                                                                                                                                                                             | W Ave H Exit                  | 43,510 <sup>2</sup>        | 47,367                              | 55                         | Hard                       |
| <b>W Ave H Vehicle Distribution and Mix<sup>2</sup></b>                                                                                                                                                                                                                                |                               |                            |                                     |                            |                            |
| Motor-Vehicle Type                                                                                                                                                                                                                                                                     |                               | Daytime %<br>(7AM to 7 PM) | Evening %<br>(7 PM to 10 PM)        | Night %<br>(10 PM to 7 AM) | Total % of<br>Traffic Flow |
| Automobiles                                                                                                                                                                                                                                                                            |                               | 77.5                       | 12.9                                | 9.6                        | 97.5                       |
| Medium Trucks                                                                                                                                                                                                                                                                          |                               | 84.8                       | 4.9                                 | 10.3                       | 1.8                        |
| Heavy Trucks                                                                                                                                                                                                                                                                           |                               | 86.5                       | 2.7                                 | 10.8                       | 0.7                        |
| Notes:<br><sup>1</sup> 2019 City of Lancaster ADT Map with a 2% per year traffic increase.<br><sup>2</sup> 2022 Caltrans Traffic Volumes with a 2% per year traffic increase.<br><sup>3</sup> Project ADT calculated using ITE 11 <sup>th</sup> Edition trip generation methodologies. |                               |                            |                                     |                            |                            |

To determine the project's noise impact to the surrounding land uses, MD generated noise contours for the traffic volumes along W Avenue H and Highway 14. Noise contours are used to provide a characterization of sound levels experienced at a set distance from the centerline of a subject roadway. They are intended to represent a worst-case scenario and do not take into account structures, sound walls, topography, and/or other sound-attenuating features, which may further reduce the actual noise level. Noise contours are developed for comparative purposes and are used to demonstrate potential increases/decreases along subject roadways because of a project. Existing ADT counts were obtained using the City of Lancaster ADT Map (2019 data) and from the 2022 Caltrans Traffic Volumes. A 2% per year traffic increase was calculated to determine the 2025 traffic conditions. The project trip generation was calculated using ITE 11<sup>th</sup> Edition trip generation methodologies.

## 5.4 SoundPLAN Noise Model (Operational Noise)

SoundPLAN (SP) acoustical modeling software was utilized to model future worst-case stationary noise impacts to the adjacent land uses. SP is capable of evaluating multiple stationary noise source impacts at various receiver locations. SP's software utilizes algorithms (based on the inverse square law and reference equipment noise level data) to calculate noise level projections. The software allows the user to input specific noise sources, spectral content, sound barriers, building placement, topography, and sensitive receptor locations.

The future worst-case noise level projections were modeled using referenced sound level data for the various stationary on-site sources (parking spaces, HVAC, gas station pumps, etc.). HVAC noise was estimated using 1 ton of HVAC per 350 square feet of building area. The model assumes that every parking space has 3 movements in an hour and that the gas station pumps have seven (7) customers per hour on each pump. Additionally, the model assumes that the drive-thrus are full of idling cars. As a worst-case scenario, the model assumes all noise sources (HVAC, parking movements, gas pumps, idling cars) are constantly running.

Referenced SoundPLAN library sound level data was utilized to model the various stationary on-site noise sources associated with project operation. The model is able to evaluate the noise-attenuating effects of any existing property line walls. Input and output calculations are provided in Appendix C.

## **5.5 FHWA Roadway Construction Noise Model**

The construction noise analysis utilizes the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RNCM), together with several key construction parameters. Key inputs include distance to the sensitive receiver, equipment usage, % usage factor, and baseline parameters for the project site.

The project was analyzed based on the different construction phases. The construction noise calculation output worksheet is in Appendix C.

Exhibit E

Measurement Location

# = Short-Term  
Monitoring Location



## 6.0 Existing Noise Environment

One (1) 15-minute ambient noise measurement was conducted at the project site on March 19, 2025, to document the existing noise environment. The measurement includes the Leq, Lmin, Lmax, and other statistical data (e.g., L2, L8). In addition, the CNEL was calculated based on typical California traffic patterns. Noise data indicates that traffic along Highway 14 is the primary source of noise impacting the site and the adjacent uses.

### 6.1 Short-Term Noise Measurement Results

The results of the short-term noise data are presented in Table 2.

**Table 2: Short-Term Noise Measurement Data (dBA)<sup>1</sup>**

| Location                                                                                                                      | Start Time | Stop Time | Leq  | Lmax | Lmin | L(2) | L(8) | L(25) | L(50) | L(90) | CNEL <sup>2</sup> |
|-------------------------------------------------------------------------------------------------------------------------------|------------|-----------|------|------|------|------|------|-------|-------|-------|-------------------|
| NM1                                                                                                                           | 11:08 AM   | 11:23 AM  | 54.7 | 73.1 | 44.2 | 62.5 | 55.7 | 53.6  | 51.6  | 47.8  | 58.2              |
| Notes:<br><sup>1</sup> Measurement locations are indicated in Exhibit E.<br><sup>2</sup> See Appendix A for CNEL calculation. |            |           |      |      |      |      |      |       |       |       |                   |

Noise data indicates the ambient noise level was 54.7 dBA Leq at the project site. The CNEL was estimated to be 58.2 dBA at the project site using typical California traffic patterns. Additional field notes and photographs are provided in Appendix A.

## 7.0 Future Noise Environment Impacts and Mitigation

This assessment analyzes future noise impacts to sensitive receptors and the project and compares the results to the City's Noise Standards. The analysis details the estimated exterior noise levels associated with traffic from adjacent roadways and stationary operational noise sources such as HVAC and parking.

### 7.1 Future On/Off-Site Traffic Noise Impact

The potential off-site noise impacts caused by the increase in vehicular traffic as a result of the project were calculated at a distance of 90 feet from Avenue H and a distance of 450 feet from Highway 14. All 1,800 project-generated trips were applied to each roadway segment as a worst-case conservative estimate. The distance to the 55, 60, 65, and 70 dBA CNEL noise contours are also provided for reference. The noise levels at the represented distances are representative of approximate distances to the nearest homes to the subject roadways impacted by the project. The noise contours were calculated for the following scenarios and conditions:

- Existing Condition: This scenario refers to the existing traffic noise condition and is demonstrated in Table 3.
- Existing + Project Condition: This scenario refers to the existing plus project traffic noise condition and is demonstrated in Table 3.

**Table 3: Existing Without Project Exterior Noise Levels (dBA CNEL)**

| Roadway    | Segment                       | CNEL at Nearest Residence (dBA) <sup>2</sup> | Distance to Contour (ft) |             |             |             |
|------------|-------------------------------|----------------------------------------------|--------------------------|-------------|-------------|-------------|
|            |                               |                                              | 70 dBA CNEL              | 65 dBA CNEL | 60 dBA CNEL | 55 dBA CNEL |
| W Avenue H | East of 30 <sup>th</sup> St W | 66.1                                         | 107                      | 338         | 1070        | 3384        |
| Highway 14 | W Ave H Exit                  | 66.9                                         | 222                      | 702         | 2218        | 7015        |

**Existing With Project Exterior Noise Levels (dBA CNEL)**

| Roadway    | Segment                       | CNEL at Nearest Residence (dBA) <sup>2</sup> | Distance to Contour (ft) |             |             |             |
|------------|-------------------------------|----------------------------------------------|--------------------------|-------------|-------------|-------------|
|            |                               |                                              | 70 dBA CNEL              | 65 dBA CNEL | 60 dBA CNEL | 55 dBA CNEL |
| W Avenue H | East of 30 <sup>th</sup> St W | 67.0                                         | 132                      | 416         | 1315        | 4159        |
| Highway 14 | W Ave H Exit                  | 67.3                                         | 242                      | 764         | 2415        | 7637        |

**Change in Existing Noise Levels as a Result of Project (dBA CNEL)**

| Roadway <sup>1</sup>                                                                                                | Segment                       | CNEL at 150 Feet dBA <sup>2</sup> |                       |                       |                              |
|---------------------------------------------------------------------------------------------------------------------|-------------------------------|-----------------------------------|-----------------------|-----------------------|------------------------------|
|                                                                                                                     |                               | Existing Without Project          | Existing With Project | Change in Noise Level | Potential Significant Impact |
| W Avenue H                                                                                                          | East of 30 <sup>th</sup> St W | 66.1                              | 67.0                  | 0.9                   | No                           |
| Highway 14                                                                                                          | W Ave H Exit                  | 66.9                              | 67.3                  | 0.4                   | No                           |
| Notes:                                                                                                              |                               |                                   |                       |                       |                              |
| <sup>1</sup> Exterior noise levels calculated at 5 feet above ground level.                                         |                               |                                   |                       |                       |                              |
| <sup>2</sup> Noise levels calculated 90 feet from centerline of W Ave H and 450 feet from centerline of Highway 14. |                               |                                   |                       |                       |                              |

Table 3 provides the Existing and Existing + Project noise conditions and shows the change in noise level because of the proposed project. As shown in Table 3, the change in noise level ranges from 0.4 to 0.9

dba CNEL. This increase is below 3 dBA, which is the threshold of human perceptibility (see Section 2). Thus, the increase in traffic will be inaudible, and the impact is less than significant.

## 7.2 Future Off-Site Stationary Noise Impact

Sensitive receptors that may be affected by project operational noise include residences to the southeast of the site. The worst-case stationary noise was modeled using SoundPLAN acoustical modeling software. Worst-case assumes that all HVAC machines and gas pumping stations are in use simultaneously and that there are 3 parking movements per space per hour.

A total of four (4) receptors were modeled to evaluate the proposed project's operational impact. A receptor is denoted by a yellow dot. All yellow dots represent either a property line or a sensitive receptor, such as a building facade. Receptor 1 represents a potential commercial use, receptors 2, and 4 represent the nearest existing commercial/industrial uses, while receptor 3 represents the residential uses to the southeast.

### Project Operational Noise Levels

Worst-case "project only" exterior operational noise is presented in Exhibit F. Operational noise levels are expected to reach 31 to 42 dBA CNEL at the nearby existing receptors.

### Project Plus Ambient Operational Noise Levels

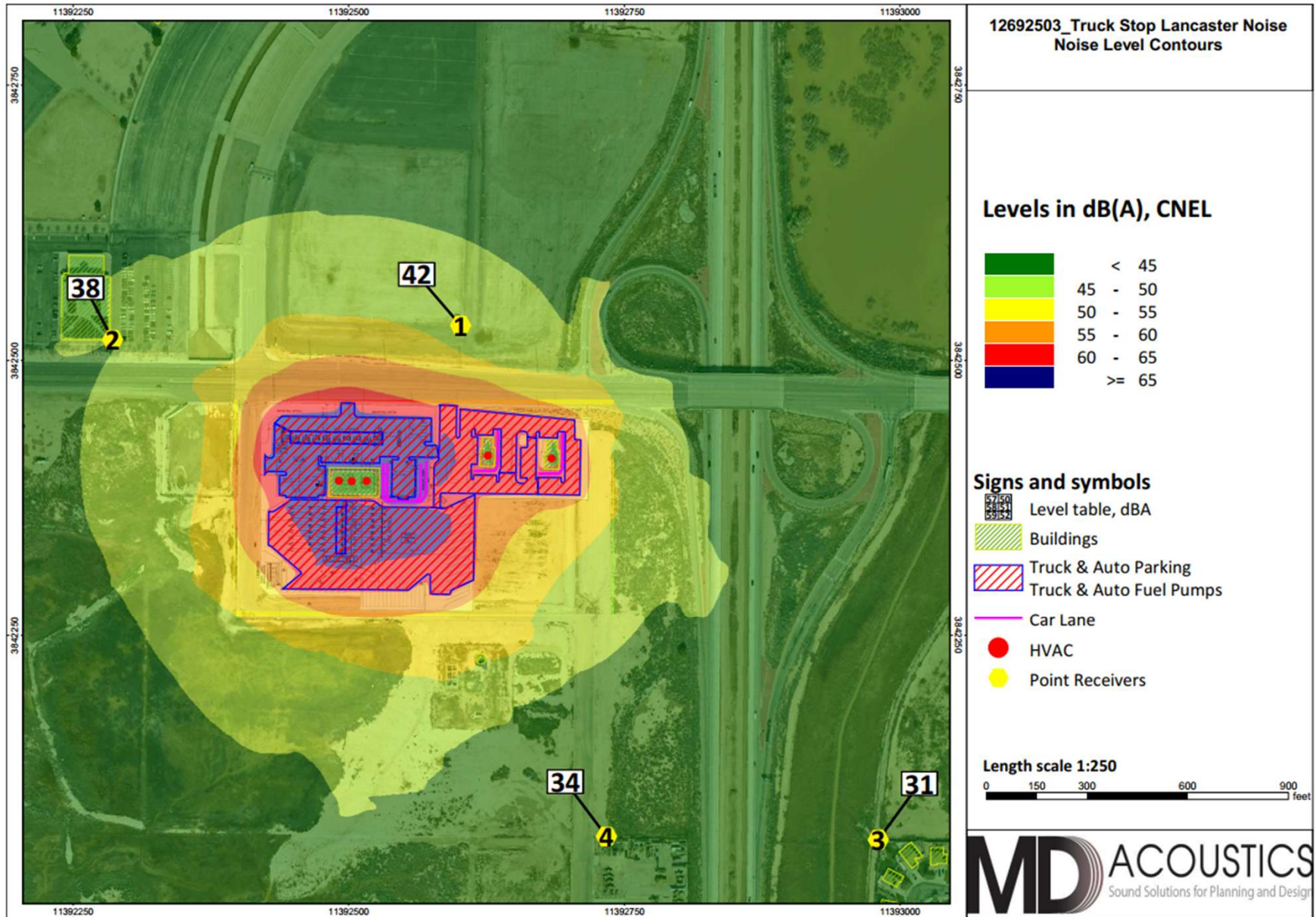
Existing plus project noise level projections are not anticipated to increase the existing ambient noise levels. These levels do not exceed the exterior noise limit of 65 dBA CNEL at residential uses and 70 dBA CNEL at commercial/industrial uses, as outlined in the City of Lancaster's General Plan. Therefore, the impact is less than significant.

**Table 4: Operational Noise Levels (dBA, CNEL)**

| Receptor <sup>1</sup>                                                                                                                                                                                                                                                                                                                           | Existing Ambient Noise Level (dBA, CNEL) <sup>2</sup> | Project Noise Level (dBA, CNEL) <sup>3</sup> | Exterior Noise Level Limit (dBA, CNEL) | Total Combined Noise Level (dBA, CNEL) | Significant Impact? |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|----------------------------------------------|----------------------------------------|----------------------------------------|---------------------|
| R1                                                                                                                                                                                                                                                                                                                                              | 58                                                    | 42                                           | 70                                     | 58                                     | No                  |
| R2                                                                                                                                                                                                                                                                                                                                              | 58                                                    | 38                                           | 70                                     | 58                                     | No                  |
| R3                                                                                                                                                                                                                                                                                                                                              | 58                                                    | 31                                           | 65                                     | 58                                     | No                  |
| R4                                                                                                                                                                                                                                                                                                                                              | 58                                                    | 34                                           | 70                                     | 58                                     | No                  |
| Notes:<br><sup>1</sup> R1 represents a potential commercial use. R2 and R4 represent existing commercial and industrial uses respectively. R3 represents existing residential uses.<br><sup>2</sup> See Table 2 for measured ambient noise levels.<br><sup>3</sup> See Exhibit F for the operational noise level projections at said receptors. |                                                       |                                              |                                        |                                        |                     |

Exhibit F

Operational Noise Level Contours (CNEL)



## 8.0 Construction Noise Impacts

The degree of construction noise may vary for different areas of the project site and also vary depending on the construction activities. Noise levels associated with the construction will vary with the different phases of construction. The construction noise and vibration level projections are provided in the sections below.

### 8.1 Construction Noise

The Environmental Protection Agency (EPA) has compiled data regarding the noise-generated characteristics of typical construction activities. The data is presented in Table 5.

**Table 5: Typical Construction Noise Levels<sup>1</sup>**

| Equipment Powered by Internal Combustion Engines                                              |                               |
|-----------------------------------------------------------------------------------------------|-------------------------------|
| Type                                                                                          | Noise Levels (dBA) at 50 Feet |
| <b>Earth Moving</b>                                                                           |                               |
| Compactors (Rollers)                                                                          | 73 - 76                       |
| Front Loaders                                                                                 | 73 - 84                       |
| Backhoes                                                                                      | 73 - 92                       |
| Tractors                                                                                      | 75 - 95                       |
| Scrapers, Graders                                                                             | 78 - 92                       |
| Pavers                                                                                        | 85 - 87                       |
| Trucks                                                                                        | 81 - 94                       |
| <b>Materials Handling</b>                                                                     |                               |
| Concrete Mixers                                                                               | 72 - 87                       |
| Concrete Pumps                                                                                | 81 - 83                       |
| Cranes (Movable)                                                                              | 72 - 86                       |
| Cranes (Derrick)                                                                              | 85 - 87                       |
| <b>Stationary</b>                                                                             |                               |
| Pumps                                                                                         | 68 - 71                       |
| Generators                                                                                    | 71 - 83                       |
| Compressors                                                                                   | 75 - 86                       |
| <b>Impact Equipment</b>                                                                       |                               |
| Type                                                                                          | Noise Levels (dBA) at 50 Feet |
| Saws                                                                                          | 71 - 82                       |
| Vibrators                                                                                     | 68 - 82                       |
| Notes:<br><sup>1</sup> Referenced Noise Levels from the Environmental Protection Agency (EPA) |                               |

Construction is anticipated to only occur between Monday – Saturday during the permissible hours from 7:00 a.m. to 8:00 p.m., according to the City's Municipal Code Section 8.24.040. Construction noise is considered a short-term impact and would be considered significant if construction activities are taken outside the allowable times as described in the City's Municipal Code. Construction noise will have a temporary or periodic increase in the ambient noise level above the existing within the project vicinity.

The construction noise impact is considered less than significant; however, construction noise level projections are provided.

Typical operating cycles for these types of construction equipment may involve one or two minutes of full power operation followed by three to four minutes at lower power settings. Noise levels are in Table 6. A likely worst-case construction noise scenario assumes equipment is operating at a minimum of 1,170 feet and an average of 1,675 feet from the nearest sensitive receptor (residences to the southeast).

**Table 6: Construction Noise Levels at Residences to the Southeast**

| Phase        | dBA Lmax | dBA Leq |
|--------------|----------|---------|
| Site Prep    | 52.1     | 52.2    |
| Grading      | 53.1     | 51.8    |
| Build        | 52.1     | 50.6    |
| Paving       | 52.1     | 49.4    |
| Arch Coating | 46.1     | 38.5    |

## 8.2 Construction Vibration

Construction activities can produce vibration that may be felt by adjacent land uses. The construction of the proposed project would not require the use of equipment such as pile drivers, which are known to generate substantial construction vibration levels. The primary vibration source during construction may be from a vibratory roller. A vibratory roller has a vibration impact of 0.210 inches per second peak particle velocity (PPV) at 25 feet which is perceptible but below any risk to architectural damage.

The fundamental equation used to calculate vibration propagation through average soil conditions and distance is as follows:

$$PPV_{\text{equipment}} = PPV_{\text{ref}} (100/D_{\text{rec}})^n$$

Where:  $PPV_{\text{ref}}$  = reference PPV at 100ft.

$D_{\text{rec}}$  = distance from equipment to receiver in ft.

$n = 1.1$  (the value related to the attenuation rate through ground)

The thresholds from the Caltrans Transportation and Construction Induced Vibration Guidance Manual in Table 7 (below) provides general thresholds and guidelines as to the vibration damage potential from vibratory impacts.

**Table 7: Guideline Vibration Damage Potential Threshold Criteria**

| Structure and Condition                                                                                                                                                                                                                                                                                                                                                                    | Maximum PPV (in/sec) |                                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                            | Transient Sources    | Continuous/Frequent Intermittent Sources |
| Extremely fragile historic buildings, ruins, ancient monuments                                                                                                                                                                                                                                                                                                                             | 0.12                 | 0.08                                     |
| Fragile buildings                                                                                                                                                                                                                                                                                                                                                                          | 0.2                  | 0.1                                      |
| Historic and some old buildings                                                                                                                                                                                                                                                                                                                                                            | 0.5                  | 0.25                                     |
| Older residential structures                                                                                                                                                                                                                                                                                                                                                               | 0.5                  | 0.3                                      |
| New residential structures                                                                                                                                                                                                                                                                                                                                                                 | 1.0                  | 0.5                                      |
| Modern industrial/commercial buildings                                                                                                                                                                                                                                                                                                                                                     | 2.0                  | 0.5                                      |
| Source: Table 19, Transportation and Construction Vibration Guidance Manual, Caltrans, Sept. 2013.<br>Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment. |                      |                                          |

Table 8 gives approximate vibration levels for particular construction activities. This data provides a reasonable estimate for a wide range of soil conditions.

**Table 8: Vibration Source Levels for Construction Equipment<sup>1</sup>**

| Equipment                                                                                                     | Peak Particle Velocity (inches/second) at 25 feet | Approximate Vibration Level LV (dVB) at 25 feet |
|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------|-------------------------------------------------|
| Pile driver (impact)                                                                                          | 1.518 (upper range)                               | 112                                             |
|                                                                                                               | 0.644 (typical)                                   | 104                                             |
| Pile driver (sonic)                                                                                           | 0.734 upper range                                 | 105                                             |
|                                                                                                               | 0.170 typical                                     | 93                                              |
| Clam shovel drop (slurry wall)                                                                                | 0.202                                             | 94                                              |
| Hydromill                                                                                                     | 0.008 in soil                                     | 66                                              |
| (slurry wall)                                                                                                 | 0.017 in rock                                     | 75                                              |
| Vibratory Roller                                                                                              | 0.21                                              | 94                                              |
| Hoe Ram                                                                                                       | 0.089                                             | 87                                              |
| Large bulldozer                                                                                               | 0.089                                             | 87                                              |
| Caisson drill                                                                                                 | 0.089                                             | 87                                              |
| Loaded trucks                                                                                                 | 0.076                                             | 86                                              |
| Jackhammer                                                                                                    | 0.035                                             | 79                                              |
| Small bulldozer                                                                                               | 0.003                                             | 58                                              |
| <sup>1</sup> Source: Transit Noise and Vibration Impact Assessment, Federal Transit Administration, May 2006. |                                                   |                                                 |

At a distance of 550 feet, the distance from the property line of the project site to the nearest existing building to the northwest, a vibratory roller would yield a worst-case 0.007 PPV (in/sec), which is sustainably below any risk of damage (0.2 in/sec PPV is the threshold of older, historic structures). The impact is less than significant, and no mitigation is required.

## 9.0 CEQA Checklist

The California Environmental Quality Act Guidelines establishes thresholds for noise impact analysis as presented below:

*(a) Would the project result in the generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise Code, or applicable standards of other agencies?*

### Transportation Noise Impacts

The main source of noise due to traffic near the project site is due to traffic from Avenue H and Highway 14. The project trip generation per 11<sup>th</sup> Edition ITE trip generation methodologies estimates the project will generate a total of 3,875 daily trips. It takes a change in noise level of 3 dB for the human ear to perceive a difference. An additional 1800 daily trips will increase the existing traffic noise on Avenue H by a maximum of 0.9 dBA CNEL and increase the existing traffic noise on Highway 14 by a maximum of 0.4 dBA CNEL. The change in noise level is not perceptible, and the impact is less than significant.

### Stationary Noise Sources

Lancaster places exterior noise limits for different land use types in the Lancaster General Plan. The exterior noise limit for residential uses is 65 dBA CNEL and for commercial/industrial uses is 70 dBA CNEL. Stationary noise impacts would be considered significant if they result in project levels exceeding 65 dBA CNEL at residential uses or 70 dBA CNEL at commercial/industrial uses. Implementation of the proposed project will result in noise related to parking movements, gas pump operation, HVAC equipment, and idling cars. The future worst-case noise level projections were modeled using referenced sound level data for the various stationary on-site sources. The model assumes that the noise sources are operating simultaneously and continuously (worst-case scenario) when the noise will, in reality, be intermittent and lower in noise level. The projected project-only noise level at the nearest residential uses will be 31 to 42 dBA CNEL. Existing plus project noise levels are not expected to increase the ambient noise level, and will be below the City's residential noise standard. Thus, the impact is less than significant.

### Construction Noise and Vibration

Construction is anticipated to occur during the permissible hours as described in the City's Municipal Code Section 8.24.040. Construction noise is considered a short-term impact and would be considered significant if construction occurs outside the allowable times as described in the City's Municipal Code.

The grading phase of on-site construction activities will generate the highest temporary noise levels. Typical operating cycles for these types of construction equipment may involve 1 or 2 minutes of full power operation followed by 3 or 4 minutes at lower power settings. Construction at the nearest residential uses will be up to 58 dBA Lmax. Construction noise is not anticipated to increase the ambient noise level at the nearest residential uses. The construction noise will occur during the allowable times. Thus, the impact is less than significant.

*b) Generate excessive ground-borne vibration or ground-borne noise levels?*

Construction vibration will be significant if vibration exceeds levels that would result in structural damage to existing buildings. At a distance of 550 feet, the nearest building to the project construction, a vibrational roller would yield a worst-case 0.007 PPV (in/sec), which is sustainably below any risk of damage (0.2 in/sec PPV is the threshold of older, historic structures). Therefore, the impact is less than significant.

## **10.0 References**

State of California General Plan Guidelines: 1998. Governor's Office of Planning and Research

City of Lancaster: General Plan 2030, Noise Element.

City of Lancaster: Municipal Code Chapter 8.24.

Caltrans Noise Technical Manual. 2013

Konan Vibration Criteria

ITE 11<sup>th</sup> Generation Trip Generation Manual.

Federal Highway Administration. Noise Barrier Design Handbook. June 2017.

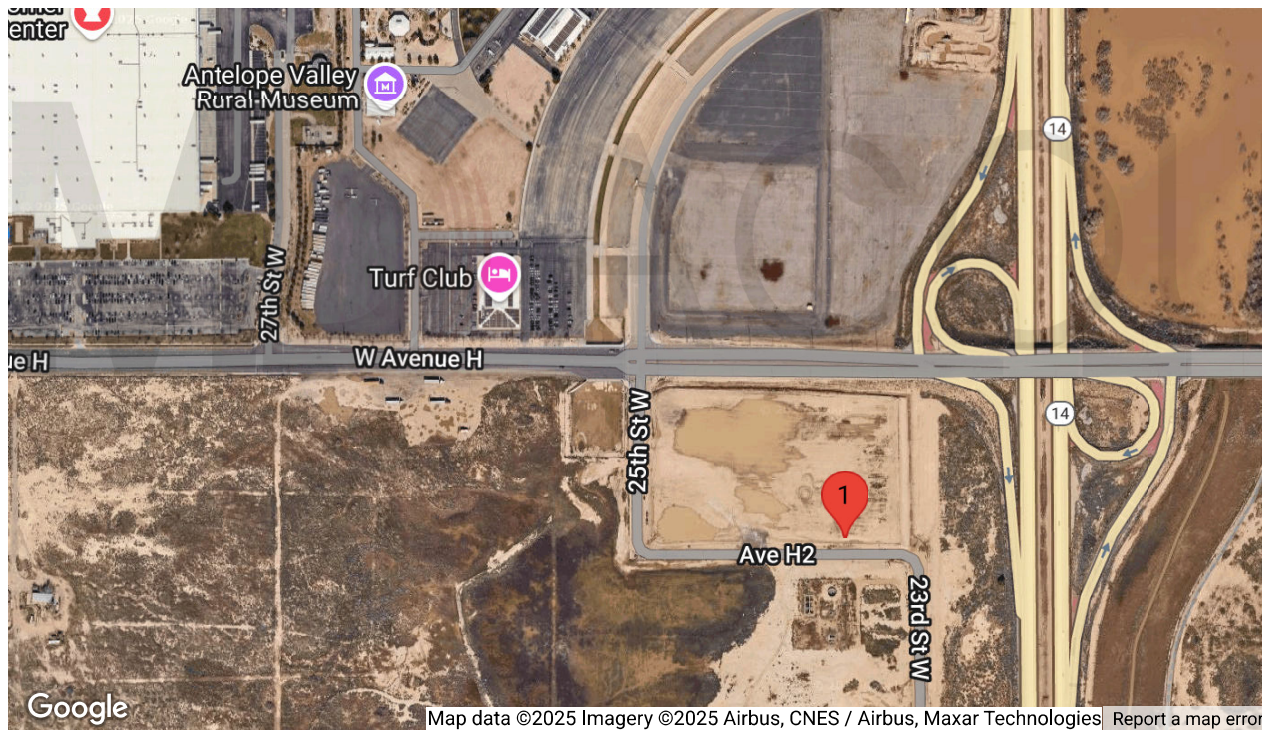
Federal Transit Administration. Transit Noise and Vibration Impact Assessment Manual. September 2018

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**Appendix A:**  
Photographs and Field Measurement Data

### 15-Minute Continuous Noise Measurement Datasheet - NM1

|                               |                                             |                                                                                                                                                                                                                                                            |
|-------------------------------|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Project Name:</b>          | Truck Stop Noise                            | <b>Site Observations:</b><br><br>63F, clear skies, Sunny, Winds 1-6MPH. Traffic is the primary noise source. Three cars drove past the location of NM1 during the reading. Distant plans and train sounds could also be distinguished during the readings. |
| <b>Project: #/Name:</b>       | 1269-2025-003                               |                                                                                                                                                                                                                                                            |
| <b>Site Address/Location:</b> | 25th St W & W Ave H                         |                                                                                                                                                                                                                                                            |
| <b>Date:</b>                  | 03/19/2025                                  |                                                                                                                                                                                                                                                            |
| <b>Field Tech/Engineer:</b>   | Jason Schuyler / Naomi Jensen               |                                                                                                                                                                                                                                                            |
| <b>Sound Meter:</b>           | XL2, NTI                                    | <b>SN:</b> A2A-07095-E0                                                                                                                                                                                                                                    |
| <b>Settings:</b>              | A-weighted, slow, 1-sec, 15-minute interval |                                                                                                                                                                                                                                                            |
| <b>Site Id:</b>               | NM1                                         |                                                                                                                                                                                                                                                            |



15-Minute Continuous Noise Measurement Datasheet - Cont. - NM1

|                        |                     |                      |                |
|------------------------|---------------------|----------------------|----------------|
| Project Name:          | Truck Stop Noise    | Calibrator:          | LD Cal 200     |
| Site Address/Location: | 25th St W & W Ave H | Cal Check: Pre-test: | 0 Post Test: 0 |
| Site Id:               | NM1                 |                      |                |

Figure 1: NM1

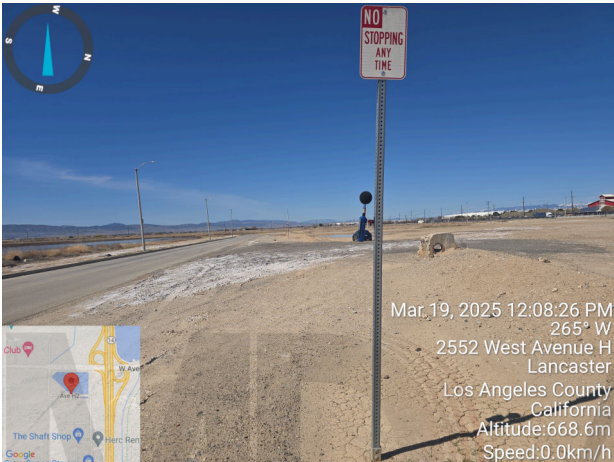


Figure 2: NM1



Figure 3: NM1

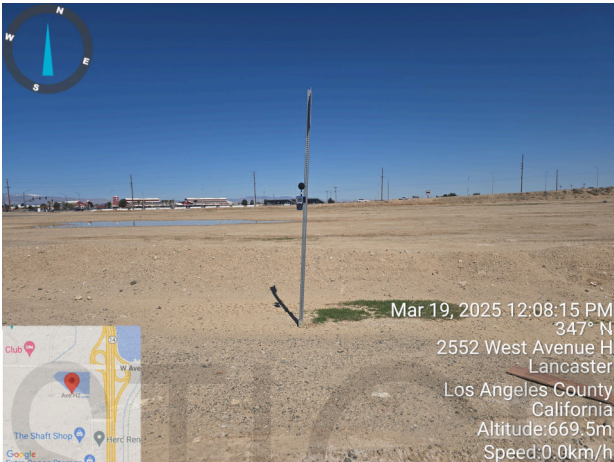
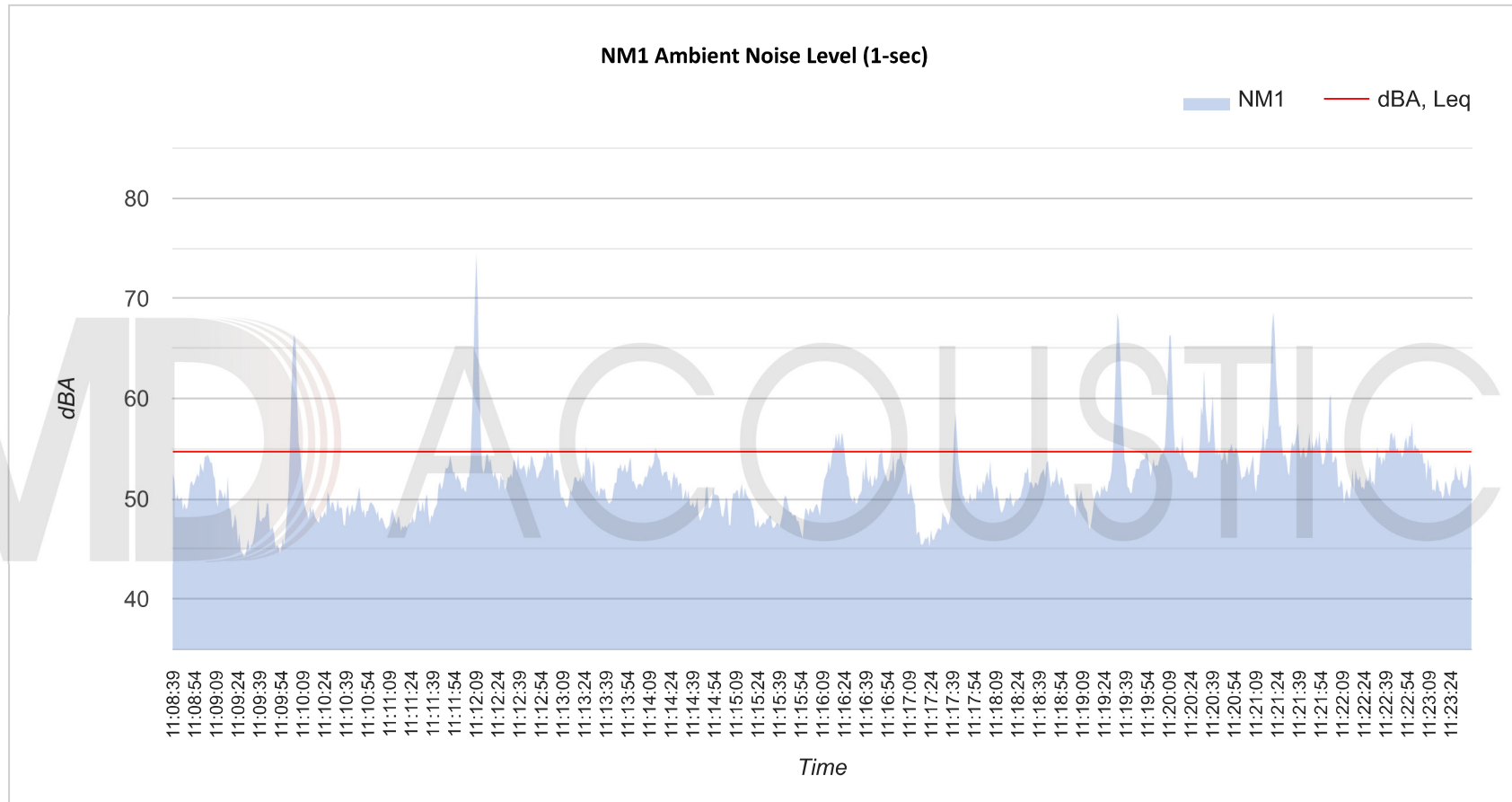


Table 1: Baseline Noise Measurement Summary

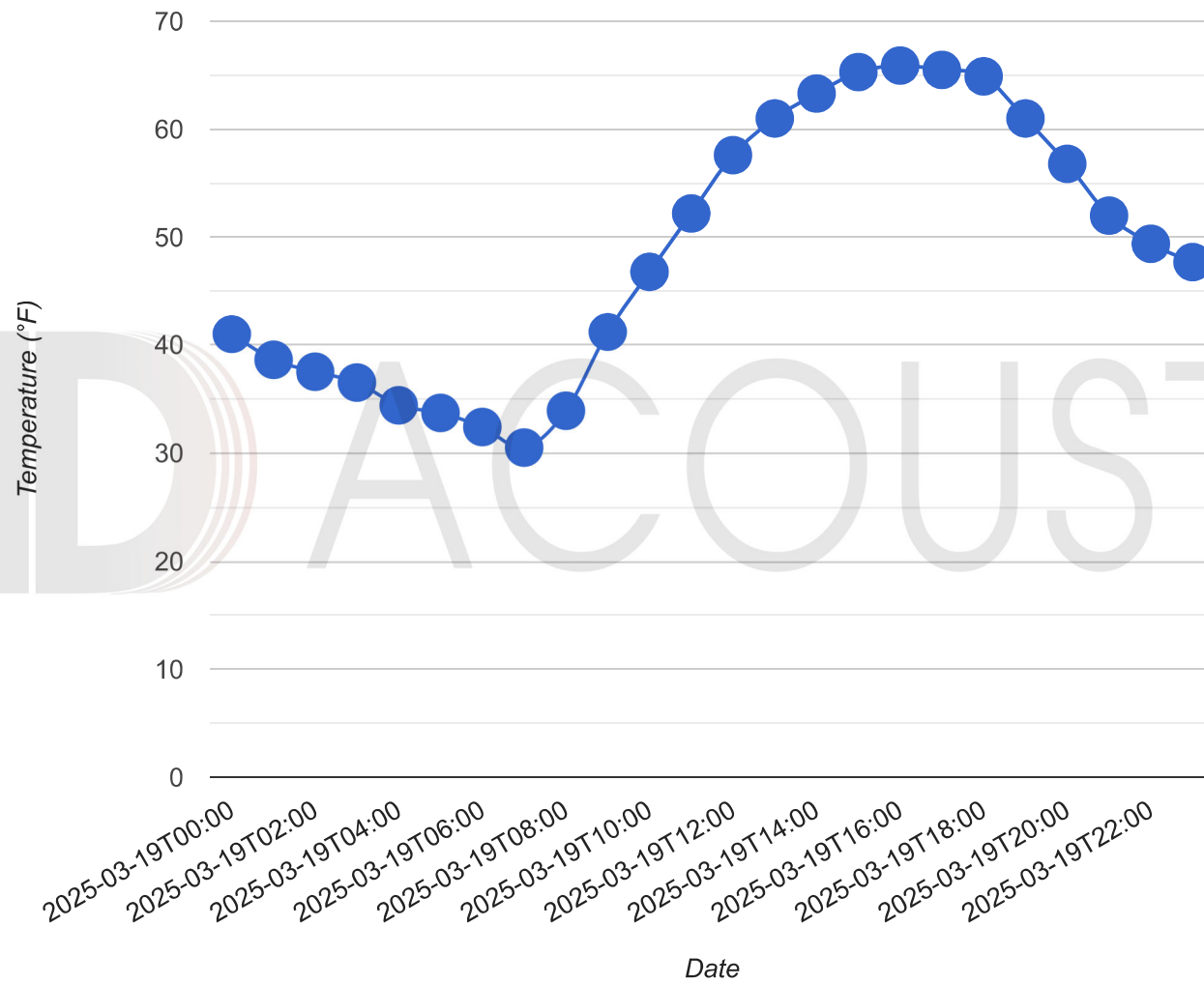
| Location | Start    | Stop     | Leq  | Lmax | Lmin | L2   | L8   | L25  | L50  | L90  |
|----------|----------|----------|------|------|------|------|------|------|------|------|
| NM1      | 11:08 AM | 11:23 AM | 54.7 | 73.1 | 44.2 | 62.5 | 55.7 | 53.6 | 51.6 | 47.8 |

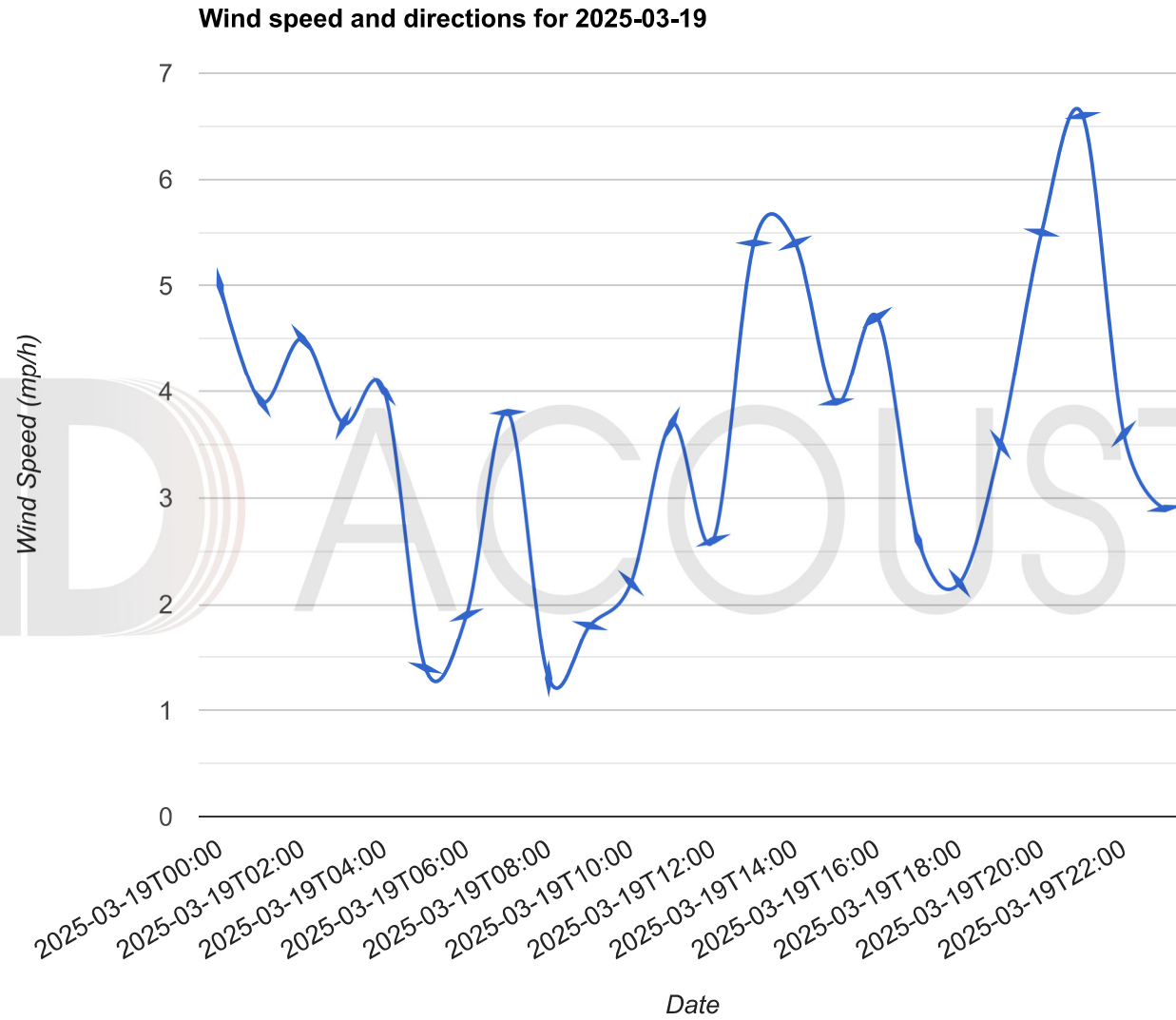
### 15-Minute Continuous Noise Measurement Datasheet - Cont. - NM1

|                               |                     |                              |                                  |                                     |
|-------------------------------|---------------------|------------------------------|----------------------------------|-------------------------------------|
| <b>Project Name:</b>          | Truck Stop Noise    | <b>Site Topo:</b>            | Flat desert conditions, the site | <b>Noise Source(s) w/ Distance:</b> |
| <b>Site Address/Location:</b> | 25th St W & W Ave H | <b>Meteorological Cond.:</b> |                                  | Road and commercial noise           |
| <b>Site Id:</b>               | NM1                 | <b>Ground Type:</b>          | Sandy soil and clay              |                                     |



Weather forecast for 2025-03-19





Source: Global Forecast System (GFS) weather forecast model

# CNEL CALCULATED FROM SITE MEASUREMENTS

PROJECT: Lancaster Truck Stop Noise  
LOCATION: 500-ft from center of Antelope Valley Fwy

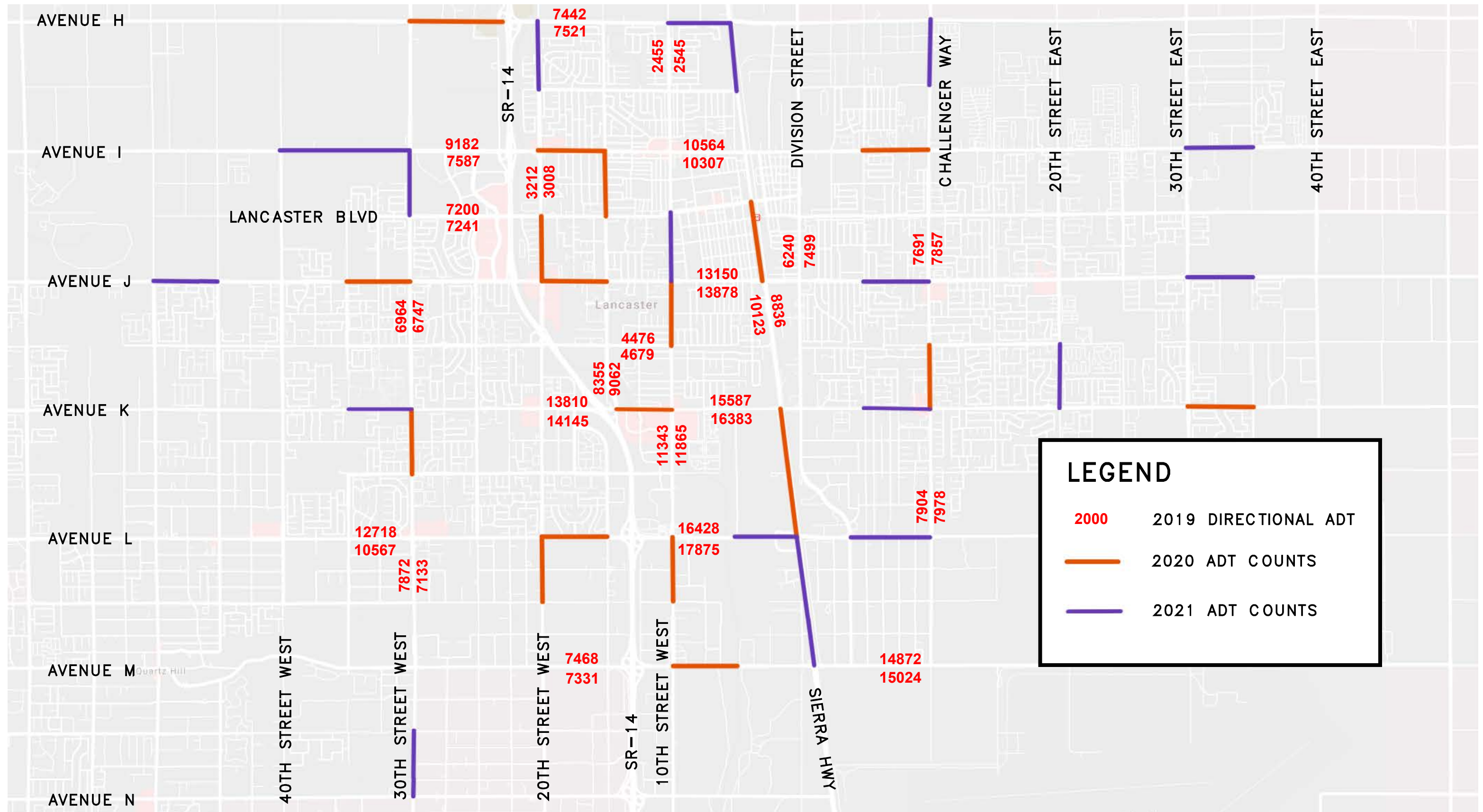
DATE: 24-Mar-25  
JN: 1269-2025-0

| TIME<br>BEGINNING | HOURLY<br>LEQ | HOURLY LEQ<br>WEIGHTING | ADJUSTED<br>HOURLY LEQ |
|-------------------|---------------|-------------------------|------------------------|
| 0000              | 49.4          | 10.0                    | 59.4                   |
| 0100              | 47.0          | 10.0                    | 57.0                   |
| 0200              | 45.8          | 10.0                    | 55.8                   |
| 0300              | 44.0          | 10.0                    | 54.0                   |
| 0400              | 45.0          | 10.0                    | 55.0                   |
| 0500              | 48.8          | 10.0                    | 58.8                   |
| 0600              | 55.2          | 10.0                    | 65.2                   |
| 0700              | 57.5          | 0.0                     | 57.5                   |
| 0800              | 55.6          | 0.0                     | 55.6                   |
| 0900              | 54.6          | 0.0                     | 54.6                   |
| 1000              | 54.5          | 0.0                     | 54.5                   |
| 1100              | 54.7 *        | 0.0                     | 54.7                   |
| 1200              | 54.8          | 0.0                     | 54.8                   |
| 1300              | 54.9          | 0.0                     | 54.9                   |
| 1400              | 55.1          | 0.0                     | 55.1                   |
| 1500              | 56.3          | 0.0                     | 56.3                   |
| 1600              | 57.8          | 0.0                     | 57.8                   |
| 1700              | 57.5          | 0.0                     | 57.5                   |
| 1800              | 55.8          | 0.0                     | 55.8                   |
| 1900              | 54.4          | 5.0                     | 59.4                   |
| 2000              | 53.3          | 5.0                     | 58.3                   |
| 2100              | 52.6          | 5.0                     | 57.6                   |
| 2200              | 51.6          | 10.0                    | 61.6                   |
| 2300              | 51.0          | 10.0                    | 61.0                   |
| CNEL (dBA)        |               |                         | 58.2                   |

HR. MEASURED: 1100 \*  
MEASURED LEQ: 54.7 \*

**Appendix B:**  
Traffic Noise Modeling Output

# CITY OF LANCASTER ADT MAP



|    |     |     |   |        |                                               |      |        |       |      |       |       |
|----|-----|-----|---|--------|-----------------------------------------------|------|--------|-------|------|-------|-------|
| 07 | 014 | LA  | R | 54.543 | ANGELES FOREST HIGHWAY                        | 8000 | 105000 | 99000 | 6200 | 80000 | 76000 |
| 07 | 014 | LA  | R | 58.172 | PALMDALE, AVENUE S                            | 6200 | 80000  | 76000 | 6400 | 84000 | 79000 |
| 07 | 014 | LA  | R | 59.803 | PALMDALE, SOUTH JCT. RTE. 138                 | 6400 | 84000  | 79000 | 6800 | 89000 | 84000 |
| 07 | 014 | LA  | R | 61.766 | PALMDALE, 10TH STREET WEST                    | 6800 | 89000  | 84000 | 6800 | 89000 | 84000 |
| 07 | 014 | LA  | R | 63.671 | PALMDALE, AVENUE N                            | 6800 | 89000  | 84000 | 7200 | 94000 | 89000 |
| 07 | 014 | LA  | R | 64.678 | LANCASTER, COLUMBIA WAY/AVENUE M              | 7200 | 94000  | 89000 | 6900 | 90000 | 86000 |
| 07 | 014 | LA  | R | 65.683 | LANCASTER, AVENUE L                           | 6900 | 90000  | 86000 | 5800 | 76000 | 72000 |
| 07 | 014 | LA  | R | 66.730 | LANCASTER, AVENUE K                           | 5800 | 76000  | 72000 | 4800 | 62000 | 59000 |
| 07 | 014 | LA  | R | 67.390 | LANCASTER, AVENUE J-8/20TH STREET WEST        | 4800 | 62000  | 59000 | 3450 | 45000 | 43000 |
| 07 | 014 | LA  | R | 67.957 | LANCASTER, AVENUE J                           | 3450 | 45000  | 43000 | 3900 | 51000 | 48000 |
| 07 | 014 | LA  | R | 68.965 | LANCASTER, AVENUE I                           | 3900 | 51000  | 48000 | 3350 | 43500 | 41000 |
| 07 | 014 | LA  | R | 69.991 | LANCASTER, AVENUE H                           | 3350 | 43500  | 41000 | 3200 | 42000 | 39500 |
| 07 | 014 | LA  | R | 70.992 | AVENUE G                                      | 3200 | 42000  | 39500 | 3150 | 41500 | 39000 |
| 07 | 014 | LA  | R | 71.995 | AVENUE F                                      | 3150 | 41500  | 39000 | 3100 | 40000 | 38000 |
| 07 | 014 | LA  | R | 74.003 | NORTH JCT. RTE. 138                           | 3100 | 40000  | 38000 |      |       |       |
| 09 | 014 | KER | R | 0.000  | AVENUE A, LOS ANGELES/KERN COUNTY LINE        |      |        |       | 3400 | 39000 | 37200 |
| 09 | 014 | KER | R | 3.018  | ROSAMOND BOULEVARD                            | 2850 | 36500  | 37600 | 2100 | 23600 | 21200 |
| 09 | 014 | KER | R | 12.147 | SILVER QUEEN ROAD                             | 2100 | 20200  | 19600 | 2000 | 22600 | 20300 |
| 09 | 014 | KER |   | 16.070 | JCT. RTE. 58                                  | 1600 | 16800  | 15700 | 1200 | 11400 | 10700 |
| 09 | 014 | KER |   | 19.239 | MOJAVE, NORTH JCT RTE 58                      | 1700 | 17100  | 15900 | 850  | 10900 | 9600  |
| 09 | 014 | KER |   | 21.290 | RANDBURG CUT-OFF ROAD, CA CITY/BAKERSFIELD RD | 850  | 10800  | 9600  | 910  | 6900  | 5900  |
| 09 | 014 | KER |   | 22.150 | CALIFORNIA CITY                               | 910  | 6900   | 5900  | 1050 | 8100  | 7700  |
| 09 | 014 | KER |   | 35.560 | RANDBURG ROAD                                 | 910  | 6800   | 5900  | 730  | 5500  | 4500  |

Compound Growth Factor

Street Name: W Avenue H  
Job Number: 12692503

Prepared By: B. Wu

|                     |
|---------------------|
| Current Volume      |
| 14,963              |
| Growth Factor %     |
| 2.0%                |
| Over How Many Years |
| 6                   |

|                   |
|-------------------|
| Compounded Volume |
| 16851             |

| Period |        |
|--------|--------|
| 1      | 15,262 |
| 2      | 15,568 |
| 3      | 15,879 |
| 4      | 16,196 |
| 5      | 16,520 |
| 6      | 16,851 |
| 7      | 17,188 |
| 8      | 17,532 |
| 9      | 17,882 |
| 10     | 18,240 |
| 11     | 18,605 |
| 12     | 18,977 |
| 13     | 19,356 |
| 14     | 19,743 |
| 15     | 20,138 |
| 16     | 20,541 |
| 17     | 20,952 |
| 18     | 21,371 |
| 19     | 21,798 |
| 20     | 22,234 |

Compound Growth Factor

Street Name: Highway 14 (by W Ave H)  
Job Number: 12692503

Prepared By: B. Wu

|                     |
|---------------------|
| Current Volume      |
| 41,000              |
| Growth Factor %     |
| 2.0%                |
| Over How Many Years |
| 3                   |

|                   |
|-------------------|
| Compounded Volume |
| 43510             |

| Period |        |
|--------|--------|
| 1      | 41,820 |
| 2      | 42,656 |
| 3      | 43,510 |
| 4      | 44,380 |
| 5      | 45,267 |
| 6      | 46,173 |
| 7      | 47,096 |
| 8      | 48,038 |
| 9      | 48,999 |
| 10     | 49,979 |
| 11     | 50,978 |
| 12     | 51,998 |
| 13     | 53,038 |
| 14     | 54,099 |
| 15     | 55,181 |
| 16     | 56,284 |
| 17     | 57,410 |
| 18     | 58,558 |
| 19     | 59,729 |
| 20     | 60,924 |

| Proposed Land Use                                             | Qty | Unit | Daily Trips<br>(ADTs) |              | AM Peak Hour |                 |             |            |             | PM Peak Hour |                 |            |            |             |
|---------------------------------------------------------------|-----|------|-----------------------|--------------|--------------|-----------------|-------------|------------|-------------|--------------|-----------------|------------|------------|-------------|
|                                                               |     |      | Rate                  | Trips        | Rate         | In:Out<br>Split | Trips       |            |             | Rate         | In:Out<br>Split | Trips      |            |             |
|                                                               |     |      |                       |              |              |                 | In          | Out        | Total       |              |                 | In         | Out        | Total       |
| Fast-Food Restaurant<br>with Drive-Through<br>Window<br>(934) | 8.8 | TSF  | 467.48                | 4114         | 44.61        | 51:49           | 200         | 192        | 393         | 33.03        | 52:48           | 151        | 140        | 291         |
| <i>Pass-By Trips</i>                                          |     |      | <i>0.50</i>           | <i>-2057</i> | <i>0.50</i>  |                 | <i>-100</i> | <i>-96</i> | <i>-196</i> | <i>0.55</i>  |                 | <i>-83</i> | <i>-77</i> | <i>-160</i> |
| <b>Total</b>                                                  |     |      |                       | <b>2057</b>  |              |                 | <b>100</b>  | <b>96</b>  | <b>196</b>  |              |                 | <b>68</b>  | <b>63</b>  | <b>131</b>  |

ITE Trip Generation (11th Edition, 2021)

Thousand Square Feet

| Proposed Land Use                                                       | Qty | Unit | Daily Trips<br>(ADTs) |              | AM Peak Hour |                 |             |             |             | PM Peak Hour |                 |             |             |             |
|-------------------------------------------------------------------------|-----|------|-----------------------|--------------|--------------|-----------------|-------------|-------------|-------------|--------------|-----------------|-------------|-------------|-------------|
|                                                                         |     |      | Rate                  | Trips        | Rate         | In:Out<br>Split | Trips       |             |             | Rate         | In:Out<br>Split | Trips       |             |             |
|                                                                         |     |      |                       |              |              |                 | In          | Out         | Total       |              |                 | In          | Out         | Total       |
| Convenience Store/Gas<br>Station, GFA (4-5.5k), VFP<br>(>8)<br>(945(4)) | 28  | VFP  | 257.13                | 7200         | 27.04        | 50:50           | 379         | 379         | 757         | 22.76        | 50:50           | 319         | 319         | 637         |
| <i>Pass-By Trips</i>                                                    |     |      | <i>0.75</i>           | <i>-5400</i> | <i>0.76</i>  |                 | <i>-288</i> | <i>-288</i> | <i>-575</i> | <i>0.75</i>  |                 | <i>-239</i> | <i>-239</i> | <i>-478</i> |
| <b>Total</b>                                                            |     |      |                       | <b>1800</b>  |              |                 | <b>91</b>   | <b>91</b>   | <b>182</b>  |              |                 | <b>80</b>   | <b>80</b>   | <b>159</b>  |

ITE Trip Generation (11th Edition, 2021)

Vehicle Fueling Positions

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

PROJECT: **TRUCK STOP LANCASTER**  
 ROADWAY: **W AVENUE H**  
 LOCATION: **LANCASTER, CA**

JOB #: **1269-25-03**  
 DATE: **#####**  
 ENGINEER: **N. Jensen**

## NOISE INPUT DATA - EXISTING

## ROADWAY CONDITIONS

ADT = **16,851**  
 SPEED = **55**  
 PK HR % = **10**  
 NEAR LANE/FAR LANE DI: **85**  
 ROAD ELEVATION = **0.0**  
 GRADE = **1.0** %  
 PK HR VOL = **1,685**

## RECEIVER INPUT DATA

RECEIVER DISTANCE = **90**  
 DIST C/L TO WALL = **58**  
 RECEIVER HEIGHT = **5.0**  
 WALL DISTANCE FROM RECEIVER **32**  
 PAD ELEVATION = **0.5**  
 ROADWAY VIEW: LF ANGLE= **-90**  
 RT ANGLE= **90**  
 DF ANGLE= **180**

## SITE CONDITIONS

AUTOMOBILES = **10**  
 MEDIUM TRUCKS = **10** (10 = HARD SITE, 15 = SOFT SITE)  
 HEAVY TRUCKS = **10**

## WALL INFORMATION

HTH WALL **5.0**  
 AMBIENT= **0.0**  
 BARRIER = **0** (0 = WALL, 1 = BERM)

## VEHICLE MIX DATA

| VEHICLE TYPE  | DAY   | EVENING | NIGHT | DAILY  |
|---------------|-------|---------|-------|--------|
| AUTOMOBILES   | 0.775 | 0.129   | 0.096 | 0.9742 |
| MEDIUM TRUCKS | 0.848 | 0.049   | 0.103 | 0.0184 |
| HEAVY TRUCKS  | 0.865 | 0.027   | 0.108 | 0.0074 |

## MISC. VEHICLE INFO

| VEHICLE TYPE  | HEIGHT | SLE DISTANCE | GRADE ADJUSTMENT |
|---------------|--------|--------------|------------------|
| AUTOMOBILES   | 2.0    | 71.62        | --               |
| MEDIUM TRUCKS | 4.0    | 71.50        | --               |
| HEAVY TRUCKS  | 8.0    | 79.37        | 0.00             |

## NOISE OUTPUT DATA

## NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

| VEHICLE TYPE       | PK HR LEQ | DAY LEQ | EVEN LEQ | NIGHT LEQ | LDN  | CNEL |
|--------------------|-----------|---------|----------|-----------|------|------|
| AUTOMOBILES        | 70.5      | 68.6    | 66.9     | 60.8      | 69.4 | 70.0 |
| MEDIUM TRUCKS      | 60.4      | 58.9    | 52.6     | 51.0      | 59.5 | 59.7 |
| HEAVY TRUCKS       | 60.0      | 58.6    | 49.5     | 50.8      | 59.1 | 59.3 |
|                    |           |         |          |           |      |      |
| NOISE LEVELS (dBA) | 71.3      | 69.5    | 67.1     | 61.6      | 70.2 | 70.8 |

## NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

| VEHICLE TYPE       | PK HR LEQ | DAY LEQ | EVEN LEQ | NIGHT LEQ | LDN  | CNEL |
|--------------------|-----------|---------|----------|-----------|------|------|
| AUTOMOBILES        | 65.2      | 63.3    | 61.6     | 55.5      | 64.1 | 64.7 |
| MEDIUM TRUCKS      | 55.5      | 54.0    | 47.6     | 46.1      | 54.5 | 54.8 |
| HEAVY TRUCKS       | 60.0      | 58.6    | 49.5     | 50.8      | 59.1 | 59.3 |
|                    |           |         |          |           |      |      |
| NOISE LEVELS (dBA) | 66.7      | 64.8    | 62.5     | 57.0      | 65.6 | 66.1 |

## NOISE CONTOUR (FT)

| NOISE LEVELS | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|--------------|--------|--------|--------|--------|
| CNEL         | 107    | 338    | 1070   | 3384   |
| LDN          | 95     | 299    | 945    | 2989   |

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

PROJECT: TRUCK STOP LANCASTER  
 ROADWAY: W AVENUE H  
 LOCATION: LANCASTER, CA

JOB #: 1269-25-03  
 DATE: #####  
 ENGINEER: N. Jensen

## NOISE INPUT DATA - EXISTING + PROJECT

## ROADWAY CONDITIONS

ADT = 20,708  
 SPEED = 55  
 PK HR % = 10  
 NEAR LANE/FAR LANE DI: 85  
 ROAD ELEVATION = 0.0  
 GRADE = 1.0 %  
 PK HR VOL = 2,071

## RECEIVER INPUT DATA

RECEIVER DISTANCE = 90  
 DIST C/L TO WALL = 58  
 RECEIVER HEIGHT = 5.0  
 WALL DISTANCE FROM RECEIVER 32  
 PAD ELEVATION = 0.5  
 ROADWAY VIEW: LF ANGLE= -90  
 RT ANGLE= 90  
 DF ANGLE= 180

## SITE CONDITIONS

AUTOMOBILES = 10  
 MEDIUM TRUCKS = 10 (10 = HARD SITE, 15 = SOFT SITE)  
 HEAVY TRUCKS = 10

## WALL INFORMATION

HTH WALL 5.0  
 AMBIENT= 0.0  
 BARRIER = 0 (0 = WALL, 1 = BERM)

## VEHICLE MIX DATA

| VEHICLE TYPE  | DAY   | EVENING | NIGHT | DAILY  |
|---------------|-------|---------|-------|--------|
| AUTOMOBILES   | 0.775 | 0.129   | 0.096 | 0.9742 |
| MEDIUM TRUCKS | 0.848 | 0.049   | 0.103 | 0.0184 |
| HEAVY TRUCKS  | 0.865 | 0.027   | 0.108 | 0.0074 |

## MISC. VEHICLE INFO

| VEHICLE TYPE  | HEIGHT | SLE DISTANCE | GRADE ADJUSTMENT |
|---------------|--------|--------------|------------------|
| AUTOMOBILES   | 2.0    | 71.62        | --               |
| MEDIUM TRUCKS | 4.0    | 71.50        | --               |
| HEAVY TRUCKS  | 8.0    | 79.37        | 0.00             |

## NOISE OUTPUT DATA

## NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

| VEHICLE TYPE       | PK HR LEQ | DAY LEQ | EVEN LEQ | NIGHT LEQ | LDN  | CNEL |
|--------------------|-----------|---------|----------|-----------|------|------|
| AUTOMOBILES        | 71.4      | 69.5    | 67.8     | 61.7      | 70.3 | 70.9 |
| MEDIUM TRUCKS      | 61.3      | 59.8    | 53.5     | 51.9      | 60.4 | 60.6 |
| HEAVY TRUCKS       | 60.9      | 59.5    | 50.4     | 51.7      | 60.0 | 60.2 |
|                    |           |         |          |           |      |      |
| NOISE LEVELS (dBA) | 72.2      | 70.3    | 68.0     | 62.5      | 71.1 | 71.6 |

## NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

| VEHICLE TYPE       | PK HR LEQ | DAY LEQ | EVEN LEQ | NIGHT LEQ | LDN  | CNEL |
|--------------------|-----------|---------|----------|-----------|------|------|
| AUTOMOBILES        | 66.1      | 64.2    | 62.5     | 56.4      | 65.0 | 65.6 |
| MEDIUM TRUCKS      | 56.4      | 54.9    | 48.5     | 47.0      | 55.4 | 55.7 |
| HEAVY TRUCKS       | 60.9      | 59.5    | 50.4     | 51.7      | 60.0 | 60.2 |
|                    |           |         |          |           |      |      |
| NOISE LEVELS (dBA) | 67.6      | 65.7    | 63.4     | 57.9      | 66.5 | 67.0 |

## NOISE CONTOUR (FT)

| NOISE LEVELS | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|--------------|--------|--------|--------|--------|
| CNEL         | 132    | 416    | 1315   | 4159   |
| LDN          | 116    | 367    | 1162   | 3673   |

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

PROJECT: TRUCK STOP LANCASTER  
 ROADWAY: HIGHWAY 14  
 LOCATION: LANCASTER, CA

JOB #: 1269-25-03  
 DATE: #####  
 ENGINEER: B. Wu

## NOISE INPUT DATA - EXISTING

## ROADWAY CONDITIONS

ADT = 43,510  
 SPEED = 55  
 PK HR % = 10  
 NEAR LANE/FAR LANE DI: 45  
 ROAD ELEVATION = 0.0  
 GRADE = 1.0 %  
 PK HR VOL = 4,351

## RECEIVER INPUT DATA

RECEIVER DISTANCE = 450  
 DIST C/L TO WALL = 0  
 RECEIVER HEIGHT = 5.0  
 WALL DISTANCE FROM RECEIVER 450  
 PAD ELEVATION = 0.5  
 ROADWAY VIEW: LF ANGLE= -90  
 RT ANGLE= 90  
 DF ANGLE= 180

## SITE CONDITIONS

AUTOMOBILES = 10  
 MEDIUM TRUCKS = 10  
 HEAVY TRUCKS = 10  
 (10 = HARD SITE, 15 = SOFT SITE)

## WALL INFORMATION

HTH WALL 0.0  
 AMBIENT= 0.0  
 BARRIER = 0 (0 = WALL, 1 = BERM)

## VEHICLE MIX DATA

| VEHICLE TYPE  | DAY   | EVENING | NIGHT | DAILY  |
|---------------|-------|---------|-------|--------|
| AUTOMOBILES   | 0.775 | 0.129   | 0.096 | 0.9742 |
| MEDIUM TRUCKS | 0.848 | 0.049   | 0.103 | 0.0184 |
| HEAVY TRUCKS  | 0.865 | 0.027   | 0.108 | 0.0074 |

## MISC. VEHICLE INFO

| VEHICLE TYPE  | HEIGHT | SLE DISTANCE | GRADE ADJUSTMENT |
|---------------|--------|--------------|------------------|
| AUTOMOBILES   | 2.0    | 449.45       | --               |
| MEDIUM TRUCKS | 4.0    | 449.44       | --               |
| HEAVY TRUCKS  | 8.0    | 449.44       | 0.00             |

## NOISE OUTPUT DATA

## NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

| VEHICLE TYPE       | PK HR LEQ | DAY LEQ | EVEN LEQ | NIGHT LEQ | LDN  | CNEL |
|--------------------|-----------|---------|----------|-----------|------|------|
| AUTOMOBILES        | 66.7      | 64.8    | 63.0     | 57.0      | 65.6 | 66.2 |
| MEDIUM TRUCKS      | 56.6      | 55.1    | 48.7     | 47.2      | 55.6 | 55.9 |
| HEAVY TRUCKS       | 56.6      | 55.2    | 46.1     | 47.4      | 55.7 | 55.9 |
|                    |           |         |          |           |      |      |
| NOISE LEVELS (dBA) | 67.5      | 65.6    | 63.3     | 57.8      | 66.4 | 66.9 |

## NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

| VEHICLE TYPE       | PK HR LEQ | DAY LEQ | EVEN LEQ | NIGHT LEQ | LDN  | CNEL |
|--------------------|-----------|---------|----------|-----------|------|------|
| AUTOMOBILES        | 66.7      | 64.8    | 63.0     | 57.0      | 65.6 | 66.2 |
| MEDIUM TRUCKS      | 56.6      | 55.1    | 48.7     | 47.2      | 55.6 | 55.9 |
| HEAVY TRUCKS       | 56.6      | 55.2    | 46.1     | 47.4      | 55.7 | 55.9 |
|                    |           |         |          |           |      |      |
| NOISE LEVELS (dBA) | 67.5      | 65.6    | 63.3     | 57.8      | 66.4 | 66.9 |

## NOISE CONTOUR (FT)

| NOISE LEVELS | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|--------------|--------|--------|--------|--------|
| CNEL         | 222    | 702    | 2218   | 7015   |
| LDN          | 196    | 620    | 1961   | 6200   |

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

PROJECT: TRUCK STOP LANCASTER  
ROADWAY: HIGHWAY 14  
LOCATION: LANCASTER, CA

JOB #: 1269-25-03  
DATE: #####  
ENGINEER: B. Wu

## NOISE INPUT DATA - EXISTING + PROJECT

## ROADWAY CONDITIONS

ADT = 47,367  
SPEED = 55  
PK HR % = 10  
NEAR LANE/FAR LANE DI: 45  
ROAD ELEVATION = 0.0  
GRADE = 1.0 %  
PK HR VOL = 4,737

## RECEIVER INPUT DATA

RECEIVER DISTANCE = 450  
DIST C/L TO WALL = 0  
RECEIVER HEIGHT = 5.0  
WALL DISTANCE FROM RECEIVER 450  
PAD ELEVATION = 0.5  
ROADWAY VIEW: LF ANGLE= -90  
RT ANGLE= 90  
DF ANGLE= 180

## SITE CONDITIONS

AUTOMOBILES = 10  
MEDIUM TRUCKS = 10 (10 = HARD SITE, 15 = SOFT SITE)  
HEAVY TRUCKS = 10

## WALL INFORMATION

HTH WALL 0.0  
AMBIENT= 0.0  
BARRIER = 0 (0 = WALL, 1 = BERM)

## VEHICLE MIX DATA

| VEHICLE TYPE  | DAY   | EVENING | NIGHT | DAILY  |
|---------------|-------|---------|-------|--------|
| AUTOMOBILES   | 0.775 | 0.129   | 0.096 | 0.9742 |
| MEDIUM TRUCKS | 0.848 | 0.049   | 0.103 | 0.0184 |
| HEAVY TRUCKS  | 0.865 | 0.027   | 0.108 | 0.0074 |

## MISC. VEHICLE INFO

| VEHICLE TYPE  | HEIGHT | SLE DISTANCE | GRADE ADJUSTMENT |
|---------------|--------|--------------|------------------|
| AUTOMOBILES   | 2.0    | 449.45       | --               |
| MEDIUM TRUCKS | 4.0    | 449.44       | --               |
| HEAVY TRUCKS  | 8.0    | 449.44       | 0.00             |

## NOISE OUTPUT DATA

## NOISE IMPACTS (WITHOUT TOPO OR BARRIER SHIELDING)

| VEHICLE TYPE       | PK HR LEQ | DAY LEQ | EVEN LEQ | NIGHT LEQ | LDN  | CNEL |
|--------------------|-----------|---------|----------|-----------|------|------|
| AUTOMOBILES        | 67.1      | 65.2    | 63.4     | 57.3      | 66.0 | 66.6 |
| MEDIUM TRUCKS      | 56.9      | 55.4    | 49.1     | 47.5      | 56.0 | 56.2 |
| HEAVY TRUCKS       | 56.9      | 55.5    | 46.5     | 47.7      | 56.1 | 56.2 |
|                    |           |         |          |           |      |      |
| NOISE LEVELS (dBA) | 67.8      | 66.0    | 63.6     | 58.2      | 66.8 | 67.3 |

## NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)

| VEHICLE TYPE       | PK HR LEQ | DAY LEQ | EVEN LEQ | NIGHT LEQ | LDN  | CNEL |
|--------------------|-----------|---------|----------|-----------|------|------|
| AUTOMOBILES        | 67.1      | 65.2    | 63.4     | 57.3      | 66.0 | 66.6 |
| MEDIUM TRUCKS      | 56.9      | 55.4    | 49.1     | 47.5      | 56.0 | 56.2 |
| HEAVY TRUCKS       | 56.9      | 55.5    | 46.5     | 47.7      | 56.1 | 56.2 |
|                    |           |         |          |           |      |      |
| NOISE LEVELS (dBA) | 67.8      | 66.0    | 63.6     | 58.2      | 66.8 | 67.3 |

## NOISE CONTOUR (FT)

| NOISE LEVELS | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
|--------------|--------|--------|--------|--------|
| CNEL         | 242    | 764    | 2415   | 7637   |
| LDN          | 213    | 675    | 2135   | 6750   |

## **Appendix C:**

### SoundPLAN Inputs/Outputs

# Truck Stop Lancaster Noise

## Octave spectra of the sources in dB(A) - 001 - Truck Stop Lancaster: Outdoor SP

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| Name            | Source type | l or A<br>m,m² | Li<br>dB(A) | Rw<br>dB | L'w<br>dB(A) | Lw<br>dB(A) | KI<br>dB | KT<br>dB | LwMax<br>dB(A) | DO-Wall<br>dB | Day histogram | Emission spectrum                           | 63Hz<br>dB(A) | 125Hz<br>dB(A) | 250Hz<br>dB(A) | 500Hz<br>dB(A) | 1kHz<br>dB(A) | 2kHz<br>dB(A) | 4kHz<br>dB(A) | 8kHz<br>dB(A) | 16kHz<br>dB(A) |
|-----------------|-------------|----------------|-------------|----------|--------------|-------------|----------|----------|----------------|---------------|---------------|---------------------------------------------|---------------|----------------|----------------|----------------|---------------|---------------|---------------|---------------|----------------|
| Auto Fuel Pump  | PLot        | 892.97         |             |          | 64.2         | 93.8        | 0.0      | 0.0      |                | 0             | 100%/24h      | Typical spectrum                            | 77.1          | 88.7           | 81.2           | 85.7           | 85.8          | 86.2          | 83.5          | 77.3          | 64.5           |
| Auto Parking    | PLot        | 7070.03        |             |          | 58.1         | 96.6        | 0.0      | 0.0      |                | 0             | 100%/24h      | Typical spectrum                            | 79.9          | 91.5           | 84.0           | 88.5           | 88.6          | 89.0          | 86.3          | 80.1          | 67.3           |
| Auto Parking    | PLot        | 7117.66        |             |          | 51.8         | 90.4        | 0.0      | 0.0      |                | 0             | 100%/24h      | Typical spectrum                            | 73.7          | 85.3           | 77.8           | 82.3           | 82.4          | 82.8          | 80.1          | 73.9          | 61.1           |
| Truck Fuel Pump | PLot        | 352.15         |             |          | 63.2         | 88.7        | 0.0      | 0.0      |                | 0             | 100%/24h      | Idling Semi Truck 10' -<br>Calibrated       | 57.8          | 75.5           | 74.4           | 80.7           | 85.3          | 82.0          | 77.0          | 69.0          | 56.9           |
| Truck Parking   | PLot        | 13320.00       |             |          | 52.4         | 93.7        | 0.0      | 0.0      |                | 0             | 100%/24h      | Idling Semi Truck 10' -<br>Calibrated       | 62.8          | 80.6           | 79.4           | 85.8           | 90.3          | 87.0          | 82.0          | 74.0          | 61.9           |
| Car Lane        | Line        | 47.18          |             |          | 62.8         | 79.5        | 0.0      | 0.0      |                | 0             | 100%/24h      | Carwash - Drive-Thru -<br>Idling Car @ 6ft  | 63.2          | 64.7           | 67.5           | 72.5           | 73.0          | 74.3          | 70.8          | 62.8          | 56.2           |
| Car Lane        | Line        | 56.61          |             |          | 62.8         | 80.3        | 0.0      | 0.0      |                | 0             | 100%/24h      | Carwash - Drive-Thru -<br>Idling Car @ 6ft  | 64.0          | 65.5           | 68.3           | 73.2           | 73.8          | 75.1          | 71.6          | 63.6          | 57.0           |
| Car Lane        | Line        | 57.15          |             |          | 62.8         | 80.4        | 0.0      | 0.0      |                | 0             | 100%/24h      | Carwash - Drive-Thru -<br>Idling Car @ 6ft  | 64.0          | 65.5           | 68.3           | 73.3           | 73.9          | 75.2          | 71.6          | 63.6          | 57.0           |
| Car Lane        | Line        | 97.51          |             |          | 62.8         | 82.7        | 0.0      | 0.0      |                | 0             | 100%/24h      | Carwash - Drive-Thru -<br>Idling Car @ 6ft  | 66.4          | 67.8           | 70.6           | 75.6           | 76.2          | 77.5          | 74.0          | 66.0          | 59.4           |
| Car Lane        | Line        | 39.33          |             |          | 62.8         | 78.8        | 0.0      | 0.0      |                | 0             | 100%/24h      | Carwash - Drive-Thru -<br>Idling Car @ 6ft  | 62.4          | 63.9           | 66.7           | 71.7           | 72.3          | 73.5          | 70.0          | 62.0          | 55.4           |
| HVAC            | Point       |                |             |          | 80.0         | 80.0        | 0.0      | 0.0      |                | 0             | 100%/24h      | HVAC: 67.7dB @ 3ft -<br>Carrier 50TFQ0006 - | 56.3          | 65.1           | 67.9           | 72.7           | 74.4          | 74.2          | 71.2          | 66.8          | 55.1           |
| HVAC            | Point       |                |             |          | 80.0         | 80.0        | 0.0      | 0.0      |                | 0             | 100%/24h      | HVAC: 67.7dB @ 3ft -<br>Carrier 50TFQ0006 - | 56.3          | 65.1           | 67.9           | 72.7           | 74.4          | 74.2          | 71.2          | 66.8          | 55.1           |
| HVAC            | Point       |                |             |          | 80.0         | 80.0        | 0.0      | 0.0      |                | 0             | 100%/24h      | HVAC: 67.7dB @ 3ft -<br>Carrier 50TFQ0006 - | 56.3          | 65.1           | 67.9           | 72.7           | 74.4          | 74.2          | 71.2          | 66.8          | 55.1           |
| HVAC            | Point       |                |             |          | 80.0         | 80.0        | 0.0      | 0.0      |                | 0             | 100%/24h      | HVAC: 67.7dB @ 3ft -<br>Carrier 50TFQ0006 - | 56.3          | 65.1           | 67.9           | 72.7           | 74.4          | 74.2          | 71.2          | 66.8          | 55.1           |
| HVAC3           | Point       |                |             |          | 80.0         | 80.0        | 0.0      | 0.0      |                | 0             | 100%/24h      | HVAC: 67.7dB @ 3ft -<br>Carrier 50TFQ0006 - | 56.3          | 65.1           | 67.9           | 72.7           | 74.4          | 74.2          | 71.2          | 66.8          | 55.1           |

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# Truck Stop Lancaster Noise

## Contribution spectra - 001 - Truck Stop Lancaster: Outdoor SP

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| Source                                        | Time slice | Sum   | 25Hz  | 31.5Hz | 40Hz  | 50Hz  | 63Hz  | 80Hz  | 100Hz | 125Hz | 160Hz | 200Hz | 250Hz | 315Hz | 400Hz | 500Hz | 630Hz | 800Hz | 1kHz  | 1.25kHz | 1.6kHz | 2kHz  | 2.5kHz | 3.15kHz | 4kHz  | 5kHz  | 6.3kHz | 8kHz  | 10kHz | 12.5kHz | 16kHz |
|-----------------------------------------------|------------|-------|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|--------|-------|--------|---------|-------|-------|--------|-------|-------|---------|-------|
|                                               |            | dB(A) | dB(A) | dB(A)  | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A)   | dB(A)  | dB(A) | dB(A)  | dB(A)   | dB(A) | dB(A) | dB(A)  | dB(A) | dB(A) | dB(A)   | dB(A) |
| Receiver R1 FIG Lr,lim dB(A) Leq,d 41.9 dB(A) |            |       |       |        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |         |        |       |        |         |       |       |        |       |       |         |       |
| Auto Fuel Pump                                | Leq,d      | 35.8  |       |        |       |       | 22.0  |       |       | 30.6  |       |       | 21.9  |       |       | 26.3  |       |       | 28.9  |         |        | 29.5  |        |         | 24.3  |       |        | 7.2   |       |         | -39.4 |
| Auto Parking                                  | Leq,d      | 38.5  |       |        |       |       | 25.0  |       |       | 33.6  |       |       | 25.0  |       |       | 29.6  |       |       | 31.1  |         |        | 31.7  |        |         | 26.6  |       |        | 9.8   |       |         | -31.5 |
| Auto Parking                                  | Leq,d      | 33.2  |       |        |       |       | 19.9  |       |       | 28.8  |       |       | 20.1  |       |       | 24.5  |       |       | 25.6  |         |        | 25.7  |        |         | 20.0  |       |        | 4.3   |       |         | -32.2 |
| Truck Fuel Pump                               | Leq,d      | 19.4  | -20.8 | -16.3  | -12.4 | -11.1 | -6.5  | -1.7  | -2.1  | 12.2  | 1.7   | 1.8   | 1.9   | 4.1   | 6.7   | 7.3   | 7.0   | 10.1  | 13.2  | 7.5     | 6.5    | 4.7   | 0.7    | -3.8    | -9.0  | -15.3 | -25.4  | -39.0 | -56.0 | -78.1   |       |
| Truck Parking                                 | Leq,d      | 30.8  | -16.4 | -11.7  | -7.6  | -6.1  | -1.3  | 3.9   | 3.8   | 18.6  | 8.6   | 9.6   | 10.3  | 13.1  | 16.2  | 17.5  | 18.0  | 21.5  | 25.5  | 20.7    | 20.8   | 19.9  | 16.9   | 13.4    | 9.3   | 4.3   | -4.4   | -16.3 | -31.0 | -50.2   | -74.3 |
| Car Lane                                      | Leq,d      | 20.6  | -1.7  | -18.7  | -12.7 | 2.3   | 3.3   | 5.3   | 0.2   | 4.2   | 1.1   | 5.6   | 0.6   | 2.6   | 6.6   | 6.5   | 10.4  | 9.2   | 9.1   | 9.9     | 9.1    | 11.6  | 12.0   | 7.9     | 4.3   | -1.3  | -8.2   | -15.9 | -27.2 | -40.6   | -57.6 |
| Car Lane                                      | Leq,d      | 20.1  | -0.5  | -17.7  | -11.8 | 3.0   | 3.7   | 5.6   | 0.7   | 4.5   | 1.3   | 5.8   | 0.7   | 2.6   | 6.4   | 6.3   | 10.1  | 8.7   | 8.4   | 9.4     | 8.4    | 10.8  | 11.0   | 6.9     | 3.3   | -2.1  | -8.6   | -15.8 | -26.1 | -38.0   | -52.8 |
| Car Lane                                      | Leq,d      | 17.0  | -2.5  | -19.7  | -14.0 | 0.7   | 1.4   | 3.1   | -2.2  | 1.5   | -1.5  | 3.0   | -2.0  | -0.2  | 3.5   | 3.4   | 7.1   | 5.9   | 5.6   | 6.2     | 5.0    | 7.3   | 7.4    | 2.9     | -1.1  | -7.1  | -14.5  | -22.9 | -35.0 | -49.4   | -67.7 |
| Car Lane                                      | Leq,d      | 23.9  | 1.0   | -16.0  | -10.0 | 5.0   | 6.0   | 8.0   | 2.8   | 6.8   | 3.7   | 8.7   | 3.9   | 5.9   | 9.9   | 9.9   | 13.9  | 12.8  | 12.6  | 13.4    | 12.6   | 15.1  | 15.4   | 11.2    | 7.5   | 1.7   | -5.5   | -13.7 | -25.6 | -39.9   | -57.9 |
| Car Lane                                      | Leq,d      | 20.2  | -3.0  | -20.0  | -14.0 | 1.0   | 2.0   | 3.9   | -1.2  | 2.7   | -0.3  | 4.2   | -0.8  | 1.1   | 5.9   | 6.4   | 10.3  | 9.2   | 9.1   | 9.9     | 9.0    | 11.5  | 11.8   | 7.6     | 3.8   | -2.0  | -9.3   | -17.7 | -29.9 | -44.6   | -63.3 |
| HVAC                                          | Leq,d      | 20.8  | -29.8 | -23.7  | -19.7 | -6.7  | -1.8  | -7.8  | 0.2   | 2.2   | 1.1   | 3.1   | 3.1   | 5.1   | 6.1   | 7.1   | 11.0  | 13.2  | 9.1   | 11.0    | 12.1   | 9.7   | 10.2   | 6.2     | 5.8   | 1.5   | -2.1   | -12.5 | -25.4 | -38.3   | -57.0 |
| HVAC                                          | Leq,d      | 22.7  | -28.1 | -22.1  | -18.1 | -5.1  | -0.1  | -6.1  | 1.9   | 3.9   | 2.8   | 4.8   | 4.8   | 6.8   | 7.8   | 8.8   | 12.7  | 14.9  | 10.9  | 12.8    | 13.9   | 11.6  | 12.2   | 8.5     | 8.3   | 4.5   | 1.6    | -7.8  | -19.2 | -30.0   | -45.9 |
| HVAC                                          | Leq,d      | 20.3  | -31.5 | -25.5  | -21.5 | -8.5  | -3.5  | -9.5  | -1.4  | 0.5   | -0.5  | 1.5   | 1.6   | 3.6   | 4.6   | 5.7   | 9.7   | 12.0  | 8.1   | 10.2    | 11.7   | 9.8   | 11.0   | 7.9     | 6.9   | 1.8   | -3.0   | -15.2 | -30.6 | -47.2   | -70.6 |
| HVAC                                          | Leq,d      | 21.3  | -30.8 | -24.7  | -20.8 | -7.7  | -2.8  | -8.8  | -0.7  | 1.2   | 0.2   | 2.2   | 2.3   | 4.3   | 5.4   | 6.4   | 10.5  | 12.8  | 9.0   | 11.1    | 12.6   | 10.9  | 12.3   | 8.9     | 8.1   | 3.2   | -1.2   | -12.8 | -27.5 | -42.9   | -64.8 |
| HVAC3                                         | Leq,d      | 20.8  | -31.2 | -25.1  | -21.1 | -8.1  | -3.2  | -9.1  | -1.1  | 0.9   | -0.2  | 1.8   | 1.9   | 3.9   | 5.0   | 6.0   | 10.1  | 12.4  | 8.5   | 10.7    | 12.2   | 10.3  | 11.7   | 8.4     | 7.5   | 2.5   | -2.2   | -14.1 | -29.1 | -45.1   | -67.8 |
| Receiver R2 FIG Lr,lim dB(A) Leq,d 38.1 dB(A) |            |       |       |        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |         |        |       |        |         |       |       |        |       |       |         |       |
| Auto Fuel Pump                                | Leq,d      | 32.0  |       |        |       |       | 19.3  |       |       | 27.2  |       |       | 18.5  |       |       | 22.9  |       |       | 24.7  |         |        | 25.0  |        |         | 18.8  |       |        | -3.0  |       |         | -65.6 |
| Auto Parking                                  | Leq,d      | 34.9  |       |        |       |       | 21.8  |       |       | 29.7  |       |       | 21.0  |       |       | 25.6  |       |       | 27.7  |         |        | 28.8  |        |         | 22.4  |       |        | -0.3  |       |         | -60.2 |
| Auto Parking                                  | Leq,d      | 24.0  |       |        |       |       | 12.9  |       |       | 19.5  |       |       | 10.4  |       |       | 15.1  |       |       | 17.1  |         |        | 16.4  |        |         | 6.5   |       |        | -26.5 |       |         |       |
| Truck Fuel Pump                               | Leq,d      | 25.6  | -23.7 | -19.0  | -14.8 | -13.2 | -8.3  | -2.9  | -3.3  | 11.6  | 1.8   | 3.3   | 4.1   | 7.0   | 10.2  | 11.7  | 12.3  | 16.1  | 20.3  | 15.7    | 15.8   | 15.4  | 12.9   | 10.3    | 6.0   | -0.3  | -10.8  | -25.6 | -44.9 | -70.9   |       |
| Truck Parking                                 | Leq,d      | 29.4  | -18.6 | -13.9  | -9.8  | -8.3  | -3.5  | 1.8   | 1.1   | 15.9  | 6.0   | 7.3   | 8.0   | 10.8  | 14.1  | 15.5  | 16.1  | 19.9  | 24.0  | 19.4    | 19.8   | 19.3  | 16.6   | 13.4    | 8.8   | 2.6   | -7.7   | -21.9 | -39.8 | -63.3   | -93.3 |
| Car Lane                                      | Leq,d      | 12.4  | -6.3  | -23.3  | -17.4 | -2.5  | -1.7  | 0.2   | -6.3  | -2.5  | -5.8  | -1.5  | -6.6  | -4.9  | -1.1  | -1.3  | 2.4   | 1.5   | 1.1   | 1.6     | 0.5    | 2.5   | 2.0    | -3.3    | -8.7  | -17.0 | -28.2  | -42.4 | -63.2 | -90.0   |       |
| Car Lane                                      | Leq,d      | 11.1  | -7.5  | -24.7  | -19.0 | -4.3  | -3.7  | -1.9  | -9.0  | -5.3  | -8.7  | -4.2  | -9.4  | -7.6  | -3.7  | -3.9  | -0.1  | -0.8  | 0.9   | 1.4     | 0.3    | 2.2   | 1.5    | -4.2    | -10.3 | -19.6 | -32.1  | -48.0 | -71.2 |         |       |
| Car Lane                                      | Leq,d      | 7.5   | -7.8  | -25.2  | -19.6 | -5.0  | -4.4  | -2.8  | -10.3 | -6.8  | -10.3 | -5.7  | -11.1 | -9.6  | -5.9  | -6.4  | -2.9  | -3.7  | -4.3  | -4.1    | -5.7   | -3.5  | -4.3   | -10.1   | -16.2 | -25.4 | -39.4  | -58.2 | -85.6 |         |       |
| Car Lane                                      | Leq,d      | 13.5  | -3.2  | -20.5  | -14.8 | -0.2  | 0.4   | 2.0   | -4.7  | -1.1  | -4.6  | -0.2  | -5.5  | -3.9  | -0.1  | -0.4  | 3.3   | 2.3   | 1.9   | 2.5     | 1.3    | 3.4   | 3.0    | -2.1    | -7.4  | -15.4 | -26.1  | -39.6 | -59.1 | -83.8   |       |
| Car Lane                                      | Leq,d      | 8.6   | -7.1  | -24.5  | -19.0 | -4.6  | -4.2  | -2.9  | -9.6  | -6.3  | -9.9  | -6.0  | -10.9 | -9.2  | -5.4  | -5.7  | -1.9  | -2.8  | -3.1  | -2.5    | -3.6   | -1.5  | -1.7   | -6.7    | -11.7 | -19.4 | -29.7  | -42.6 | -61.5 | -85.8   |       |

MD Acoustics LLC 4960 S Gilbert Rd Chandler AZ 85249 USA

# Truck Stop Lancaster Noise

## Contribution spectra - 001 - Truck Stop Lancaster: Outdoor SP

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| Source          | Time slice | Sum   | 25Hz             | 31.5Hz | 40Hz  | 50Hz  | 63Hz  | 80Hz  | 100Hz | 125Hz | 160Hz | 200Hz | 250Hz | 315Hz | 400Hz | 500Hz | 630Hz | 800Hz | 1kHz  | 1.25kHz | 1.6kHz | 2kHz  | 2.5kHz | 3.15kHz | 4kHz  | 5kHz  | 6.3kHz | 8kHz  | 10kHz | 12.5kHz | 16kHz |
|-----------------|------------|-------|------------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|--------|-------|--------|---------|-------|-------|--------|-------|-------|---------|-------|
|                 |            | dB(A) | dB(A)            | dB(A)  | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A)   | dB(A)  | dB(A) | dB(A)  | dB(A)   | dB(A) | dB(A) | dB(A)  | dB(A) | dB(A) | dB(A)   | dB(A) |
| HVAC            | Leq,d      | 10.7  | -37.5            | -31.5  | -27.5 | -14.5 | -9.6  | -15.6 | -8.8  | -6.9  | -8.0  | -6.1  | -6.2  | -4.3  | -3.4  | -2.5  | 1.3   | 4.0   | -0.4  | 1.2     | 1.7    | -1.5  | -2.3   | -8.2    | -11.8 | -20.8 | -31.8  | -53.1 | -81.9 | -98.1   | -96.1 |
| HVAC            | Leq,d      | 15.8  | -36.4            | -30.3  | -26.3 | -13.3 | -8.3  | -14.3 | -7.2  | -5.2  | -6.2  | -4.1  | -4.0  | -1.8  | -0.6  | 0.8   | 5.3   | 8.9   | 5.7   | 7.2     | 7.9    | 4.8   | 4.2    | -1.4    | -4.4  | -12.6 | -22.1  | -41.4 | -67.1 | -98.1   |       |
| HVAC            | Leq,d      | 19.1  | -34.0            | -27.9  | -23.9 | -10.9 | -5.9  | -11.9 | -3.9  | -1.9  | -2.9  | -0.8  | -0.7  | 1.4   | 2.6   | 3.9   | 8.2   | 11.0  | 7.8   | 10.7    | 11.6   | 8.8   | 8.8    | 4.0     | 2.3   | -3.9  | -10.4  | -25.1 | -44.2 | -65.9   |       |
| HVAC            | Leq,d      | 15.8  | -34.6            | -28.5  | -24.5 | -11.5 | -6.6  | -12.6 | -4.9  | -2.9  | -4.0  | -2.0  | -2.0  | 0.0   | 1.0   | 2.0   | 5.9   | 8.3   | 4.2   | 6.1     | 7.1    | 4.7   | 5.0    | 0.8     | -0.1  | -5.7  | -12.7  | -28.3 | -48.7 | -72.2   |       |
| HVAC3           | Leq,d      | 16.3  | -34.3            | -28.2  | -24.2 | -11.2 | -6.3  | -12.3 | -4.5  | -2.5  | -3.6  | -1.6  | -1.6  | 0.4   | 1.4   | 2.4   | 6.4   | 8.7   | 4.6   | 6.5     | 7.7    | 5.3   | 5.7    | 1.6     | 1.0   | -4.7  | -11.5  | -26.6 | -46.3 | -68.8   |       |
| Receiver R3     |            |       |                  |        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |         |        |       |        |         |       |       |        |       |       |         |       |
| FIG             | Lr,lim     | dB(A) | Leq,d 31.2 dB(A) |        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |         |        |       |        |         |       |       |        |       |       |         |       |
| Auto Fuel Pump  | Leq,d      | 23.7  |                  |        |       |       | 14.6  |       |       | 19.7  |       |       | 9.4   |       |       | 14.3  |       |       | 17.1  |         |        | 14.5  |        |         | -2.2  |       |        | -58.5 |       |         |       |
| Auto Parking    | Leq,d      | 26.6  |                  |        |       |       | 17.3  |       |       | 22.4  |       |       | 12.1  |       |       | 17.1  |       |       | 20.1  |         |        | 17.8  |        |         | 2.3   |       |        | -51.2 |       |         |       |
| Auto Parking    | Leq,d      | 22.8  |                  |        |       |       | 12.7  |       |       | 18.3  |       |       | 7.8   |       |       | 13.3  |       |       | 16.6  |         |        | 14.9  |        |         | 1.9   |       |        | -43.4 |       |         |       |
| Truck Fuel Pump | Leq,d      | 18.0  | -29.6            | -24.9  | -20.7 | -19.1 | -14.2 | -8.9  | -10.8 | 4.0   | -5.9  | -3.4  | -2.7  | 0.1   | 3.2   | 4.5   | 5.8   | 9.6   | 13.4  | 8.2     | 7.6    | 5.9   | 1.4    | -4.4    | -12.1 | -23.0 | -40.7  | -66.5 |       |         |       |
| Truck Parking   | Leq,d      | 23.5  | -23.8            | -19.1  | -14.9 | -13.3 | -8.4  | -3.1  | -5.0  | 9.9   | 0.0   | 2.3   | 3.1   | 6.0   | 9.1   | 10.5  | 11.0  | 14.8  | 18.7  | 13.7    | 13.3   | 12.0  | 8.2    | 3.0     | -3.8  | -13.7 | -29.8  | -53.0 | -84.2 |         |       |
| Car Lane        | Leq,d      | 8.3   | -11.6            | -28.6  | -22.6 | -7.6  | -6.6  | -4.7  | -12.2 | -8.3  | -11.5 | -5.5  | -10.6 | -8.8  | -4.8  | -4.9  | -1.1  | -2.0  | -2.3  | -1.8    | -3.1   | -1.5  | -2.5   | -8.9    | -16.2 | -27.4 | -43.0  | -65.4 | -98.7 |         |       |
| Car Lane        | Leq,d      | 14.6  | -5.6             | -22.6  | -16.6 | -1.6  | -0.6  | 2.0   | -5.7  | -1.8  | -4.0  | -2.6  | -7.6  | -5.8  | -1.6  | -1.7  | 2.2   | 5.6   | 5.1   | 5.5     | 4.1    | 5.6   | 4.4    | -2.2    | -9.7  | -21.3 | -37.5  | -59.2 | -91.0 |         |       |
| Car Lane        | Leq,d      | 13.9  | -7.4             | -24.4  | -18.4 | -3.4  | -2.5  | -0.5  | -6.8  | -2.5  | -5.6  | -1.7  | -6.8  | -4.9  | -0.6  | -0.7  | 3.1   | 4.5   | 4.1   | 4.6     | 3.1    | 4.9   | 3.9    | -2.2    | -9.0  | -19.5 | -33.7  | -53.6 | -82.9 |         |       |
| Car Lane        | Leq,d      | 11.8  | -8.7             | -25.7  | -19.7 | -4.7  | -3.8  | -1.8  | -8.6  | -4.7  | -7.8  | -1.9  | -7.0  | -5.1  | -1.3  | -1.4  | 2.4   | 1.5   | 1.5   | 2.0     | 0.5    | 2.1   | 0.8    | -5.9    | -13.6 | -25.5 | -42.1  | -64.6 | -98.1 |         |       |
| Car Lane        | Leq,d      | 8.3   | -12.9            | -29.8  | -23.9 | -8.9  | -7.9  | -5.9  | -13.6 | -9.7  | -12.8 | -5.1  | -10.2 | -8.3  | -4.5  | -4.6  | -0.8  | -1.7  | -2.1  | -1.6    | -3.1   | -1.6  | -3.0   | -9.8    | -17.7 | -29.9 | -47.1  | -70.3 |       |         |       |
| HVAC            | Leq,d      | 13.2  | -38.1            | -32.1  | -28.1 | -15.1 | -10.1 | -16.0 | -9.4  | -7.4  | -8.4  | -6.3  | -6.2  | -4.1  | -2.9  | -1.5  | 2.9   | 6.7   | 3.4   | 4.8     | 5.3    | 1.9   | 0.9    | -5.4    | -9.5  | -19.5 | -31.6  | -54.9 | -86.4 |         |       |
| HVAC            | Leq,d      | 12.7  | -38.7            | -32.7  | -28.6 | -15.6 | -10.6 | -16.6 | -10.1 | -8.1  | -9.1  | -7.0  | -6.8  | -4.7  | -3.4  | -1.9  | 2.8   | 7.0   | 2.5   | 4.0     | 4.3    | 0.9   | -0.4   | -7.0    | -11.6 | -22.2 | -35.5  | -60.4 | -94.3 |         |       |
| HVAC            | Leq,d      | 8.1   | -40.0            | -34.0  | -30.0 | -17.0 | -12.1 | -18.1 | -11.9 | -10.0 | -11.1 | -9.2  | -9.2  | -7.3  | -6.4  | -5.5  | -1.6  | 1.4   | -2.9  | -1.3    | -0.6   | -3.7  | -4.5   | -10.3   | -15.9 | -28.1 | -43.8  | -72.3 |       |         |       |
| HVAC            | Leq,d      | 10.1  | -39.7            | -33.7  | -29.7 | -16.7 | -11.7 | -17.7 | -11.4 | -9.5  | -10.6 | -8.6  | -8.5  | -6.5  | -5.5  | -4.4  | -0.3  | 3.0   | -0.7  | 1.9     | 2.8    | -0.9  | -2.4   | -9.6    | -14.9 | -26.8 | -41.9  | -69.6 |       |         |       |
| HVAC3           | Leq,d      | 8.3   | -39.9            | -33.9  | -29.9 | -16.9 | -11.9 | -17.9 | -11.7 | -9.8  | -10.9 | -9.0  | -9.0  | -7.1  | -6.2  | -5.3  | -1.4  | 1.6   | -2.6  | -1.0    | -0.3   | -3.4  | -4.0   | -10.0   | -15.4 | -27.5 | -43.0  | -71.1 |       |         |       |
| Receiver R4     |            |       |                  |        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |         |        |       |        |         |       |       |        |       |       |         |       |
| FIG             | Lr,lim     | dB(A) | Leq,d 33.6 dB(A) |        |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |         |        |       |        |         |       |       |        |       |       |         |       |
| Auto Fuel Pump  | Leq,d      | 23.8  |                  |        |       |       | 14.7  |       |       | 20.3  |       |       | 11.4  |       |       | 14.8  |       |       | 15.4  |         |        | 13.9  |        |         | 0.6   |       |        | -40.1 |       |         |       |
| Auto Parking    | Leq,d      | 27.7  |                  |        |       |       | 17.3  |       |       | 23.3  |       |       | 14.9  |       |       | 18.9  |       |       | 20.4  |         |        | 19.7  |        |         | 7.5   |       |        | -31.3 |       |         |       |
| Auto Parking    | Leq,d      | 25.1  |                  |        |       |       | 14.1  |       |       | 20.8  |       |       | 10.6  |       |       | 15.8  |       |       | 18.4  |         |        | 17.5  |        |         | 7.4   |       |        | -27.0 |       |         |       |
| Truck Fuel Pump | Leq,d      | 23.1  | -26.2            | -21.4  | -17.2 | -15.7 | -10.7 | -5.4  | -6.6  | 8.3   | -1.6  | 0.4   | 1.1   | 4.0   | 7.5   | 9.1   | 9.8   | 14.0  | 18.2  | 13.4    | 14.2   | 12.8  | 8.9    | 4.1     | -2.1  | -10.4 | -23.8  | -42.6 | -67.5 |         |       |
| Truck Parking   | Leq,d      | 28.2  | -19.6            | -14.8  | -10.7 | -9.1  | -4.2  | 1.0   | 0.2   | 15.0  | 5.1   | 6.3   | 7.1   | 10.0  | 13.4  | 14.7  | 15.3  | 19.2  | 23.1  | 18.4    | 18.6   | 17.4  | 13.9   | 9.5     | 4.1   | -2.9  | -14.2  | -29.6 | -49.7 | -77.1   |       |

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# Truck Stop Lancaster Noise

## Contribution spectra - 001 - Truck Stop Lancaster: Outdoor SP

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| Source   | Time slice | Sum   | 25Hz  | 31.5Hz | 40Hz  | 50Hz  | 63Hz  | 80Hz  | 100Hz | 125Hz | 160Hz | 200Hz | 250Hz | 315Hz | 400Hz | 500Hz | 630Hz | 800Hz | 1kHz  | 1.25kHz | 1.6kHz | 2kHz  | 2.5kHz | 3.15kHz | 4kHz  | 5kHz  | 6.3kHz | 8kHz  | 10kHz | 12.5kHz | 16kHz |
|----------|------------|-------|-------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|--------|-------|--------|---------|-------|-------|--------|-------|-------|---------|-------|
|          |            | dB(A) | dB(A) | dB(A)  | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A)   | dB(A)  | dB(A) | dB(A)  | dB(A)   | dB(A) | dB(A) | dB(A)  | dB(A) | dB(A) | dB(A)   | dB(A) |
| Car Lane | Leq,d      | 12.0  | -8.6  | -25.5  | -19.5 | -4.6  | -3.6  | -1.6  | -8.3  | -4.4  | -7.5  | -2.3  | -7.3  | -5.4  | -1.5  | -1.6  | 2.3   | 1.3   | 1.1   | 1.7     | 0.5    | 2.5   | 2.2    | -3.4    | -9.4  | -18.6 | -31.0  | -47.1 | -70.6 |         |       |
| Car Lane | Leq,d      | 14.0  | -7.8  | -24.7  | -18.7 | -3.8  | -2.8  | -0.8  | -6.8  | -2.9  | -6.0  | -0.7  | -5.7  | -3.8  | 0.7   | 0.7   | 4.5   | 3.6   | 3.3   | 4.0     | 2.8    | 4.8   | 4.3    | -1.2    | -7.1  | -16.1 | -28.4  | -44.3 | -67.6 | -97.9   |       |
| Car Lane | Leq,d      | 17.7  | -2.6  | -19.6  | -13.6 | 1.4   | 2.3   | 4.3   | -1.5  | 2.4   | -0.7  | -0.3  | -5.3  | -3.4  | 0.8   | 0.7   | 4.5   | 8.0   | 7.7   | 8.3     | 7.2    | 9.2   | 8.6    | 3.1     | -2.3  | -11.3 | -23.5  | -39.2 | -62.1 | -91.9   |       |
| Car Lane | Leq,d      | 15.7  | -5.6  | -22.5  | -16.6 | -1.6  | -0.6  | 1.4   | -5.4  | -1.5  | -3.9  | 1.4   | -3.6  | -1.7  | 2.2   | 2.1   | 6.0   | 5.0   | 4.7   | 5.7     | 4.5    | 6.4   | 6.0    | 0.1     | -6.1  | -15.5 | -28.2  | -44.7 | -68.7 | -99.9   |       |
| Car Lane | Leq,d      | 12.0  | -9.7  | -26.7  | -20.7 | -5.7  | -4.7  | -2.8  | -9.6  | -5.7  | -8.8  | -3.4  | -8.5  | -5.2  | -1.3  | -1.4  | 2.5   | 1.6   | 1.3   | 2.3     | 1.0    | 2.9   | 2.4    | -3.5    | -9.9  | -19.5 | -32.5  | -49.4 | -74.1 |         |       |
| HVAC     | Leq,d      | 15.9  | -36.3 | -30.2  | -26.2 | -13.2 | -8.2  | -14.2 | -7.0  | -5.0  | -6.0  | -3.9  | -3.8  | -1.7  | -0.5  | 0.9   | 5.3   | 8.7   | 5.9   | 7.5     | 8.2    | 5.1   | 4.6    | -1.0    | -3.9  | -11.9 | -21.2  | -40.0 | -65.2 | -95.5   |       |
| HVAC     | Leq,d      | 15.2  | -36.5 | -30.5  | -26.5 | -13.5 | -8.5  | -14.4 | -7.4  | -5.5  | -6.5  | -4.4  | -4.3  | -2.2  | -1.1  | 0.2   | 4.5   | 7.7   | 4.5   | 7.1     | 7.7    | 4.7   | 4.0    | -1.6    | -4.7  | -13.0 | -22.7  | -42.1 | -68.2 | -99.7   |       |
| HVAC     | Leq,d      | 13.2  | -37.3 | -31.3  | -27.3 | -14.3 | -9.3  | -15.3 | -8.5  | -6.6  | -7.7  | -5.7  | -5.6  | -3.7  | -2.7  | -1.6  | 2.4   | 5.2   | 1.3   | 3.3     | 6.2    | 3.7   | 3.5    | -2.7    | -6.4  | -15.7 | -26.6  | -47.8 | -76.4 |         |       |
| HVAC     | Leq,d      | 13.9  | -37.0 | -31.0  | -27.0 | -14.0 | -9.0  | -15.0 | -8.2  | -6.2  | -7.3  | -5.3  | -5.3  | -3.3  | -2.3  | -1.3  | 2.8   | 5.6   | 1.7   | 5.3     | 6.7    | 4.3   | 4.0    | -2.0    | -5.7  | -14.7 | -25.2  | -45.8 | -73.5 |         |       |
| HVAC3    | Leq,d      | 11.9  | -37.2 | -31.2  | -27.2 | -14.2 | -9.3  | -15.3 | -8.5  | -6.6  | -7.7  | -5.8  | -5.8  | -3.9  | -3.0  | -2.1  | 1.7   | 4.3   | 0.0   | 1.5     | 4.9    | 1.5   | 0.4    | -5.8    | -9.8  | -19.2 | -30.1  | -51.0 | -79.0 |         |       |

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# Truck Stop Lancaster Noise

## Contribution level - 001 - Truck Stop Lancaster: Outdoor SP

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| Source                                         | Source group              | Source ty | Tr. lane | Leq,d<br>dB(A) | A<br>dB |  |
|------------------------------------------------|---------------------------|-----------|----------|----------------|---------|--|
| Receiver R1 FI G Lr,lim dB(A) Leq,d 41.9 dB(A) |                           |           |          |                |         |  |
| Auto Parking                                   | Default parking lot noise | PLot      |          | 38.5           | 0.0     |  |
| Car Lane                                       | Default industrial noise  | Line      |          | 23.9           | 0.0     |  |
| Car Lane                                       | Default industrial noise  | Line      |          | 20.2           | 0.0     |  |
| Auto Fuel Pump                                 | Default parking lot noise | PLot      |          | 35.8           | 0.0     |  |
| Truck Parking                                  | Default parking lot noise | PLot      |          | 30.8           | 0.0     |  |
| HVAC                                           | Default industrial noise  | Point     |          | 21.3           | 0.0     |  |
| HVAC                                           | Default industrial noise  | Point     |          | 20.3           | 0.0     |  |
| HVAC3                                          | Default industrial noise  | Point     |          | 20.8           | 0.0     |  |
| Car Lane                                       | Default industrial noise  | Line      |          | 20.1           | 0.0     |  |
| Car Lane                                       | Default industrial noise  | Line      |          | 17.0           | 0.0     |  |
| Auto Parking                                   | Default parking lot noise | PLot      |          | 33.2           | 0.0     |  |
| HVAC                                           | Default industrial noise  | Point     |          | 22.7           | 0.0     |  |
| HVAC                                           | Default industrial noise  | Point     |          | 20.8           | 0.0     |  |
| Truck Fuel Pump                                | Default parking lot noise | PLot      |          | 19.4           | 0.0     |  |
| Car Lane                                       | Default industrial noise  | Line      |          | 20.6           | 0.0     |  |
| Receiver R2 FI G Lr,lim dB(A) Leq,d 38.1 dB(A) |                           |           |          |                |         |  |
| Auto Parking                                   | Default parking lot noise | PLot      |          | 34.9           | 0.0     |  |
| Car Lane                                       | Default industrial noise  | Line      |          | 13.5           | 0.0     |  |
| Car Lane                                       | Default industrial noise  | Line      |          | 8.6            | 0.0     |  |
| Auto Fuel Pump                                 | Default parking lot noise | PLot      |          | 32.0           | 0.0     |  |
| Truck Parking                                  | Default parking lot noise | PLot      |          | 29.4           | 0.0     |  |
| HVAC                                           | Default industrial noise  | Point     |          | 15.8           | 0.0     |  |
| HVAC                                           | Default industrial noise  | Point     |          | 19.1           | 0.0     |  |
| HVAC3                                          | Default industrial noise  | Point     |          | 16.3           | 0.0     |  |
| Car Lane                                       | Default industrial noise  | Line      |          | 11.1           | 0.0     |  |
| Car Lane                                       | Default industrial noise  | Line      |          | 7.5            | 0.0     |  |
| Auto Parking                                   | Default parking lot noise | PLot      |          | 24.0           | 0.0     |  |
| HVAC                                           | Default industrial noise  | Point     |          | 15.8           | 0.0     |  |
| HVAC                                           | Default industrial noise  | Point     |          | 10.7           | 0.0     |  |
| Truck Fuel Pump                                | Default parking lot noise | PLot      |          | 25.6           | 0.0     |  |
| Car Lane                                       | Default industrial noise  | Line      |          | 12.4           | 0.0     |  |
| Receiver R3 FI G Lr,lim dB(A) Leq,d 31.2 dB(A) |                           |           |          |                |         |  |
| Auto Parking                                   | Default parking lot noise | PLot      |          | 26.6           | 0.0     |  |

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# Truck Stop Lancaster Noise

## Contribution level - 001 - Truck Stop Lancaster: Outdoor SP

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| Source          | Source group              | Source ty | Tr. lane | Leq,d<br>dB(A) | A<br>dB |  |
|-----------------|---------------------------|-----------|----------|----------------|---------|--|
| Car Lane        | Default industrial noise  | Line      |          | 11.8           | 0.0     |  |
| Car Lane        | Default industrial noise  | Line      |          | 8.3            | 0.0     |  |
| Auto Fuel Pump  | Default parking lot noise | PLot      |          | 23.7           | 0.0     |  |
| Truck Parking   | Default parking lot noise | PLot      |          | 23.5           | 0.0     |  |
| HVAC            | Default industrial noise  | Point     |          | 10.1           | 0.0     |  |
| HVAC            | Default industrial noise  | Point     |          | 8.1            | 0.0     |  |
| HVAC3           | Default industrial noise  | Point     |          | 8.3            | 0.0     |  |
| Car Lane        | Default industrial noise  | Line      |          | 14.6           | 0.0     |  |
| Car Lane        | Default industrial noise  | Line      |          | 13.9           | 0.0     |  |
| Auto Parking    | Default parking lot noise | PLot      |          | 22.8           | 0.0     |  |
| HVAC            | Default industrial noise  | Point     |          | 12.7           | 0.0     |  |
| HVAC            | Default industrial noise  | Point     |          | 13.2           | 0.0     |  |
| Truck Fuel Pump | Default parking lot noise | PLot      |          | 18.0           | 0.0     |  |
| Car Lane        | Default industrial noise  | Line      |          | 8.3            | 0.0     |  |

Receiver R4 FIG Lr,lim dB(A) Leq,d 33.6 dB(A)

|                 |                           |       |  |      |     |  |
|-----------------|---------------------------|-------|--|------|-----|--|
| Auto Parking    | Default parking lot noise | PLot  |  | 27.7 | 0.0 |  |
| Car Lane        | Default industrial noise  | Line  |  | 15.7 | 0.0 |  |
| Car Lane        | Default industrial noise  | Line  |  | 12.0 | 0.0 |  |
| Auto Fuel Pump  | Default parking lot noise | PLot  |  | 23.8 | 0.0 |  |
| Truck Parking   | Default parking lot noise | PLot  |  | 28.2 | 0.0 |  |
| HVAC            | Default industrial noise  | Point |  | 13.9 | 0.0 |  |
| HVAC            | Default industrial noise  | Point |  | 13.2 | 0.0 |  |
| HVAC3           | Default industrial noise  | Point |  | 11.9 | 0.0 |  |
| Car Lane        | Default industrial noise  | Line  |  | 14.0 | 0.0 |  |
| Car Lane        | Default industrial noise  | Line  |  | 17.7 | 0.0 |  |
| Auto Parking    | Default parking lot noise | PLot  |  | 25.1 | 0.0 |  |
| HVAC            | Default industrial noise  | Point |  | 15.2 | 0.0 |  |
| HVAC            | Default industrial noise  | Point |  | 15.9 | 0.0 |  |
| Truck Fuel Pump | Default parking lot noise | PLot  |  | 23.1 | 0.0 |  |
| Car Lane        | Default industrial noise  | Line  |  | 12.0 | 0.0 |  |

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**Appendix D:**  
Construction Noise Modeling Output

**VIBRATION LEVEL IMPACT**

Project: Truck Stop Noise Date: 4/11/25  
Source: Vibratory Roller  
Scenario: Unmitigated  
Location: Northwest commercial building  
Address: 25th St W & W Avenue H, Lancaster, CA  
PPV =  $PPV_{ref}(25/D)^n$  (in/sec)

**DATA INPUT**

Equipment = 1 Vibratory Roller INPUT SECTION IN BLUE  
Type  
PPVref = 0.21 Reference PPV (in/sec) at 25 ft.  
D = 550.00 Distance from Equipment to Receiver (ft)  
n = 1.10 Vibration attenuation rate through the ground

Note: Based on reference equations from Vibration Guidance Manual, California Department of Transportation, 2006, pgs 38-43.

**DATA OUT RESULTS**

PPV = 0.007 IN/SEC OUTPUT IN RED

**Receptor - Residences to the Southeast**

| Construction Phase Equipment Item | # of Items | Item Lmax at 50 feet, dBA <sup>1</sup> | Edge of Site to Receptor, feet | Center of Site to Receptor, feet | Item Usage Percent <sup>1</sup> | Ground Factor <sup>2</sup> | Usage Factor | Receptor Item Lmax, dBA | Receptor Item Leq, dBA |
|-----------------------------------|------------|----------------------------------------|--------------------------------|----------------------------------|---------------------------------|----------------------------|--------------|-------------------------|------------------------|
| DEMO                              |            |                                        |                                |                                  |                                 |                            |              |                         |                        |
| Excavator                         | 3          | 81                                     | 1170                           | 1675                             | 40                              | 0.33                       | 0.40         | 49.1                    | 41.5                   |
| Dozer                             | 2          | 82                                     | 1170                           | 1675                             | 40                              | 0.33                       | 0.40         | 50.1                    | 42.5                   |
| Concrete Saw                      | 1          | 90                                     | 1170                           | 1675                             | 20                              | 0.33                       | 0.20         | 58.1                    | 47.5                   |
| Tractor                           | 0          | 84                                     | 1170                           | 1675                             | 40                              | 0.33                       | 0.40         | 0.0                     | 0.0                    |
|                                   |            |                                        |                                |                                  |                                 |                            | Log Sum      | 58.1                    | 51.3                   |
| SITE PREP                         |            |                                        |                                |                                  |                                 |                            |              |                         |                        |
| Grader                            | 0          | 85                                     | 1170                           | 1675                             | 40                              | 0.33                       | 0.40         | 0.0                     | 0.0                    |
| Tractor                           | 4          | 84                                     | 1170                           | 1675                             | 40                              | 0.33                       | 0.40         | 52.1                    | 44.5                   |
| Dozer                             | 3          | 82                                     | 1170                           | 1675                             | 40                              | 0.33                       | 0.40         | 50.1                    | 42.5                   |
| Scraper                           | 0          | 84                                     | 1170                           | 1675                             | 40                              | 0.33                       | 0.40         | 0.0                     | 0.0                    |
|                                   |            |                                        |                                |                                  |                                 |                            | Log Sum      | 52.1                    | 52.2                   |
| GRADE                             |            |                                        |                                |                                  |                                 |                            |              |                         |                        |
| Dozer                             | 1          | 82                                     | 1170                           | 1675                             | 40                              | 0.33                       | 0.40         | 50.1                    | 42.5                   |
| Tractor                           | 3          | 84                                     | 1170                           | 1675                             | 40                              | 0.33                       | 0.40         | 52.1                    | 44.5                   |
| Grader                            | 1          | 85                                     | 1170                           | 1675                             | 40                              | 0.33                       | 0.40         | 53.1                    | 45.5                   |
| Excavator                         | 1          | 81                                     | 1170                           | 1675                             | 40                              | 0.33                       | 0.40         | 49.1                    | 41.5                   |
| Scraper                           | 0          | 84                                     | 1170                           | 1675                             | 40                              | 0.33                       | 0.40         | 0.0                     | 0.0                    |
|                                   |            |                                        |                                |                                  |                                 |                            |              | 53.1                    | 51.8                   |
| BUILD                             |            |                                        |                                |                                  |                                 |                            |              |                         |                        |
| Crane                             | 1          | 81                                     | 1170                           | 1675                             | 16                              | 0.33                       | 0.16         | 49.1                    | 37.5                   |
| Man lift                          | 3          | 75                                     | 1170                           | 1675                             | 20                              | 0.33                       | 0.20         | 43.1                    | 32.5                   |
| Tractor                           | 3          | 84                                     | 1170                           | 1675                             | 40                              | 0.33                       | 0.40         | 52.1                    | 44.5                   |
| Welder/Torch                      | 1          | 74                                     | 1170                           | 1675                             | 40                              | 0.33                       | 0.40         | 42.1                    | 34.5                   |
| Generator                         | 1          | 81                                     | 1170                           | 1675                             | 50                              | 0.33                       | 0.50         | 49.1                    | 42.5                   |
|                                   |            |                                        |                                |                                  |                                 |                            |              | 52.1                    | 50.6                   |
| PAVE                              |            |                                        |                                |                                  |                                 |                            |              |                         |                        |
| Paver                             | 1          | 77                                     | 1170                           | 1675                             | 50                              | 0.33                       | 0.50         | 45.1                    | 38.5                   |
| Concrete Mixer Truck              | 2          | 79                                     | 1170                           | 1675                             | 40                              | 0.33                       | 0.40         | 47.1                    | 39.5                   |
| Roller                            | 2          | 80                                     | 1170                           | 1675                             | 20                              | 0.33                       | 0.20         | 48.1                    | 37.5                   |
| Tractor                           | 1          | 84                                     | 1170                           | 1675                             | 40                              | 0.33                       | 0.40         | 52.1                    | 44.5                   |
| Compactor (ground)                | 2          | 83                                     | 1170                           | 1675                             | 20                              | 0.33                       | 0.20         | 51.1                    | 40.5                   |
|                                   |            |                                        |                                |                                  |                                 |                            |              | 52.1                    | 49.4                   |
| ARCH COAT                         |            |                                        |                                |                                  |                                 |                            |              |                         |                        |
| Compressor (air)                  | 1          | 78                                     | 1170                           | 1675                             | 40                              | 0.33                       | 0.40         | 46.1                    | 38.5                   |
|                                   |            |                                        |                                |                                  |                                 |                            |              | 46.1                    | 38.5                   |

<sup>1</sup>FHWA Construction Noise Handbook: Table 9.1 RCNM Default Noise Emission Reference Levels and Usage Factors

<sup>2</sup>FTA Transit Noise and Vibration Impact Assessment Manual Section 7.1, 0.66 for soft ground and 0 for hard ground