# Appendix F
# Noise Study

# U-Haul Redevelopment Project

## Noise Impact Study

City of Gardena, CA

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MD ACOUSTICS
Sound Solutions for Planning and Design

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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 U-Haul Redevelopment Project (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. The Project must demonstrate compliance to 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 14206 S Van Ness Ave, in Gardena California, as shown in Exhibit A. The site is currently zoned as General Commercial (C-3) with a Mixed Use Overlay Zone (MUO) in the City of Gardena Zoning Map. The Project includes a Change of Zone to C-4. The proposed use is general commercial. To the north is the United States Post office (M-2). To the east is a mixed-use development with live-work and residential uses currently under construction (C-3/MUO). To the south is Rosecrans Avenue, and south of that is a mix of commercial uses (C-3/MUO). To the west is Van Ness Avenue, and west of that is a mix of commercial uses (C-2/MUO and C-3).

## 1.3 Proposed Project Description

An approximately 177,573 gross square foot, five-story storage facility would be located within the northern portion of the site and a separate 8,000-square foot single-story building for retail sales and office use would be located within the southern portion of the site, adjacent to Rosecrans Avenue; refer to Exhibit B. The proposed storage facility would provide a total of 1,620 storage units ranging in size from 5 feet by 5 feet to 10 feet by 20 feet distributed throughout the five levels and a covered truck shunting area on the ground floor. The site will have 60 parking spaces. The Project proposes 24- to 36-inch intermittent screen walls within the landscaped areas along Van Ness and Rosecrans Avenues.

This study assesses the traffic and operational noise to and from the Project site and compares the results to the applicable City noise standards. In addition, the study reviews noise generated by construction activities.

Construction activities within the Project area will consist of demolition, site preparation, grading, building construction, paving, and architectural coating.

## 1.4 Report Summary

A 24-hour noise measurement was taken on-site on 6/3/2021 to 6/4/2021 near the adjacent residential units. Noise levels during operational hours ranged between 57.4 dBA Leq and 65.5 dBA Leq. The CNEL level was 61.5 dBA.

The project will increase the traffic CNEL level by less than 0.1 dBA on Rosecrans and Van Ness Avenues as a result of the project which is inaudible. The noise level on the project site in 2022 with project traffic will be 72 dBA CNEL, which is conditionally acceptable for office and commercial. Standard construction will result in an interior level of 50 dBA Leq, complying with the California Building Code. The impact is less than significant, and no mitigation is required.

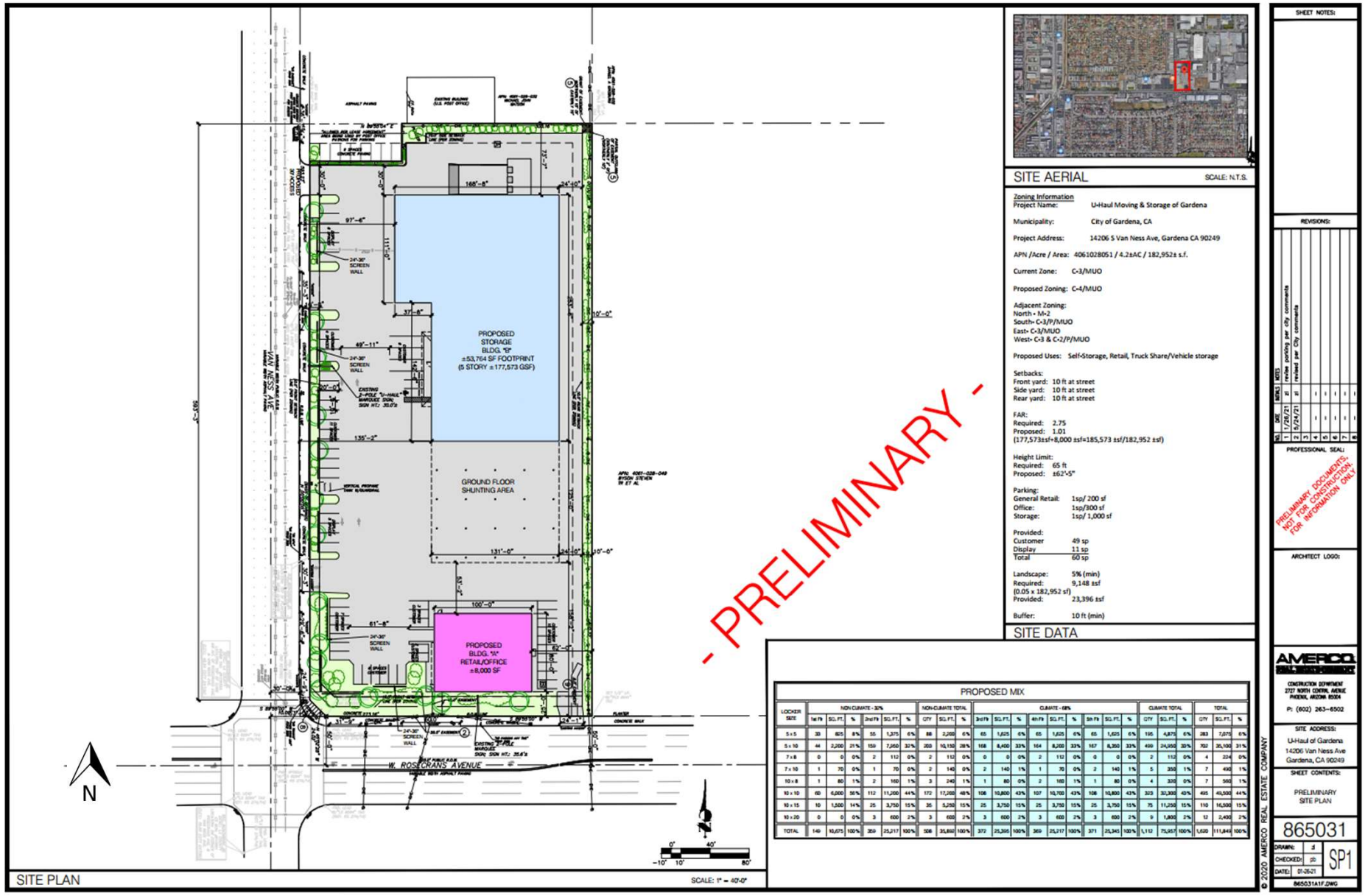
Project-only operational levels due to project operations, which includes parking lot noise and rooftop units, are between 39 dBA Leq and 46 dBA Leq at the surrounding parking lots. The ambient level is not expected to increase as a result of the project. The impact is less than significant, and no mitigation is required.

Construction noise levels will range from 67 to 79 dBA Leq at the adjacent residential property depending on the phase. Construction is anticipated to occur during the City's permissible hours of 7 AM to 6 PM on weekdays and 9 AM to 6 PM on Saturday. The impact is less than significant, and no mitigation is required.

# 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.

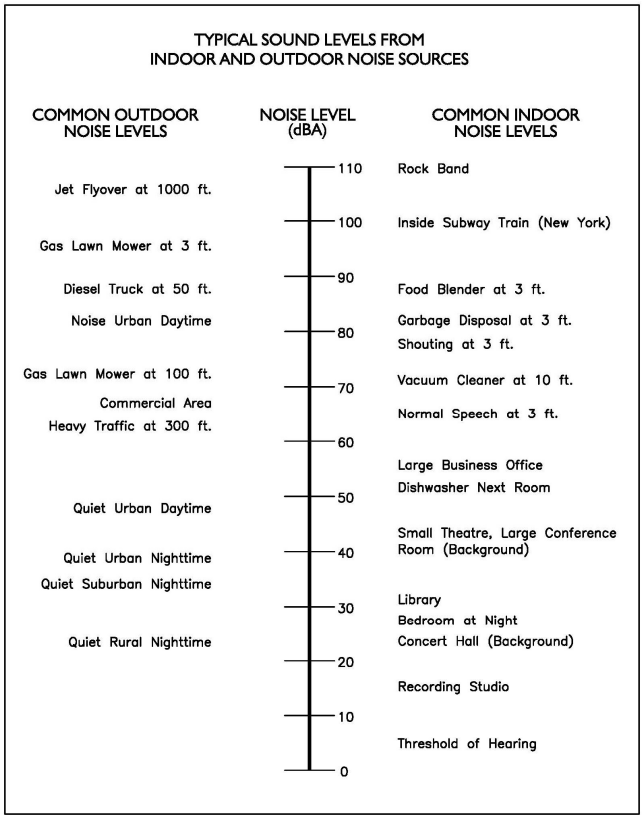
## 2.1 Sound, Noise, and Acoustics

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 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 to the high pitch of 20,000 Hz.

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




## 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/m2), also called micro-Pascal (µPa). One µPa is approximately one hundred billionths (0.00000000001) of normal atmospheric pressure. Sound pressure level (SPL or $L_p$) 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 references sound levels for different noise sources.

## 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 the change in the 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

## 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:*** *A*ny 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 (4) sound propagation. The greater the volume of traffic, the 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 from a noise source. Wind, temperature, air humidity, and turbulence can further impact how far sound can travel.

# *3.0 Ground-Bourne 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 wavefront, 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 wavefront. 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 wavefront. 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 Gardena 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 jurisdictions 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 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 the compatibility of sensitive uses with various incremental levels of noise.

The State of California has established noise insulation standards as outlined in Title 24 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. The City of Gardena has adopted their own version of the State's Land Use Compatibility Guidelines. These are presented in Exhibit D.

**Exhibit D: Land Use Compatibility Guidelines**

| Land Use Category | CNEL, dB 55 | 60 | 65 | 70 | 75 | 80 |
|---|---|---|---|---|---|---|
| Residential - Single family, multifamily, duplex | A | A | B | C | C | | |
| Residential - Mobile homes | A | A | B | C | C | | |
| Transient Lodging - Motels, hotels | A | A | B | B | C | C | |
| Schools, Libraries, Churches, Hospitals, Nursing Homes | A | A | B | C | C | | |
| Auditoriums, Concert Halls, Amphitheaters, Meeting Halls | B | B | C | C | | | |
| Sports Arenas, Outdoor Spectator Sports, Amusement Parks | A | A | A | B | B | | |
| Playgrounds, Neighborhood Parks | A | A | A | B | C | | |
| Golf Courses, Riding Stables, Cemeteries | A | A | A | A | B | C | C |
| Office and Professional Buildings | A | A | A | B | B | C | |
| Commercial Retail, Banks, Restaurants, Theaters | A | A | A | A | B | B | C |
| Industrial, Manufacturing, Utilities, Wholesale, Service Stations | A | A | A | A | B | B | B |
| Agriculture | A | A | A | A | A | A | A |

Legend

A — NORMALLY ACCEPTABLE
Specified land use is satisfactory based on the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

B — CONDITIONALLY ACCEPTABLE
New construction or development should be undertaken only after a detailed analysis of the noise requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

C — NORMALLY UNACCEPTABLE
New construction or development should generally be discouraged. If it does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

CLEARLY UNACCEPTABLE
New construction or development should generally not be undertaken.

Source: Taken in part from "Aircraft Noise Impact Planning Guidelines for Local Agencies," U.S. Dept. of Housing and Urban Development, TE/NA-472, November 1972.

## 4.3 City of Gardena Noise Regulations

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

### City of Gardena General Plan

Applicable policies and standards governing environmental noise in the City are set forth in the General Plan Noise Element. Table N-1 of the Gardena Noise Element outlines the exterior noise compatibility for community noise environments. According to Table N-1 commercial uses are normally acceptable up to 70 dBA CNEL.

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

**Goals, Policies, and Implementation Measures**

Policies, goals, and implementation program measures from the Noise Element that would mitigate potential impacts on noise include the following.

**N Goal 1:** Use noise control measures to reduce the impact from transportation noise sources.

N 1.1: Minimize noise conflicts between land uses and the circulation network, and mitigate sound levels where necessary or feasible to ensure the peace and quiet of the community.

N 1.2: Reduce unnecessary traffic volumes in residential neighborhoods by limiting through-ways and by facilitating the use of alternative routes around, rather than through, neighborhoods.

N 1.3: Promote the use of new technologies to minimize traffic noise, such as use of rubberized asphalt in road surface materials.

N1.4: Promote the use of traffic calming measures where appropriate, such as narrow roadways and on street parking, in commercial and mixed-use districts.

N1.5: Reduce noise impacts from vehicles, particularly in residential area through enforcement of speed limits on arterials and local roads.

N1.6: Require compliance with State's Vehicle Code noise standards within the City.

N1.7: Ensure the effective enforcement of City, State and Federal noise standards by all City Divisions.

N1.8: Encourage walking, biking, carpooling, use of public transit and other alternative modes of transportation to minimize vehicular use and associated traffic noise.

N1.9: Encourage, where feasible and reasonable, noise mitigation measures, such as noise barriers and realignments, in the design and construction of new roadway projects in Gardena.

N1.10: Consider noise impacts to residential neighborhoods when designating truck routes and major circulation corridors.

N1.11: Maintain bus routes that meet public transportation needs and minimize noise impacts in residential areas.

N1.12: Encourage the Public Utilities Commission and Union Pacific to minimize the level of noise produced by train movements and horns within Gardena by reducing speeds, improving

vehicle system technology, and developing improved procedures for train engineer horn sounding.

N1.13: Encourage Gardena citizen participation and City involvement on committees that would influence future aircraft and railroad operations in Los Angeles County.

N1.14: Participate in the planning and impact assessment activities of the County Airport Land Use Commission and other regional or State agencies relative to any proposed expansion or change in flight patterns at the Hawthorne Municipal Airport or the Compton Airport.

**N Goal 2:** Incorporate noise considerations into land use planning decisions.

N2.1: Promote noise regulations that establish acceptable noise standards for various land uses throughout Gardena.

N2.2: Require noise/land use compatibility standards to guide future planning and development.

N2.3: Promote compliance with the State's noise insulation standards in the conversion of existing apartments into condominiums wherever feasible.

N2.4: Require mitigation of all significant noise impacts as a condition of project approval.

N2.5: Require proposed projects to be re-viewed for compatibility with nearby noise-sensitive land uses with the intent of reducing noise impacts.

N2.6: Require new residential developments located in proximity to existing commercial/ industrial operations to control residential interior noise levels as a condition of approval and minimize exposure of residents in the site design.

N2.7: Require new commercial/industrial operations located in proximity to existing or proposed residential areas to incorporate noise mitigation into the project design.

N2.8: Require that mixed-use structures and areas be designed to prevent transfer of noise and vibration from commercial areas to residential areas.

N2.9: Encourage the creative use of site and building design techniques as a means to minimize noise impacts.

N2.10: Promote replacement of significant noise sources with non-noise-generating land uses when plans for future use of areas are developed.

N2.11: Require the County of Los Angeles, the City of Hawthorne, the City of Los Angeles, and the City of Torrance to minimize or avoid land use/noise conflicts prior to project approvals.

**N Goal 3:** Develop measures to control non-transportation noise impacts.

N3.1: Require compliance with a quantitative noise ordinance based on the Model Noise Ordinance developed by the (now-defunct) State of California Office of Noise Control.

N3.2: Require compliance with noise regulations. Review and update Gardena's policies and regulations affecting noise.

N3.3: Require compliance with construction hours to minimize the impacts of construction noise on adjacent land.

N3.4: Require new equipment and vehicles purchased by the City to comply with noise performance standards consistent with available noise reduction technology.

N3.5: Require City departments to observe State and Federal occupational safety and health noise standards.

## City of Gardena Municipal Code

Sections 8.36.040 and 8.36.050 of the City's Noise Ordinance establish exterior and interior noise standards as it relates to that limit how loud project operation noise can be. The allowable exterior noise levels presented in Table 1 limit project operational noise at nearby land uses, and the allowable interior noise levels presented in Table 2 limit how loud project operational noise can be inside nearby residential and mixed-use structures. Subsection 8.36.040(C), states that in the event the ambient noise level exceeds the noise standard, the ambient noise level shall become the noise standard.

**Table 1: Allowable Exterior Noise Level (dBA, Leq)**

| Type of Land Use | 15-Minute Average Noise (dBA, Leq) | | Maximum Noise Level (dBA, Lmax) | |
|---|---|---|---|---|
| | 7 AM-10 PM | 10 PM to 7 AM | 7 AM-10 PM | 10 PM to 7 AM |
| Residential | 55 | 50 | 75 | 70 |
| Residential portions of mixed use | 60 | 50 | 80 | 70 |
| Commercial | 65 | 60 | 85 | 80 |
| Industrial or manufacturing | 70 | 70 | 90 | 90 |

Source: City of Gardena Municipal Code Section 8.36.040.
A. The exterior noise standards, unless otherwise specifically indicated, shall apply to all property within the City. The Land Use category refers to the affected receiver property. In the event the alleged offensive noise contains a pure tone such as a whine, screech, or hum, or contains repetitive, impulsive or impact noise such as hammering or riveting, or contains music or speech conveying informational content, each of the above noise standards shall be reduced by 5 dB.
B. No person shall operate or cause to be operated, any source of sound at any location within the incorporated City or allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which causes the noise level when measured from any other property, either incorporated or unincorporated, to exceed the noise standards presented in the above table.
C. In the event the ambient noise level exceeds the noise standard, the ambient noise level shall become the noise standard.

<Table 2, next page>

**Table 2: Allowable Interior Noise Level (dBA, Leq)**

| Type of Land Use | 15-Minute Average Noise (dBA, Leq) | | Maximum Noise Level (dBA, Lmax) | |
|---|---|---|---|---|
| | 7 AM-10 PM | 10 PM to 7 AM | 7 AM-10 PM | 10 PM to 7 AM |
| Residential | 45 | 40 | 65 | 60 |
| Residential portions of mixed use | 45 | 40 | 70 | 60 |

Source: City of Gardena Municipal Code Section 8.36.050.
A. The interior noise standards presented above, unless otherwise specifically indicated, shall apply to all residential dwellings with windows in their normal seasonal configuration, where such dwelling is the receiver of intrusive noise:
In the event the alleged offensive noise contains a pure tone such as a whine, screech, or hum, or contains repetitive, impulsive or impact noise such as hammering or riveting, or contains music or speech conveying informational content, each of the above noise standards shall be reduced by 5 dB.
B. No person shall operate or cause to be operated, any source of sound at any location within the incorporated City or allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which causes the noise level when measured within any residential dwelling, either incorporated or unincorporated, to exceed the noise standards of paragraph (A).
C. In the event the ambient noise level exceeds the noise standard, the ambient noise level shall become the noise standard.

## Construction Noise Regulations

Per Section 8.36.080 of the City's Noise Ordinance, Project construction activities are explicitly exempt from the exterior and interior noise standards presented in Sections 8.36.040 and 8.36.050. Specifically, the ordinance states that "noise associated with construction, repair, remodeling, grading or demolition of any real property are exempt from the provisions in Chapter 8.36 (City of Gardena Noise Ordinance), provided said activities do not take place between the hours of 6:00 PM and 7:00 AM on weekdays between the hours of 6:00 PM and 9:00 AM on Saturday or any time on Sunday or a Federal holiday".

# *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 with the City of Gardena and the Caltrans technical noise specifications. All measurements 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 Location

The noise monitoring location was selected based on the distance from Rosecrans and Van Ness to the nearest sensitive on-site receptors. The long-term noise measurement was conducted near the adjacent residences and is illustrated in Exhibit E. Appendix A includes photos, the field sheet, and measured noise data. Exhibit E illustrates the location of the measurements.

## 5.3 Stationary Noise Modeling

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, and driveway). The model assumes that the site has sixty (60) parking spaces and 63 Trane air conditioning units.

Parking was modeled with a reference noise level of 0.72 cars per hour coming and going from the parking spots (per the peak hour of the trip generation divided by the number of parking spots). The rooftop unit was modeled as a line source with a sound power level of 74 dBA. The model is able to evaluate the noise attenuating effects of any existing or proposed property line walls. Input and output calculations are provided in Appendix C.

**Table 3: Reference Sound Level Measurements for SoundPLAN Model**

| Source | Source Type | Reference Level (dBA) | Descriptor |
|---|---|---|---|
| Parking | Area (SP Parking Tool) | - | 1 movement per hr |
| Rooftop Units | Point Source | 74 | Sound Power |

## 5.4 FHWA Traffic Noise Prediction Model/SoundPLAN

Traffic noise from vehicular traffic was projected using a computer program that replicates the FHWA Traffic Noise Prediction Model (FHWA-RD-77-108). The FHWA model arrives at the predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). Roadway volumes were obtained from the City. The 2018 counts were projected to the year 2022. The Project trip generation was used to obtain 2022 plus Project volumes. 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 4 indicates the roadway parameters and vehicle distribution utilized for this study.

<Table 4, next page>

**Table 4: Roadway Parameters and Vehicle Distribution**

| Roadway | Type | 2022 ADT[1] | 2022 + Project ADT[2] | Speed (MPH) | Site Conditions |
|---|---|---|---|---|---|
| Van Ness Ave. | Arterial | 22,515 | 22,635 | 35 | Hard |
| Rosecrans Ave. | Major Collector | 38,524 | 38,644 | 40 | Hard |
| **Vehicle Distribution and Mix[3]** | | | | | |
| **Motor-Vehicle Type** | | **Daytime % (7 AM to 7 PM)** | **Evening % (7 PM to 10 PM)** | **Night % (10 PM to 7 AM)** | **Total % of Traffic Flow** |
| Automobiles | | 77.5 | 12.9 | 9.6 | 97.42 |
| Medium Trucks | | 84.8 | 4.9 | 10.3 | 1.54 |
| Heavy Trucks | | 86.5 | 2.7 | 10.8 | 0.74 |

Notes:
[1] Existing ADT volumes for are from the City's 2018 traffic counts.
[2] E+P estimated with a 2% growth rate factor.
[3] Vehicle distribution data is based on typical Southern California roadway vehicle percentages.

To determine the project's noise impact to the surrounding land uses, MD generated noise contours for existing ADT and existing + project conditions. 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 that 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 as a result of a project.

In addition, this assessment calculates future traffic noise levels at the project site associated with Rosecrans and Van Ness. For the purpose of this evaluation, MD used the existing + project to represent the future noise level to the office/retail building. The traffic noise calculation worksheet outputs are located in Appendix B.

## 5.5 Interior Noise Modeling

The interior noise level is the difference between the projected exterior noise level at the structure's facade and the noise reduction provided by the structure itself. Typical building construction will provide a conservative 12 dBA noise level reduction with a "windows open" condition and a very conservative 20 dBA noise level reduction with "windows closed". MD estimated the interior noise level by subtracting the building shell design from the predicted exterior noise level.

## 5.6 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 located in Appendix D.

# Exhibit E
## Measurement Location


X = Measurement location

= boundary

# *6.0 Existing Noise Environment*

A twenty-four (24) hour ambient noise measurement was conducted at the Project site. The measurement location is in Exhibit E The measurement measured the 1-hour Leq, Lmin, Lmax, and other statistical data (e.g. L2, L8). The noise measurement was taken to determine the existing baseline noise conditions.

## 6.1 Long-Term Noise Measurement Results

The results of the Long-term noise data taken are presented in Table 5.

**Table 5: Long-Term Noise Measurement Data (dBA)[1,2]**

| Date | Time | 1-hour dB(A) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Leq | Lmax | Lmin | L(2) | L(8) | L(25) | L(50) |
| 6/3/2021 | 5PM-6PM | 58.0 | 75.4 | 50.2 | 61.5 | 60.0 | 59.6 | 57.5 |
| 6/3/2021 | 6PM-7PM | 58.1 | 75.5 | 48.8 | 62.7 | 61.8 | 60.8 | 56.4 |
| 6/3/2021 | 7PM-8PM | 57.4 | 76.1 | 47.4 | 66.1 | 59.9 | 58.6 | 55.7 |
| 6/3/2021 | 8PM-9PM | 54.7 | 63.5 | 50.4 | 60.8 | 59.1 | 56.2 | 53.8 |
| 6/3/2021 | 9PM-10PM | 54.0 | 70.1 | 47.5 | 56.3 | 56.1 | 55.6 | 54.0 |
| 6/3/2021 | 10PM-11PM | 53.6 | 63.9 | 48.8 | 56.3 | 56.1 | 55.5 | 53.1 |
| 6/3/2021 | 11PM-12AM | 53.2 | 63.6 | 48.4 | 56.1 | 55.8 | 55.4 | 52.4 |
| 6/4/2021 | 12AM-1AM | 53.2 | 69.3 | 47.7 | 57.4 | 55.9 | 55.7 | 52.1 |
| 6/4/2021 | 1AM-2AM | 52.4 | 64.6 | 46.8 | 55.5 | 55.1 | 55.0 | 51.0 |
| 6/4/2021 | 2AM-3AM | 52.7 | 57.2 | 45.1 | 54.8 | 54.7 | 54.5 | 53.9 |
| 6/4/2021 | 3AM-4AM | 50.3 | 61.4 | 44.4 | 54.7 | 54.5 | 54.5 | 48.1 |
| 6/4/2021 | 4AM-5AM | 49.1 | 64.8 | 44.4 | 54.5 | 50.9 | 50.4 | 48.1 |
| 6/4/2021 | 5AM-6AM | 51.3 | 77.6 | 45.7 | 56.3 | 53.3 | 52.3 | 50.3 |
| 6/4/2021 | 6AM-7AM | 54.5 | 75.4 | 47.4 | 58.3 | 57.6 | 57.0 | 53.8 |
| 6/4/2021 | 7AM-8AM | 57.9 | 71.9 | 48.6 | 61.7 | 60.6 | 59.8 | 57.7 |
| 6/4/2021 | 8AM-9AM | 62.5 | 84.2 | 51.5 | 70.7 | 66.7 | 64.2 | 58.7 |
| 6/4/2021 | 9AM-10AM | 65.5 | 85.5 | 51.0 | 73.8 | 73.6 | 71.0 | 61.0 |
| 6/4/2021 | 10AM-11AM | 62.5 | 78.3 | 53.5 | 68.7 | 68.3 | 67.0 | 59.7 |
| 6/4/2021 | 11AM-12PM | 59.5 | 81.7 | 53.6 | 63.9 | 63.0 | 60.8 | 58.5 |
| 6/4/2021 | 12PM-1PM | 60.2 | 76.0 | 54.1 | 66.8 | 65.0 | 63.1 | 58.3 |
| 6/4/2021 | 1PM-2PM | 61.9 | 82.7 | 52.4 | 69.4 | 68.4 | 65.8 | 58.4 |
| 6/4/2021 | 2PM-3PM | 58.4 | 74.5 | 54.0 | 62.0 | 60.6 | 59.8 | 58.0 |
| 6/4/2021 | 3PM-4PM | 58.8 | 76.9 | 53.6 | 64.0 | 61.6 | 60.2 | 57.9 |
| 6/4/2021 | 4PM-5PM | 57.6 | 73.4 | 47.4 | 62.6 | 60.0 | 59.2 | 56.6 |
| CNEL | | 61.5 | | | | | | |

Notes:
1. Long-term noise monitoring location LT1 is illustrated in Exhibit E.
2. Quietest hour during operational hours is highlighted in orange.

Noise data indicates the ambient hourly level ranged between 57.4 dBA to 65.5 dBA Leq on the Project site during operational hours. Operational hours vary depending on the day of the week. Friday has the longest operational hours from 7 AM to 8 PM. The measured CNEL at the Project site was 61.5 dBA CNEL. Additional field notes and photographs are provided in Appendix A.

For this evaluation, MD utilized the quietest hourly ambient noise level and has compared the Project's projected noise levels to the quietest hourly ambient. The quietest (lowest) hourly level during Friday operational hours occurred from 7 PM to 8 PM (57.4 dBA, Leq (h)).

# *7.0 Future Noise Environment Impacts and Mitigation*

This assessment analyzes future noise impacts to 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 roadway sources.

## 7.1 Future Exterior Noise

The following outlines the exterior noise levels associated with the proposed project.

### 7.1.1 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 50 feet. The distance to the 55, 60, 65, and 70 dBA CNEL noise contours are also provided in Appendix B for reference. The noise levels and contours were calculated for 2022 without Project and 2022 with Project. The CNEL levels will increase less than 0.1 dBA on Rosecrans and Van Ness as a result of the project. This will be inaudible and therefore the impact is less than significant, and no mitigation is required.

### 7.1.2 On-Site Traffic Noise Impact

Traffic noise from the local roadway network was evaluated and compared to the City's Land Use Compatibility Guidelines (Exhibit D). Commercial uses are conditionally acceptable up to 80 dBA CNEL and offices are conditionally acceptable up to 75 dBA CNEL. Levels at the office building are 71.7 dBA CNEL. The peak hourly level at the office building is projected to be 72 dBA Leq. Standard building construction for the office area, with standard STC windows and glass doors, will result in an interior level of 50 dBA Leq. The impact is therefore less than significant, and no mitigation is required.

### 7.1.3 Noise Impacts to Off-Site Receptors Due to Stationary Sources

Sensitive receptors that may be affected by project operational noise include adjacent residences to the east. The worst-case stationary noise was modeled using SoundPLAN acoustical modeling software. The model utilizes a reference level of 74 dBA for the sound power for the air conditioning unit and parking lot movements based on the peak hour trip generation for the Project.

A total of four (4) receptors were modeled using the SoundPLAN noise model to evaluate the proposed project's operational impact. A receptor is denoted by a yellow dot. All yellow dots represent a property line. The results are in Exhibit F.

Project Operational Noise Levels

Exhibit F shows the "Project-only" operational noise levels at the property lines and/or sensitive receptor area and how the noise will propagate at the site. Operational noise levels at the adjacent uses are anticipated to range between 38 dBA to 45 dBA Leq (depending on the location).

The "Project-only" noise projections to the adjacent uses are below the City's 60 dBA mixed-use residential limit, as outlined within the City's noise ordinance (see Table 1).

Project Plus Ambient Operational Noise Levels

As shown in Table 6, project plus ambient noise level projections are anticipated to be 57 dBA Leq at receptors (R1 – R4).

**Table 6: Worst-case Predicted Operational Leq Noise Level**

| Receptor[1] | Floor | Existing Ambient Noise Level (dBA, Leq)[2] | Project Noise Level (dBA, Leq)[3] | Total Combined Noise Level (dBA, Leq) | Daytime (7 AM - 10 PM) Stationary Noise Limit (dBA, Leq) | Change in Noise Level as Result of Project |
|---|---|---|---|---|---|---|
| R1 | 1 | 57 | 43 | 57 | **65** | 0 |
| R2 | 1 | | 38 | 57 | **65** | 0 |
| R3 | 1 | | 45 | 57 | **60** | 0 |
| | 2 | | 45 | 57 | **60** | 0 |
| | 3 | | 44 | 57 | **60** | 0 |
| R4 | 1 | | 44 | 57 | **65** | 0 |

Notes:
1. Receptors R1, R2, and R4 represent commercial uses. R3 represents residential use.
2. Existing measured ambient condition
3. See Exhibit F for the operational noise level projections at said receptors.

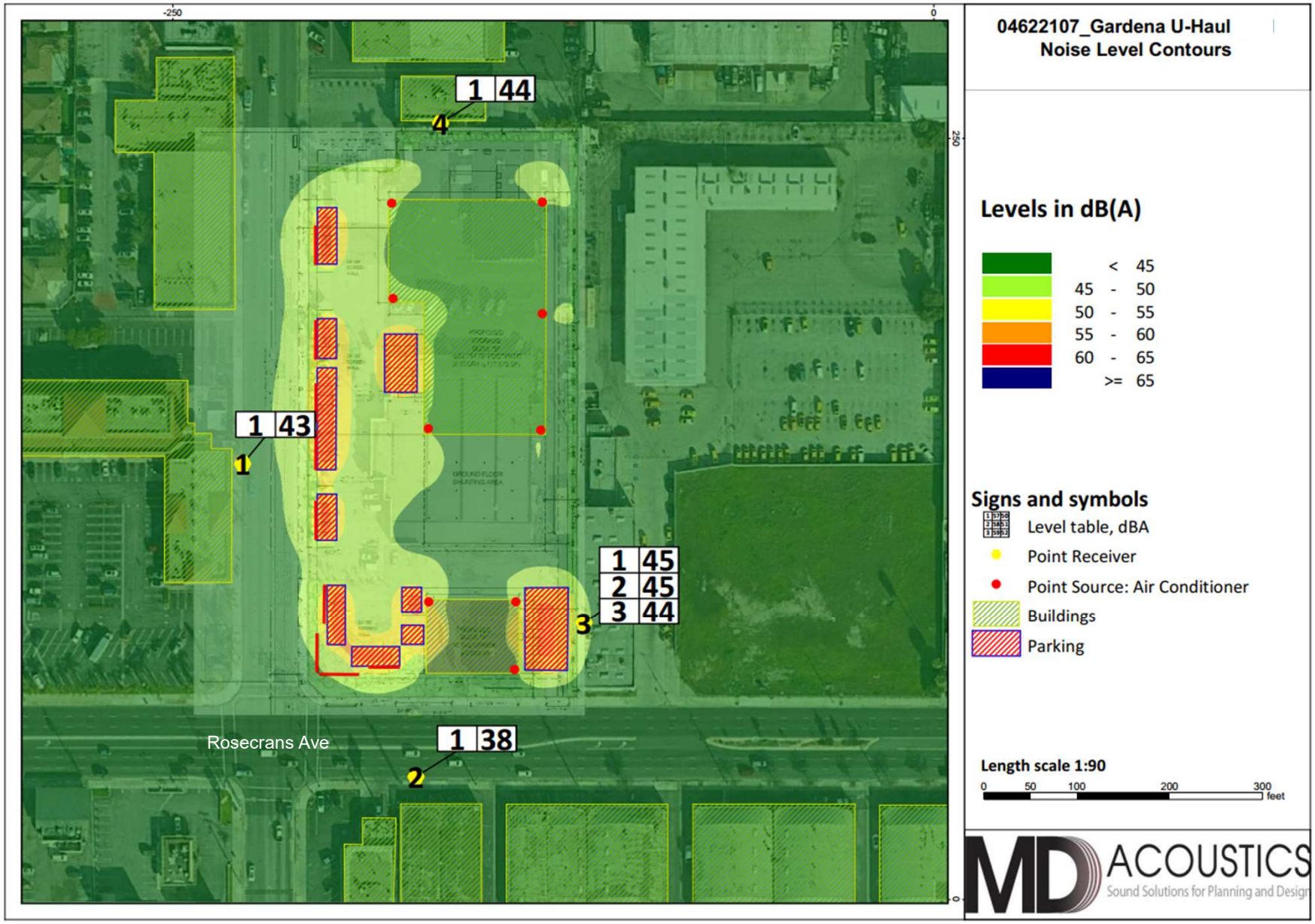
As shown in Table 6, the project will increase the worst-case noise level by less than one dB at receptors R1-R4. As discussed in Section 2.5 of this report, an increase of 1 dB is not perceptible.

As a conservative measure, MD has compared the worst-case operational daytime noise levels with the lowest measured ambient levels during operational hours. The total combined noise level is below the 60 dBA mixed-use residential daytime noise limit and the 65 dBA commercial daytime noise limit. Therefore, the project complies with all local noise regulations.

The interior noise level at the adjacent residential properties is projected to be 40 dBA, Leq during operational hours which is below the 45 dBA daytime residential mixed-use limit.

Exhibit F

## Worst Case Operational Noise Levels



# *8.0 Construction Noise Impact*

The degree of construction noise will vary in 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 7.

**Table 7: Typical Construction Noise Levels[1]**

**Equipment Powered by Internal Combustion Engines**

| Type | Noise Levels (dBA) at 50 Feet |
|---|---|
| **Earth Moving** | |
| Compactors (Rollers) | 73 - 76 |
| Front Loaders | 73 - 84 |
| Backhoes | 73 - 92 |
| Tractors | 75 - 95 |
| Scrapers, Graders | 78 - 92 |
| Pavers | 85 - 87 |
| Trucks | 81 - 94 |
| **Materials Handling** | |
| Concrete Mixers | 72 - 87 |
| Concrete Pumps | 81 - 83 |
| Cranes (Movable) | 72 - 86 |
| Cranes (Derrick) | 85 - 87 |
| **Stationary** | |
| Pumps | 68 - 71 |
| Generators | 71 - 83 |
| Compressors | 75 - 86 |

**Impact Equipment**

| Type | Noise Levels (dBA) at 50 Feet |
|---|---|
| Saws | 71 - 82 |
| Vibrators | 68 - 82 |

Notes:
[1] Referenced Noise Levels from the Environmental Protection Agency (EPA)

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. Construction equipment was obtained from the air quality study CalEEMod. Construction noise was projected from the center of the site to represent an average of equipment moving around the site. Table 8 provides the average construction noise levels at the nearest sensitive receptor, the adjacent residences to the east of the project site.

**Table 8: Average Construction Noise Level by Phase (dBA)**

| Activity | Leq at 160 Feet (East Residences) |
|---|---|
| Site Preparation | 79 |
| Demolition | 77 |
| Grading | 77 |
| Building Construction | 77 |
| Paving | 78 |
| Architectural Coating | 67 |

A single bulldozer 25 ft away from the eastern residential buildings (running adjacent to the property line) would have an Lmax level of 91 dBA. This maximum level will only occur during the short periods when equipment is operating along the property line.

Construction operations must follow section 8.36.080 of the municipal code which states that construction, repair, or excavation work performed must not take place between the hours of 6:00 PM and 7:00 AM on weekdays between the hours of 6:00 PM and 9:00 AM on Saturday or any time on Sunday or a Federal holiday. When construction activities are taken within allowable times, the construction noise impact is considered less than significant, and no mitigation is required. However, the following best management practices are recommended to further induce noise levels associated with construction activities:

1. During construction, the contractor should ensure all construction equipment is equipped with appropriate noise attenuating devices.

2. The contractor should locate equipment staging areas that will create the greatest distance between construction-related noise/vibration sources and sensitive receptors nearest the project site during all project construction.

3. Idling equipment should be turned off when not in use.

4. Equipment should be maintained so that vehicles and their loads are secured from rattling and banging.

Construction is anticipated to occur during the permissible hours according to the City's Municipal Code. 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. The construction noise impact is considered less than significant, and no mitigation is required.

## 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 bulldozer.

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

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

*Where: $PPV_{ref}$ = reference PPV at 100ft.*
*$D_{rec}$ = distance from equipment to receiver in ft.*
*n = 1.1 (the value related to the attenuation rate through the ground)*

The thresholds from the Caltrans Transportation and Construction Induced Vibration Guidance Manual in Table 9 (below) provide general thresholds and guidelines as to the vibration damage potential from vibratory impacts.

**Table 9: 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.
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 10 gives approximate vibration levels for particular construction activities. This data provides a reasonable estimate for a wide range of soil conditions.

**Table 10: Vibration Source Levels for Construction Equipment[1]**

| 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 |

| Equipment | Peak Particle Velocity (inches/second) at 25 feet | Approximate Vibration Level LV (dVB) at 25 feet |
|---|---|---|
| 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 |

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

The nearest residential structures to the east are approximately 25 feet from construction activities. At a distance of 25 feet, a large bulldozer would yield a worst-case 0.089 PPV (in/sec) which is perceptible but sustainably below any risk of damage. The impact is less than significant, and no mitigation is required.

# *9.0 References*

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

City of Gardena: Noise Element.

City of Gardena: Noise Ordinance.

Caltrans Construction Vibration Manual, Konan Vibration Criteria

Federal Transit Administration Traffic Noise and Vibration Manual. 2018.

Federal Highway Administration: Roadway Noise Construction Model. 2006.

Federal Highway Administration: Traffic Noise Model

# Appendix A:

Field Measurement Data

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Simi Valley, CA 93065

# 24-Hour Continuous Noise Measurement Datasheet

**Project:** Uhaul Redevelopment project
**Site Address/Location:** 14202 Van Ness, Gardena CA
**Date:** 06/03/2021-06/05/2021
**Field Tech/Engineer:** Jason Schuyler & Claire Pincock

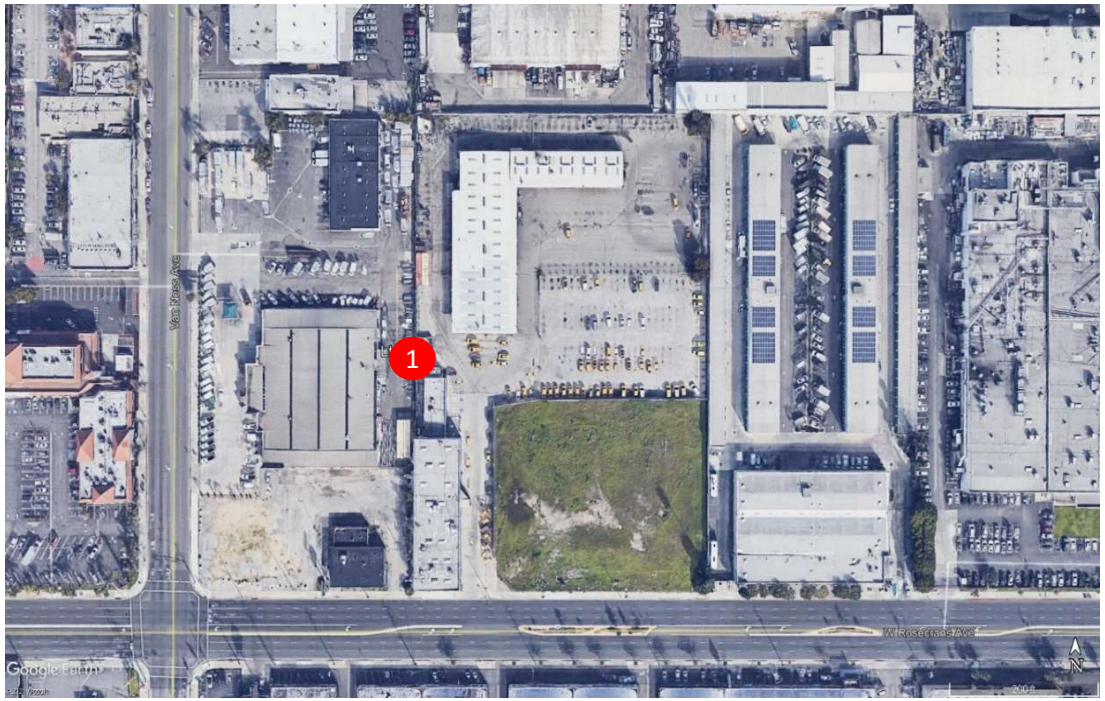
**Site Observations:** Clear Skys temps in the 80' during the day high 50's at night. Primary noise source is Rosecrans Ave.

**General Location:**
**Sound Meter:** Piccolo 2 **SN:** 80206
**Settings:** A-weighted, slow, 1-min, 24-hour duration
**Meteorological Con.:** 2 to 5 mph wind from W. no rain
**Site ID:** LT-1

**Site Topo:** Flat
**Ground Type:** Hard site buildings walls and Asvaul

**Noise Source(s) w/ Distance:**
Meter is 3' from E. P/L

**Figure 1: LT-1 Monitoring Location**

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Simi Valley, CA 93065

## 24-Hour Noise Measurement Datasheet - Cont.

**Project:** Uhaul Redevelopment project **Day:** 1 of 1
**Site Address/Location:** 14202 Van Ness, Gardena CA
**Site ID:** LT-1

| Date | Start | Stop | Leq | Lmax | Lmin | L2 | L8 | L25 | L50 | L90 |
|---|---|---|---|---|---|---|---|---|---|---|
| 6/3/2021 | 5:00 PM | 6:00 PM | 58.0 | 75.4 | 50.2 | 61.5 | 60.0 | 59.6 | 57.5 | 55.5 |
| 6/3/2021 | 6:00 PM | 7:00 PM | 58.1 | 75.5 | 48.8 | 62.7 | 61.8 | 60.8 | 56.4 | 54.3 |
| 6/3/2021 | 7:00 PM | 8:00 PM | 57.4 | 76.1 | 47.4 | 66.1 | 59.9 | 58.6 | 55.7 | 53.2 |
| 6/3/2021 | 8:00 PM | 9:00 PM | 54.7 | 63.5 | 50.4 | 60.8 | 59.1 | 56.2 | 53.8 | 50.2 |
| 6/3/2021 | 9:00 PM | 10:00 PM | 54.0 | 70.1 | 47.5 | 56.3 | 56.1 | 55.6 | 54.0 | 51.1 |
| 6/3/2021 | 10:00 PM | 11:00 PM | 53.6 | 63.9 | 48.8 | 56.3 | 56.1 | 55.5 | 53.1 | 51.3 |
| 6/3/2021 | 11:00 PM | 12:00 AM | 53.2 | 63.6 | 48.4 | 56.1 | 55.8 | 55.4 | 52.4 | 50.8 |
| 6/3/2021 | 12:00 AM | 1:00 AM | 53.2 | 69.3 | 47.7 | 57.4 | 55.9 | 55.7 | 52.1 | 50.1 |
| 6/3/2021 | 1:00 AM | 2:00 AM | 52.4 | 64.6 | 46.8 | 55.5 | 55.1 | 55.0 | 51.0 | 49.4 |
| 6/3/2021 | 2:00 AM | 3:00 AM | 52.7 | 57.2 | 45.1 | 54.8 | 54.7 | 54.5 | 53.9 | 47.3 |
| 6/3/2021 | 3:00 AM | 4:00 AM | 50.3 | 61.4 | 44.4 | 54.7 | 54.5 | 54.5 | 48.1 | 46.9 |
| 6/3/2021 | 4:00 AM | 5:00 AM | 49.1 | 64.8 | 44.4 | 54.5 | 50.9 | 50.4 | 48.1 | 46.4 |
| 6/3/2021 | 5:00 AM | 6:00 AM | 51.3 | 77.6 | 45.7 | 56.3 | 53.3 | 52.3 | 50.3 | 48.5 |
| 6/4/2021 | 6:00 AM | 7:00 AM | 54.5 | 75.4 | 47.4 | 58.3 | 57.6 | 57.0 | 53.8 | 51.0 |
| 6/4/2021 | 7:00 AM | 8:00 AM | 57.9 | 71.9 | 48.6 | 61.7 | 60.6 | 59.8 | 57.7 | 53.8 |
| 6/4/2021 | 8:00 AM | 9:00 AM | 62.5 | 84.2 | 51.5 | 70.7 | 66.7 | 64.2 | 58.7 | 56.9 |
| 6/4/2021 | 9:00 AM | 10:00 AM | 65.5 | 85.5 | 51.0 | 73.8 | 73.6 | 71.0 | 61.0 | 57.6 |
| 6/4/2021 | 10:00 AM | 11:00 AM | 62.5 | 78.3 | 53.5 | 68.7 | 68.3 | 67.0 | 59.7 | 57.7 |
| 6/4/2021 | 11:00 AM | 12:00 PM | 59.5 | 81.7 | 53.6 | 63.9 | 63.0 | 60.8 | 58.5 | 57.0 |
| 6/4/2021 | 12:00 PM | 1:00 PM | 60.2 | 76.0 | 54.1 | 66.8 | 65.0 | 63.1 | 58.3 | 57.3 |
| 6/4/2021 | 1:00 PM | 2:00 PM | 61.9 | 82.7 | 52.4 | 69.4 | 68.4 | 65.8 | 58.4 | 55.7 |
| 6/4/2021 | 2:00 PM | 3:00 PM | 58.4 | 74.5 | 54.0 | 62.0 | 60.6 | 59.8 | 58.0 | 56.5 |
| 6/4/2021 | 3:00 PM | 4:00 PM | 58.8 | 76.9 | 53.6 | 64.0 | 61.6 | 60.2 | 57.9 | 56.2 |
| 6/4/2021 | 4:00 PM | 5:00 PM | 57.6 | 73.4 | 47.4 | 62.6 | 60.0 | 59.2 | 56.6 | 54.0 |

**CNEL:** 61.5

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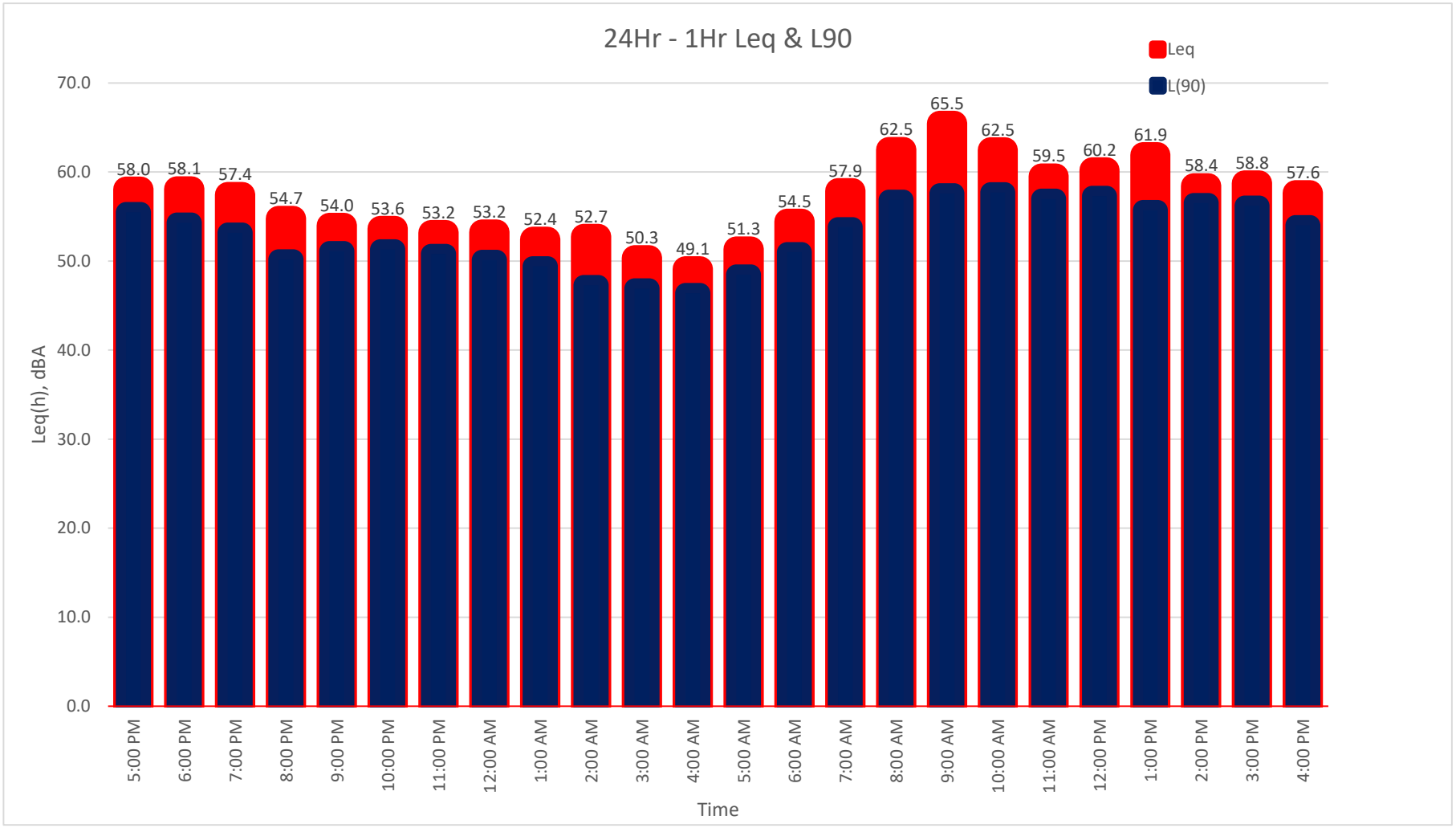
## 24-Hour Continuous Noise Measurement Datasheet - Cont.

**Project:** Uhaul Redevelopment project **Day:** 1 of 1
**Site Address/Location:** 14202 Van Ness, Gardena CA
**Site ID:** LT-1



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**AZ Office**
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Chandler, AZ 85249

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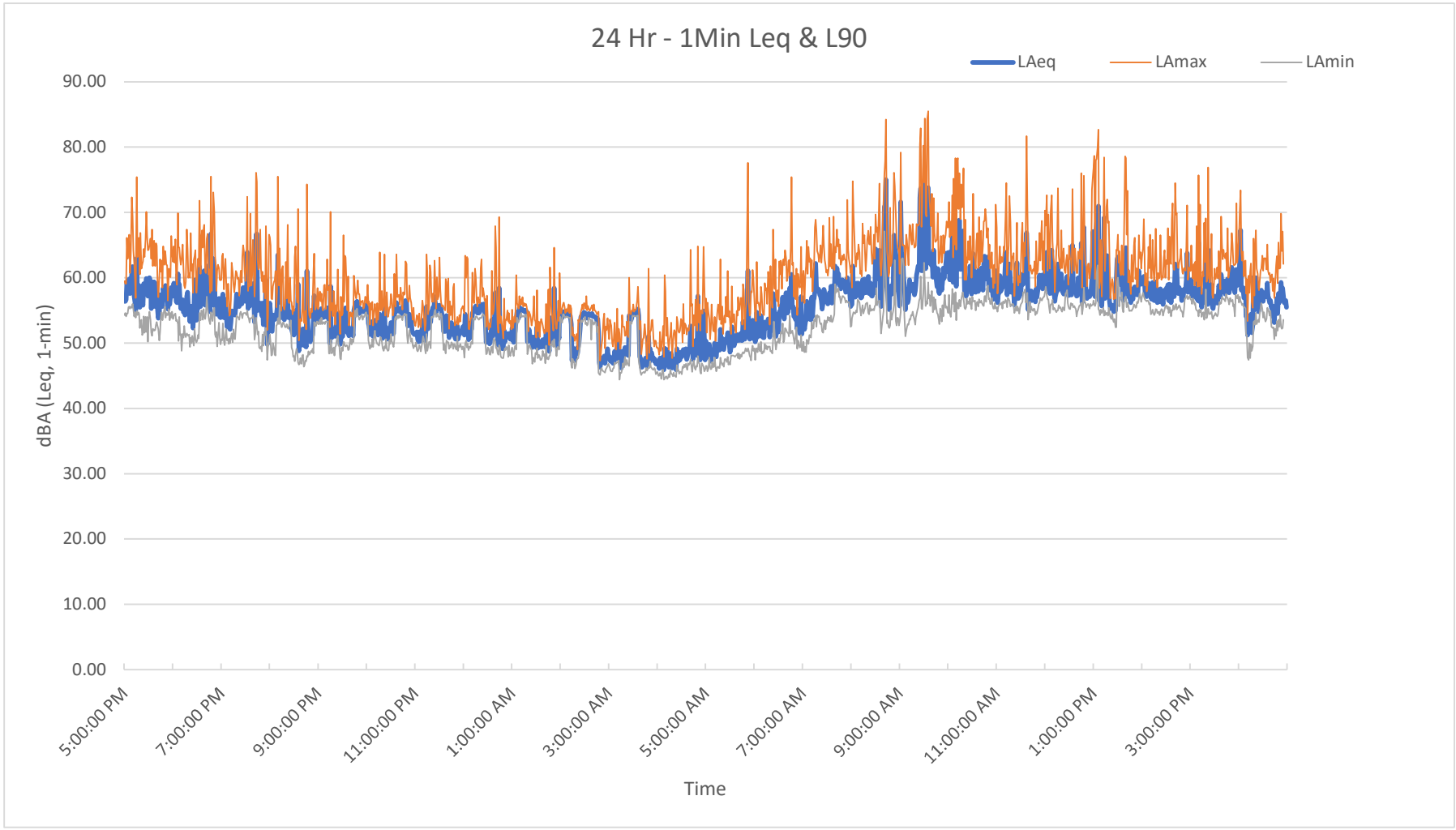
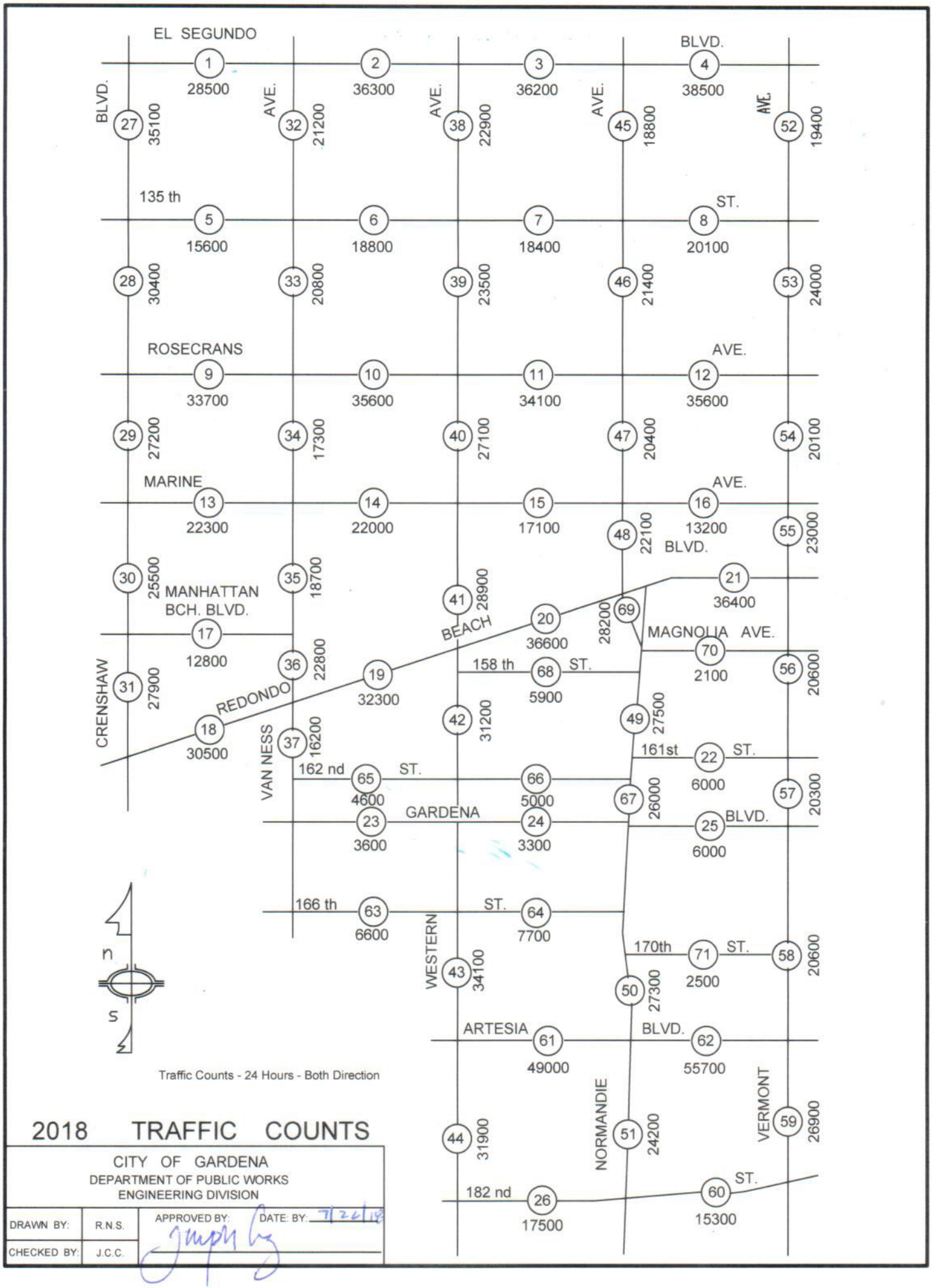
## 24-Hour Continuous Noise Measurement Datasheet - Cont.

**Project:** Uhaul Redevelopment project **Day:** 1 of 1
**Site Address/Location:** 14202 Van Ness, Gardena CA
**Site ID:** LT-1



**Appendix B:**

Traffic Data




Traffic Counts - 24 Hours - Both Direction

# 2018 TRAFFIC COUNTS

CITY OF GARDENA
DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION

| | | | |
|---|---|---|---|
| DRAWN BY: | R.N.S. | APPROVED BY: | DATE: BY: 7/26/18 |
| CHECKED BY: | J.C.C. | | |

| Trip Generation Rates | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Land Use | Rate | Daily | AM Peak Hour | | | PM Peak Hour | | |
| | | | In | Out | Total | In | Out | Total |
| Mini-Warehouse (ITE Code 151) | per KSF | 1.51 | 60% | 40% | 0.10 | 47% | 53% | 0.17 |
| General Office Building (ITE Code 710) | per KSF | 9.74 | 86% | 14% | 1.16 | 16% | 84% | 1.15 |
| Building Materials and Lumber Store (ITE Code 812) | per KSF | 18.05 | 63% | 37% | 1.57 | 47% | 53% | 2.06 |

| Trip Generation Estimates | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Land Use | Size | Daily | AM Peak Hour | | | PM Peak Hour | | |
| | | | In | Out | Total | In | Out | Total |
| Existing Uses | | | | | | | | |
| Mini-Warehouse (ITE Code 151) | 23.536 KSF | 36 | 1 | 1 | 2 | 2 | 2 | 4 |
| General Office Building (ITE Code 710) | 15.981 KSF | 156 | 16 | 3 | 19 | 3 | 15 | 18 |
| Building Materials and Lumber Store (ITE Code 812) | 3.750 KSF | 68 | 4 | 2 | 6 | 4 | 4 | 8 |
| **TOTAL - EXISTING USES** | | **260** | **21** | **6** | **27** | **9** | **21** | **30** |
| Proposed Uses | | | | | | | | |
| Mini-Warehouse (ITE Code 151) | 177.573 KSF | 268 | 11 | 7 | 18 | 14 | 16 | 30 |
| General Office Building (ITE Code 710) | 3.820 KSF | 37 | 3 | 1 | 4 | 1 | 3 | 4 |
| Building Materials and Lumber Store (ITE Code 812) | 4.180 KSF | 75 | 4 | 3 | 7 | 4 | 5 | 9 |
| **TOTAL PROJECT TRIPS** | | **380** | **18** | **11** | **29** | **19** | **24** | **43** |
| **NET NEW PROJECT TRIPS** | | **120** | **-3** | **5** | **2** | **10** | **3** | **13** |

Source: Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition
Notes:
KSF - thousand square feet

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

PROJECT: Gardena U-Haul Redevelopment
ROADWAY: Rosecrans 2022
LOCATION: 50 from CL

JOB #: 1922-06-02
DATE: 22-Oct-21
ENGINEER: M. Dickerson

## NOISE INPUT DATA

### ROADWAY CONDITIONS

| | | |
|---|---|---|
| ADT = | 38,524 | |
| SPEED = | 40 | |
| PK HR % = | 10 | |
| NEAR LANE/FAR LANE DIS | 65 | |
| ROAD ELEVATION = | 0.0 | |
| GRADE = | 1.0 | % |
| PK HR VOL = | 3,852 | |

### RECEIVER INPUT DATA

| | | |
|---|---|---|
| RECEIVER DISTANCE = | | 50 |
| DIST C/L TO WALL = | | 10 |
| RECEIVER HEIGHT = | | 5.0 |
| WALL DISTANCE FROM RECEIVER | | 40 |
| PAD ELEVATION = | | 0.0 |
| 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 TRUCK | 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 | 38.11 | - - |
| MEDIUM TRUCKS | 4.0 | 38.01 | - - |
| HEAVY TRUCKS | 8.0 | 38.12 | 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 | 72.9 | 71.0 | 69.2 | 63.2 | 71.8 | 72.4 |
| MEDIUM TRUCKS | 64.6 | 63.1 | 56.7 | 55.2 | 63.7 | 63.9 |
| HEAVY TRUCKS | 65.5 | 64.1 | 55.0 | 56.3 | 64.6 | 64.8 |
| | | | | | | |
| NOISE LEVELS (dBA) | 74.1 | 72.3 | 69.6 | 64.5 | 73.1 | 73.6 |

### *NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)*

| VEHICLE TYPE | PK HR LEQ | DAY LEQ | EVEN LEQ | NIGHT LEQ | LDN | CNEL |
|---|---|---|---|---|---|---|
| AUTOMOBILES | 72.9 | 71.0 | 69.2 | 63.2 | 71.8 | 72.4 |
| MEDIUM TRUCKS | 64.6 | 63.1 | 56.7 | 55.2 | 63.7 | 63.9 |
| HEAVY TRUCKS | 65.5 | 64.1 | 55.0 | 56.3 | 64.6 | 64.8 |
| | | | | | | |
| NOISE LEVELS (dBA) | 74.1 | 72.3 | 69.6 | 64.5 | 73.1 | 73.6 |

| NOISE CONTOUR (FT) | | | | |
|---|---|---|---|---|
| NOISE LEVELS | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
| CNEL | 114 | 361 | 1140 | 3606 |
| LDN | 102 | 322 | 1017 | 3215 |

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

PROJECT: Gardena U-Haul Redevelopment
ROADWAY: Rosecrans 2022+P
LOCATION: 50 from CL

JOB #: 1922-06-02
DATE: 22-Oct-21
ENGINEER: M. Dickerson

## NOISE INPUT DATA

### ROADWAY CONDITIONS

| | | |
|---|---|---|
| ADT = | 38,644 | |
| SPEED = | 40 | |
| PK HR % = | 10 | |
| NEAR LANE/FAR LANE DIS | 54 | |
| ROAD ELEVATION = | 0.0 | |
| GRADE = | 1.0 | % |
| PK HR VOL = | 3,864 | |

### RECEIVER INPUT DATA

| | | |
|---|---|---|
| RECEIVER DISTANCE = | | 50 |
| DIST C/L TO WALL = | | 10 |
| RECEIVER HEIGHT = | | 5.0 |
| WALL DISTANCE FROM RECEIVER | | 40 |
| PAD ELEVATION = | | 0.0 |
| 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 TRUCK | 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 | 42.19 | - - |
| MEDIUM TRUCKS | 4.0 | 42.10 | - - |
| HEAVY TRUCKS | 8.0 | 42.19 | 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 | 72.5 | 70.6 | 68.8 | 62.7 | 71.4 | 72.0 |
| MEDIUM TRUCKS | 64.2 | 62.7 | 56.3 | 54.8 | 63.2 | 63.5 |
| HEAVY TRUCKS | 65.1 | 63.6 | 54.6 | 55.9 | 64.2 | 64.3 |
| | | | | | | |
| NOISE LEVELS (dBA) | 73.7 | 71.9 | 69.2 | 64.1 | 72.7 | 73.2 |

### *NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)*

| VEHICLE TYPE | PK HR LEQ | DAY LEQ | EVEN LEQ | NIGHT LEQ | LDN | CNEL |
|---|---|---|---|---|---|---|
| AUTOMOBILES | 72.5 | 70.6 | 68.8 | 62.7 | 71.4 | 72.0 |
| MEDIUM TRUCKS | 64.2 | 62.7 | 56.3 | 54.8 | 63.2 | 63.5 |
| HEAVY TRUCKS | 65.1 | 63.6 | 54.6 | 55.9 | 64.2 | 64.3 |
| | | | | | | |
| NOISE LEVELS (dBA) | 73.7 | 71.9 | 69.2 | 64.1 | 72.7 | 73.2 |

| NOISE CONTOUR (FT) | | | | |
|---|---|---|---|---|
| NOISE LEVELS | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
| CNEL | 103 | 327 | 1033 | 3268 |
| LDN | 92 | 291 | 921 | 2913 |

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

PROJECT: Gardena U-Haul Redevelopment
ROADWAY: Van Ness 2022
LOCATION: 50 from CL

JOB #: 1922-06-02
DATE: 22-Oct-21
ENGINEER: M. Dickerson

## NOISE INPUT DATA

### ROADWAY CONDITIONS

| | |
|---|---|
| ADT = | 22,515 |
| SPEED = | 35 |
| PK HR % = | 10 |
| NEAR LANE/FAR LANE DIS | 45 |
| ROAD ELEVATION = | 0.0 |
| GRADE = | 1.0 % |
| PK HR VOL = | 2,252 |

### RECEIVER INPUT DATA

| | | |
|---|---|---|
| RECEIVER DISTANCE = | | 50 |
| DIST C/L TO WALL = | | 10 |
| RECEIVER HEIGHT = | | 5.0 |
| WALL DISTANCE FROM RECEIVER | | 40 |
| PAD ELEVATION = | | 0.0 |
| 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 TRUCK | 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 | 44.75 | - - |
| MEDIUM TRUCKS | 4.0 | 44.66 | - - |
| HEAVY TRUCKS | 8.0 | 44.75 | 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 | 68.2 | 66.3 | 64.5 | 58.5 | 67.1 | 67.7 |
| MEDIUM TRUCKS | 60.7 | 59.2 | 52.8 | 51.3 | 59.7 | 60.0 |
| HEAVY TRUCKS | 61.9 | 60.5 | 51.5 | 52.7 | 61.1 | 61.2 |
| | | | | | | |
| NOISE LEVELS (dBA) | 69.7 | 67.9 | 65.0 | 60.1 | 68.7 | 69.1 |

### *NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)*

| VEHICLE TYPE | PK HR LEQ | DAY LEQ | EVEN LEQ | NIGHT LEQ | LDN | CNEL |
|---|---|---|---|---|---|---|
| AUTOMOBILES | 68.2 | 66.3 | 64.5 | 58.5 | 67.1 | 67.7 |
| MEDIUM TRUCKS | 60.7 | 59.2 | 52.8 | 51.3 | 59.7 | 60.0 |
| HEAVY TRUCKS | 61.9 | 60.5 | 51.5 | 52.7 | 61.1 | 61.2 |
| | | | | | | |
| NOISE LEVELS (dBA) | 69.7 | 67.9 | 65.0 | 60.1 | 68.7 | 69.1 |

| NOISE CONTOUR (FT) | | | | |
|---|---|---|---|---|
| NOISE LEVELS | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
| CNEL | 41 | 130 | 410 | 1295 |
| LDN | 37 | 116 | 367 | 1160 |

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

PROJECT: Gardena U-Haul Redevelopment
ROADWAY: Rosecrans 2022+P
LOCATION: 50 from CL

JOB #: 1922-06-02
DATE: 22-Oct-21
ENGINEER: M. Dickerson

## NOISE INPUT DATA

### ROADWAY CONDITIONS

| | |
|---|---|
| ADT = | 22,635 |
| SPEED = | 35 |
| PK HR % = | 10 |
| NEAR LANE/FAR LANE DIS | 45 |
| ROAD ELEVATION = | 0.0 |
| GRADE = | 1.0 % |
| PK HR VOL = | 2,264 |

### RECEIVER INPUT DATA

| | | |
|---|---|---|
| RECEIVER DISTANCE = | | 50 |
| DIST C/L TO WALL = | | 10 |
| RECEIVER HEIGHT = | | 5.0 |
| WALL DISTANCE FROM RECEIVER | | 40 |
| PAD ELEVATION = | | 0.0 |
| 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 TRUCK | 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 | 44.75 | - - |
| MEDIUM TRUCKS | 4.0 | 44.66 | - - |
| HEAVY TRUCKS | 8.0 | 44.75 | 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 | 68.2 | 66.3 | 64.5 | 58.5 | 67.1 | 67.7 |
| MEDIUM TRUCKS | 60.7 | 59.2 | 52.8 | 51.3 | 59.7 | 60.0 |
| HEAVY TRUCKS | 62.0 | 60.5 | 51.5 | 52.7 | 61.1 | 61.2 |
| | | | | | | |
| NOISE LEVELS (dBA) | 69.7 | 68.0 | 65.0 | 60.1 | 68.7 | 69.2 |

### *NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)*

| VEHICLE TYPE | PK HR LEQ | DAY LEQ | EVEN LEQ | NIGHT LEQ | LDN | CNEL |
|---|---|---|---|---|---|---|
| AUTOMOBILES | 68.2 | 66.3 | 64.5 | 58.5 | 67.1 | 67.7 |
| MEDIUM TRUCKS | 60.7 | 59.2 | 52.8 | 51.3 | 59.7 | 60.0 |
| HEAVY TRUCKS | 62.0 | 60.5 | 51.5 | 52.7 | 61.1 | 61.2 |
| | | | | | | |
| NOISE LEVELS (dBA) | 69.7 | 68.0 | 65.0 | 60.1 | 68.7 | 69.2 |

| NOISE CONTOUR (FT) | | | | |
|---|---|---|---|---|
| NOISE LEVELS | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
| CNEL | 41 | 130 | 412 | 1302 |
| LDN | 37 | 117 | 369 | 1166 |

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

PROJECT: Gardena U-Haul Redevelopment
ROADWAY: Rosecrans 2022+P
LOCATION: 50 from CL

JOB #: 1922-06-02
DATE: 22-Oct-21
ENGINEER: M. Dickerson

## NOISE INPUT DATA

### ROADWAY CONDITIONS

| | |
|---|---|
| ADT = | 38,644 |
| SPEED = | 40 |
| PK HR % = | 10 |
| NEAR LANE/FAR LANE DIS | 54 |
| ROAD ELEVATION = | 0.0 |
| GRADE = | 1.0 % |
| PK HR VOL = | 3,864 |

### RECEIVER INPUT DATA

| | | |
|---|---|---|
| RECEIVER DISTANCE = | | 75 |
| DIST C/L TO WALL = | | 10 |
| RECEIVER HEIGHT = | | 5.0 |
| WALL DISTANCE FROM RECEIVER | | 65 |
| PAD ELEVATION = | | 0.0 |
| 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 TRUCK | 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 | 70.04 | - - |
| MEDIUM TRUCKS | 4.0 | 69.98 | - - |
| HEAVY TRUCKS | 8.0 | 70.04 | 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 | 70.3 | 68.4 | 66.6 | 60.5 | 69.2 | 69.8 |
| MEDIUM TRUCKS | 62.0 | 60.5 | 54.1 | 52.6 | 61.0 | 61.3 |
| HEAVY TRUCKS | 62.9 | 61.4 | 52.4 | 53.7 | 62.0 | 62.1 |
| | | | | | | |
| NOISE LEVELS (dBA) | 71.5 | 69.7 | 67.0 | 61.9 | 70.5 | 71.0 |

### *NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)*

| VEHICLE TYPE | PK HR LEQ | DAY LEQ | EVEN LEQ | NIGHT LEQ | LDN | CNEL |
|---|---|---|---|---|---|---|
| AUTOMOBILES | 70.3 | 68.4 | 66.6 | 60.5 | 69.2 | 69.8 |
| MEDIUM TRUCKS | 62.0 | 60.5 | 54.1 | 52.6 | 61.0 | 61.3 |
| HEAVY TRUCKS | 62.9 | 61.4 | 52.4 | 53.7 | 62.0 | 62.1 |
| | | | | | | |
| NOISE LEVELS (dBA) | 71.5 | 69.7 | 67.0 | 61.9 | 70.5 | 71.0 |

| NOISE CONTOUR (FT) | | | | |
|---|---|---|---|---|
| NOISE LEVELS | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
| CNEL | 93 | 295 | 934 | 2952 |
| LDN | 83 | 263 | 832 | 2632 |

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

PROJECT: Gardena U-Haul Redevelopment
ROADWAY: Rosecrans 2022+P
LOCATION: 50 from CL

JOB #: 1922-06-02
DATE: 22-Oct-21
ENGINEER: M. Dickerson

## NOISE INPUT DATA

### ROADWAY CONDITIONS

| | |
|---|---|
| ADT = | 22,635 |
| SPEED = | 35 |
| PK HR % = | 10 |
| NEAR LANE/FAR LANE DIS | 45 |
| ROAD ELEVATION = | 0.0 |
| GRADE = | 1.0 % |
| PK HR VOL = | 2,264 |

### RECEIVER INPUT DATA

| | | |
|---|---|---|
| RECEIVER DISTANCE = | | 168 |
| DIST C/L TO WALL = | | 10 |
| RECEIVER HEIGHT = | | 5.0 |
| WALL DISTANCE FROM RECEIVER | | 158 |
| PAD ELEVATION = | | 0.0 |
| 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 TRUCK | 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 | 166.51 | - - |
| MEDIUM TRUCKS | 4.0 | 166.49 | - - |
| HEAVY TRUCKS | 8.0 | 166.51 | 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 | 62.5 | 60.6 | 58.8 | 52.8 | 61.4 | 62.0 |
| MEDIUM TRUCKS | 55.0 | 53.5 | 47.1 | 45.6 | 54.0 | 54.3 |
| HEAVY TRUCKS | 56.2 | 54.8 | 45.8 | 47.0 | 55.4 | 55.5 |
| | | | | | | |
| NOISE LEVELS (dBA) | 64.0 | 62.2 | 59.3 | 54.4 | 63.0 | 63.4 |

### *NOISE IMPACTS (WITH TOPO AND BARRIER SHIELDING)*

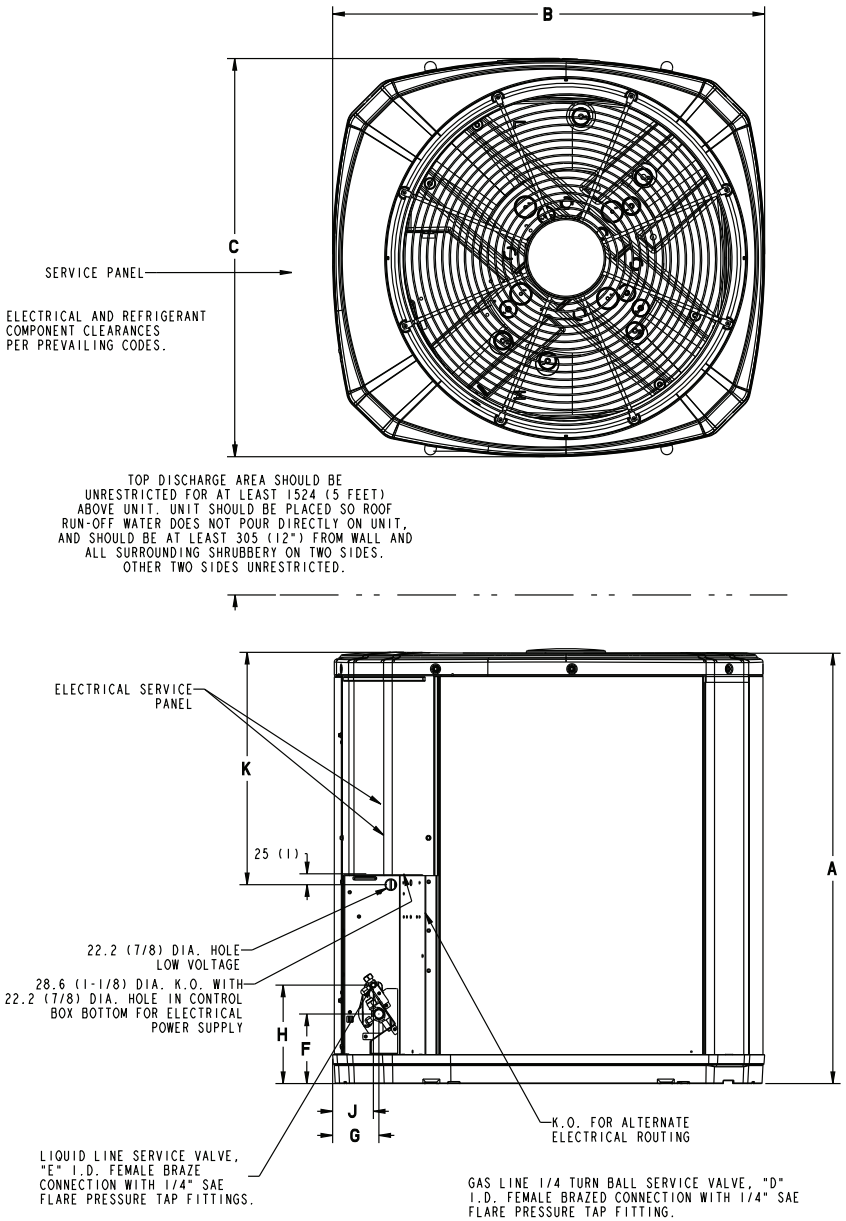
| VEHICLE TYPE | PK HR LEQ | DAY LEQ | EVEN LEQ | NIGHT LEQ | LDN | CNEL |
|---|---|---|---|---|---|---|
| AUTOMOBILES | 62.5 | 60.6 | 58.8 | 52.8 | 61.4 | 62.0 |
| MEDIUM TRUCKS | 55.0 | 53.5 | 47.1 | 45.6 | 54.0 | 54.3 |
| HEAVY TRUCKS | 56.2 | 54.8 | 45.8 | 47.0 | 55.4 | 55.5 |
| | | | | | | |
| NOISE LEVELS (dBA) | 64.0 | 62.2 | 59.3 | 54.4 | 63.0 | 63.4 |

| NOISE CONTOUR (FT) | | | | |
|---|---|---|---|---|
| NOISE LEVELS | 70 dBA | 65 dBA | 60 dBA | 55 dBA |
| CNEL | 37 | 118 | 372 | 1176 |
| LDN | 33 | 105 | 333 | 1053 |

# Appendix C:

SoundPLAN Input/Output

# Outline Drawing




| Model | Base | A | B | C | D | E | F | G | H | J | K |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4TWA4060A4 | 4 | 1147 (45-1/8) | 946 (37-1/4) | 870 (34-1/4) | 7/8 | 3/8 | 152 (6) | 98 (3-7/8) | 219 (8-5/8) | 86 (3-3/8) | 813 (32) |

| Sound Power Level | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| MODEL | A-Weighted Sound Power Level [dB(A)] | Full Octave Sound Power(dB) | | | | | | | |
| | | 63 Hz* | 125 Hz | 250 Hz | 500 Hz | 1000 Hz | 2000 Hz | 4000 Hz | 8000 Hz |
| 4TWA4060A4 | 74 | 72 | 72 | 71 | 69 | 70 | 62 | 57 | 52 |

| Source | Source group | Source ty | Tr. lane | LrD dB(A) | A dB | |
|---|---|---|---|---|---|---|
| Receiver R1 Fl G LrD,lim dB(A) LrD 43.1 dB(A) | | | | | | |
| | Default parking lot noise | PLot | | 37.3 | 0.0 | |
| Trane20 | Default industrial noise | Point | | 34.3 | 0.0 | |
| Trane60 | Default industrial noise | Point | | 34.2 | 0.0 | |
| | Default parking lot noise | PLot | | 33.0 | 0.0 | |
| Trane10 | Default industrial noise | Point | | 31.5 | 0.0 | |
| Trane30 | Default industrial noise | Point | | 29.9 | 0.0 | |
| | Default parking lot noise | PLot | | 29.1 | 0.0 | |
| Trane50 | Default industrial noise | Point | | 29.1 | 0.0 | |
| | Default parking lot noise | PLot | | 28.5 | 0.0 | |
| | Default parking lot noise | PLot | | 27.8 | 0.0 | |
| Trane40 | Default industrial noise | Point | | 27.5 | 0.0 | |
| | Default parking lot noise | PLot | | 26.5 | 0.0 | |
| | Default parking lot noise | PLot | | 24.8 | 0.0 | |
| Trane3 | Default industrial noise | Point | | 23.4 | 0.0 | |
| | Default parking lot noise | PLot | | 22.8 | 0.0 | |
| | Default parking lot noise | PLot | | 21.8 | 0.0 | |
| Trane2 | Default industrial noise | Point | | 21.3 | 0.0 | |
| | Default parking lot noise | PLot | | 20.5 | 0.0 | |
| Trane1 | Default industrial noise | Point | | 19.7 | 0.0 | |
| Receiver R2 Fl G LrD,lim dB(A) LrD 39.0 dB(A) | | | | | | |
| Trane20 | Default industrial noise | Point | | 32.0 | 0.0 | |
| | Default parking lot noise | PLot | | 30.3 | 0.0 | |
| Trane10 | Default industrial noise | Point | | 29.0 | 0.0 | |
| | Default parking lot noise | PLot | | 28.1 | 0.0 | |
| Trane60 | Default industrial noise | Point | | 27.1 | 0.0 | |
| | Default parking lot noise | PLot | | 26.8 | 0.0 | |
| Trane1 | Default industrial noise | Point | | 26.7 | 0.0 | |
| Trane30 | Default industrial noise | Point | | 25.0 | 0.0 | |
| | Default parking lot noise | PLot | | 25.0 | 0.0 | |
| Trane50 | Default industrial noise | Point | | 24.9 | 0.0 | |
| Trane3 | Default industrial noise | Point | | 24.8 | 0.0 | |
| | Default parking lot noise | PLot | | 24.8 | 0.0 | |
| | Default parking lot noise | PLot | | 23.8 | 0.0 | |
| Trane40 | Default industrial noise | Point | | 21.7 | 0.0 | |
| Trane2 | Default industrial noise | Point | | 21.7 | 0.0 | |
| | Default parking lot noise | PLot | | 21.4 | 0.0 | |
| | Default parking lot noise | PLot | | 21.4 | 0.0 | |
| | Default parking lot noise | PLot | | 16.9 | 0.0 | |
| | Default parking lot noise | PLot | | 15.8 | 0.0 | |
| Receiver R3 Fl G LrD,lim dB(A) LrD 42.6 dB(A) | | | | | | |
| Trane10 | Default industrial noise | Point | | 37.8 | 0.0 | |
| | Default parking lot noise | PLot | | 37.7 | 0.0 | |
| Trane20 | Default industrial noise | Point | | 33.3 | 0.0 | |

| Source | Source group | Source ty | Tr. lane | LrD dB(A) | A dB | |
|---|---|---|---|---|---|---|
| Trane2 | Default industrial noise | Point | | 31.0 | 0.0 | |
| Trane50 | Default industrial noise | Point | | 30.1 | 0.0 | |
| Trane1 | Default industrial noise | Point | | 28.7 | 0.0 | |
| Trane40 | Default industrial noise | Point | | 26.1 | 0.0 | |
| Trane60 | Default industrial noise | Point | | 25.5 | 0.0 | |
| Trane3 | Default industrial noise | Point | | 23.0 | 0.0 | |
| Trane30 | Default industrial noise | Point | | 21.6 | 0.0 | |
| | Default parking lot noise | PLot | | 16.5 | 0.0 | |
| | Default parking lot noise | PLot | | 16.4 | 0.0 | |
| | Default parking lot noise | PLot | | 16.1 | 0.0 | |
| | Default parking lot noise | PLot | | 15.1 | 0.0 | |
| | Default parking lot noise | PLot | | 15.1 | 0.0 | |
| | Default parking lot noise | PLot | | 9.1 | 0.0 | |
| | Default parking lot noise | PLot | | 8.2 | 0.0 | |
| | Default parking lot noise | PLot | | 7.9 | 0.0 | |
| | Default parking lot noise | PLot | | 5.1 | 0.0 | |
| Receiver R3 Fl F2 LrD,lim dB(A) LrD 46.1 dB(A) | | | | | | |
| | Default parking lot noise | PLot | | 43.4 | 0.0 | |
| Trane10 | Default industrial noise | Point | | 39.2 | 0.0 | |
| Trane20 | Default industrial noise | Point | | 35.2 | 0.0 | |
| Trane2 | Default industrial noise | Point | | 32.4 | 0.0 | |
| Trane50 | Default industrial noise | Point | | 31.2 | 0.0 | |
| Trane1 | Default industrial noise | Point | | 30.4 | 0.0 | |
| Trane60 | Default industrial noise | Point | | 29.5 | 0.0 | |
| Trane40 | Default industrial noise | Point | | 26.7 | 0.0 | |
| Trane3 | Default industrial noise | Point | | 25.9 | 0.0 | |
| Trane30 | Default industrial noise | Point | | 25.2 | 0.0 | |
| | Default parking lot noise | PLot | | 21.6 | 0.0 | |
| | Default parking lot noise | PLot | | 21.6 | 0.0 | |
| | Default parking lot noise | PLot | | 20.5 | 0.0 | |
| | Default parking lot noise | PLot | | 20.2 | 0.0 | |
| | Default parking lot noise | PLot | | 19.5 | 0.0 | |
| | Default parking lot noise | PLot | | 11.8 | 0.0 | |
| | Default parking lot noise | PLot | | 11.2 | 0.0 | |
| | Default parking lot noise | PLot | | 11.1 | 0.0 | |
| | Default parking lot noise | PLot | | 7.5 | 0.0 | |
| Receiver R3 Fl F3 LrD,lim dB(A) LrD 45.7 dB(A) | | | | | | |
| | Default parking lot noise | PLot | | 42.7 | 0.0 | |
| Trane10 | Default industrial noise | Point | | 39.4 | 0.0 | |
| Trane20 | Default industrial noise | Point | | 34.0 | 0.0 | |
| Trane2 | Default industrial noise | Point | | 32.1 | 0.0 | |
| Trane60 | Default industrial noise | Point | | 30.9 | 0.0 | |
| Trane50 | Default industrial noise | Point | | 30.8 | 0.0 | |
| Trane1 | Default industrial noise | Point | | 30.6 | 0.0 | |

# Gardena U-Haul Mnd
# Contribution spectra - 001 - Outdoor SP



| Source | Time slice | Sum | 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 | 20kHz |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 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 Fl G LrD,lim dB(A) LrD 43.1 dB(A) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Trane1 | LrD | 19.7 | -11.6 | -11.6 | -11.6 | -2.2 | -2.2 | -2.2 | 4.0 | 4.0 | 4.0 | 7.0 | 7.0 | 7.0 | 12.9 | 12.9 | 12.9 | 5.3 | 5.3 | 5.3 | -4.0 | -4.0 | -4.0 | -23.6 | -23.6 | -23.6 | | | |
| Trane2 | LrD | 21.3 | -8.9 | -8.9 | -8.9 | -0.6 | -0.6 | -0.6 | 5.4 | 5.4 | 5.4 | 8.7 | 8.7 | 8.7 | 14.3 | 14.3 | 14.3 | 7.5 | 7.5 | 7.5 | -0.7 | -0.7 | -0.7 | -17.1 | -17.1 | -17.1 | | | |
| Trane3 | LrD | 23.4 | -8.0 | -8.0 | -8.0 | 1.3 | 1.3 | 1.3 | 7.6 | 7.6 | 7.6 | 11.0 | 11.0 | 11.0 | 16.3 | 16.3 | 16.3 | 9.4 | 9.4 | 9.4 | 2.1 | 2.1 | 2.1 | -12.0 | -12.0 | -12.0 | | | |
| Trane10 | LrD | 31.5 | -0.6 | -0.6 | -0.6 | 8.6 | 8.6 | 8.6 | 14.7 | 14.7 | 14.7 | 19.9 | 19.9 | 19.9 | 24.4 | 24.4 | 24.4 | 17.5 | 17.5 | 17.5 | 8.6 | 8.6 | 8.6 | -9.5 | -9.5 | -9.5 | | | |
| Trane20 | LrD | 34.3 | 3.1 | 3.1 | 3.1 | 12.3 | 12.3 | 12.3 | 18.7 | 18.7 | 18.7 | 22.0 | 22.0 | 22.0 | 27.2 | 27.2 | 27.2 | 20.0 | 20.0 | 20.0 | 12.7 | 12.7 | 12.7 | -1.0 | -1.0 | -1.0 | | | |
| Trane30 | LrD | 29.9 | 1.1 | 1.1 | 1.1 | 7.5 | 7.5 | 7.5 | 13.4 | 13.4 | 13.4 | 16.6 | 16.6 | 16.6 | 23.1 | 23.1 | 23.1 | 15.8 | 15.8 | 15.8 | 7.7 | 7.7 | 7.7 | -8.7 | -8.7 | -8.7 | | | |
| Trane40 | LrD | 27.5 | -1.3 | -1.3 | -1.3 | 7.0 | 7.0 | 7.0 | 12.9 | 12.9 | 12.9 | 15.9 | 15.9 | 15.9 | 20.2 | 20.2 | 20.2 | 12.1 | 12.1 | 12.1 | 2.4 | 2.4 | 2.4 | -17.7 | -17.7 | -17.7 | | | |
| Trane50 | LrD | 29.1 | -0.5 | -0.5 | -0.5 | 8.5 | 8.5 | 8.5 | 14.6 | 14.6 | 14.6 | 17.4 | 17.4 | 17.4 | 21.5 | 21.5 | 21.5 | 15.0 | 15.0 | 15.0 | 5.0 | 5.0 | 5.0 | -14.3 | -14.3 | -14.3 | | | |
| Trane60 | LrD | 34.2 | 3.1 | 3.1 | 3.1 | 12.2 | 12.2 | 12.2 | 18.6 | 18.6 | 18.6 | 21.9 | 21.9 | 21.9 | 27.1 | 27.1 | 27.1 | 19.9 | 19.9 | 19.9 | 12.6 | 12.6 | 12.6 | -1.1 | -1.1 | -1.1 | | | |
| 6 | LrD | 26.5 | 4.5 | 4.5 | 4.5 | 15.5 | 15.5 | 15.5 | 4.2 | 4.2 | 4.2 | 11.8 | 11.8 | 11.8 | 14.6 | 14.6 | 14.6 | 16.8 | 16.8 | 16.8 | 12.1 | 12.1 | 12.1 | -1.2 | -1.2 | -1.2 | -34.1 | -34.1 | -34.1 |
| 7 | LrD | 22.8 | -0.4 | -0.4 | -0.4 | 11.0 | 11.0 | 11.0 | 2.2 | 2.2 | 2.2 | 8.2 | 8.2 | 8.2 | 10.4 | 10.4 | 10.4 | 13.5 | 13.5 | 13.5 | 9.0 | 9.0 | 9.0 | -3.7 | -3.7 | -3.7 | -34.7 | -34.7 | -34.7 |
| 8 | LrD | 20.5 | 2.0 | 2.0 | 2.0 | 10.9 | 10.9 | 10.9 | -1.6 | -1.6 | -1.6 | 3.7 | 3.7 | 3.7 | 7.8 | 7.8 | 7.8 | 10.2 | 10.2 | 10.2 | 6.1 | 6.1 | 6.1 | -10.8 | -10.8 | -10.8 | -53.0 | -53.0 | -53.0 |
| 9 | LrD | 27.8 | 5.6 | 5.6 | 5.6 | 18.0 | 18.0 | 18.0 | 7.7 | 7.7 | 7.7 | 11.7 | 11.7 | 11.7 | 15.3 | 15.3 | 15.3 | 17.3 | 17.3 | 17.3 | 13.9 | 13.9 | 13.9 | 2.9 | 2.9 | 2.9 | -26.2 | -26.2 | -26.2 |
| 10 | LrD | 21.8 | -1.0 | -1.0 | -1.0 | 12.8 | 12.8 | 12.8 | 0.8 | 0.8 | 0.8 | 4.3 | 4.3 | 4.3 | 9.1 | 9.1 | 9.1 | 11.3 | 11.3 | 11.3 | 7.2 | 7.2 | 7.2 | -5.4 | -5.4 | -5.4 | -38.9 | -38.9 | -38.9 |
| 1 | LrD | 24.8 | 4.6 | 4.6 | 4.6 | 13.7 | 13.7 | 13.7 | 1.4 | 1.4 | 1.4 | 9.4 | 9.4 | 9.4 | 14.0 | 14.0 | 14.0 | 14.7 | 14.7 | 14.7 | 9.9 | 9.9 | 9.9 | -3.9 | -3.9 | -3.9 | -36.9 | -36.9 | -36.9 |
| 2 | LrD | 28.5 | 6.3 | 6.3 | 6.3 | 17.7 | 17.7 | 17.7 | 7.2 | 7.2 | 7.2 | 13.9 | 13.9 | 13.9 | 17.3 | 17.3 | 17.3 | 18.1 | 18.1 | 18.1 | 14.0 | 14.0 | 14.0 | 3.1 | 3.1 | 3.1 | -22.3 | -22.3 | -22.3 |
| 3 | LrD | 37.3 | 14.9 | 14.9 | 14.9 | 26.2 | 26.2 | 26.2 | 17.4 | 17.4 | 17.4 | 23.2 | 23.2 | 23.2 | 25.9 | 25.9 | 25.9 | 26.7 | 26.7 | 26.7 | 23.1 | 23.1 | 23.1 | 13.8 | 13.8 | 13.8 | -7.1 | -7.1 | -7.1 |
| 4 | LrD | 33.0 | 11.1 | 11.1 | 11.1 | 22.3 | 22.3 | 22.3 | 12.8 | 12.8 | 12.8 | 18.7 | 18.7 | 18.7 | 21.6 | 21.6 | 21.6 | 22.3 | 22.3 | 22.3 | 18.6 | 18.6 | 18.6 | 9.2 | 9.2 | 9.2 | -12.0 | -12.0 | -12.0 |
| 5 | LrD | 29.1 | 7.1 | 7.1 | 7.1 | 18.6 | 18.6 | 18.6 | 8.0 | 8.0 | 8.0 | 14.0 | 14.0 | 14.0 | 17.9 | 17.9 | 17.9 | 18.5 | 18.5 | 18.5 | 14.4 | 14.4 | 14.4 | 3.1 | 3.1 | 3.1 | -24.1 | -24.1 | -24.1 |
| Receiver R2 Fl G LrD,lim dB(A) LrD 39.0 dB(A) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Trane1 | LrD | 26.7 | -2.9 | -2.9 | -2.9 | 3.7 | 3.7 | 3.7 | 11.2 | 11.2 | 11.2 | 14.4 | 14.4 | 14.4 | 19.6 | 19.6 | 19.6 | 12.4 | 12.4 | 12.4 | 5.4 | 5.4 | 5.4 | -7.1 | -7.1 | -7.1 | | | |
| Trane2 | LrD | 21.7 | -6.7 | -6.7 | -6.7 | -0.3 | -0.3 | -0.3 | 7.3 | 7.3 | 7.3 | 9.8 | 9.8 | 9.8 | 14.5 | 14.5 | 14.5 | 6.1 | 6.1 | 6.1 | -3.0 | -3.0 | -3.0 | -19.6 | -19.6 | -19.6 | | | |
| Trane3 | LrD | 24.8 | -4.6 | -4.6 | -4.6 | 1.8 | 1.8 | 1.8 | 9.1 | 9.1 | 9.1 | 13.3 | 13.3 | 13.3 | 17.7 | 17.7 | 17.7 | 9.9 | 9.9 | 9.9 | 1.7 | 1.7 | 1.7 | -13.3 | -13.3 | -13.3 | | | |
| Trane10 | LrD | 29.0 | 0.2 | 0.2 | 0.2 | 6.8 | 6.8 | 6.8 | 14.6 | 14.6 | 14.6 | 17.0 | 17.0 | 17.0 | 21.9 | 21.9 | 21.9 | 13.7 | 13.7 | 13.7 | 3.8 | 3.8 | 3.8 | -15.3 | -15.3 | -15.3 | | | |
| Trane20 | LrD | 32.0 | 1.5 | 1.5 | 1.5 | 8.4 | 8.4 | 8.4 | 16.4 | 16.4 | 16.4 | 20.1 | 20.1 | 20.1 | 24.9 | 24.9 | 24.9 | 17.0 | 17.0 | 17.0 | 8.3 | 8.3 | 8.3 | -8.5 | -8.5 | -8.5 | | | |
| Trane30 | LrD | 25.0 | -5.8 | -5.8 | -5.8 | 1.1 | 1.1 | 1.1 | 9.6 | 9.6 | 9.6 | 12.8 | 12.8 | 12.8 | 17.5 | 17.5 | 17.5 | 12.2 | 12.2 | 12.2 | 2.0 | 2.0 | 2.0 | -20.8 | -20.8 | -20.8 | | | |
| Trane40 | LrD | 21.7 | -6.5 | -6.5 | -6.5 | -0.1 | -0.1 | -0.1 | 8.0 | 8.0 | 8.0 | 10.2 | 10.2 | 10.2 | 13.5 | 13.5 | 13.5 | 9.2 | 9.2 | 9.2 | -2.7 | -2.7 | -2.7 | -31.3 | -31.3 | -31.3 | | | |
| Trane50 | LrD | 24.9 | -3.3 | -3.3 | -3.3 | 3.0 | 3.0 | 3.0 | 10.8 | 10.8 | 10.8 | 13.0 | 13.0 | 13.0 | 17.6 | 17.6 | 17.6 | 10.4 | 10.4 | 10.4 | -0.8 | -0.8 | -0.8 | -24.9 | -24.9 | -24.9 | | | |
| Trane60 | LrD | 27.1 | -2.7 | -2.7 | -2.7 | 4.1 | 4.1 | 4.1 | 12.4 | 12.4 | 12.4 | 15.4 | 15.4 | 15.4 | 19.8 | 19.8 | 19.8 | 12.3 | 12.3 | 12.3 | 2.4 | 2.4 | 2.4 | -18.4 | -18.4 | -18.4 | | | |
| 6 | LrD | 30.3 | 8.9 | 8.9 | 8.9 | 18.7 | 18.7 | 18.7 | 10.1 | 10.1 | 10.1 | 16.0 | 16.0 | 16.0 | 19.2 | 19.2 | 19.2 | 19.8 | 19.8 | 19.8 | 16.0 | 16.0 | 16.0 | 6.0 | 6.0 | 6.0 | -17.6 | -17.6 | -17.6 |
| 7 | LrD | 25.0 | 5.6 | 5.6 | 5.6 | 14.8 | 14.8 | 14.8 | 3.5 | 3.5 | 3.5 | 9.6 | 9.6 | 9.6 | 13.3 | 13.3 | 13.3 | 14.2 | 14.2 | 14.2 | 10.2 | 10.2 | 10.2 | -1.3 | -1.3 | -1.3 | -29.2 | -29.2 | -29.2 |
| 8 | LrD | 26.8 | 7.4 | 7.4 | 7.4 | 15.9 | 15.9 | 15.9 | 5.0 | 5.0 | 5.0 | 10.6 | 10.6 | 10.6 | 14.2 | 14.2 | 14.2 | 16.9 | 16.9 | 16.9 | 13.9 | 13.9 | 13.9 | 1.8 | 1.8 | 1.8 | -28.4 | -28.4 | -28.4 |
| 9 | LrD | 21.4 | 2.9 | 2.9 | 2.9 | 10.8 | 10.8 | 10.8 | -2.5 | -2.5 | -2.5 | 2.5 | 2.5 | 2.5 | 9.9 | 9.9 | 9.9 | 12.1 | 12.1 | 12.1 | 6.1 | 6.1 | 6.1 | -12.0 | -12.0 | -12.0 | -59.6 | -59.6 | -59.6 |
| 10 | LrD | 24.8 | 5.8 | 5.8 | 5.8 | 15.2 | 15.2 | 15.2 | 3.7 | 3.7 | 3.7 | 7.5 | 7.5 | 7.5 | 12.3 | 12.3 | 12.3 | 14.4 | 14.4 | 14.4 | 10.4 | 10.4 | 10.4 | -0.1 | -0.1 | -0.1 | -25.0 | -25.0 | -25.0 |
| 1 | LrD | 15.8 | -3.7 | -3.7 | -3.7 | 3.9 | 3.9 | 3.9 | -4.5 | -4.5 | -4.5 | 2.0 | 2.0 | 2.0 | 4.0 | 4.0 | 4.0 | 6.3 | 6.3 | 6.3 | 0.8 | 0.8 | 0.8 | -21.4 | -21.4 | -21.4 | -80.2 | -80.2 | -80.2 |

# Gardena U-Haul Mnd
# Contribution spectra - 001 - Outdoor SP



| Source | Time slice | Sum | 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 | 20kHz |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 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) |
| 2 | LrD | 16.9 | -4.7 | -4.7 | -4.7 | 3.3 | 3.3 | 3.3 | -4.5 | -4.5 | -4.5 | 2.1 | 2.1 | 2.1 | 5.8 | 5.8 | 5.8 | 7.8 | 7.8 | 7.8 | 2.8 | 2.8 | 2.8 | -16.8 | -16.8 | -16.8 | -67.8 | -67.8 | -67.8 |
| 3 | LrD | 23.8 | 1.8 | 1.8 | 1.8 | 10.2 | 10.2 | 10.2 | 2.5 | 2.5 | 2.5 | 9.0 | 9.0 | 9.0 | 12.5 | 12.5 | 12.5 | 14.7 | 14.7 | 14.7 | 10.1 | 10.1 | 10.1 | -7.2 | -7.2 | -7.2 | -50.2 | -50.2 | -50.2 |
| 4 | LrD | 21.4 | -0.6 | -0.6 | -0.6 | 8.5 | 8.5 | 8.5 | 1.1 | 1.1 | 1.1 | 7.4 | 7.4 | 7.4 | 9.5 | 9.5 | 9.5 | 12.2 | 12.2 | 12.2 | 7.5 | 7.5 | 7.5 | -6.7 | -6.7 | -6.7 | -42.4 | -42.4 | -42.4 |
| 5 | LrD | 28.1 | 8.0 | 8.0 | 8.0 | 17.2 | 17.2 | 17.2 | 7.1 | 7.1 | 7.1 | 13.2 | 13.2 | 13.2 | 16.6 | 16.6 | 16.6 | 17.6 | 17.6 | 17.6 | 13.5 | 13.5 | 13.5 | 2.0 | 2.0 | 2.0 | -25.6 | -25.6 | -25.6 |
| Receiver R3 Fl G LrD,lim dB(A) LrD 42.6 dB(A) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Trane1 | LrD | 28.7 | 0.5 | 0.5 | 0.5 | 7.8 | 7.8 | 7.8 | 13.7 | 13.7 | 13.7 | 16.9 | 16.9 | 16.9 | 21.5 | 21.5 | 21.5 | 13.7 | 13.7 | 13.7 | 6.1 | 6.1 | 6.1 | -5.8 | -5.8 | -5.8 | | | |
| Trane2 | LrD | 31.0 | 1.9 | 1.9 | 1.9 | 9.3 | 9.3 | 9.3 | 15.9 | 15.9 | 15.9 | 19.0 | 19.0 | 19.0 | 23.8 | 23.8 | 23.8 | 16.2 | 16.2 | 16.2 | 8.9 | 8.9 | 8.9 | -2.5 | -2.5 | -2.5 | | | |
| Trane3 | LrD | 23.0 | -5.7 | -5.7 | -5.7 | 0.4 | 0.4 | 0.4 | 5.4 | 5.4 | 5.4 | 11.4 | 11.4 | 11.4 | 16.0 | 16.0 | 16.0 | 8.3 | 8.3 | 8.3 | 0.0 | 0.0 | 0.0 | -14.8 | -14.8 | -14.8 | | | |
| Trane10 | LrD | 37.8 | 9.4 | 9.4 | 9.4 | 16.6 | 16.6 | 16.6 | 22.6 | 22.6 | 22.6 | 25.7 | 25.7 | 25.7 | 30.6 | 30.6 | 30.6 | 23.0 | 23.0 | 23.0 | 15.5 | 15.5 | 15.5 | 3.5 | 3.5 | 3.5 | | | |
| Trane20 | LrD | 33.3 | 4.3 | 4.3 | 4.3 | 11.2 | 11.2 | 11.2 | 17.3 | 17.3 | 17.3 | 21.5 | 21.5 | 21.5 | 26.2 | 26.2 | 26.2 | 18.4 | 18.4 | 18.4 | 9.9 | 9.9 | 9.9 | -5.0 | -5.0 | -5.0 | | | |
| Trane30 | LrD | 21.6 | -4.8 | -4.8 | -4.8 | 1.6 | 1.6 | 1.6 | 6.9 | 6.9 | 6.9 | 8.6 | 8.6 | 8.6 | 14.3 | 14.3 | 14.3 | 8.4 | 8.4 | 8.4 | -4.0 | -4.0 | -4.0 | -31.3 | -31.3 | -31.3 | | | |
| Trane40 | LrD | 26.1 | -3.2 | -3.2 | -3.2 | 3.7 | 3.7 | 3.7 | 10.1 | 10.1 | 10.1 | 13.3 | 13.3 | 13.3 | 19.0 | 19.0 | 19.0 | 12.7 | 12.7 | 12.7 | 3.1 | 3.1 | 3.1 | -16.8 | -16.8 | -16.8 | | | |
| Trane50 | LrD | 30.1 | 1.3 | 1.3 | 1.3 | 8.3 | 8.3 | 8.3 | 14.6 | 14.6 | 14.6 | 17.7 | 17.7 | 17.7 | 23.0 | 23.0 | 23.0 | 16.0 | 16.0 | 16.0 | 7.4 | 7.4 | 7.4 | -8.5 | -8.5 | -8.5 | | | |
| Trane60 | LrD | 25.5 | -0.8 | -0.8 | -0.8 | 5.6 | 5.6 | 5.6 | 11.0 | 11.0 | 11.0 | 12.7 | 12.7 | 12.7 | 18.6 | 18.6 | 18.6 | 9.9 | 9.9 | 9.9 | -0.8 | -0.8 | -0.8 | -21.1 | -21.1 | -21.1 | | | |
| 6 | LrD | 15.1 | -2.3 | -2.3 | -2.3 | 3.3 | 3.3 | 3.3 | -8.4 | -8.4 | -8.4 | -1.5 | -1.5 | -1.5 | 5.1 | 5.1 | 5.1 | 5.0 | 5.0 | 5.0 | -1.2 | -1.2 | -1.2 | -18.5 | -18.5 | -18.5 | -55.8 | -55.8 | -55.8 |
| 7 | LrD | 15.1 | -4.9 | -4.9 | -4.9 | 0.6 | 0.6 | 0.6 | -11.4 | -11.4 | -11.4 | 4.3 | 4.3 | 4.3 | 4.4 | 4.4 | 4.4 | 4.6 | 4.6 | 4.6 | -1.1 | -1.1 | -1.1 | -15.4 | -15.4 | -15.4 | -48.1 | -48.1 | -48.1 |
| 8 | LrD | 37.7 | 19.3 | 19.3 | 19.3 | 29.0 | 29.0 | 29.0 | 20.4 | 20.4 | 20.4 | 24.5 | 24.5 | 24.5 | 24.9 | 24.9 | 24.9 | 24.3 | 24.3 | 24.3 | 19.6 | 19.6 | 19.6 | 9.8 | 9.8 | 9.8 | -8.9 | -8.9 | -8.9 |
| 9 | LrD | 9.1 | -6.6 | -6.6 | -6.6 | -1.5 | -1.5 | -1.5 | -13.3 | -13.3 | -13.3 | -11.1 | -11.1 | -11.1 | -2.3 | -2.3 | -2.3 | -0.3 | -0.3 | -0.3 | -8.6 | -8.6 | -8.6 | -31.0 | -31.0 | -31.0 | -72.8 | -72.8 | -72.8 |
| 10 | LrD | 5.1 | -8.8 | -8.8 | -8.8 | -3.5 | -3.5 | -3.5 | -15.7 | -15.7 | -15.7 | -12.6 | -12.6 | -12.6 | -8.0 | -8.0 | -8.0 | -6.9 | -6.9 | -6.9 | -12.9 | -12.9 | -12.9 | -27.1 | -27.1 | -27.1 | -55.4 | -55.4 | -55.4 |
| 1 | LrD | 7.9 | -6.4 | -6.4 | -6.4 | -0.9 | -0.9 | -0.9 | -11.7 | -11.7 | -11.7 | -10.1 | -10.1 | -10.1 | -5.4 | -5.4 | -5.4 | -3.0 | -3.0 | -3.0 | -13.7 | -13.7 | -13.7 | -40.9 | -40.9 | -40.9 | -93.8 | -93.8 | -93.8 |
| 2 | LrD | 8.2 | -6.5 | -6.5 | -6.5 | -0.8 | -0.8 | -0.8 | -11.8 | -11.8 | -11.8 | -10.2 | -10.2 | -10.2 | -4.6 | -4.6 | -4.6 | -2.5 | -2.5 | -2.5 | -11.7 | -11.7 | -11.7 | -37.0 | -37.0 | -37.0 | -84.6 | -84.6 | -84.6 |
| 3 | LrD | 16.1 | -0.3 | -0.3 | -0.3 | 5.7 | 5.7 | 5.7 | -5.4 | -5.4 | -5.4 | 0.1 | 0.1 | 0.1 | 5.2 | 5.2 | 5.2 | 5.7 | 5.7 | 5.7 | -2.0 | -2.0 | -2.0 | -22.1 | -22.1 | -22.1 | -67.6 | -67.6 | -67.6 |
| 4 | LrD | 16.4 | -1.3 | -1.3 | -1.3 | 7.3 | 7.3 | 7.3 | -1.9 | -1.9 | -1.9 | 3.1 | 3.1 | 3.1 | 4.0 | 4.0 | 4.0 | 4.4 | 4.4 | 4.4 | -2.1 | -2.1 | -2.1 | -18.0 | -18.0 | -18.0 | -56.8 | -56.8 | -56.8 |
| 5 | LrD | 16.5 | -2.2 | -2.2 | -2.2 | 3.6 | 3.6 | 3.6 | -7.8 | -7.8 | -7.8 | 4.3 | 4.3 | 4.3 | 6.0 | 6.0 | 6.0 | 6.3 | 6.3 | 6.3 | -0.1 | -0.1 | -0.1 | -16.8 | -16.8 | -16.8 | -55.7 | -55.7 | -55.7 |
| Receiver R3 Fl F2 LrD,lim dB(A) LrD 46.1 dB(A) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Trane1 | LrD | 30.4 | 0.9 | 0.9 | 0.9 | 7.9 | 7.9 | 7.9 | 14.9 | 14.9 | 14.9 | 19.0 | 19.0 | 19.0 | 23.1 | 23.1 | 23.1 | 15.9 | 15.9 | 15.9 | 9.6 | 9.6 | 9.6 | -0.6 | -0.6 | -0.6 | | | |
| Trane2 | LrD | 32.4 | 2.2 | 2.2 | 2.2 | 9.2 | 9.2 | 9.2 | 17.0 | 17.0 | 17.0 | 20.8 | 20.8 | 20.8 | 25.1 | 25.1 | 25.1 | 18.0 | 18.0 | 18.0 | 11.8 | 11.8 | 11.8 | 1.9 | 1.9 | 1.9 | | | |
| Trane3 | LrD | 25.9 | -4.6 | -4.6 | -4.6 | 2.2 | 2.2 | 2.2 | 8.8 | 8.8 | 8.8 | 14.8 | 14.8 | 14.8 | 18.8 | 18.8 | 18.8 | 11.1 | 11.1 | 11.1 | 3.5 | 3.5 | 3.5 | -10.2 | -10.2 | -10.2 | | | |
| Trane10 | LrD | 39.2 | 9.6 | 9.6 | 9.6 | 16.6 | 16.6 | 16.6 | 23.7 | 23.7 | 23.7 | 27.5 | 27.5 | 27.5 | 31.9 | 31.9 | 31.9 | 24.8 | 24.8 | 24.8 | 18.4 | 18.4 | 18.4 | 8.1 | 8.1 | 8.1 | | | |
| Trane20 | LrD | 35.2 | 5.3 | 5.3 | 5.3 | 11.8 | 11.8 | 11.8 | 18.5 | 18.5 | 18.5 | 23.7 | 23.7 | 23.7 | 28.0 | 28.0 | 28.0 | 20.8 | 20.8 | 20.8 | 13.9 | 13.9 | 13.9 | 1.4 | 1.4 | 1.4 | | | |
| Trane30 | LrD | 25.2 | -4.1 | -4.1 | -4.1 | 2.9 | 2.9 | 2.9 | 9.2 | 9.2 | 9.2 | 13.4 | 13.4 | 13.4 | 18.1 | 18.1 | 18.1 | 10.9 | 10.9 | 10.9 | 0.5 | 0.5 | 0.5 | -22.1 | -22.1 | -22.1 | | | |
| Trane40 | LrD | 26.7 | -1.4 | -1.4 | -1.4 | 4.5 | 4.5 | 4.5 | 10.9 | 10.9 | 10.9 | 15.0 | 15.0 | 15.0 | 19.6 | 19.6 | 19.6 | 12.5 | 12.5 | 12.5 | 3.2 | 3.2 | 3.2 | -16.2 | -16.2 | -16.2 | | | |
| Trane50 | LrD | 31.2 | 2.5 | 2.5 | 2.5 | 8.9 | 8.9 | 8.9 | 15.4 | 15.4 | 15.4 | 19.5 | 19.5 | 19.5 | 23.9 | 23.9 | 23.9 | 17.0 | 17.0 | 17.0 | 9.3 | 9.3 | 9.3 | -5.2 | -5.2 | -5.2 | | | |
| Trane60 | LrD | 29.5 | 0.0 | 0.0 | 0.0 | 6.9 | 6.9 | 6.9 | 13.4 | 13.4 | 13.4 | 17.5 | 17.5 | 17.5 | 22.5 | 22.5 | 22.5 | 14.5 | 14.5 | 14.5 | 5.5 | 5.5 | 5.5 | -12.3 | -12.3 | -12.3 | | | |
| 6 | LrD | 19.5 | 0.0 | 0.0 | 0.0 | 5.3 | 5.3 | 5.3 | -5.8 | -5.8 | -5.8 | 1.8 | 1.8 | 1.8 | 10.1 | 10.1 | 10.1 | 10.1 | 10.1 | 10.1 | 4.4 | 4.4 | 4.4 | -11.9 | -11.9 | -11.9 | -51.1 | -51.1 | -51.1 |
| 7 | LrD | 20.5 | -0.4 | -0.4 | -0.4 | 5.3 | 5.3 | 5.3 | -6.4 | -6.4 | -6.4 | 8.2 | 8.2 | 8.2 | 10.2 | 10.2 | 10.2 | 10.6 | 10.6 | 10.6 | 6.0 | 6.0 | 6.0 | -6.7 | -6.7 | -6.7 | -37.9 | -37.9 | -37.9 |

# Gardena U-Haul Mnd
# Contribution spectra - 001 - Outdoor SP



| Source | Time slice | Sum | 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 | 20kHz |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 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) |
| 8 | LrD | 43.4 | 23.1 | 23.1 | 23.1 | 33.3 | 33.3 | 33.3 | 25.3 | 25.3 | 25.3 | 30.2 | 30.2 | 30.2 | 31.1 | 31.1 | 31.1 | 31.5 | 31.5 | 31.5 | 28.4 | 28.4 | 28.4 | 21.0 | 21.0 | 21.0 | 5.1 | 5.1 | 5.1 |
| 9 | LrD | 11.2 | -6.9 | -6.9 | -6.9 | -1.5 | -1.5 | -1.5 | -12.1 | -12.1 | -12.1 | -9.7 | -9.7 | -9.7 | 0.0 | 0.0 | 0.0 | 2.7 | 2.7 | 2.7 | -3.8 | -3.8 | -3.8 | -25.9 | -25.9 | -25.9 | -73.2 | -73.2 | -73.2 |
| 10 | LrD | 7.5 | -6.7 | -6.7 | -6.7 | -2.3 | -2.3 | -2.3 | -14.2 | -14.2 | -14.2 | -11.3 | -11.3 | -11.3 | -4.7 | -4.7 | -4.7 | -3.2 | -3.2 | -3.2 | -9.3 | -9.3 | -9.3 | -24.7 | -24.7 | -24.7 | -55.2 | -55.2 | -55.2 |
| 1 | LrD | 11.1 | -5.8 | -5.8 | -5.8 | 1.3 | 1.3 | 1.3 | -8.2 | -8.2 | -8.2 | -6.1 | -6.1 | -6.1 | -1.4 | -1.4 | -1.4 | 1.4 | 1.4 | 1.4 | -8.5 | -8.5 | -8.5 | -36.7 | -36.7 | -36.7 | -94.2 | -94.2 | -94.2 |
| 2 | LrD | 11.8 | -5.9 | -5.9 | -5.9 | 0.9 | 0.9 | 0.9 | -8.8 | -8.8 | -8.8 | -6.8 | -6.8 | -6.8 | 0.5 | 0.5 | 0.5 | 2.6 | 2.6 | 2.6 | -6.2 | -6.2 | -6.2 | -32.1 | -32.1 | -32.1 | -84.9 | -84.9 | -84.9 |
| 3 | LrD | 20.2 | 0.7 | 0.7 | 0.7 | 7.7 | 7.7 | 7.7 | -2.3 | -2.3 | -2.3 | 3.4 | 3.4 | 3.4 | 10.2 | 10.2 | 10.2 | 10.7 | 10.7 | 10.7 | 3.9 | 3.9 | 3.9 | -15.0 | -15.0 | -15.0 | -60.4 | -60.4 | -60.4 |
| 4 | LrD | 21.6 | 3.4 | 3.4 | 3.4 | 11.3 | 11.3 | 11.3 | 1.3 | 1.3 | 1.3 | 7.4 | 7.4 | 7.4 | 10.2 | 10.2 | 10.2 | 10.6 | 10.6 | 10.6 | 5.4 | 5.4 | 5.4 | -9.1 | -9.1 | -9.1 | -45.2 | -45.2 | -45.2 |
| 5 | LrD | 21.6 | 1.2 | 1.2 | 1.2 | 7.2 | 7.2 | 7.2 | -3.8 | -3.8 | -3.8 | 7.9 | 7.9 | 7.9 | 11.6 | 11.6 | 11.6 | 12.0 | 12.0 | 12.0 | 6.6 | 6.6 | 6.6 | -8.5 | -8.5 | -8.5 | -45.5 | -45.5 | -45.5 |
| Receiver R3 Fl F3 LrD,lim dB(A) LrD 45.7 dB(A) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Trane1 | LrD | 30.6 | 0.7 | 0.7 | 0.7 | 7.9 | 7.9 | 7.9 | 15.4 | 15.4 | 15.4 | 18.9 | 18.9 | 18.9 | 23.2 | 23.2 | 23.2 | 16.4 | 16.4 | 16.4 | 11.0 | 11.0 | 11.0 | 2.5 | 2.5 | 2.5 | | | |
| Trane2 | LrD | 32.1 | 2.1 | 2.1 | 2.1 | 9.4 | 9.4 | 9.4 | 16.8 | 16.8 | 16.8 | 20.3 | 20.3 | 20.3 | 24.6 | 24.6 | 24.6 | 17.8 | 17.8 | 17.8 | 12.4 | 12.4 | 12.4 | 4.2 | 4.2 | 4.2 | | | |
| Trane3 | LrD | 26.9 | -4.6 | -4.6 | -4.6 | 2.6 | 2.6 | 2.6 | 10.2 | 10.2 | 10.2 | 14.2 | 14.2 | 14.2 | 19.3 | 19.3 | 19.3 | 15.2 | 15.2 | 15.2 | 8.7 | 8.7 | 8.7 | -2.7 | -2.7 | -2.7 | | | |
| Trane10 | LrD | 39.4 | 9.5 | 9.5 | 9.5 | 16.6 | 16.6 | 16.6 | 24.2 | 24.2 | 24.2 | 27.7 | 27.7 | 27.7 | 31.9 | 31.9 | 31.9 | 25.1 | 25.1 | 25.1 | 19.4 | 19.4 | 19.4 | 10.4 | 10.4 | 10.4 | | | |
| Trane20 | LrD | 34.0 | 4.3 | 4.3 | 4.3 | 11.4 | 11.4 | 11.4 | 18.9 | 18.9 | 18.9 | 22.4 | 22.4 | 22.4 | 26.6 | 26.6 | 26.6 | 19.5 | 19.5 | 19.5 | 13.1 | 13.1 | 13.1 | 1.5 | 1.5 | 1.5 | | | |
| Trane30 | LrD | 26.9 | -4.0 | -4.0 | -4.0 | 3.1 | 3.1 | 3.1 | 10.6 | 10.6 | 10.6 | 14.5 | 14.5 | 14.5 | 19.4 | 19.4 | 19.4 | 14.5 | 14.5 | 14.5 | 6.1 | 6.1 | 6.1 | -13.7 | -13.7 | -13.7 | | | |
| Trane40 | LrD | 26.0 | -3.3 | -3.3 | -3.3 | 3.7 | 3.7 | 3.7 | 11.1 | 11.1 | 11.1 | 14.6 | 14.6 | 14.6 | 18.6 | 18.6 | 18.6 | 11.0 | 11.0 | 11.0 | 2.7 | 2.7 | 2.7 | -15.9 | -15.9 | -15.9 | | | |
| Trane50 | LrD | 30.8 | 1.3 | 1.3 | 1.3 | 8.3 | 8.3 | 8.3 | 15.8 | 15.8 | 15.8 | 19.3 | 19.3 | 19.3 | 23.5 | 23.5 | 23.5 | 16.3 | 16.3 | 16.3 | 9.4 | 9.4 | 9.4 | -4.1 | -4.1 | -4.1 | | | |
| Trane60 | LrD | 30.9 | 0.0 | 0.0 | 0.0 | 7.2 | 7.2 | 7.2 | 14.7 | 14.7 | 14.7 | 18.6 | 18.6 | 18.6 | 23.4 | 23.4 | 23.4 | 18.0 | 18.0 | 18.0 | 12.0 | 12.0 | 12.0 | -3.1 | -3.1 | -3.1 | | | |
| 6 | LrD | 20.3 | 1.4 | 1.4 | 1.4 | 8.6 | 8.6 | 8.6 | -0.9 | -0.9 | -0.9 | 3.6 | 3.6 | 3.6 | 10.3 | 10.3 | 10.3 | 10.2 | 10.2 | 10.2 | 4.5 | 4.5 | 4.5 | -11.7 | -11.7 | -11.7 | -49.3 | -49.3 | -49.3 |
| 7 | LrD | 20.8 | 0.4 | 0.4 | 0.4 | 7.2 | 7.2 | 7.2 | -3.4 | -3.4 | -3.4 | 8.4 | 8.4 | 8.4 | 10.3 | 10.3 | 10.3 | 10.6 | 10.6 | 10.6 | 6.0 | 6.0 | 6.0 | -6.7 | -6.7 | -6.7 | -37.8 | -37.8 | -37.8 |
| 8 | LrD | 42.7 | 23.1 | 23.1 | 23.1 | 32.8 | 32.8 | 32.8 | 24.8 | 24.8 | 24.8 | 29.5 | 29.5 | 29.5 | 30.3 | 30.3 | 30.3 | 30.8 | 30.8 | 30.8 | 27.7 | 27.7 | 27.7 | 20.2 | 20.2 | 20.2 | 3.8 | 3.8 | 3.8 |
| 9 | LrD | 13.5 | -4.3 | -4.3 | -4.3 | 2.6 | 2.6 | 2.6 | -7.1 | -7.1 | -7.1 | -4.2 | -4.2 | -4.2 | 1.5 | 1.5 | 1.5 | 4.5 | 4.5 | 4.5 | -2.9 | -2.9 | -2.9 | -25.0 | -25.0 | -25.0 | -68.4 | -68.4 | -68.4 |
| 10 | LrD | 9.3 | -5.2 | -5.2 | -5.2 | 0.9 | 0.9 | 0.9 | -10.0 | -10.0 | -10.0 | -8.5 | -8.5 | -8.5 | -4.4 | -4.4 | -4.4 | -2.9 | -2.9 | -2.9 | -8.5 | -8.5 | -8.5 | -22.5 | -22.5 | -22.5 | -50.9 | -50.9 | -50.9 |
| 1 | LrD | 13.6 | -4.4 | -4.4 | -4.4 | 3.9 | 3.9 | 3.9 | -4.1 | -4.1 | -4.1 | -0.2 | -0.2 | -0.2 | 1.5 | 1.5 | 1.5 | 2.6 | 2.6 | 2.6 | -6.0 | -6.0 | -6.0 | -29.6 | -29.6 | -29.6 | -84.0 | -84.0 | -84.0 |
| 2 | LrD | 13.9 | -4.8 | -4.8 | -4.8 | 3.5 | 3.5 | 3.5 | -4.5 | -4.5 | -4.5 | -0.9 | -0.9 | -0.9 | 2.1 | 2.1 | 2.1 | 3.8 | 3.8 | 3.8 | -4.4 | -4.4 | -4.4 | -27.6 | -27.6 | -27.6 | -76.8 | -76.8 | -76.8 |
| 3 | LrD | 21.7 | 2.2 | 2.2 | 2.2 | 10.3 | 10.3 | 10.3 | 1.8 | 1.8 | 1.8 | 6.8 | 6.8 | 6.8 | 11.2 | 11.2 | 11.2 | 11.6 | 11.6 | 11.6 | 4.8 | 4.8 | 4.8 | -14.2 | -14.2 | -14.2 | -59.3 | -59.3 | -59.3 |
| 4 | LrD | 22.2 | 3.4 | 3.4 | 3.4 | 11.9 | 11.9 | 11.9 | 2.3 | 2.3 | 2.3 | 8.1 | 8.1 | 8.1 | 10.9 | 10.9 | 10.9 | 11.2 | 11.2 | 11.2 | 6.0 | 6.0 | 6.0 | -8.7 | -8.7 | -8.7 | -44.8 | -44.8 | -44.8 |
| 5 | LrD | 22.4 | 2.3 | 2.3 | 2.3 | 9.8 | 9.8 | 9.8 | 0.9 | 0.9 | 0.9 | 9.0 | 9.0 | 9.0 | 12.0 | 12.0 | 12.0 | 12.2 | 12.2 | 12.2 | 6.7 | 6.7 | 6.7 | -8.4 | -8.4 | -8.4 | -45.4 | -45.4 | -45.4 |
| Receiver R4 Fl G LrD,lim dB(A) LrD 43.8 dB(A) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Trane1 | LrD | 12.2 | -14.0 | -14.0 | -14.0 | -7.8 | -7.8 | -7.8 | -2.6 | -2.6 | -2.6 | -1.1 | -1.1 | -1.1 | 5.3 | 5.3 | 5.3 | -2.4 | -2.4 | -2.4 | -14.8 | -14.8 | -14.8 | -42.7 | -42.7 | -42.7 | | | |
| Trane2 | LrD | 13.2 | -12.9 | -12.9 | -12.9 | -6.7 | -6.7 | -6.7 | -1.6 | -1.6 | -1.6 | 0.0 | 0.0 | 0.0 | 6.3 | 6.3 | 6.3 | -1.6 | -1.6 | -1.6 | -13.5 | -13.5 | -13.5 | -39.4 | -39.4 | -39.4 | | | |
| Trane3 | LrD | 13.2 | -12.9 | -12.9 | -12.9 | -6.6 | -6.6 | -6.6 | -1.5 | -1.5 | -1.5 | 0.0 | 0.0 | 0.0 | 6.3 | 6.3 | 6.3 | -1.8 | -1.8 | -1.8 | -13.7 | -13.7 | -13.7 | -39.3 | -39.3 | -39.3 | | | |
| Trane10 | LrD | 25.9 | -1.7 | -1.7 | -1.7 | 4.5 | 4.5 | 4.5 | 9.6 | 9.6 | 9.6 | 11.1 | 11.1 | 11.1 | 19.5 | 19.5 | 19.5 | 11.7 | 11.7 | 11.7 | 0.7 | 0.7 | 0.7 | -24.0 | -24.0 | -24.0 | | | |
| Trane20 | LrD | 24.3 | -1.3 | -1.3 | -1.3 | 4.8 | 4.8 | 4.8 | 9.8 | 9.8 | 9.8 | 11.3 | 11.3 | 11.3 | 17.4 | 17.4 | 17.4 | 9.2 | 9.2 | 9.2 | -2.3 | -2.3 | -2.3 | -25.9 | -25.9 | -25.9 | | | |
| Trane30 | LrD | 41.1 | 12.1 | 12.1 | 12.1 | 19.3 | 19.3 | 19.3 | 25.4 | 25.4 | 25.4 | 28.9 | 28.9 | 28.9 | 34.0 | 34.0 | 34.0 | 26.5 | 26.5 | 26.5 | 19.3 | 19.3 | 19.3 | 7.5 | 7.5 | 7.5 | | | |
| Trane40 | LrD | 38.6 | 10.1 | 10.1 | 10.1 | 16.9 | 16.9 | 16.9 | 23.0 | 23.0 | 23.0 | 26.2 | 26.2 | 26.2 | 31.5 | 31.5 | 31.5 | 24.3 | 24.3 | 24.3 | 17.4 | 17.4 | 17.4 | 5.6 | 5.6 | 5.6 | | | |

# Gardena U-Haul Mnd
# Contribution spectra - 001 - Outdoor SP



| Source | Time slice | Sum | 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 | 20kHz |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 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) |
| Trane50 | LrD | 29.0 | 2.2 | 2.2 | 2.2 | 8.4 | 8.4 | 8.4 | 13.6 | 13.6 | 13.6 | 15.2 | 15.2 | 15.2 | 22.3 | 22.3 | 22.3 | 14.4 | 14.4 | 14.4 | 4.2 | 4.2 | 4.2 | -16.2 | -16.2 | -16.2 | | | |
| Trane60 | LrD | 29.6 | 2.9 | 2.9 | 2.9 | 9.0 | 9.0 | 9.0 | 14.0 | 14.0 | 14.0 | 15.6 | 15.6 | 15.6 | 23.0 | 23.0 | 23.0 | 15.0 | 15.0 | 15.0 | 5.4 | 5.4 | 5.4 | -14.0 | -14.0 | -14.0 | | | |
| 6 | LrD | 9.2 | -3.4 | -3.4 | -3.4 | 1.7 | 1.7 | 1.7 | -9.6 | -9.6 | -9.6 | -8.0 | -8.0 | -8.0 | -5.3 | -5.3 | -5.3 | -5.9 | -5.9 | -5.9 | -15.0 | -15.0 | -15.0 | -40.3 | -40.3 | -40.3 | -101.5 | -101.5 | -101.5 |
| 7 | LrD | 5.9 | -7.0 | -7.0 | -7.0 | -1.8 | -1.8 | -1.8 | -12.9 | -12.9 | -12.9 | -11.3 | -11.3 | -11.3 | -10.0 | -10.0 | -10.0 | -7.4 | -7.4 | -7.4 | -14.7 | -14.7 | -14.7 | -39.2 | -39.2 | -39.2 | -96.4 | -96.4 | -96.4 |
| 8 | LrD | 9.5 | -3.9 | -3.9 | -3.9 | 1.2 | 1.2 | 1.2 | -10.0 | -10.0 | -10.0 | -8.4 | -8.4 | -8.4 | -5.7 | -5.7 | -5.7 | -1.5 | -1.5 | -1.5 | -12.6 | -12.6 | -12.6 | -40.5 | -40.5 | -40.5 | -95.7 | -95.7 | -95.7 |
| 9 | LrD | 19.0 | -0.1 | -0.1 | -0.1 | 5.2 | 5.2 | 5.2 | -7.2 | -7.2 | -7.2 | -5.9 | -5.9 | -5.9 | 8.6 | 8.6 | 8.6 | 10.8 | 10.8 | 10.8 | 4.5 | 4.5 | 4.5 | -14.2 | -14.2 | -14.2 | -58.1 | -58.1 | -58.1 |
| 10 | LrD | 4.9 | -9.1 | -9.1 | -9.1 | -4.2 | -4.2 | -4.2 | -15.7 | -15.7 | -15.7 | -14.1 | -14.1 | -14.1 | -13.8 | -13.8 | -13.8 | -4.3 | -4.3 | -4.3 | -12.4 | -12.4 | -12.4 | -37.6 | -37.6 | -37.6 | -101.9 | -101.9 | -101.9 |
| 1 | LrD | 31.1 | 12.0 | 12.0 | 12.0 | 21.2 | 21.2 | 21.2 | 8.8 | 8.8 | 8.8 | 15.3 | 15.3 | 15.3 | 19.5 | 19.5 | 19.5 | 20.2 | 20.2 | 20.2 | 15.9 | 15.9 | 15.9 | 4.6 | 4.6 | 4.6 | -21.3 | -21.3 | -21.3 |
| 2 | LrD | 20.1 | 2.0 | 2.0 | 2.0 | 9.6 | 9.6 | 9.6 | -2.8 | -2.8 | -2.8 | 4.6 | 4.6 | 4.6 | 9.2 | 9.2 | 9.2 | 9.5 | 9.5 | 9.5 | 4.0 | 4.0 | 4.0 | -12.8 | -12.8 | -12.8 | -54.6 | -54.6 | -54.6 |
| 3 | LrD | 21.7 | 4.4 | 4.4 | 4.4 | 10.9 | 10.9 | 10.9 | -1.6 | -1.6 | -1.6 | 0.0 | 0.0 | 0.0 | 11.4 | 11.4 | 11.4 | 11.7 | 11.7 | 11.7 | 5.7 | 5.7 | 5.7 | -13.3 | -13.3 | -13.3 | -59.3 | -59.3 | -59.3 |
| 4 | LrD | 14.2 | -2.1 | -2.1 | -2.1 | 3.5 | 3.5 | 3.5 | -8.5 | -8.5 | -8.5 | -6.7 | -6.7 | -6.7 | 3.4 | 3.4 | 3.4 | 4.4 | 4.4 | 4.4 | -1.3 | -1.3 | -1.3 | -23.7 | -23.7 | -23.7 | -81.4 | -81.4 | -81.4 |
| 5 | LrD | 10.6 | -2.1 | -2.1 | -2.1 | 3.2 | 3.2 | 3.2 | -8.4 | -8.4 | -8.4 | -6.7 | -6.7 | -6.7 | -3.5 | -3.5 | -3.5 | -5.6 | -5.6 | -5.6 | -15.3 | -15.3 | -15.3 | -39.7 | -39.7 | -39.7 | -95.6 | -95.6 | -95.6 |

| Source | Source group | Source ty | Tr. lane | LrD dB(A) | A dB | |
|---|---|---|---|---|---|---|
| Trane3 | Default industrial noise | Point | | 26.9 | 0.0 | |
| Trane30 | Default industrial noise | Point | | 26.9 | 0.0 | |
| Trane40 | Default industrial noise | Point | | 26.0 | 0.0 | |
| | Default parking lot noise | PLot | | 22.4 | 0.0 | |
| | Default parking lot noise | PLot | | 22.2 | 0.0 | |
| | Default parking lot noise | PLot | | 21.7 | 0.0 | |
| | Default parking lot noise | PLot | | 20.8 | 0.0 | |
| | Default parking lot noise | PLot | | 20.3 | 0.0 | |
| | Default parking lot noise | PLot | | 13.9 | 0.0 | |
| | Default parking lot noise | PLot | | 13.6 | 0.0 | |
| | Default parking lot noise | PLot | | 13.5 | 0.0 | |
| | Default parking lot noise | PLot | | 9.3 | 0.0 | |
| Receiver R4 Fl G LrD,lim dB(A) LrD 43.8 dB(A) | | | | | | |
| Trane30 | Default industrial noise | Point | | 41.1 | 0.0 | |
| Trane40 | Default industrial noise | Point | | 38.6 | 0.0 | |
| | Default parking lot noise | PLot | | 31.1 | 0.0 | |
| Trane60 | Default industrial noise | Point | | 29.6 | 0.0 | |
| Trane50 | Default industrial noise | Point | | 29.0 | 0.0 | |
| Trane10 | Default industrial noise | Point | | 25.9 | 0.0 | |
| Trane20 | Default industrial noise | Point | | 24.3 | 0.0 | |
| | Default parking lot noise | PLot | | 21.7 | 0.0 | |
| | Default parking lot noise | PLot | | 20.1 | 0.0 | |
| | Default parking lot noise | PLot | | 19.0 | 0.0 | |
| | Default parking lot noise | PLot | | 14.2 | 0.0 | |
| Trane3 | Default industrial noise | Point | | 13.2 | 0.0 | |
| Trane2 | Default industrial noise | Point | | 13.2 | 0.0 | |
| Trane1 | Default industrial noise | Point | | 12.2 | 0.0 | |
| | Default parking lot noise | PLot | | 10.6 | 0.0 | |
| | Default parking lot noise | PLot | | 9.5 | 0.0 | |
| | Default parking lot noise | PLot | | 9.2 | 0.0 | |
| | Default parking lot noise | PLot | | 5.9 | 0.0 | |
| | Default parking lot noise | PLot | | 4.9 | 0.0 | |

# Gardena U-Haul Mnd
## Octave spectra of the sources in dB(A) - 001 - Outdoor SP

| Name | Source type | l or A | Li | R'w | L'w | Lw | KI | KT | LwMax | DO-Wall | Time histogram | Emission spectrum | 63Hz | 125Hz | 250Hz | 500Hz | 1kHz | 2kHz | 4kHz | 8kHz | 16kHz |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | m,m² | dB(A) | dB | dB(A) | dB(A) | dB | dB | dB(A) | dB | | | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) | dB(A) |
| Trane1 | Point | | | | 74.0 | 74.0 | 0.0 | 0.0 | | 0 | 100%/24h | Trane 4TWA4060A4 | 47.1 | 57.2 | 63.7 | 67.1 | 71.3 | 64.5 | 59.3 | 52.2 | |
| Trane2 | Point | | | | 74.0 | 74.0 | 0.0 | 0.0 | | 0 | 100%/24h | Trane 4TWA4060A4 | 47.1 | 57.2 | 63.7 | 67.1 | 71.3 | 64.5 | 59.3 | 52.2 | |
| Trane3 | Point | | | | 74.0 | 74.0 | 0.0 | 0.0 | | 0 | 100%/24h | Trane 4TWA4060A4 | 47.1 | 57.2 | 63.7 | 67.1 | 71.3 | 64.5 | 59.3 | 52.2 | |
| Trane10 | Point | | | | 84.0 | 84.0 | 0.0 | 0.0 | | 0 | 100%/24h | Trane 4TWA4060A4 | 57.1 | 67.2 | 73.7 | 77.1 | 81.3 | 74.5 | 69.3 | 62.2 | |
| Trane20 | Point | | | | 84.0 | 84.0 | 0.0 | 0.0 | | 0 | 100%/24h | Trane 4TWA4060A4 | 57.1 | 67.2 | 73.7 | 77.1 | 81.3 | 74.5 | 69.3 | 62.2 | |
| Trane30 | Point | | | | 84.0 | 84.0 | 0.0 | 0.0 | | 0 | 100%/24h | Trane 4TWA4060A4 | 57.1 | 67.2 | 73.7 | 77.1 | 81.3 | 74.5 | 69.3 | 62.2 | |
| Trane40 | Point | | | | 84.0 | 84.0 | 0.0 | 0.0 | | 0 | 100%/24h | Trane 4TWA4060A4 | 57.1 | 67.2 | 73.7 | 77.1 | 81.3 | 74.5 | 69.3 | 62.2 | |
| Trane50 | Point | | | | 84.0 | 84.0 | 0.0 | 0.0 | | 0 | 100%/24h | Trane 4TWA4060A4 | 57.1 | 67.2 | 73.7 | 77.1 | 81.3 | 74.5 | 69.3 | 62.2 | |
| Trane60 | Point | | | | 84.0 | 84.0 | 0.0 | 0.0 | | 0 | 100%/24h | Trane 4TWA4060A4 | 57.1 | 67.2 | 73.7 | 77.1 | 81.3 | 74.5 | 69.3 | 62.2 | |
| | PLot | 99.38 | | | 54.8 | 74.8 | 0.0 | 0.0 | | 0 | Uhaul Storage | Typical spectrum | 58.1 | 69.7 | 62.2 | 66.7 | 66.8 | 67.2 | 64.5 | 58.3 | 45.5 |
| | PLot | 51.65 | | | 54.6 | 71.8 | 0.0 | 0.0 | | 0 | Uhaul Storage | Typical spectrum | 55.1 | 66.7 | 59.2 | 63.7 | 63.8 | 64.2 | 61.5 | 55.3 | 42.5 |
| | PLot | 382.37 | | | 51.2 | 77.0 | 0.0 | 0.0 | | 0 | Uhaul Storage | Typical spectrum | 60.3 | 71.9 | 64.4 | 68.9 | 69.0 | 69.4 | 66.7 | 60.5 | 47.7 |
| | PLot | 202.92 | | | 51.7 | 74.8 | 0.0 | 0.0 | | 0 | Uhaul Storage | Typical spectrum | 58.1 | 69.7 | 62.2 | 66.7 | 66.8 | 67.2 | 64.5 | 58.3 | 45.5 |
| | PLot | 45.44 | | | 53.4 | 70.0 | 0.0 | 0.0 | | 0 | Uhaul Storage | Typical spectrum | 53.4 | 65.0 | 57.5 | 62.0 | 62.1 | 62.5 | 59.8 | 53.6 | 40.8 |
| | PLot | 118.90 | | | 54.0 | 74.8 | 0.0 | 0.0 | | 0 | Uhaul Storage | Typical spectrum | 58.1 | 69.7 | 62.2 | 66.7 | 66.8 | 67.2 | 64.5 | 58.3 | 45.5 |
| | PLot | 83.19 | | | 53.8 | 73.0 | 0.0 | 0.0 | | 0 | Uhaul Storage | Typical spectrum | 56.4 | 68.0 | 60.5 | 65.0 | 65.1 | 65.5 | 62.8 | 56.6 | 43.8 |
| | PLot | 206.51 | | | 55.0 | 78.2 | 0.0 | 0.0 | | 0 | Uhaul Storage | Typical spectrum | 61.5 | 73.1 | 65.6 | 70.1 | 70.2 | 70.6 | 67.9 | 61.7 | 48.9 |
| | PLot | 97.30 | | | 54.1 | 74.0 | 0.0 | 0.0 | | 0 | Uhaul Storage | Typical spectrum | 57.3 | 68.9 | 61.4 | 65.9 | 66.0 | 66.4 | 63.7 | 57.5 | 44.7 |
| | PLot | 117.81 | | | 54.7 | 75.5 | 0.0 | 0.0 | | 0 | Uhaul Storage | Typical spectrum | 58.8 | 70.4 | 62.9 | 67.4 | 67.5 | 67.9 | 65.2 | 59.0 | 46.2 |

# Appendix D:

Construction Noise Modeling Output

Receptor - Commercial to the North

| A | B | C | D | E | F | G | H | I | J |
|---|---|---|---|---|---|---|---|---|---|
| Construction Phase Equipment Item | # of Items | Item Lmax at 50 feet, dBA | Dist. To Recptr. | Item Usage Percent | Usage Factor | Dist. Correction dB | Usage Adj. dB | Recptr. Item Lmax, dBA | Recptr. Item Leq, dBA |
| DEMO | | | | | | | | | |
| 1. Concrete/Industrial Saws | 1 | 82 | 300 | 73 | 0.73 | -15.6 | -1.4 | 66.4 | 65.1 |
| 2. Excavators | 3 | 85 | 300 | 38 | 0.38 | -15.6 | -4.2 | 69.4 | 65.2 |
| 3. Rubber Tired Dozers | 2 | 85 | 300 | 40 | 0.40 | -15.6 | -4.0 | 69.4 | 65.5 |
| | | | | | | | Log Sum | 77 | 73 |
| SITE PREP | | | | | | | | | |
| 1. Tractors/Loaders/Backhoes | 4 | 80 | 300 | 37 | 0.37 | -15.6 | -4.3 | 64.4 | 60.1 |
| 2. Rubber Tired Dozers | 3 | 85 | 300 | 40 | 0.40 | -15.6 | -4.0 | 69.4 | 65.5 |
| | | | | | | | Log Sum | 76 | 72 |
| GRADE | | | | | | | | | |
| 1. Excavators | 1 | 85 | 300 | 38 | 0.38 | -15.6 | -4.2 | 69.4 | 65.2 |
| 2. Graders | 1 | 85 | 300 | 41 | 0.41 | -15.6 | -3.9 | 69.4 | 65.6 |
| 3. Rubber Tired Dozers | 1 | 85 | 300 | 40 | 0.40 | -15.6 | -4.0 | 69.4 | 65.5 |
| 5. Tractors/Loaders/Backhoes | 3 | 80 | 300 | 37 | 0.37 | -15.6 | -4.3 | 64.4 | 60.1 |
| | | | | | | | Log Sum | 75 | 71 |
| BUILD | | | | | | | | | |
| 1. Cranes | 1 | 83 | 300 | 29 | 0.29 | -15.6 | -5.4 | 67.4 | 62.1 |
| 2. Forklifts | 3 | 85 | 300 | 20 | 0.20 | -15.6 | -7.0 | 69.4 | 62.4 |
| 3.Generator Sets | 1 | 82 | 300 | 74 | 0.74 | -15.6 | -1.3 | 66.4 | 65.1 |
| 4. Tractor/Loaders/Backhoes | 3 | 80 | 300 | 37 | 0.37 | -15.6 | -4.3 | 64.4 | 60.1 |
| 5. Welders | 1 | 73 | 300 | 45 | 0.45 | -15.6 | -3.5 | 57.4 | 54.0 |
| | | | | | | | Log Sum | 77 | 71 |
| PAVE | | | | | | | | | |
| 1. Pavers | 1 | 85 | 300 | 42 | 0.42 | -15.6 | -3.8 | 69.4 | 65.7 |
| 2. Paving Equipment | 2 | 85 | 300 | 36 | 0.36 | -15.6 | -4.4 | 69.4 | 65.0 |
| 3. Rollers | 2 | 85 | 300 | 38 | 0.38 | -15.6 | -4.2 | 69.4 | 65.2 |
| 4. Cement and Mortar Mixers | 2 | 85 | 300 | 56 | 0.56 | -15.6 | -2.5 | 69.4 | 66.9 |
| 5. Tractors/Loaders/Backhoes | 1 | 80 | 300 | 37 | 0.37 | -15.6 | -4.3 | 64.4 | 60.1 |
| | | | | | | | Log Sum | 76 | 72 |
| ARCH COAT | | | | | | | | | |
| 1. Air Compressors | 1 | 80 | 300 | 48 | 0.48 | -15.6 | -3.2 | 64.4 | 61.2 |
| | | | | | | | Log Sum | 64 | 61 |

Receptor - Commercial to the South

| A | B | C | D | E | F | G | H | I | J |
|---|---|---|---|---|---|---|---|---|---|
| Construction Phase Equipment Item | # of Items | Item Lmax at 50 feet, dBA | Dist. To Recptr. | Item Usage Percent | Usage Factor | Dist. Correction dB | Usage Adj. dB | Recptr. Item Lmax, dBA | Recptr. Item Leq, dBA |
| DEMO | | | | | | | | | |
| 1. Concrete/Industrial Saws | 1 | 82 | 400 | 73 | 0.73 | -18.1 | -1.4 | 63.9 | 62.6 |
| 2. Excavators | 3 | 85 | 400 | 38 | 0.38 | -18.1 | -4.2 | 66.9 | 62.7 |
| 3. Rubber Tired Dozers | 2 | 85 | 400 | 40 | 0.40 | -18.1 | -4.0 | 66.9 | 63.0 |
| | | | | | | | Log Sum | 74 | 71 |
| SITE PREP | | | | | | | | | |
| 1. Tractors/Loaders/Backhoes | 4 | 80 | 400 | 37 | 0.37 | -18.1 | -4.3 | 61.9 | 57.6 |
| 2. Rubber Tired Dozers | 3 | 85 | 400 | 40 | 0.40 | -18.1 | -4.0 | 66.9 | 63.0 |
| | | | | | | | Log Sum | 73 | 69 |
| GRADE | | | | | | | | | |
| 1. Excavators | 1 | 85 | 400 | 38 | 0.38 | -18.1 | -4.2 | 66.9 | 62.7 |
| 2. Graders | 1 | 85 | 400 | 41 | 0.41 | -18.1 | -3.9 | 66.9 | 63.1 |
| 3. Rubber Tired Dozers | 1 | 85 | 400 | 40 | 0.40 | -18.1 | -4.0 | 66.9 | 63.0 |
| 5. Tractors/Loaders/Backhoes | 3 | 80 | 400 | 37 | 0.37 | -18.1 | -4.3 | 61.9 | 57.6 |
| | | | | | | | Log Sum | 73 | 69 |
| BUILD | | | | | | | | | |
| 1. Cranes | 1 | 83 | 400 | 29 | 0.29 | -18.1 | -5.4 | 64.9 | 59.6 |
| 2. Forklifts | 3 | 85 | 400 | 20 | 0.20 | -18.1 | -7.0 | 66.9 | 59.9 |
| 3.Generator Sets | 1 | 82 | 400 | 74 | 0.74 | -18.1 | -1.3 | 63.9 | 62.6 |
| 4. Tractor/Loaders/Backhoes | 3 | 80 | 400 | 37 | 0.37 | -18.1 | -4.3 | 61.9 | 57.6 |
| 5. Welders | 1 | 73 | 400 | 45 | 0.45 | -18.1 | -3.5 | 54.9 | 51.5 |
| | | | | | | | Log Sum | 74 | 69 |
| PAVE | | | | | | | | | |
| 1. Pavers | 1 | 85 | 400 | 42 | 0.42 | -18.1 | -3.8 | 66.9 | 63.2 |
| 2. Paving Equipment | 2 | 85 | 400 | 36 | 0.36 | -18.1 | -4.4 | 66.9 | 62.5 |
| 3. Rollers | 2 | 85 | 400 | 38 | 0.38 | -18.1 | -4.2 | 66.9 | 62.7 |
| 4. Cement and Mortar Mixers | 2 | 85 | 400 | 56 | 0.56 | -18.1 | -2.5 | 66.9 | 64.4 |
| 5. Tractors/Loaders/Backhoes | 1 | 80 | 400 | 37 | 0.37 | -18.1 | -4.3 | 61.9 | 57.6 |
| | | | | | | | Log Sum | 74 | 70 |
| ARCH COAT | | | | | | | | | |
| 1. Air Compressors | 1 | 80 | 400 | 48 | 0.48 | -18.1 | -3.2 | 61.9 | 58.8 |
| | | | | | | | Log Sum | 62 | 59 |

Receptor - Residences to the East

| A | B | C | D | E | F | G | H | I | J |
|---|---|---|---|---|---|---|---|---|---|
| Construction Phase Equipment Item | # of Items | Item Lmax at 50 feet, dBA | Dist. To Recptr. | Item Usage Percent | Usage Factor | Dist. Correction dB | Usage Adj. dB | Recptr. Item Lmax, dBA | Recptr. Item Leq, dBA |
| DEMO | | | | | | | | | |
| 1. Concrete/Industrial Saws | 1 | 82 | 160 | 73 | 0.73 | -10.1 | -1.4 | 71.9 | 70.5 |
| 2. Excavators | 3 | 85 | 160 | 38 | 0.38 | -10.1 | -4.2 | 74.9 | 70.7 |
| 3. Rubber Tired Dozers | 2 | 85 | 160 | 40 | 0.40 | -10.1 | -4.0 | 74.9 | 70.9 |
| | | | | | | | Log Sum | 82 | 79 |
| SITE PREP | | | | | | | | | |
| 1. Tractors/Loaders/Backhoes | 4 | 80 | 160 | 37 | 0.37 | -10.1 | -4.3 | 69.9 | 65.6 |
| 2. Rubber Tired Dozers | 3 | 85 | 160 | 40 | 0.40 | -10.1 | -4.0 | 74.9 | 70.9 |
| | | | | | | | Log Sum | 81 | 77 |
| GRADE | | | | | | | | | |
| 1. Excavators | 1 | 85 | 160 | 38 | 0.38 | -10.1 | -4.2 | 74.9 | 70.7 |
| 2. Graders | 1 | 85 | 160 | 41 | 0.41 | -10.1 | -3.9 | 74.9 | 71.0 |
| 3. Rubber Tired Dozers | 1 | 85 | 160 | 40 | 0.40 | -10.1 | -4.0 | 74.9 | 70.9 |
| 5. Tractors/Loaders/Backhoes | 3 | 80 | 160 | 37 | 0.37 | -10.1 | -4.3 | 69.9 | 65.6 |
| | | | | | | | Log Sum | 81 | 77 |
| BUILD | | | | | | | | | |
| 1. Cranes | 1 | 83 | 160 | 29 | 0.29 | -10.1 | -5.4 | 72.9 | 67.5 |
| 2. Forklifts | 3 | 85 | 160 | 20 | 0.20 | -10.1 | -7.0 | 74.9 | 67.9 |
| 3.Generator Sets | 1 | 82 | 160 | 74 | 0.74 | -10.1 | -1.3 | 71.9 | 70.6 |
| 4. Tractor/Loaders/Backhoes | 3 | 80 | 160 | 37 | 0.37 | -10.1 | -4.3 | 69.9 | 65.6 |
| 5. Welders | 1 | 73 | 160 | 45 | 0.45 | -10.1 | -3.5 | 62.9 | 59.4 |
| | | | | | | | Log Sum | 82 | 77 |
| PAVE | | | | | | | | | |
| 1. Pavers | 1 | 85 | 160 | 42 | 0.42 | -10.1 | -3.8 | 74.9 | 71.1 |
| 2. Paving Equipment | 2 | 85 | 160 | 36 | 0.36 | -10.1 | -4.4 | 74.9 | 70.5 |
| 3. Rollers | 2 | 85 | 160 | 38 | 0.38 | -10.1 | -4.2 | 74.9 | 70.7 |
| 4. Cement and Mortar Mixers | 2 | 85 | 160 | 56 | 0.56 | -10.1 | -2.5 | 74.9 | 72.4 |
| 5. Tractors/Loaders/Backhoes | 1 | 80 | 160 | 37 | 0.37 | -10.1 | -4.3 | 69.9 | 65.6 |
| | | | | | | | Log Sum | 82 | 78 |
| ARCH COAT | | | | | | | | | |
| 1. Air Compressors | 1 | 80 | 160 | 48 | 0.48 | -10.1 | -3.2 | 69.9 | 66.7 |
| | | | | | | | Log Sum | 70 | 67 |

Receptor - Commercial to the West

| A | B | C | D | E | F | G | H | I | J |
|---|---|---|---|---|---|---|---|---|---|
| Construction Phase Equipment Item | # of Items | Item Lmax at 50 feet, dBA | Dist. To Recptr. | Item Usage Percent | Usage Factor | Dist. Correction dB | Usage Adj. dB | Recptr. Item Lmax, dBA | Recptr. Item Leq, dBA |
| DEMO | | | | | | | | | |
| 1. Concrete/Industrial Saws | 1 | 82 | 220 | 73 | 0.73 | -12.9 | -1.4 | 69.1 | 67.8 |
| 2. Excavators | 3 | 85 | 220 | 38 | 0.38 | -12.9 | -4.2 | 72.1 | 67.9 |
| 3. Rubber Tired Dozers | 2 | 85 | 220 | 40 | 0.40 | -12.9 | -4.0 | 72.1 | 68.2 |
| | | | | | | | Log Sum | 80 | 76 |
| SITE PREP | | | | | | | | | |
| 1. Tractors/Loaders/Backhoes | 4 | 80 | 220 | 37 | 0.37 | -12.9 | -4.3 | 67.1 | 62.8 |
| 2. Rubber Tired Dozers | 3 | 85 | 220 | 40 | 0.40 | -12.9 | -4.0 | 72.1 | 68.2 |
| | | | | | | | Log Sum | 78 | 74 |
| GRADE | | | | | | | | | |
| 1. Excavators | 1 | 85 | 220 | 38 | 0.38 | -12.9 | -4.2 | 72.1 | 67.9 |
| 2. Graders | 1 | 85 | 220 | 41 | 0.41 | -12.9 | -3.9 | 72.1 | 68.3 |
| 3. Rubber Tired Dozers | 1 | 85 | 220 | 40 | 0.40 | -12.9 | -4.0 | 72.1 | 68.2 |
| 5. Tractors/Loaders/Backhoes | 3 | 80 | 220 | 37 | 0.37 | -12.9 | -4.3 | 67.1 | 62.8 |
| | | | | | | | Log Sum | 78 | 74 |
| BUILD | | | | | | | | | |
| 1. Cranes | 1 | 83 | 220 | 29 | 0.29 | -12.9 | -5.4 | 70.1 | 64.8 |
| 2. Forklifts | 3 | 85 | 220 | 20 | 0.20 | -12.9 | -7.0 | 72.1 | 65.1 |
| 3.Generator Sets | 1 | 82 | 220 | 74 | 0.74 | -12.9 | -1.3 | 69.1 | 67.8 |
| 4. Tractor/Loaders/Backhoes | 3 | 80 | 220 | 37 | 0.37 | -12.9 | -4.3 | 67.1 | 62.8 |
| 5. Welders | 1 | 73 | 220 | 45 | 0.45 | -12.9 | -3.5 | 60.1 | 56.7 |
| | | | | | | | Log Sum | 79 | 74 |
| PAVE | | | | | | | | | |
| 1. Pavers | 1 | 85 | 220 | 42 | 0.42 | -12.9 | -3.8 | 72.1 | 68.4 |
| 2. Paving Equipment | 2 | 85 | 220 | 36 | 0.36 | -12.9 | -4.4 | 72.1 | 67.7 |
| 3. Rollers | 2 | 85 | 220 | 38 | 0.38 | -12.9 | -4.2 | 72.1 | 67.9 |
| 4. Cement and Mortar Mixers | 2 | 85 | 220 | 56 | 0.56 | -12.9 | -2.5 | 72.1 | 69.6 |
| 5. Tractors/Loaders/Backhoes | 1 | 80 | 220 | 37 | 0.37 | -12.9 | -4.3 | 67.1 | 62.8 |
| | | | | | | | Log Sum | 79 | 75 |
| ARCH COAT | | | | | | | | | |
| 1. Air Compressors | 1 | 80 | 220 | 48 | 0.48 | -12.9 | -3.2 | 67.1 | 63.9 |
| | | | | | | | Log Sum | 67 | 64 |