APPENDIX F – NOISE IMPACT ANALYSIS

NOISE IMPACT ANALYSIS

NEW FLEET SERVICES FACILITY PROJECT

CITY OF SANTA ANA

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ACRONYMS AND ABBREVIATIONS

ANSI	American National Standards Institute
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
City	City of Santa Ana
County	County of Orange
CMU	Concrete masonry unit
CNEL	Community Noise Equivalent Level
dB	Decibel
dBA	A-weighted decibels
DOT	Department of Transportation
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
EPA	Environmental Protection Agency
FTES	Full Time Equivalent Students
HVAC	Heating Ventilation & Air Conditioning System
Hz	Hertz
Ldn	Day-night average noise level
Leq	Equivalent sound level
Lmax	Maximum noise level
ONAC	Federal Office of Noise Abatement and Control
OSHA	Occupational Safety and Health Administration
PPV	Peak particle velocity
RMS	Root mean square
SEL	Single Event Level or Sound Exposure Level
STC	Sound Transmission Class
VdB	Vibration velocity level in decibels

1.0 INTRODUCTION

1.1 Purpose of Analysis and Study Objectives

This Noise Impact Analysis has been prepared to determine the noise impacts associated with the proposed New Fleet Services Facility project (proposed project). The following is provided in this report:

- A description of the study area and the proposed project;
- Information regarding the fundamentals of noise;
- Information regarding the fundamentals of vibration;
- A description of the local noise guidelines and standards;
- An evaluation of the current noise environment;
- An analysis of the potential short-term construction-related noise impacts from the proposed project; and
- An analysis of long-term operations-related noise impacts from the proposed project.

1.2 Site Location and Study Area

The project site is located at 1400 S. Grand Avenue in the City of Santa Ana (City). The approximately 4.59-acre project site is mostly vacant other than the western and northern portions that are currently paved and is bounded by John F. Kennedy Elementary School and McFadden Avenue to the north, the Orange County Operations Center and a County Data Center located to the west, industrial uses to the south, and the Union Pacific Santa Ana Industrial Lead (Railroad) and multi-family residential uses to the west. The project study area is shown in Figure 1.

Sensitive Receptors in Project Vicinity

The nearest sensitive receptor to the project site is the John F. Kennedy Elementary School (JFK School) that is adjacent to the north side of the project site. There are also the multi-family homes that are as near as 55 feet west of the project site.

1.3 Proposed Project Description

The OC Fleet Services offices are currently located at 445 Civic Center West and 1102 East Fruit Street in the City of Santa Ana. The proposed project would consist of the relocation and consolidation of the two existing facilities into a new 45,706 square foot Fleet Services Building that will include vehicle maintenance bays, administrative staff offices, technician workspaces, and storage spaces. In addition, the project will include a 10,000 square foot solar panel canopy, surface parking spaces, extended access road, and a disposal lot. The Fleet Services Facility is proposed to be addressed as 1310 South Grand Avenue. The proposed project would extend the existing access roads to provide ingress and egress for the Project site via the existing driveways off McFadden Avenue and South Grand Avenue. The proposed site plan is shown in Figure 2.

Construction of the proposed project is expected to occur from December 2026 to May 2028, over an 18-month period. Construction activities will take place from 7:00 a.m. to 8:00 p.m. Monday through Saturday and no construction work will occur on Sundays or Federal holidays, per the County's Noise Control ordinance. Operations would primarily consist of providing maintenance and repair services to over 3,000 County-owned vehicles and equipment. These services ensure the safety and longevity of

County-owned vehicles while maintaining compliance with vehicle rules and regulations. Approximately 50 employees would operate the proposed facility Monday through Friday.

1.4 Standard Noise Regulatory Conditions

The proposed project will be required to comply with the following regulatory conditions from the City, County, and State.

City of Santa Ana Municipal Code

The following lists the noise regulations from the City's Municipal Code that are applicable, but not limited to the proposed project.

- Section 18-312(a) – Exterior Noise Standards
- Section 18-314(a) – Construction Noise Standards

County of Orange Municipal Code

The following lists the noise regulations from the County's Municipal Code that are applicable, but not limited to the proposed project.

- Section 4-6-5 – Exterior Noise Standards
- Section 4-6-7(e) – Construction Noise Exemption
- Section 7-1-822 – Construction time restrictions

State of California Rules

The following lists the State of California noise regulations that are applicable, but not limited to the proposed project.

- California Vehicle Code Section 2700-27207 – On Road Vehicle Noise Limits
- California Vehicle Code Section 38365-38350 – Off-Road Vehicle Noise Limits

1.5 Summary of Analysis Results

The following is a summary of the proposed project's impacts with regard to the State CEQA Guidelines noise checklist questions.

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

Potentially significant impact. Implementation of Mitigation Measure 1 would reduce this impact to less than significant levels.

Generation of excessive groundborne vibration or groundborne noise levels?

Less than significant impact.

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

Less than significant impact.

1.6 Project Design Features Incorporated into the Proposed Project

This analysis has accounted for the following Project Design Feature that is detailed in the project description for the proposed project.

Project Design Feature 1:
The project applicant shall install the 12 foot high and approximately 1,200 foot long concrete masonry unit (CMU) wall at the location of the New Wall as shown above in Figure 2 – Site Plan, prior to the start of site preparation activities.

1.7 Mitigation Measures for the Proposed Project

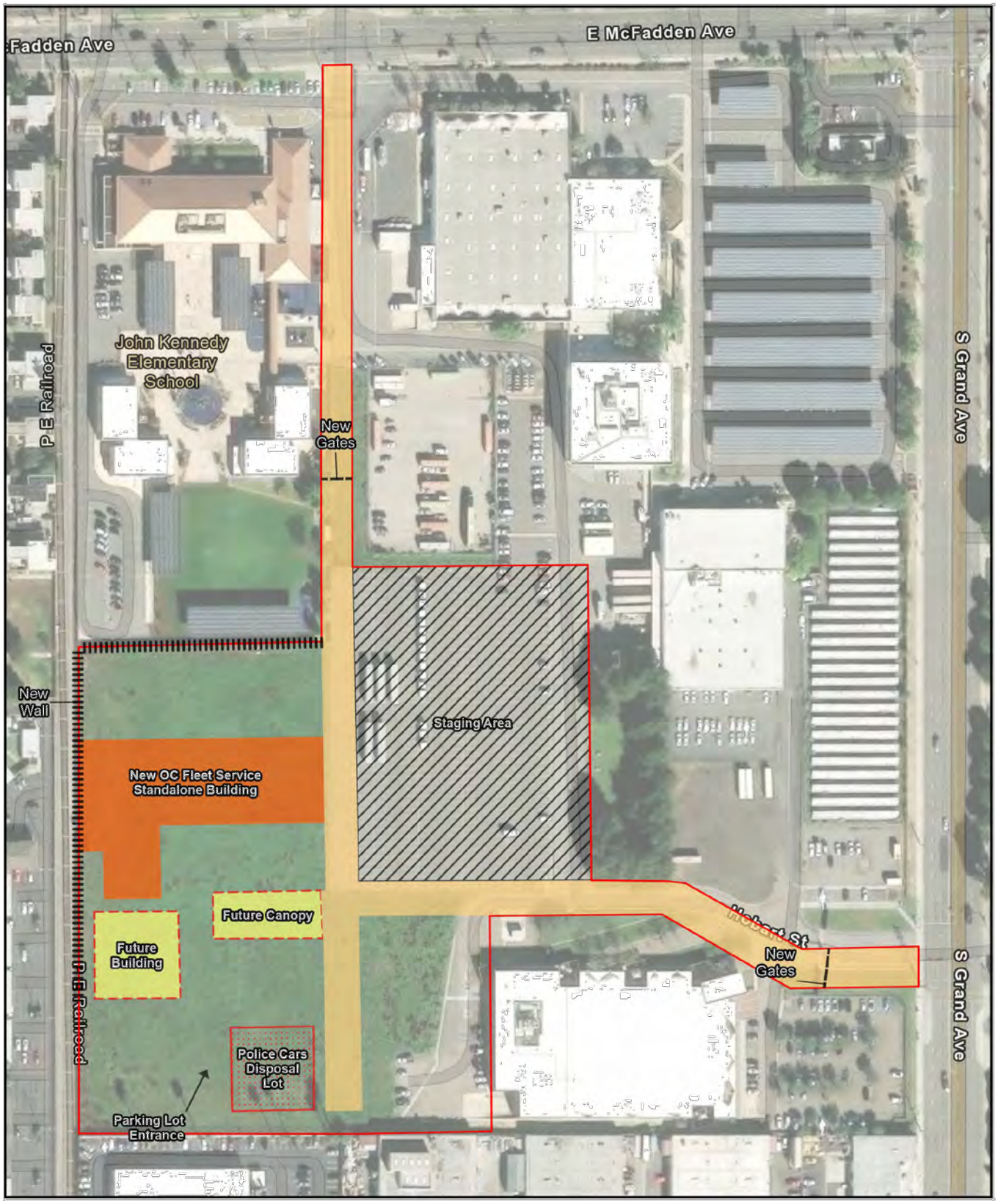
This analysis found that through adherence to the noise and vibration regulations detailed in Section 1.4 above and through implementation of Project Design Feature 1 and the following mitigation all noise and vibration impacts would be reduced to less than significant levels.

Mitigation Measure 1:
The project applicant shall require the Body Shop to operate with all exterior doors closed between the hours of 10:00 p.m. and 7:00 a.m..

SOURCE: Google Maps.

VISTA ENVIRONMENTAL

Figure 1
Project Location Map



SOURCE: Chambers Group.

VISTA ENVIRONMENTAL

Figure 2
Proposed Site Plan

2.0 NOISE FUNDAMENTALS

Noise is defined as unwanted sound. Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm or when it has adverse effects on health. Sound is produced by the vibration of sound pressure waves in the air. Sound pressure levels are used to measure the intensity of sound and are described in terms of decibels. The decibel (dB) is a logarithmic unit which expresses the ratio of the sound pressure level being measured to a standard reference level. A-weighted decibels (dBA) approximate the subjective response of the human ear to a broad frequency noise source by discriminating against very low and very high frequencies of the audible spectrum. They are adjusted to reflect only those frequencies which are audible to the human ear.

2.1 Noise Descriptors

Noise Equivalent sound levels are not measured directly, but are calculated from sound pressure levels typically measured in A-weighted decibels (dBA). The equivalent sound level (Leq) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period. The peak traffic hour Leq is the noise metric used by California Department of Transportation (Caltrans) for all traffic noise impact analyses.

The Day-Night Average Level (Ldn) is the weighted average of the intensity of a sound, with corrections for time of day, and averaged over 24 hours. The time of day corrections require the addition of ten decibels to sound levels at night between 10 p.m. and 7 a.m. While the Community Noise Equivalent Level (CNEL) is similar to the Ldn, except that it has another addition of 4.77 decibels to sound levels during the evening hours between 7 p.m. and 10 p.m. These additions are made to the sound levels at these time periods because during the evening and nighttime hours, when compared to daytime hours, there is a decrease in the ambient noise levels, which creates an increased sensitivity to sounds. For this reason, the sound appears louder in the evening and nighttime hours and is weighted accordingly. The City and County rely on the CNEL noise standard to assess transportation-related impacts on noise sensitive land uses.

2.2 Tone Noise

A pure tone noise is a noise produced at a single frequency and laboratory tests have shown that humans are more perceptible to changes in noise levels of a pure tone. For a noise source to contain a “pure tone,” there must be a significantly higher A-weighted sound energy in a given frequency band than in the neighboring bands, thereby causing the noise source to “stand out” against other noise sources. A pure tone occurs if the sound pressure level in the one-third octave band with the tone exceeds the average of the sound pressure levels of the two contiguous one-third octave bands by:

- 5 dB for center frequencies of 500 hertz (Hz) and above
- 8 dB for center frequencies between 160 and 400 Hz
- 15 dB for center frequencies of 125 Hz or less

2.3 Noise Propagation

From the noise source to the receiver, noise changes both in level and frequency spectrum. The most obvious is the decrease in noise as the distance from the source increases. The manner in which noise reduces with distance depends on whether the source is a point or line source as well as ground

absorption, atmospheric effects and refraction, and shielding by natural and manmade features. Sound from point sources, such as air conditioning condensers, radiate uniformly outward as it travels away from the source in a spherical pattern. The noise drop-off rate associated with this geometric spreading is 6 dBA per each doubling of the distance (dBA/DD). Transportation noise sources such as roadways are typically analyzed as line sources, since at any given moment the receiver may be impacted by noise from multiple vehicles at various locations along the roadway. Because of the geometry of a line source, the noise drop-off rate associated with the geometric spreading of a line source is 3 dBA/DD.

2.4 Ground Absorption

The sound drop-off rate is highly dependent on the conditions of the land between the noise source and receiver. To account for this ground-effect attenuation (absorption), two types of site conditions are commonly used in traffic noise models, soft-site and hard-site conditions. Soft-site conditions account for the sound propagation loss over natural surfaces such as normal earth and ground vegetation. For point sources, a drop-off rate of 7.5 dBA/DD is typically observed over soft ground with landscaping, as compared with a 6.0 dBA/DD drop-off rate over hard ground such as asphalt, concrete, stone and very hard packed earth. For line sources a 4.5 dBA/DD is typically observed for soft-site conditions compared to the 3.0 dBA/DD drop-off rate for hard-site conditions. Caltrans research has shown that the use of soft-site conditions is more appropriate for the application of the Federal Highway Administration (FHWA) traffic noise prediction model used in this analysis.

3.0 GROUND-BORNE VIBRATION FUNDAMENTALS

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.

3.1 Vibration Descriptors

There are several different methods that are used to quantify vibration amplitude such as the maximum instantaneous peak in the vibrations velocity, which is known as the peak particle velocity (PPV) or the root mean square (rms) amplitude of the vibration velocity. Due to the typically small amplitudes of vibrations, vibration velocity is often expressed in decibels and is denoted as (L_v) and is based on the rms velocity amplitude. A commonly used abbreviation is "VdB", which in this text, is when L_v is based on the reference quantity of 1 micro inch per second.

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. Off-site 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.

3.3 Vibration Propagation

The propagation of ground-borne vibration is not as simple to model as airborne noise. This is due to the fact that noise in the air travels through a relatively uniform median, while ground-borne vibrations travel through the earth which may contain significant geological differences. There are three main types of vibration propagation; surface, compression, and shear waves. Surface waves, or Rayleigh waves, travel along the ground's surface. These waves carry most of their energy along an expanding circular wave front, similar to ripples produced by throwing a rock into a pool of water. P-waves, or compression waves, are body waves that carry their energy along an expanding spherical wave front. The particle motion in these waves is longitudinal (i.e., in a "push-pull" fashion). P-waves are analogous to airborne sound waves. S-waves, or shear waves, are also body waves that carry energy along an expanding spherical wave front. However, unlike P-waves, the particle motion is transverse or "side-to-side and perpendicular to the direction of propagation."

As vibration waves propagate from a source, the vibration energy decreases in a logarithmic nature and the vibration levels typically decrease by 6 VdB per doubling of the distance from the vibration source. As stated above, this drop-off rate can vary greatly depending on the soil but has been shown to be effective enough for screening purposes, in order to identify potential vibration impacts that may need to be studied through actual field tests.

4.0 REGULATORY SETTING

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:

- Promulgating noise emission standards for interstate commerce
- Assisting state and local abatement efforts
- Promoting noise education and research

The Federal Office of Noise Abatement and Control (ONAC) was initially tasked with implementing the Noise Control Act. However, the ONAC has since been eliminated, leaving the development of federal noise policies and programs to other federal agencies and interagency committees. For example, the Occupational Safety and Health Administration (OSHA) agency prohibits exposure of workers to excessive sound levels. The Department of Transportation (DOT) assumed a significant role in noise control through its various operating agencies. The Federal Aviation Administration (FAA) regulates noise of aircraft and airports. Surface transportation system noise is regulated by a host of agencies, including the Federal Transit Administration (FTA). Transit noise is regulated by the FTA, while freeways that are part of the interstate highway system are regulated by the Federal Highway Administration (FHWA). Finally, the federal government actively 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 sited adjacent to a highway or, alternately that the developments are planned and constructed in such a manner that potential noise impacts are minimized.

Although the proposed project is not under the jurisdiction of the FTA, the *Transit Noise and Vibration Impact Assessment Manual* (FTA Manual), prepared by the FTA, September 2018, is a guidance document from a government agency that provides specific guidance for construction noise. The FTA recommends developing construction noise criteria on a project-specific basis that utilizes local noise ordinances if possible. However, local noise ordinances usually relates to nuisance and hours of allowed activity and sometimes specify limits in terms of maximum levels, but are generally not practical for assessing the noise impacts of a construction project. Project construction noise criteria should take into account the existing noise environment, the absolute noise levels during construction activities, the duration of the construction, and the adjacent land uses. The FTA standards are based on extensive studies by the FTA and other governmental agencies on the human effects and reaction to noise and a summary of the FTA findings for a Detailed Analysis of construction noise are provided below in Table A. It should be noted that even though the project has been analyzed based on the General Assessment methodology, the more stringent Detailed Analysis construction noise thresholds have been utilized in this analysis.

Table A – FTA Construction Noise Criteria

Land Use	Day (dBA Leq(8-hour))	Night (dBA Leq(8-hour))	30-day Average (dBA Ldn)
Residential	80	70	75
Commercial	85	85	80*
Industrial	90	90	85*

Notes:
* 24-hour Leq not Ldn.
Source: Federal Transit Administration, 2018.

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

4.2 State Regulations

Noise Standards

California Department of Health Services Office of Noise Control

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," which allows the local jurisdiction to clearly delineate compatibility of sensitive uses with various incremental levels of noise.

California Noise Insulation Standards

Title 24, Chapter 1, Article 4 of the California Administrative Code (California Noise Insulation Standards) requires noise insulation in new hotels, motels, apartment houses, and dwellings (other than single-family detached housing) that provides an annual average noise level of no more than 45 dBA CNEL. When such structures are located within a 60-dBA CNEL (or greater) noise contour, an acoustical analysis is required to ensure that interior levels do not exceed the 45-dBA CNEL annual threshold. In addition, Title 21, Chapter 6, Article 1 of the California Administrative Code requires that all habitable rooms, hospitals, convalescent homes, and places of worship shall have an interior CNEL of 45 dB or less due to aircraft noise.

Government Code Section 65302

Government Code Section 65302 mandates that the legislative body of each county and city in California 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.

California Vehicle Code Section 27200-27207 – On-Road Vehicle Noise

California Vehicle Code Section 27200-27207 provides noise limits for vehicles operated in California. For vehicles over 10,000 pounds noise is limited to 88 dB for vehicles manufactured before 1973, 86 dB for

vehicles manufactured before 1975, 83 dB for vehicles manufactured before 1988, and 80 dB for vehicles manufactured after 1987. All measurements are based at 50 feet from the vehicle.

California Vehicle Section 38365-38380 – Off-Road Vehicle Noise

California Vehicle Code Section 38365-38380 provides noise limits for off-highway motor vehicles operated in California. 92 dBA for vehicles manufactured before 1973, 88 dBA for vehicles manufactured before 1975, 86 dBA for vehicles manufactured before 1986, and 82 dBA for vehicles manufactured after December 31, 1985. All measurements are based at 50 feet from the vehicle.

Vibration Standards

Title 14 of the California Administrative Code Section 15000 requires that all state and local agencies implement the California Environmental Quality Act (CEQA) Guidelines, which requires the analysis of exposure of persons to excessive groundborne vibration. However, no statute has been adopted by the state that quantifies the level at which excessive groundborne vibration occurs.

Caltrans issued the *Transportation and Construction Vibration Guidance Manual*, April 2020. The Manual provides practical guidance to Caltrans engineers, planners, and consultants who must address vibration issues associated with the construction, operation, and maintenance of Caltrans projects. However, this manual is also used as a reference point by many lead agencies and CEQA practitioners throughout California, as it provides numeric thresholds for vibration impacts. Thresholds are established for continuous (construction-related) and transient (transportation-related) sources of vibration, which found that the human response becomes distinctly perceptible at 0.25 inch per second PPV for transient sources and 0.04 inch per second PPV for continuous sources.

4.3 Local Regulations

The City and County General Plans and Municipal Codes establishes the following goals, policies and regulations related to noise and vibration that are applicable to the proposed project.

City of Santa Ana General Plan Noise Element

Definition of undesirable or unhealthful noise levels must precede the goal of minimizing noise problems. The City of Santa Ana adopts the following standards and guidelines for noise levels for land uses:

Table B – City of Santa Ana Interior and Exterior Noise Standards

Categories	Land Use Categories	Noise Standard (dBA)	
		Interior(1)	Exterior(2)
Residential	Single-family, duplex, multi-family	45[3]	65
Institutional	Hospital, school classroom/playgrounds	45	65
	Church, library	45	--
Open Space	Parks	--	65

Notes:
[1] Interior areas (to include but are not limited to: bedrooms, bathrooms, kitchens, living rooms, dining rooms, closets, corridors/hallways, private offices, and conference rooms.
[2] Exterior areas shall mean: private yards of single-family homes, park picnic areas, school playgrounds, common areas, private open space, such as atriums on balconies, shall be excluded form exterior areas provided sufficient common area is included within the project.
[3] Interior noise level requirements contemplate a closed window condition. Mechanical ventilation system or other means of natural ventilation shall be provided per Chapter 12, Section 1305 of the Uniform Building Code.
Source: City of Santa Ana General Plan Noise Element, 2010.

Goal 1 **Prevent significant increases in noise levels in the community and minimize the adverse effects of currently-existing noise sources.**

Policies:

- Require consideration of noise generation potential and susceptibility to noise impacts in the siting, design, and construction of new developments.
- Require mitigating site and building design features, traffic circulation alternatives, insulation, and other noise prevention measures of those new developments which generate high noise levels.
- Sound insulate and/or buffer sensitive land uses such as housing from adverse noise impacts in noise-prone areas.
- Minimize noise generation in residential neighborhoods through control or elimination of truck traffic and through-traffic from these areas.

City of Santa Ana Municipal Code

The City of Santa Ana Municipal Code establishes the following applicable standards related to noise.

Sec. 18-312 Exterior noise standards

(a) The following noise standards, unless otherwise specifically indicated, shall apply to all residential property within a designated noise zone:

Table C – City of Santa Ana Exterior Noise Standards

Noise Zone[1]	Noise Level	Time Period
1	55 dB(A)	7 a.m. – 10 p.m.
	50 dB(A)	10 p.m. – 7 a.m.

Notes:
[1] Section 18-311 states: "The entire City of Santa Ana is hereby designated as "Noise Zone 1."
Source: City of Santa Ana Municipal Code, Section 18-312.

In the event the alleged offensive noise consists entirely of impact noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by five (5) dB(A).

(b) It is unlawful for any person at any location within the City of Santa Ana to create any noise, or to allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, when the foregoing causes the noise level, when measured on any other residential property, either incorporated or unincorporated, to exceed:

(1) The noise standard for a cumulative period of more than thirty (30) minute in any hour; or

(2) The noise standard plus five (5) dB(A) for a cumulative period of more than fifteen (15) minutes in any hour; or

(3) The noise standard plus ten (10) dB(A) for a cumulative period of more than five (5) minutes in any hour; or

(4) The noise standard plus fifteen (15) dB(A) for a cumulative period of more than one minute in any hour; or

(5) The noise standard plus twenty (20) dB(A) for any period of time.

(c) In the event the ambient noise level exceeds any of the first four (4) noise limit categories set forth in subsection (b) of this section, the cumulative period applicable to said category shall be increased to reflect said ambient noise level. In the event the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.

Sec. 18-313 Interior noise standards

(a) The following interior noise standards, unless otherwise specifically indicated, shall apply to all residential property within a designated noise zone:

Table D – City of Santa Ana Interior Noise Standards

Noise Zone[1]	Noise Level	Time Period
1	55 dB(A)	7 a.m. – 10 p.m.
	45 dB(A)	10 p.m. – 7 a.m.

Notes:
[1] Section 18-311 states: "The entire City of Santa Ana is hereby designated as "Noise Zone 1."
Source: City of Santa Ana Municipal Code, Section 18-313.

In the event the alleged offensive noise consists entirely of impact noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by five (5) dB(A).

(b) It is unlawful for any person at any location within the City of Santa Ana to create any noise, or to allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, when the foregoing causes the noise level, when measured within any other dwelling unit on any other residential property, to exceed:

(1) The interior noise standard for a cumulative period of more than five (5) minutes in any hour; or

(2) The interior noise standard plus five (5) dB(A) for a cumulative period of more than one minute in any hour; or

(3) The interior noise standard plus ten (10) dB(A) for any period of time.

(c) In the event the ambient noise level exceeds either of the first two (2) noise limit categories above, the cumulative period applicable to said category shall be increased to reflect said ambient noise level. In the event the ambient noise level exceeds the third noise limit category, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.

Sec. 18-314 Special provisions

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

(e) Noise sources associated with construction, repair, remodeling, or grading of any real property, provided said activities do not take place between the hours of 8:00 p.m. and 7:00 a.m. on weekdays, including Saturday, or at any time on Sunday or a federal holiday.

Sec. 18-315 Schools, hospitals and churches; special provisions

It shall be unlawful for any person to create any noise which causes the noise level at any school, hospital or church while the same is in use to exceed the noise limits as specified in Section 18-312 prescribed for the assigned noise zone in which the school, hospital or church is located, or which noise level

unreasonably interferes with the use of such institutions or which unreasonably disturbs or annoys patients in the hospital, provided conspicuous signs are displayed in three (3) separate locations within one-tenth (1/10) of a mile of the institution indicating the presence of a school, church or hospital.

County of Orange General Plan Noise Element

Goal 5 Noise/Land Use Planning.

To fully integrate noise considerations in land use planning to prevent new noise/land use conflicts.

Policies:

5.1 To utilize the criteria of acceptable noise levels for various types of land uses as depicted on Tables VIII-2 and VIII-3 in the review of development proposals.

5.5 To utilize the California Noise Standards for Airports in planning for areas surrounding military as well as civilian airports.

County of Orange Municipal Code

The County of Orange Municipal Code establishes the following applicable standards related to noise.

Sec. 4-6-5. Exterior noise standards

(a) The following noise standards, unless otherwise specifically indicated, shall apply to all residential property within a designated noise zone:

Table E – County of Orange Exterior Noise Standards

Noise Zone[1]	Noise Level	Time Period
1	55 dB(A)	7 a.m. – 10 p.m.
	50 dB(A)	10 p.m. – 7 a.m.

Notes:
[1] Section 4-6-4 states: "The entire territory of Orange County, including incorporated and unincorporated territory, is hereby designated as "Noise Zone 1."
Source: County of Orange Municipal Code, Section 4-6-5.

In the event the alleged offensive noise consists entirely of impact noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by five (5) dB(A).

(b) It shall be unlawful for any person at any location within the unincorporated area of the County to create any noise, or to allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, when the foregoing causes the noise level, when measured on any other residential property, either incorporated or unincorporated, to exceed:

(1) The noise standard for a cumulative period of more than thirty (30) minute in any hour; or

(2) The noise standard plus five (5) dB(A) for a cumulative period of more than fifteen (15) minutes in any hour; or

(3) The noise standard plus ten (10) dB(A) for a cumulative period of more than five (5) minutes in any hour; or

(4) The noise standard plus fifteen (15) dB(A) for a cumulative period of more than one minute in any hour; or

(5) The noise standard plus twenty (20) dB(A) for any period of time.

(c) In the event the ambient noise level exceeds any of the first four (4) noise limit categories above, the cumulative period applicable to said category shall be increased to reflect said ambient noise level. In the event the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.

Sec. 4-6-6. Interior noise standards

(a) The following interior noise standards, unless otherwise specifically indicated, shall apply to all residential property within a designated noise zone:

Table F – County of Orange Interior Noise Standards

Noise Zone[1]	Noise Level	Time Period
1	55 dB(A)	7 a.m. – 10 p.m.
	45 dB(A)	10 p.m. – 7 a.m.

Notes:
[1] Section 4-6-4 states: "The entire territory of Orange County, including incorporated and unincorporated territory, is hereby designated as "Noise Zone 1."
Source: County of Orange Municipal Code, Section 4-6-6.

In the event the alleged offensive noise consists entirely of impact noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by five (5) dB(A).

(b) It shall be unlawful for any person at any location within the unincorporate area of the County to create any noise, or to allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, when the foregoing causes the noise level, when measured within any other dwelling unit on any other residential property, either incorporated or unincorporated, to exceed:

(1) The interior noise standard for a cumulative period of more than five (5) minutes in any hour; or

(2) The interior noise standard plus five (5) dB(A) for a cumulative period of more than one minute in any hour; or

(3) The interior noise standard plus ten (10) dB(A) for any period of time.

(c) In the event the ambient noise level exceeds either of the first two (2) noise limit categories above, the cumulative period applicable to said category shall be increased to reflect said ambient noise level. In the event the ambient noise level exceeds the third noise limit category, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.

Sec. 4-6-7. Special Provisions

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

(e) Noise sources associated with construction, repair, remodeling, or grading of any real property, provided said activities do not take place between the hours of 8:00 p.m. and 7:00 a.m. on weekdays, including Saturday, or at any time on Sunday or a Federal holiday.

(i) Noise sources associated with the maintenance of real property, provided said activities take place between 7:00 a.m. and 8:00 p.m. on any day except Sunday or a Federal holiday, or between the hours of 9:00 a.m. and 8:00 p.m. on Sunday or a Federal holiday.

Sec. 4-6-8. Schools, Hospitals and Churches; Special Provisions

It shall be unlawful for any person to create any noise which causes the noise level at any school, hospital or church while the same is in use to exceed the noise limits as specified in section 4-6-5 prescribed for the assigned noise zone in which the school, hospital or church is located, or which noise level unreasonably interferes with the use of such institutions or which unreasonably disturbs or annoys patients in the hospital, provided conspicuous signs are displayed in three (3) separate locations within one-tenth of a mile of the institution indicating the presence of a school, church or hospital.

5.0 EXISTING NOISE CONDITIONS

To determine the existing noise levels, noise measurements have been taken in the vicinity of the project site. The field survey noted that noise within the proposed project area is generally characterized by vehicle traffic on the nearby adjacent roads, mechanical equipment at the nearby buildings, and from school activities.

5.1 Noise Measurements Parameters

The following describes the measurement procedures, measurement locations, and noise measurement results of the noise measurements taken in the project vicinity.

Noise Measurement Equipment

The noise measurements were taken using three Larson Davis Model LXT1 Class 1 sound level meters programmed in "slow" mode to record the sound pressure level at 1-second intervals for 24 hours in "A" weighted form. In addition, the L_{eq} averaged over the entire measuring time and L_{max} were recorded with the three sound level meters. The sound level meters and microphones were mounted on trees and fences, were placed approximately six feet above the ground and were equipped with windscreens during all measurements. The noise meters were calibrated before and after the monitoring using a Larson Davis Cal200 calibrator. All noise level measurement equipment meets American National Standards Institute (ANSI) specifications for sound level meters (ANSI S1.4-2014 standard).

Noise Measurement Locations

The noise monitoring locations were selected in order to obtain noise levels in the vicinity of the project site. Descriptions of the noise monitoring sites are provided below in Table G and are shown in Figure 3. Appendix A includes a photo index of the study area and noise level measurement locations.

Noise Measurement Timing and Climate

The noise measurements were recorded between 10:21 a.m. on Thursday, September 25, 2025 and 10:39 a.m. on Friday, September 26, 2025. At the start of the noise measurements, there were low clouds, the temperature was 71 degrees Fahrenheit, the humidity was 76 percent, barometric pressure was 29.87 inches of mercury, and the wind was blowing around four miles per hour. Overnight, the temperature dropped to 65 degrees Fahrenheit and the humidity peaked at 88 percent. At the conclusion of the noise measurements, there were low clouds, the temperature was 74 degrees Fahrenheit, the humidity was 69 percent, barometric pressure was 29.768 inches of mercury, and the wind was blowing around five miles per hour.

5.2 Noise Measurement Results

The results of the noise level measurements are presented in Table G. The measured sound pressure levels in dBA have been used to calculate the minimum and maximum L_{eq} averaged over 1-hour intervals. Table G also shows the L_{eq}, L_{max}, and CNEL, based on the entire measurement time. The CNEL was calculated through use of Equation 2-23 from *Technical Noise Supplement to the Traffic Noise Analysis Protocol* (TeNS), prepared by Caltrans, September 2013. The noise monitoring data printouts are included in Appendix B. Figure 4 shows a graph of the 24-hour noise measurements.

Table G – Existing (Ambient) Noise Level Measurements

Site No.	Site Description	Average (dBA L_{eq})			24- Hour Average	
		Daytime[1]	Evening[2]	Nighttime[3]	Leq	CNEL[4]
1	On fence on east side of JFK Elementary School at corner of existing paved parking area and fenced off undeveloped area.	58.9	56.6	56.7	57.9	63.6
2	On fence at the southeast corner of JFK Elementary School.	55.3	50.1	50.2	53.2	56.7
3	On west property line fence, approximately 90 feet north of southwest property corner.	55.8	53.1	52.5	54.1	58.3

Notes:

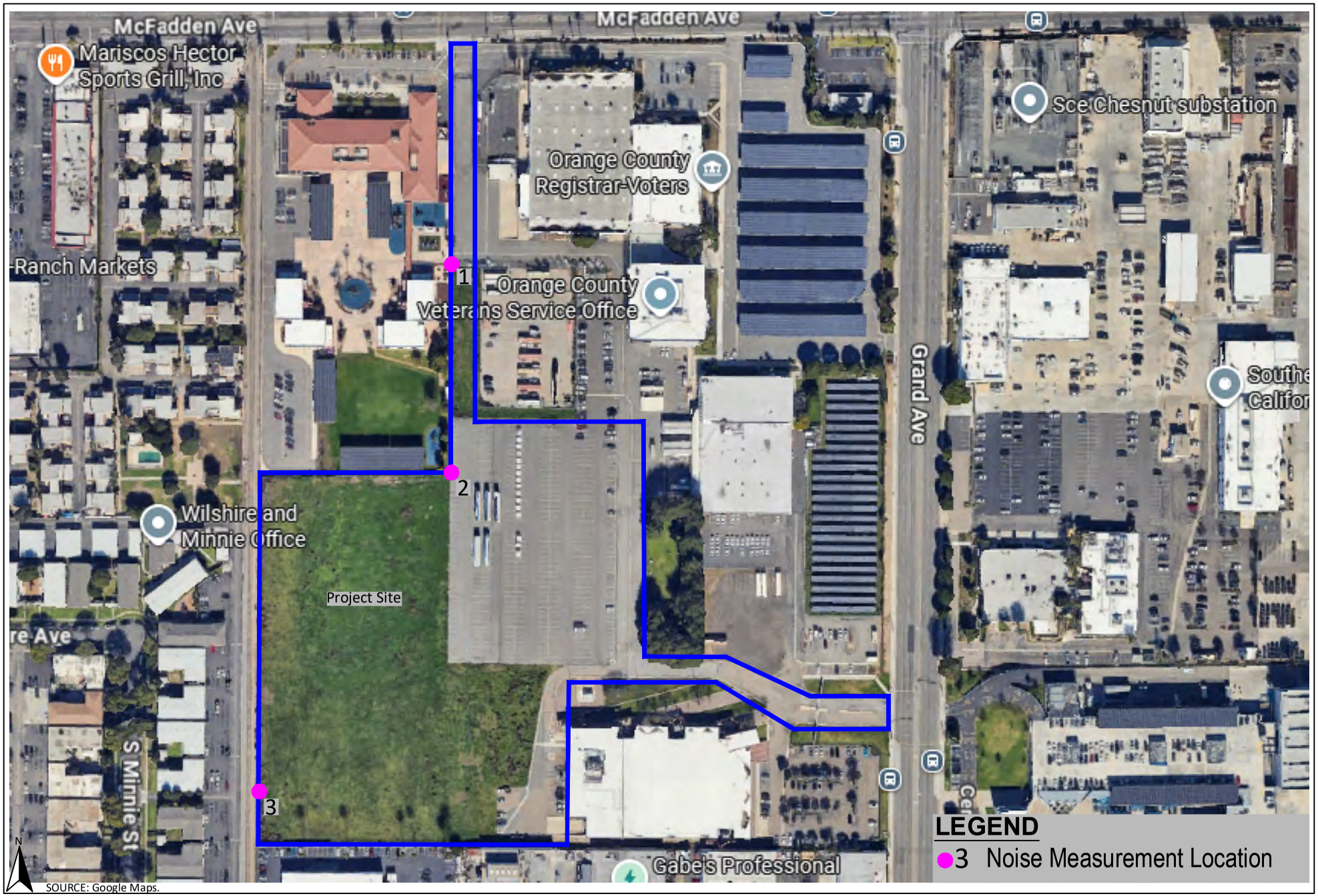
[1] Daytime defined as 7:00 a.m. to 7:00 p.m.

[2] Evening defined as 7:00 p.m. to 10:00 p.m.

[3] Nighttime define as 10:00 p.m. to 7:00 a.m.

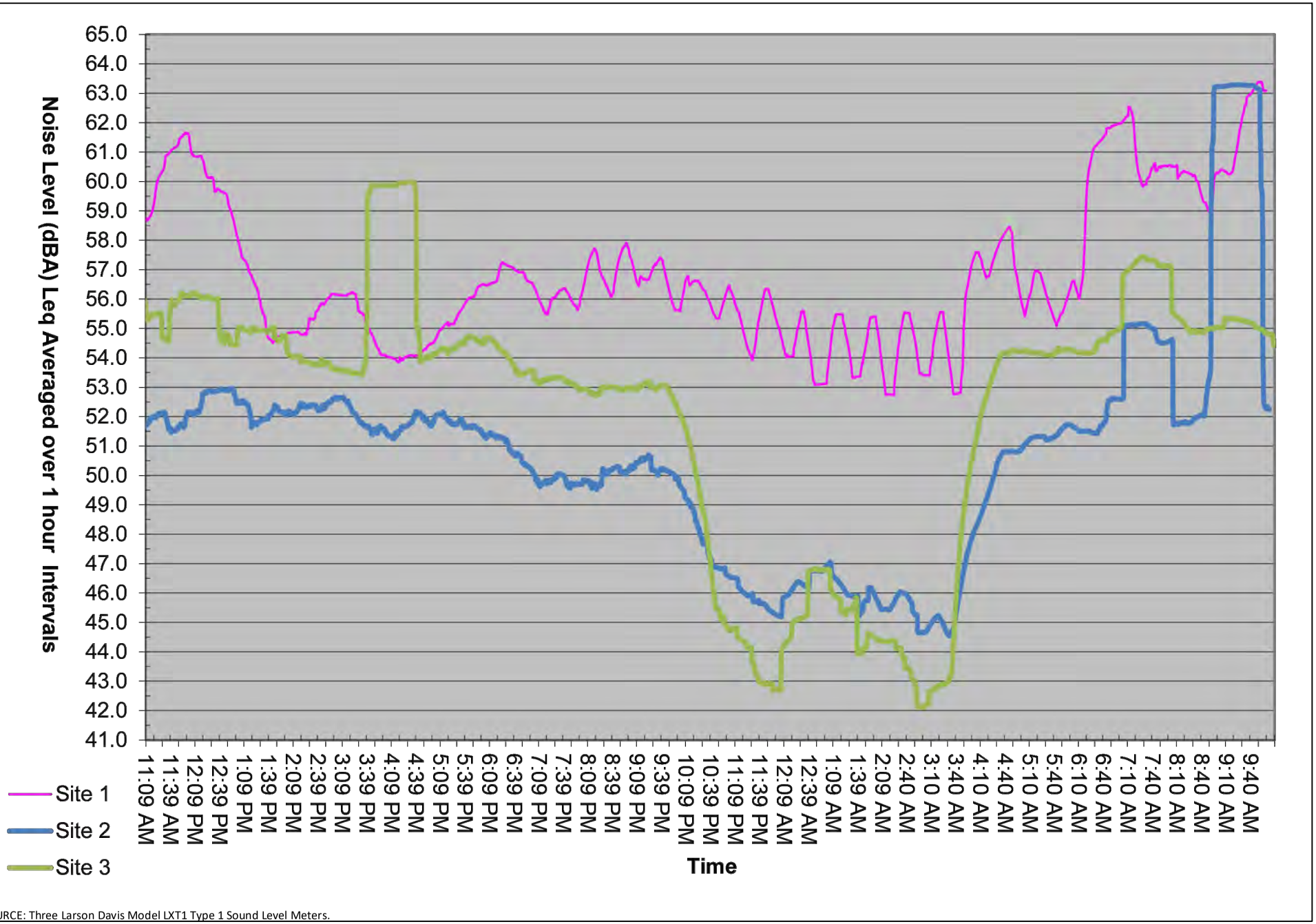
[4] The 24-hour average dBA CNEL is calculated by taking the hourly Leq values and adding a penalty of 4.77 dB during the evening hours of 7 to 10 pm and adding a 10 dB penalty during the nighttime hours of 10 pm to 7 am.

Source: Noise measurements taken between Thursday, September 25, 2025 and Friday, September 26, 2025.



VISTA ENVIRONMENTAL

Figure 3
Field Noise Monitoring Locations



SOURCE: Three Larson Davis Model LXT1 Type 1 Sound Level Meters.

VISTA ENVIRONMENTAL

Figure 4
Field Noise Measurements Graph

6.0 MODELING PARAMETERS AND ASSUMPTIONS

6.1 Construction Noise

The noise impacts from construction of the proposed project have been analyzed through use of the FHWA's Roadway Construction Noise Model (RCNM). The FHWA compiled noise measurement data regarding the noise generating characteristics of several different types of construction equipment used during the Central Artery/Tunnel project in Boston. Table H below provides a list of the construction equipment anticipated to be used for each phase of construction as detailed in the *Air Quality, Energy and Greenhouse Gas Emissions Impact Analysis New Fleet Services Facility Project* (Air Quality Analysis), prepared by Vista Environmental, April 27, 2026.

Table H – Construction Equipment Noise Emissions and Usage Factors

Equipment Description	Number of Equipment	Acoustical Use Factor[1] (percent)	Spec 721.560 Lmax at 50 feet[2] (dBA, slow[3])	Actual Measured Lmax at 50 feet[4] (dBA, slow[3])
Site Preparation				
Rubber Tired Dozers	3	40	85	82
Backhoe	1	40	80	78
Front End Loader	1	40	80	79
Tractors	2	40	84	N/A
Grading				
Excavator	1	40	85	81
Grader	1	40	85	83
Rubber Tired Dozer	1	40	85	82
Backhoe	1	40	80	78
Front End Loader	1	40	80	79
Tractor	1	40	84	N/A
Building Construction				
Crane	1	16	85	81
Forklift (Gradall)	3	40	85	83
Generator	1	50	82	81
Backhoe	1	40	80	78
Front End Loader	1	40	80	79
Tractor	1	40	84	N/A
Welder	1	40	73	74
Paving				
Cement and Mortar Mixer	2	40	85	79
Paver	1	50	85	77
Paving Equipment	2	50	85	77
Rollers	2	20	85	80
Tractor	1	40	84	N/A
Architectural Coating				
Air Compressor	1	40	80	78

Notes:
[1] Acoustical use factor is the percentage of time each piece of equipment is operational during a typical workday.
[2] Spec 721.560 is the equipment noise level utilized by the RCNM program.
[3] The "slow" response averages sound levels over 1-second increments. A "fast" response averages sound levels over 0.125-second increments.

[4] Actual Measured is the average noise level measured of each piece of equipment during the Central Artery/Tunnel project in Boston, Massachusetts primarily during the 1990s.
Source: Federal Highway Administration, 2006.

Table H also shows the associated measured noise emissions for each piece of equipment from the RCNM model and measured percentage of typical equipment use per day. Construction noise impacts to the nearby sensitive receptors have been calculated according to the equipment noise levels and usage factors listed in Table H and through use of the RCNM. For each phase of construction, the nearest piece of equipment was placed at the shortest distance of the proposed activity to the analyzed receptor and each subsequent piece of equipment was placed an additional 50 feet away, since it is unlikely that two pieces of equipment would operate closer than 50 feet apart.

For the access road to McFadden Avenue improvements that would add approximately 50,000 square feet of paved roadway adjacent to the east side of JFK Elementary School, the analysis was limited to the Site Preparation, Grading and Paving phases of construction, which were analyzed at a distance of 15 feet to the center of the community garden area, since that is the nearest use to the access road improvement area. For the south side of JFK Elementary School, all construction phases were analyzed and were analyzed at a distance of 30 feet to the center of the southern solar canopy, which is the nearest use to the south side of the School. In order to account for the acoustical center of the offroad equipment, it has been assumed that the average width of offroad equipment is 12 feet wide, which would result in an additional 6 feet being added to the distances to the nearby receptors.

Caltrans research has found that sound walls provide 5 dB of noise shielding when the wall reaches the height of line of sight between source and receiver (approximately 10 feet high) and then an additional 0.9 dBA of noise shielding for each foot above the line of sight[1]. As such, the proposed 12-foot high sound wall (see Project Design Feature 1) would provide approximately 6.8 dBA of noise reduction, which was entered into the RCNM model. The RCNM printouts are provided in Appendix C.

6.2 Operational Noise

In order to determine the noise impacts created from the potential activities and equipment that will be utilized onsite during the on-going operation of the proposed project, reference noise measurements were taken at the existing fleet services facility located at 1102 E Fruit Street. It should be noted that the fleet services staff were told to conduct the most noise producing activities during the noise measurements, in order to provide a worst-case analysis. Since the HVAC units were not running, during the site visit, a reference noise measurement of a rooftop HVAC unit taken at another service shop was utilized and the noise measurement printouts are provided in Appendix D. Table I provides a summary of the reference noise levels, the height and distance the noise measurement was taken from each source and the measured noise levels from each source.

1 Obtained from: https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tens-sep2013-a11y.pdf

Table I – Operational Reference Noise Levels

Noise Source	Reference Noise Measurements[1]				
	Distance - Noise Meter to Source (feet)	Height of Noise Source (feet)	Use Factor (Percent)	Measured Noise Levels	
				dBA Leq	dBA Lmax
Service Bays	30	4	100	65.0	85.4
Siren in Service Bay	30	5	10	76.8	93.4
Bus Bays	30	7	100	70.9	82.2
Compressor at Service Bays[2]	8	4	25	83.6	96.8
Body Shop	10	4	75	82.8	92.0
Compressor at Body Shop[2]	6	4	25	86.4	88.1
Metal Fabrication Shop	8	4	75	83.1	102.5
Rooftop HVAC Equipment	6	28	50	65.1	80.1

Notes:
[1] See Appendix D for Reference noise measurement printouts.
[2] The compressors were located outside at ground level, adjacent to the associated use building

The noise levels at the nearby school and homes were calculated based on the methodology provided in the FHWA Highway Traffic Noise Prediction Model (FHWA-RD-77-108) that is described in the *Technical Noise Supplement to the Traffic Noise Analysis Protocol* (TeNS), prepared by Caltrans, September 2013. Since the project site will be mostly paved, the hard site drop off rates for point sources was utilized that results in a drop off rate of 6.0 dB per doubling the distance between source and receptor and was calculated based on the following equation:

$$dBA_2 = dBA_1 + 10\log_{10}[(D_1/D_2)]^1 = dBA_1 + 20\log_{10}(D_1/D_2)$$

where:

dBA_1 = noise level at distance D_1

dBA_2 = noise level at distance D_2

As shown in Section 1.3, not all equipment is anticipated to be operated during the entire workday. The Use Factor provides the percent each piece of equipment will be operated in a typical day and the following Use Factor adjustment formula from the RCNM User Guide was utilized:

$$Leq = Lmax + 10Log(Use\ Factor/100)$$

In order to account for the noise reduction provided by the proposed 12 foot high concrete masonry unit (CMU) sound wall (see Project Design Feature 1), the following noise barrier noise attenuation formulas were utilized and the spreadsheet printouts are provided in Appendix E:

$$N_0 = 2(\delta_0/\gamma)$$

Where:

N_0 = Fresnel number determined along the perpendicular line between source and receiver (i.e., barrier must be perpendicular to the direct noise path)

δ_0 = δ measured along perpendicular line to barrier

γ = wavelength of sound radiated by source

$\delta = a + b - c$

Where:

δ = Path length difference

a = distance from source to top of barrier

b = distance from top of barrier to receiver

c = distance from source to receiver (straight line)

6.3 Vibration

Construction activity can result in varying degrees of ground vibration, depending on the equipment used on the site. Operation of construction equipment causes ground vibrations that spread through the ground and diminish in strength with distance. Buildings in the vicinity of the construction site respond to these vibrations with varying results ranging from no perceptible effects at the low levels to slight damage at the highest levels. Table J gives approximate vibration levels for the listed construction equipment. The data in Table J provides a reasonable estimate for a wide range of soil conditions.

Table J – Vibration Source Levels for Construction Equipment

Equipment		Peak Particle Velocity (inches/second)	Approximate Vibration Level (L_v)at 25 feet
Pile driver (impact)	Upper range	1.518	112
	typical	0.644	104
Pile driver (sonic)	Upper range	0.734	105
	typical	0.170	93
Clam shovel drop (slurry wall)		0.202	94
Vibratory Roller		0.210	94
Hoe Ram		0.089	87
Large bulldozer		0.089	87
Caisson drill		0.089	87
Loaded trucks		0.076	86
Jackhammer		0.035	79
Small bulldozer		0.003	58

Source: Federal Transit Administration, 2020.

The construction-related vibration impacts have been calculated through the vibration levels shown above in Table J and through typical vibration propagation rates. The equipment assumptions were based on the equipment lists provided above in Table H.

7.0 IMPACT ANALYSIS

7.1 CEQA Thresholds of Significance

Consistent with the California Environmental Quality Act (CEQA) and the State CEQA Guidelines, a significant impact related to noise would occur if a proposed project is determined to result in:

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

7.2 Generation of Noise Levels in Excess of Standards

The proposed project would not generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. The following section calculates the potential noise emissions associated with the temporary construction activities and long-term operations of the proposed project and compares the noise levels to the City and County standards.

Construction-Related Noise

The construction activities for the proposed project are anticipated to include site preparation and grading of the project site, building construction of the Fleet Services Building and solar panel canopy, paving of the onsite roads, disposal lot, and parking areas, and application of architectural coatings. Noise impacts from construction activities associated with the proposed project would be a function of the noise generated by construction equipment, equipment location, sensitivity of nearby land uses, and the timing and duration of the construction activities.

Section 18-314(e) of the City's Municipal Code exempts construction noise that occurs between 7:00 a.m. and 8:00 p.m. on weekdays from the City's noise standards. Section 4-6-7(e) of the County's Municipal Code exempts construction noise that occurs between 7:00 a.m. and 8:00 p.m. on weekdays from the County's noise standards. Since, neither Municipal Code provides any limits to the noise levels that may be created from construction activities that occur during the allowable times for construction, the FTA construction noise thresholds shown above in Table A have been utilized that limit noise impacts to 80 dBA Leq during the daytime when construction noise is exempt.

Construction noise levels to the nearby sensitive receptors have been calculated through use of the RCNM and the parameters and assumptions detailed in Section 6.1 of this report including Table H – Construction Equipment Noise Emissions and Usage Factors. The results are shown below in Table K and the RCNM printouts are provided in Appendix C.

Table K – Construction Noise Levels at the Nearby Sensitive Receptors

Construction Phase	Construction Noise Level (dBA Leq) at: South Side of JFK Elementary School[1]	Multi-Family Homes to West[2]	East Side of JFK Elementary School[3]
Site Preparation	75	78	79
Grading	75	78	79
Building Construction	73	77	--
Paving	72	75	76
Painting	70	72	--
FTA Construction Noise Threshold[4]	**80**	**80**	**80**
Exceed Thresholds?	No	No	No

Notes:
[1] The south side of JFK Elementary School was analyzed at 30 feet from property line to the center of the southern solar canopy.
[2] The multi-family homes to the west were analyzed at 55 feet from property line to homes.
[3] The east side of JFK Elementary School that is adjacent to the access road was analyzed at 15 feet from property line to the center of the community garden area. No Building Construction or Painting would occur at the access road improvement area.
[4] The FTA Construction noise thresholds are detailed above in Table A.
Source: RCNM, Federal Highway Administration, 2006

Table K shows that the greatest noise impacts would occur during the site preparation and grading phases, with noise levels as high as 75 dBA Leq at the south side of JFK Elementary School, 78 dBA Leq at the multi-family homes to the west, and 79 dBA Leq at the east side of JFK Elementary School. The calculated construction noise levels for all phases of construction are within the FTA construction noise standard of 80 dBA. Therefore, with implementation of Project Design Feature 1 that requires construction of the 12-foot sound wall prior to the start of site preparation activities and through adherence to the limitation of allowable construction times provided in Section 18-314(e) of the City's Municipal Code, construction-related noise levels would not exceed any standards established in the General Plan or Noise Ordinance nor would construction activities create a substantial temporary increase in ambient noise levels from construction of the proposed project. Impacts would be less than significant.

Operational-Related Noise

The proposed project consists of the operation of the new fleet services facility. Potential noise impacts associated with the operations of the proposed project would be from project-generated vehicular traffic on the nearby roadways and from onsite noise sources that may create noise levels in excess of City and County standards at the nearby receptors. The noise impacts to the nearby receptors from roadway noise and from the onsite noise sources have been analyzed separately below.

Roadway Vehicular Noise Impact to Nearby Sensitive Receptors

Vehicle noise is a combination of the noise produced by the engine, exhaust and tires. The level of traffic noise depends on three primary factors (1) the volume of traffic, (2) the speed of traffic, and (3) the number of trucks in the flow of traffic. The proposed project does not propose any uses that would require a substantial number of truck trips and the proposed project would not alter the speed limit on any existing roadway so the proposed project's potential offsite noise impacts have been focused on the noise impacts associated with the change of volume of traffic that would occur with development of the proposed project.

The *Santa Ana General Plan Update Draft Program Environmental Impact Report* (Santa Ana DPEIR), prepared by Placeworks, August 2020, utilizes the following thresholds of significance to assess traffic noise impacts at sensitive receptor locations:

- Greater than 1.5 dBA increase for ambient noise environments of 65 dBA CNEL and higher;
- Greater than 3 dBA increase for ambient noise environments of 60 – 64 dBA CNEL; and
- Greater than 5 dBA increase for ambient noise environments of less than 60 dBA CNEL.

The proposed project consists of the consolidation of two existing facilities that are located within two miles of the project site into the proposed facility. The Air Quality Analysis (Vista Environmental, 2025) found that the proposed project would relocate approximately 500 daily trips to the project site. The Santa Ana DPEIR shows that McFadden Avenue currently has 20,997 ADT and Grand Avenue currently has 36,678 ADT.

In order for project-generated vehicular traffic to increase the noise level by 3 dB, the roadway traffic would have to double. In order for project-generated vehicular traffic to increase the noise level by 1.5 dB, the roadway traffic would have to increase by 50 percent. Since the proposed project would only result in a maximum of a 2.4 percent on McFadden Avenue and 1.4 percent on Grand Avenue, when compared to existing conditions, the project-related roadway noise increase is anticipated to be negligible and well below the most stringent 1.5 dBA road noise threshold. Operational roadway noise impacts would be less than significant.

Onsite Noise Impacts to Nearby Sensitive Receptors

Section 18-312 of the City's Municipal Code and Section 4-6-5 of the County's Municipal Code limits the noise levels at the nearby homes to 55 dBA Leq or 75 dBA Lmax between 7:00 a.m. and 10:00 p.m. and 50 dBA Leq or 70 dBA Lmax between 10:00 p.m. and 7:00 a.m.. Section 18-315 of the City's Municipal Code and Section 4-6-8 of the County's Municipal Code specifies that the noise standard for schools is the same as the residential noise standard.

The nearest sensitive receptor to the project site is the John F. Kennedy Elementary School (JFK School) that is adjacent to the north side of the project site. There are also the multi-family homes that are as near as 55 feet west of the project site. Onsite operational noise impacts to the nearby sensitive receptors have been calculated based on the methodology detailed above in Section 6.2 of this report. Table L shows the calculated operational noise levels at the nearby sensitive receptors and the noise calculation printouts are provided in Appendix E.

Table L – Operational Noise Levels at the Nearby Sensitive Receptors Prior to Mitigation

Noise Source	Calculated Noise Levels[1] at:			
	School to North		Multi-Family Homes to West	
	Average Noise (dBA Leq)	Max Noise (dBA Lmax)	Average Noise (dBA Leq)	Max Noise (dBA Lmax)
Service Bays	36.1	56.5	36.8	57.2
Siren in Service Bay	37.9	64.5	38.9	65.5
Bus Bays	42.1	53.4	38.1	49.4
Compressor at Service Bays	37.6	56.8	37.9	57.1
Body Shop	43.1	53.6	48.2	58.7
Compressor at Body Shop	37.9	45.6	42.7	50.4
Metal Fabrication Shop	41.5	62.1	44.0	64.7
Rooftop Mechanical Equipment	36.1	56.6	38.6	59.1
Max or Combined Noise Level[1]	**48.9**	**64.5**	**51.5**	**65.5**
City and County Noise Standards (Day/Night)[2]	55/50	75/70	55/50	75/70
Exceed City and County Noise Standards (Day/Night)?	**No/No**	**No/No**	**No/Yes**	**No/No**

Notes:
[1] The calculated noise levels include noise reduction provided by the proposed 12-foot high cmu wall (see Project Design Feature 1).
[2] The City noise standards were obtained from Section 18.312 of the Municipal Code and the County noise standards were obtained from Section 4-6-5 of the Municipal Code.

Table L shows that the ongoing operation of the proposed project would create noise levels as high as 48.9 dBA Leq and 64.5 dBA Lmax at JFK Elementary School to the north and 51.5 dBA Leq and 65.5 dBA Lmax at the multi-family homes to the west. Table L shows the calculated operational noise levels would be within both the City and County noise standards at the School to the north, however the noise would exceed the average nighttime noise standards at the multi-family homes to the west. This would be considered a significant impact.

Mitigation Measure 1 has been provided that would require the Body Shop and Metal Fabrication Shop to operate with all exterior doors closed between the hours of 10:00 p.m. and 7:00 a.m..

Table M shows the calculated operational noise levels at the nearby sensitive receptors with the noise reduction provided by closing the exterior doors to the Body Shop. As shown in Table M, with implementation of the closing of the exterior doors during the nighttime required in Mitigation Measure 1, the operation-related noise levels at the multi-family homes would be lowered to within the City and County noise standards. Therefore, with implementation of Mitigation Measure 1, the proposed project's operations-related noise would be reduced to less than significant.

Table M – Mitigated Operational Noise Levels at the Nearby Sensitive Receptors

Noise Source	Calculated Noise Levels[1] at:				
	School to North		Multi-Family Homes to West		
	Average Noise (dBA Leq)	Max Noise (dBA Lmax)	Average Day (dBA Leq)	Average Night (dBA Leq)	Max Noise (dBA Lmax)
Service Bays	36.1	56.5	36.8	36.8	57.2
Siren in Service Bay	37.9	64.5	38.9	38.9	65.5
Bus Bays	42.1	53.4	38.1	38.1	49.4
Compressor at Service Bays	37.6	56.8	37.9	37.9	57.1
Body Shop	43.1	53.6	48.2	28.2	58.7
Compressor at Body Shop	37.9	45.6	42.7	42.7	50.4
Metal Fabrication Shop	41.5	62.1	44.0	44.0	64.7
Rooftop Mechanical Equipment	36.1	56.6	38.6	38.6	59.1
Max or Combined Noise Level[1]	**48.9**	**64.5**	**51.5**	**48.9**	**65.5**
City and County Noise Standards (Day/Night)[1]	55/50	75/70	55	50	75/70
Exceed City and County Noise Standards (Day/Night)?	No/No	No/No	No	No	No/No

Notes:
[1] The calculated noise levels include noise reduction provided by the proposed 12-foot high cmu wall (see Project Design Feature 1) and the closing of the exterior doors to the Body Shop and Metal Fabrication Shop between the hours of 10:00 p.m. and 7:00 a.m. (see Mitigation Measure 1).
[2] The City noise standards were obtained from Section 18.312 of the Municipal Code and the County noise standards were obtained from Section 4-6-5 of the Municipal Code.

Level of Significance Before Mitigation

Potentially significant impact.

Mitigation Measures

Mitigation Measure 1:

The project applicant shall require the Body Shop to operate with all exterior doors closed between the hours of 10:00 p.m. and 7:00 a.m..

Level of Significance after Mitigation

Less than significant impact.

7.3 Generation of Excessive Groundborne Vibration

The proposed project would not expose persons to or generation of excessive groundborne vibration or groundborne noise levels. The following section analyzes the potential vibration impacts associated with the construction and operations of the proposed project.

Construction-Related Vibration Impacts

The construction activities for the proposed project are anticipated to include site preparation and grading of the project site, building construction of the Fleet Services Building and solar panel canopy, paving of the onsite roads, disposal lot, and parking areas, and application of architectural coatings. The nearest offsite structure where people may sit, which makes them much more susceptible to vibration, would be

the school structure located as near as 30 feet from the proposed access road to McFadden Avenue improvements that would add approximately 50,000 square feet of paved roadway adjacent to the east side of JFK Elementary School.

Since neither the City or County General Plans or Municipal Codes provide any vibration standards for construction activities, Caltrans guidance that is detailed in Section 4.2 has been utilized, which defines the threshold of perception from transient sources at 0.25 inch per second PPV.

The primary source of vibration during construction would be from the operation of a vibratory roller. From Table J above a vibratory roller would create a vibration level of 0.21 inch per second PPV at 25 feet. Based on typical propagation rates, the vibration level at the nearest offsite structure (30 feet away) would be 0.17 inch per second PPV. The vibration level at the nearest offsite structures would be below the 0.25 inch per second PPV threshold detailed above. Impacts would be less than significant.

Operations-Related Vibration Impacts

The proposed project would consist of the on-going operation of the new fleet services facility. The on-going operation of the proposed project would not include the operation of any known vibration sources. Therefore, a less than significant vibration impact is anticipated from the operation of the proposed project.

Level of Significance

Less than significant impact.

7.4 Aircraft Noise

The proposed project would not expose people residing or working in the project area to excessive noise levels from aircraft. The nearest airport is John Wayne Municipal Airport that is located as near as 3.3 miles south of the project site. The project site is located outside of the 60 dBA CNEL noise contours of both of this airport. A less than significant impact would occur from aircraft noise.

Level of Significance

Less than significant impact.

8.0 REFERENCES

California Department of Transportation (Caltrans), *Technical Noise Supplement to the Traffic Noise Analytics Protocol*, September 2013.

California Department of Transportation, *Transportation and Construction Vibration Guidance Manual*, April 2020.

City of Santa Ana, *Noise Element Santa Ana General Plan,* Final, April 2022.

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County of Orange, *County of Orange General Plan,* September 13, 2005.

County of Orange, *The Codified Ordinances of the County of Orange Supplement 155,* May 20, 2025.

Federal Transit Administration, *Transit Noise and Vibration Impact Assessment,* September 2018.

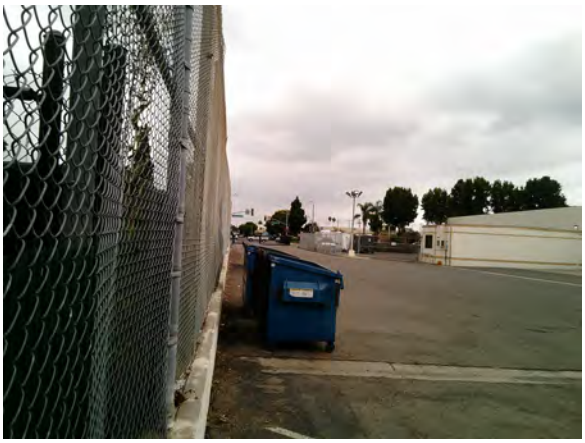
Placeworks, *Santa Ana General Plan Update Draft Program Environmental Impact Report,* August 2020.

U.S. Department of Transportation, *FHWA Roadway Construction Noise Model User's Guide,* January, 2006.

Vista Environmental, *Air Quality, Energy, and Greenhouse Gas Emissions Impact Analysis New Fleet Services Facility Project,* April 27, 2026.

APPENDIX A

Field Noise Measurements Photo Index



Noise Measurement Site 1 - looking north

Noise Measurement Site 1 - looking northeast

Noise Measurement Site 1 - looking east

Noise Measurement Site 1 - looking southeast

Noise Measurement Site 1 - looking south

Noise Measurement Site 1 - looking southwest

Noise Measurement Site 1 - looking west

Noise Measurement Site 1 - looking northwest

Noise Measurement Site 2 - looking north

Noise Measurement Site 2 - looking northeast

Noise Measurement Site 2 - looking east

Noise Measurement Site 2 - looking southeast

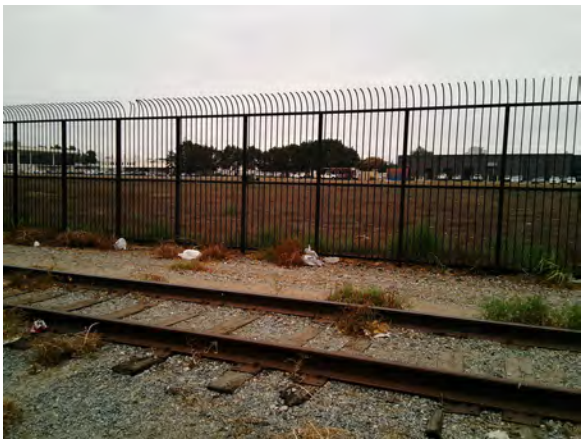
Noise Measurement Site 2 - looking south

Noise Measurement Site 2 - looking southwest

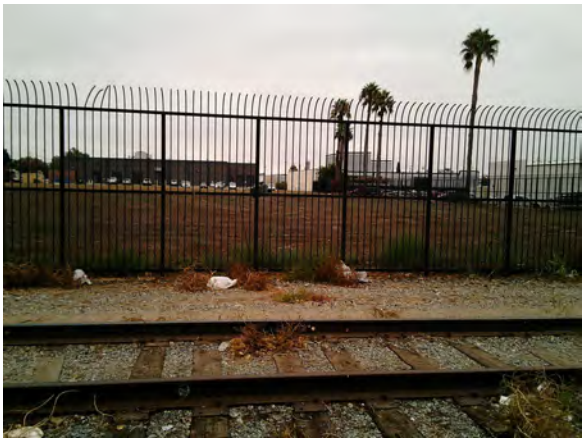
Noise Measurement Site 2 - looking west

Noise Measurement Site 2 - looking northwest

Noise Measurement Site 3 - looking north



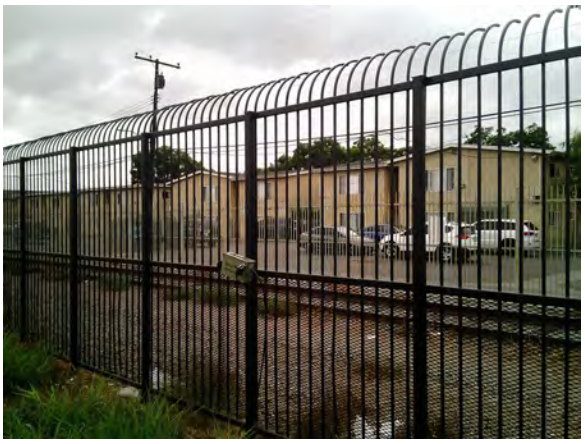
Noise Measurement Site 3 - looking northeast



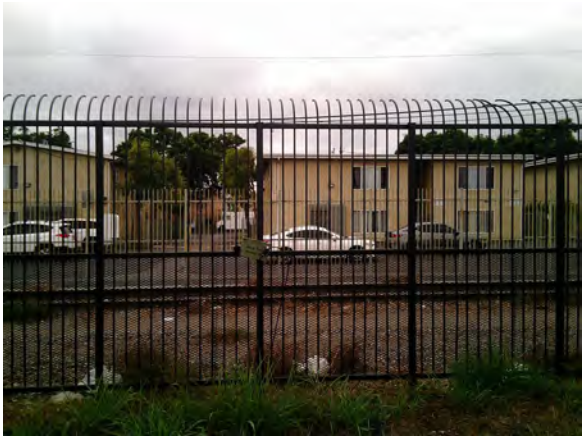
Noise Measurement Site 3 - looking east

Noise Measurement Site 3 - looking southeast

Noise Measurement Site 3 - looking south



Noise Measurement Site 3 - looking southwest



Noise Measurement Site 3 - looking west

Noise Measurement Site 3 - looking northwest

APPENDIX B

Field Noise Measurements Printouts

Site 1 - On Fence on East Side of School

September 25, 2025 Leq Daytime = 58.9
Sampling Time = 1 sec Freq Weighting=A Leq Evening = 56.6
Record Num = 86402 Leq Nighttime = 56.7
Leq = 57.9 Ldn(24hr)= 63.4 CNEL = 63.6
Min = 42.9 Min Leq hr at 2:06 AM 52.7
Max = 81.3 Max Leq hr at 9:41 AM 63.4

Site 1 - On Fence on East Side of School

SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL
61.7	10:21:59		61.7	61.7
61.3	10:22:00		61.3	61.3
71.7	10:22:01		71.7	71.7
61.7	10:22:02		61.7	61.7
54.3	10:22:03		54.3	54.3
54.8	10:22:04		54.8	54.8
62.4	10:22:05		62.4	62.4
61.7	10:22:06		61.7	61.7
55.2	10:22:07		55.2	55.2
78.9	10:22:08		78.9	78.9
61.1	10:22:09		61.1	61.1
60.3	10:22:10		60.3	60.3
53.7	10:22:11		53.7	53.7
59.2	10:22:12		59.2	59.2
65.0	10:22:13		65.0	65.0
70.7	10:22:14		70.7	70.7
64.4	10:22:15		64.4	64.4
54.7	10:22:16		54.7	54.7
55.8	10:22:17		55.8	55.8
55.2	10:22:18		55.2	55.2
54.8	10:22:19		54.8	54.8
61.7	10:22:20		61.7	61.7
60.8	10:22:21		60.8	60.8
67.0	10:22:22		67.0	67.0
56.6	10:22:23		56.6	56.6
62.9	10:22:24		62.9	62.9
59.1	10:22:25		59.1	59.1
59.8	10:22:26		59.8	59.8
66.9	10:22:27		66.9	66.9
61.4	10:22:28		61.4	61.4
63.7	10:22:29		63.7	63.7
74.0	10:22:30		74.0	74.0
57.9	10:22:31		57.9	57.9
57.9	10:22:32		57.9	57.9
60.5	10:22:33		60.5	60.5
59.2	10:22:34		59.2	59.2
58.8	10:22:35		58.8	58.8
60.0	10:22:36		60.0	60.0
56.7	10:22:37		56.7	56.7
54.3	10:22:38		54.3	54.3
54.3	10:22:39		54.3	54.3
56.0	10:22:40		56.0	56.0
62.7	10:22:41		62.7	62.7
69.8	10:22:42		69.8	69.8
69.7	10:22:43		69.7	69.7
67.3	10:22:44		67.3	67.3
62.8	10:22:45		62.8	62.8
61.0	10:22:46		61.0	61.0
59.8	10:22:47		59.8	59.8
64.9	10:22:48		64.9	64.9
70.9	10:22:49		70.9	70.9
68.0	10:22:50		68.0	68.0
59.3	10:22:51		59.3	59.3
69.5	10:22:52		69.5	69.5
67.7	10:22:53		67.7	67.7
66.5	10:22:54		66.5	66.5
61.7	10:22:55		61.7	61.7
68.2	10:22:56		68.2	68.2
58.7	10:22:57		58.7	58.7
59.6	10:22:58		59.6	59.6
60.4	10:22:59		60.4	60.4
65.2	10:23:00		65.2	65.2
72.9	10:23:01		72.9	72.9
68.1	10:23:02		68.1	68.1
64.0	10:23:03		64.0	64.0
61.9	10:23:04		61.9	61.9
60.5	10:23:05		60.5	60.5
57.7	10:23:06		57.7	57.7
58.9	10:23:07		58.9	58.9
57.7	10:23:08		57.7	57.7
58.6	10:23:09		58.6	58.6
60.3	10:23:10		60.3	60.3
70.6	10:23:11		70.6	70.6
71.3	10:23:12		71.3	71.3
59.2	10:23:13		59.2	59.2
62.4	10:23:14		62.4	62.4
62.0	10:23:15		62.0	62.0
80.3	10:23:16		80.3	80.3
75.5	10:23:17		75.5	75.5
61.1	10:23:18		61.1	61.1
57.1	10:23:19		57.1	57.1
58.7	10:23:20		58.7	58.7
58.0	10:23:21		58.0	58.0
56.7	10:23:22		56.7	56.7
62.1	10:23:23		62.1	62.1
66.4	10:23:24		66.4	66.4
62.2	10:23:25		62.2	62.2
71.5	10:23:26		71.5	71.5
71.7	10:23:27		71.7	71.7
61.5	10:23:28		61.5	61.5
63.8	10:23:29		63.8	63.8
64.0	10:23:30		64.0	64.0
67.3	10:23:31		67.3	67.3
69.4	10:23:32		69.4	69.4
71.4	10:23:33		71.4	71.4
77.4	10:23:34		77.4	77.4
71.9	10:23:35		71.9	71.9
61.3	10:23:36		61.3	61.3
66.6	10:23:37		66.6	66.6
59.2	10:23:38		59.2	59.2
61.6	10:23:39		61.6	61.6
64.5	10:23:40		64.5	64.5
61.2	10:23:41		61.2	61.2
58.9	10:23:42		58.9	58.9
56.2	10:23:43		56.2	56.2
55.9	10:23:44		55.9	55.9
56.9	10:23:45		56.9	56.9
60.5	10:23:46		60.5	60.5
59.3	10:23:47		59.3	59.3
58.3	10:23:48		58.3	58.3
58.3	10:23:49		58.3	58.3
60.8	10:23:50		60.8	60.8
63.2	10:23:51		63.2	63.2
64.1	10:23:52		64.1	64.1
63.1	10:23:53		63.1	63.1
58.3	10:23:54		58.3	58.3
56.9	10:23:55		56.9	56.9
58.8	10:23:56		58.8	58.8
58.5	10:23:57		58.5	58.5
57.4	10:23:58		57.4	57.4
57.6	10:23:59		57.6	57.6
61.6	10:24:00		61.6	61.6
63.1	10:24:01		63.1	63.1
56.9	10:24:02		56.9	56.9
57.3	10:24:03		57.3	57.3
53.9	10:24:04		53.9	53.9
52.7	10:24:05		52.7	52.7
52.9	10:24:06		52.9	52.9
54.9	10:24:07		54.9	54.9
56.1	10:24:08		56.1	56.1
56.5	10:24:09		56.5	56.5
57.4	10:24:10		57.4	57.4
58.5	10:24:11		58.5	58.5
64.4	10:24:12		64.4	64.4
57.1	10:24:13		57.1	57.1
62.3	10:24:14		62.3	62.3
55.4	10:24:15		55.4	55.4
63.8	10:24:16		63.8	63.8
56.1	10:24:17		56.1	56.1
54.3	10:24:18		54.3	54.3
54.6	10:24:19		54.6	54.6
54.4	10:24:20		54.4	54.4
53.5	10:24:21		53.5	53.5
55.2	10:24:22		55.2	55.2
58.6	10:24:23		58.6	58.6
58.9	10:24:24		58.9	58.9
58.6	10:24:25		58.6	58.6
54.7	10:24:26		54.7	54.7
58.8	10:24:27		58.8	58.8
55.2	10:24:28		55.2	55.2
55.6	10:24:29		55.6	55.6
55.7	10:24:30		55.7	55.7
56.7	10:24:31		56.7	56.7
56.4	10:24:32		56.4	56.4
59.8	10:24:33		59.8	59.8
57.2	10:24:34		57.2	57.2
57.2	10:24:35		57.2	57.2
56.0	10:24:36		56.0	56.0
57.7	10:24:37		57.7	57.7
57.3	10:24:38		57.3	57.3
57.5	10:24:39		57.5	57.5
59.0	10:24:40		59.0	59.0
56.8	10:24:41		56.8	56.8
58.1	10:24:42		58.1	58.1

Site 2 - On Fence at SE Corner of School

September 25, 2025 10:33:30 AM Leq Daytime = 55.3
Sampling Time = 1 sec Freq Weighting=A Leq Evening = 50.1
Record Num = 86402 Leq Nighttime = 50.2
Leq = 53.2 Ldn(24hr)= 56.5 CNEL = 56.7
Min = 41.4 Min Leq hr at 3:31 AM 44.5
Max = 87.1 Max Leq hr at 9:10 AM 63.3

Site 2 - On Fence at SE Corner of School

SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL
51.1	10:33:30		51.1	51.1
56.5	10:33:31		56.5	56.5
56.5	10:33:32		56.5	56.5
61.1	10:33:33		61.1	61.1
60.9	10:33:34		60.9	60.9
56.5	10:33:35		56.5	56.5
78.7	10:33:36		78.7	78.7
67.0	10:33:37		67.0	67.0
50.3	10:33:38		50.3	50.3
56.6	10:33:39		56.6	56.6
61.4	10:33:40		61.4	61.4
69.9	10:33:41		69.9	69.9
49.9	10:33:42		49.9	49.9
51.3	10:33:43		51.3	51.3
60.2	10:33:44		60.2	60.2
54.6	10:33:45		54.6	54.6
58.8	10:33:46		58.8	58.8
57.2	10:33:47		57.2	57.2
55.0	10:33:48		55.0	55.0
54.9	10:33:49		54.9	54.9
59.3	10:33:50		59.3	59.3
68.2	10:33:51		68.2	68.2
61.4	10:33:52		61.4	61.4
59.1	10:33:53		59.1	59.1
61.7	10:33:54		61.7	61.7
64.4	10:33:55		64.4	64.4
62.5	10:33:56		62.5	62.5
57.5	10:33:57		57.5	57.5
62.3	10:33:58		62.3	62.3
60.1	10:33:59		60.1	60.1
62.6	10:34:00		62.6	62.6
56.2	10:34:01		56.2	56.2
63.3	10:34:02		63.3	63.3
54.1	10:34:03		54.1	54.1
74.2	10:34:04		74.2	74.2
53.5	10:34:05		53.5	53.5
51.8	10:34:06		51.8	51.8
51.7	10:34:07		51.7	51.7
49.9	10:34:08		49.9	49.9
49.7	10:34:09		49.7	49.7
53.2	10:34:10		53.2	53.2
67.5	10:34:11		67.5	67.5
53.3	10:34:12		53.3	53.3
50.6	10:34:13		50.6	50.6
49.2	10:34:14		49.2	49.2
58.6	10:34:15		58.6	58.6
57.9	10:34:16		57.9	57.9
51.3	10:34:17		51.3	51.3
68.8	10:34:18		68.8	68.8
67.7	10:34:19		67.7	67.7
70.2	10:34:20		70.2	70.2
61.7	10:34:21		61.7	61.7
60.4	10:34:22		60.4	60.4
54.0	10:34:23		54.0	54.0
49.3	10:34:24		49.3	49.3
49.4	10:34:25		49.4	49.4
49.9	10:34:26		49.9	49.9
50.9	10:34:27		50.9	50.9
52.6	10:34:28		52.6	52.6
56.3	10:34:29		56.3	56.3
62.5	10:34:30		62.5	62.5
68.4	10:34:31		68.4	68.4
64.3	10:34:32		64.3	64.3
59.1	10:34:33		59.1	59.1
63.6	10:34:34		63.6	63.6
59.9	10:34:35		59.9	59.9
53.5	10:34:36		53.5	53.5
65.2	10:34:37		65.2	65.2
60.3	10:34:38		60.3	60.3
55.7	10:34:39		55.7	55.7
55.9	10:34:40		55.9	55.9
53.7	10:34:41		53.7	53.7
49.4	10:34:42		49.4	49.4
51.7	10:34:43		51.7	51.7
51.6	10:34:44		51.6	51.6
52.9	10:34:45		52.9	52.9
52.3	10:34:46		52.3	52.3
65.8	10:34:47		65.8	65.8
63.1	10:34:48		63.1	63.1
54.5	10:34:49		54.5	54.5
54.8	10:34:50		54.8	54.8
52.3	10:34:51		52.3	52.3
62.2	10:34:52		62.2	62.2
57.5	10:34:53		57.5	57.5
54.0	10:34:54		54.0	54.0
53.0	10:34:55		53.0	53.0
52.9	10:34:56		52.9	52.9
48.4	10:34:57		48.4	48.4
49.3	10:34:58		49.3	49.3
51.6	10:34:59		51.6	51.6
53.2	10:35:00		53.2	53.2
49.2	10:35:01		49.2	49.2
49.8	10:35:02		49.8	49.8
52.4	10:35:03		52.4	52.4
50.5	10:35:04		50.5	50.5
51.6	10:35:05		51.6	51.6
51.6	10:35:06		51.6	51.6
51.4	10:35:07		51.4	51.4
53.4	10:35:08		53.4	53.4
55.3	10:35:09		55.3	55.3
56.7	10:35:10		56.7	56.7
49.5	10:35:11		49.5	49.5
49.3	10:35:12		49.3	49.3
49.3	10:35:13		49.3	49.3
51.5	10:35:14		51.5	51.5
50.9	10:35:15		50.9	50.9
52.4	10:35:16		52.4	52.4
50.2	10:35:17		50.2	50.2
49.7	10:35:18		49.7	49.7
51.2	10:35:19		51.2	51.2
50.3	10:35:20		50.3	50.3
53.1	10:35:21		53.1	53.1
50.6	10:35:22		50.6	50.6
51.0	10:35:23		51.0	51.0
51.0	10:35:24		51.0	51.0
50.1	10:35:25		50.1	50.1
53.3	10:35:26		53.3	53.3
51.4	10:35:27		51.4	51.4
51.0	10:35:28		51.0	51.0
50.0	10:35:29		50.0	50.0
49.7	10:35:30		49.7	49.7
49.3	10:35:31		49.3	49.3
50.5	10:35:32		50.5	50.5
51.5	10:35:33		51.5	51.5
49.7	10:35:34		49.7	49.7
49.9	10:35:35		49.9	49.9
49.9	10:35:36		49.9	49.9
49.7	10:35:37		49.7	49.7
49.4	10:35:38		49.4	49.4
49.5	10:35:39		49.5	49.5
49.9	10:35:40		49.9	49.9
52.5	10:35:41		52.5	52.5
51.0	10:35:42		51.0	51.0
51.6	10:35:43		51.6	51.6
49.7	10:35:44		49.7	49.7
48.8	10:35:45		48.8	48.8
49.0	10:35:46		49.0	49.0
48.5	10:35:47		48.5	48.5
48.5	10:35:48		48.5	48.5
49.7	10:35:49		49.7	49.7
51.8	10:35:50		51.8	51.8
50.3	10:35:51		50.3	50.3
49.1	10:35:52		49.1	49.1
49.5	10:35:53		49.5	49.5
49.0	10:35:54		49.0	49.0
49.6	10:35:55		49.6	49.6
48.8	10:35:56		48.8	48.8
48.9	10:35:57		48.9	48.9
52.1	10:35:58		52.1	52.1
48.7	10:35:59		48.7	48.7
48.8	10:36:00		48.8	48.8
48.9	10:36:01		48.9	48.9
49.5	10:36:02		49.5	49.5
49.0	10:36:03		49.0	49.0
49.5	10:36:04		49.5	49.5
50.0	10:36:05		50.0	50.0
51.8	10:36:06		51.8	51.8
49.2	10:36:07		49.2	49.2
49.1	10:36:08		49.1	49.1
49.6	10:36:09		49.6	49.6
49.4	10:36:10		49.4	49.4
49.3	10:36:11		49.3	49.3
49.6	10:36:12		49.6	49.6
50.2	10:36:13		50.2	50.2

Site 3 - On West Prop Line Fence 90 ft North of SW Corner

September 25, 2025 10:39:29 AM Leq Daytime = 55.8
Sampling Time = 1 sec Freq Weighting=A Leq Evening = 53.1
Record Num = 86402 Leq Nighttime = 52.5
Leq = 54.1 Ldn(24hr)= 57.9 CNEL = 58.3
Min = 39.4 Min Leq hr at 2:52 AM 42.1
Max = 82.6 Max Leq hr at 4:21 PM 60.0

Site 3 - On West Prop Line Fence 90 ft North of SW Corner

SPL	Time	Leq (1 hour Avg.)	Ldn	CNEL
57.4	10:39:29		57.4	57.4
58.2	10:39:30		58.2	58.2
70.0	10:39:31		70.0	70.0
56.4	10:39:32		56.4	56.4
57.3	10:39:33		57.3	57.3
64.9	10:39:34		64.9	64.9
54.0	10:39:35		54.0	54.0
52.9	10:39:36		52.9	52.9
53.8	10:39:37		53.8	53.8
55.7	10:39:38		55.7	55.7
73.7	10:39:39		73.7	73.7
70.9	10:39:40		70.9	70.9
70.0	10:39:41		70.0	70.0
72.7	10:39:42		72.7	72.7
53.4	10:39:43		53.4	53.4
52.3	10:39:44		52.3	52.3
52.7	10:39:45		52.7	52.7
52.7	10:39:46		52.7	52.7
58.3	10:39:47		58.3	58.3
62.0	10:39:48		62.0	62.0
59.1	10:39:49		59.1	59.1
58.7	10:39:50		58.7	58.7
62.8	10:39:51		62.8	62.8
54.7	10:39:52		54.7	54.7
54.9	10:39:53		54.9	54.9
55.8	10:39:54		55.8	55.8
56.0	10:39:55		56.0	56.0
55.9	10:39:56		55.9	55.9
55.4	10:39:57		55.4	55.4
53.4	10:39:58		53.4	53.4
53.1	10:39:59		53.1	53.1
56.7	10:40:00		56.7	56.7
55.0	10:40:01		55.0	55.0
54.1	10:40:02		54.1	54.1
53.3	10:40:03		53.3	53.3
59.8	10:40:04		59.8	59.8
56.8	10:40:05		56.8	56.8
53.2	10:40:06		53.2	53.2
57.9	10:40:07		57.9	57.9
57.3	10:40:08		57.3	57.3
57.7	10:40:09		57.7	57.7
54.7	10:40:10		54.7	54.7
64.4	10:40:11		64.4	64.4
55.2	10:40:12		55.2	55.2
54.6	10:40:13		54.6	54.6
55.0	10:40:14		55.0	55.0
54.5	10:40:15		54.5	54.5
59.5	10:40:16		59.5	59.5
74.1	10:40:17		74.1	74.1
56.7	10:40:18		56.7	56.7
70.1	10:40:19		70.1	70.1
76.2	10:40:20		76.2	76.2
54.5	10:40:21		54.5	54.5
59.8	10:40:22		59.8	59.8
55.4	10:40:23		55.4	55.4
53.5	10:40:24		53.5	53.5
55.3	10:40:25		55.3	55.3
54.6	10:40:26		54.6	54.6
56.1	10:40:27		56.1	56.1
53.4	10:40:28		53.4	53.4
60.1	10:40:29		60.1	60.1
64.3	10:40:30		64.3	64.3
59.3	10:40:31		59.3	59.3
65.1	10:40:32		65.1	65.1
61.0	10:40:33		61.0	61.0
68.3	10:40:34		68.3	68.3
62.9	10:40:35		62.9	62.9
66.2	10:40:36		66.2	66.2
67.6	10:40:37		67.6	67.6
59.1	10:40:38		59.1	59.1
53.5	10:40:39		53.5	53.5
53.4	10:40:40		53.4	53.4
55.3	10:40:41		55.3	55.3
54.8	10:40:42		54.8	54.8
55.6	10:40:43		55.6	55.6
53.8	10:40:44		53.8	53.8
54.2	10:40:45		54.2	54.2
53.2	10:40:46		53.2	53.2
54.4	10:40:47		54.4	54.4
58.0	10:40:48		58.0	58.0
54.4	10:40:49		54.4	54.4
54.4	10:40:50		54.4	54.4
53.9	10:40:51		53.9	53.9
53.6	10:40:52		53.6	53.6
54.0	10:40:53		54.0	54.0
53.8	10:40:54		53.8	53.8
53.8	10:40:55		53.8	53.8
53.8	10:40:56		53.8	53.8
53.9	10:40:57		53.9	53.9
53.6	10:40:58		53.6	53.6
54.2	10:40:59		54.2	54.2
53.9	10:41:00		53.9	53.9
54.8	10:41:01		54.8	54.8
54.4	10:41:02		54.4	54.4
53.5	10:41:03		53.5	53.5
53.9	10:41:04		53.9	53.9
53.3	10:41:05		53.3	53.3
53.0	10:41:06		53.0	53.0
53.2	10:41:07		53.2	53.2
53.8	10:41:08		53.8	53.8
54.5	10:41:09		54.5	54.5
54.1	10:41:10		54.1	54.1
54.0	10:41:11		54.0	54.0
53.9	10:41:12		53.9	53.9
54.1	10:41:13		54.1	54.1
53.6	10:41:14		53.6	53.6
53.4	10:41:15		53.4	53.4
53.6	10:41:16		53.6	53.6
53.5	10:41:17		53.5	53.5
52.8	10:41:18		52.8	52.8
52.1	10:41:19		52.1	52.1
53.0	10:41:20		53.0	53.0
53.0	10:41:21		53.0	53.0
53.1	10:41:22		53.1	53.1
52.4	10:41:23		52.4	52.4
52.3	10:41:24		52.3	52.3
52.8	10:41:25		52.8	52.8
53.1	10:41:26		53.1	53.1
53.9	10:41:27		53.9	53.9
53.4	10:41:28		53.4	53.4
53.2	10:41:29		53.2	53.2
52.7	10:41:30		52.7	52.7
53.2	10:41:31		53.2	53.2
52.3	10:41:32		52.3	52.3
53.2	10:41:33		53.2	53.2
52.8	10:41:34		52.8	52.8
52.1	10:41:35		52.1	52.1
52.5	10:41:36		52.5	52.5
52.0	10:41:37		52.0	52.0
52.8	10:41:38		52.8	52.8
52.0	10:41:39		52.0	52.0
52.0	10:41:40		52.0	52.0
52.5	10:41:41		52.5	52.5
53.6	10:41:42		53.6	53.6
52.3	10:41:43		52.3	52.3
52.9	10:41:44		52.9	52.9
52.5	10:41:45		52.5	52.5
52.8	10:41:46		52.8	52.8
52.9	10:41:47		52.9	52.9
52.3	10:41:48		52.3	52.3
53.4	10:41:49		53.4	53.4
53.4	10:41:50		53.4	53.4
52.4	10:41:51		52.4	52.4
52.5	10:41:52		52.5	52.5
52.0	10:41:53		52.0	52.0
52.2	10:41:54		52.2	52.2
53.3	10:41:55		53.3	53.3
52.2	10:41:56		52.2	52.2
52.2	10:41:57		52.2	52.2
53.3	10:41:58		53.3	53.3
52.4	10:41:59		52.4	52.4
52.9	10:42:00		52.9	52.9
52.8	10:42:01		52.8	52.8
52.7	10:42:02		52.7	52.7
52.8	10:42:03		52.8	52.8
52.6	10:42:04		52.6	52.6
53.4	10:42:05		53.4	53.4
53.6	10:42:06		53.6	53.6
52.9	10:42:07		52.9	52.9
52.6	10:42:08		52.6	52.6
52.5	10:42:09		52.5	52.5
53.2	10:42:10		53.2	53.2
54.5	10:42:11		54.5	54.5
53.4	10:42:12		53.4	53.4

APPENDIX C

RCNM Model Construction Noise Calculations

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/7/2025
Case Description: OCPW New Fleet Services Facility - Site Preparation

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
South Side of JFK School	Commercial	55.3	50.1	50.2

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	36	6.8
Dozer	No	40		81.7	86	6.8
Dozer	No	40		81.7	136	6.8
Backhoe	No	40		77.6	186	6.8
Front End Loader	No	40		79.1	236	6.8
Tractor	No	40	84		286	6.8
Tractor	No	40	84		336	6.8

Equipment		Calculated (dBA) *Lmax	Leq	Results Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq
Dozer		77.7	73.7	N/A	N/A	N/A	N/A
Dozer		70	66	N/A	N/A	N/A	N/A
Dozer		66.2	62.2	N/A	N/A	N/A	N/A
Backhoe		59.3	55.4	N/A	N/A	N/A	N/A
Front End Loader		58.8	54.9	N/A	N/A	N/A	N/A
Tractor		62.1	58.1	N/A	N/A	N/A	N/A
Tractor		60.7	56.7	N/A	N/A	N/A	N/A
	Total	**78**	**75**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/7/2025
Case Description: OCPW New Fleet Services Facility - Site Preparation

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Homes to West	Residential	55.8	53.1	52.5

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	61	0
Dozer	No	40		81.7	111	0
Dozer	No	40		81.7	161	0
Backhoe	No	40		77.6	211	0
Front End Loader	No	40		79.1	261	0
Tractor	No	40	84		311	0
Tractor	No	40	84		361	0

		Results					
		Calculated (dBA)		Noise Limits (dBA)			
				Day		Evening	
Equipment		***Lmax**	**Leq**	Lmax	Leq	Lmax	Leq
Dozer		79.9	76.0	N/A	N/A	N/A	N/A
Dozer		74.7	70.8	N/A	N/A	N/A	N/A
Dozer		71.5	67.5	N/A	N/A	N/A	N/A
Backhoe		65.1	61.1	N/A	N/A	N/A	N/A
Front End Loader		64.8	60.8	N/A	N/A	N/A	N/A
Tractor		68.1	64.1	N/A	N/A	N/A	N/A
Tractor		66.8	62.8	N/A	N/A	N/A	N/A
	Total	**80**	**78**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/7/2025
Case Description: OCPW New Fleet Services Facility - Site Preparation

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
East Side of JFK School	Commercial	58.9	56.6	56.7

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40.0		81.7	21	6.8
Dozer	No	40		81.7	71	6.8
Dozer	No	40		81.7	121	6.8
Backhoe	No	40		77.6	171	6.8
Front End Loader	No	40		79.1	221	6.8
Tractor	No	40	84		271	6.8
Tractor	No	40	84		321	6.8

		Results					
		Calculated (dBA)		Noise Limits (dBA)			
				Day		Evening	
Equipment		***Lmax**	**Leq**	Lmax	Leq	Lmax	Leq
Dozer		82.4	78.4	N/A	N/A	N/A	N/A
Dozer		71.8	67.8	N/A	N/A	N/A	N/A
Dozer		67.2	63.2	N/A	N/A	N/A	N/A
Backhoe		60.1	56.1	N/A	N/A	N/A	N/A
Front End Loader		59.4	55.4	N/A	N/A	N/A	N/A
Tractor		62.5	58.5	N/A	N/A	N/A	N/A
Tractor		61.0	57.1	N/A	N/A	N/A	N/A
	Total	**82**	**79**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/7/2025
Case Description: OCPW New Fleet Services Facility - Grading

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
South Side of JFK School	Commercial	55.3	50.1	50.2

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	36	6.8
Grader	No	40	85		86	6.8
Dozer	No	40		81.7	136	6.8
Backhoe	No	40		77.6	186	6.8
Front End Loader	No	40		79.1	236	6.8
Tractor	No	40	84		286	6.8

Equipment	Calculated (dBA) *Lmax	Leq	Results Noise Limits (dBA) Day Lmax	Leq	Evening Lmax	Leq
Excavator	76.8	72.8	N/A	N/A	N/A	N/A
Grader	73.5	69.5	N/A	N/A	N/A	N/A
Dozer	66.2	62.2	N/A	N/A	N/A	N/A
Backhoe	59.3	55.4	N/A	N/A	N/A	N/A
Front End Loader	58.8	54.9	N/A	N/A	N/A	N/A
Tractor	62.1	58.1	N/A	N/A	N/A	N/A
Total	**77**	**75**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/7/2025
Case Description: OCPW New Fleet Services Facility - Grading

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Homes to West	Residential	55.8	53.1	52.5

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	61	0
Grader	No	40	85		111	0
Dozer	No	40		81.7	161	0
Backhoe	No	40		77.6	211	0
Front End Loader	No	40		79.1	261	0
Tractor	No	40	84		311	0

		Results					
		Calculated (dBA)		Noise Limits (dBA)			
				Day		Evening	
Equipment		***Lmax**	**Leq**	Lmax	Leq	Lmax	Leq
Excavator		79.0	75	N/A	N/A	N/A	N/A
Grader		78.1	74.1	N/A	N/A	N/A	N/A
Dozer		71.5	67.5	N/A	N/A	N/A	N/A
Backhoe		65.1	61.1	N/A	N/A	N/A	N/A
Front End Loader		64.8	60.8	N/A	N/A	N/A	N/A
Tractor		68.1	64.1	N/A	N/A	N/A	N/A
	Total	**79**	**78**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/7/2025
Case Description: OCPW New Fleet Services Facility - Grading

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
East Side of JFK School	Commercial	58.9	56.6	56.7

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	21	6.8
Grader	No	40	85		71	6.8
Dozer	No	40		81.7	121	6.8
Backhoe	No	40		77.6	171	6.8
Front End Loader	No	40		79.1	221	6.8
Tractor	No	40	84		271	6.8

		Results					
		Calculated (dBA)		Noise Limits (dBA)			
				Day		Evening	
Equipment		***Lmax**	**Leq**	Lmax	Leq	Lmax	Leq
Excavator		81.4	77.5	N/A	N/A	N/A	N/A
Grader		75.2	71.2	N/A	N/A	N/A	N/A
Dozer		67.2	63.2	N/A	N/A	N/A	N/A
Backhoe		60.1	56.1	N/A	N/A	N/A	N/A
Front End Loader		59.4	55.4	N/A	N/A	N/A	N/A
Tractor		62.5	58.5	N/A	N/A	N/A	N/A
	Total	**81**	**79**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/7/2025
Case Description: OCPW New Fleet Services Facility - Building Construction

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
South Side of JFK School	Commercial	55.3	50.1	50.2

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	36	6.8
Gradall	No	40		83.4	86	6.8
Gradall	No	40		83.4	136	6.8
Gradall	No	40		83.4	186	6.8
Generator	No	50		80.6	236	6.8
Backhoe	No	40		77.6	286	6.8
Front End Loader	No	40		79.1	336	6.8
Tractor	No	40	84		386	6.8
Welder / Torch	No	40		74	436	6.8

		Calculated (dBA)		Results Noise Limits (dBA) Day		Evening	
Equipment		***Lmax**	**Leq**	Lmax	Leq	Lmax	Leq
Crane		76.6	68.6	N/A	N/A	N/A	N/A
Gradall		71.9	67.9	N/A	N/A	N/A	N/A
Gradall		67.9	63.9	N/A	N/A	N/A	N/A
Gradall		65.2	61.2	N/A	N/A	N/A	N/A
Generator		60.4	57.3	N/A	N/A	N/A	N/A
Backhoe		55.6	51.6	N/A	N/A	N/A	N/A
Front End Loader		55.8	51.8	N/A	N/A	N/A	N/A
Tractor		59.4	55.5	N/A	N/A	N/A	N/A
Welder / Torch		48.4	44.4	N/A	N/A	N/A	N/A
	Total	**77**	**73**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/7/2025
Case Description: OCPW New Fleet Services Facility - Building Construction

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Homes to West	Residential	55.8	53.1	52.5

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	61	0
Gradall	No	40		83.4	111	0
Gradall	No	40		83.4	161	0
Gradall	No	40		83.4	211	0
Generator	No	50		80.6	261	0
Backhoe	No	40		77.6	311	0
Front End Loader	No	40		79.1	361	0
Tractor	No	40	84		411	0
Welder / Torch	No	40		74	461	0

	Results					
	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	***Lmax**	**Leq**	Lmax	Leq	Lmax	Leq
Crane	78.8	70.9	N/A	N/A	N/A	N/A
Gradall	76.5	72.5	N/A	N/A	N/A	N/A
Gradall	73.2	69.3	N/A	N/A	N/A	N/A
Gradall	70.9	66.9	N/A	N/A	N/A	N/A
Generator	66.3	63.3	N/A	N/A	N/A	N/A
Backhoe	61.7	57.7	N/A	N/A	N/A	N/A
Front End Loader	61.9	58.0	N/A	N/A	N/A	N/A
Tractor	65.7	61.7	N/A	N/A	N/A	N/A
Welder / Torch	54.7	50.7	N/A	N/A	N/A	N/A
Total	**79**	**77**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/7/2025
Case Description: OCPW New Fleet Services Facility - Paving

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
South Side of JFK School	Commercial	55.3	50.1	50.2

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Mixer Truck	No	40		78.8	36	6.8
Concrete Mixer Truck	No	40		78.8	86	6.8
Paver	No	50		77.2	136	6.8
Paver	No	50		77.2	186	6.8
Paver	No	50		77.2	236	6.8
Roller	No	20		80	286	6.8
Roller	No	20		80	336	6.8
Tractor	No	40	84		386	6.8

		Results					
		Calculated (dBA)		Noise Limits (dBA)			
				Day		Evening	
Equipment		***Lmax**	**Leq**	Lmax	Leq	Lmax	Leq
Concrete Mixer Truck		74.9	70.9	N/A	N/A	N/A	N/A
Concrete Mixer Truck		67.3	63.3	N/A	N/A	N/A	N/A
Paver		61.7	58.7	N/A	N/A	N/A	N/A
Paver		59.0	56.0	N/A	N/A	N/A	N/A
Paver		56.9	53.9	N/A	N/A	N/A	N/A
Roller		58.1	51.1	N/A	N/A	N/A	N/A
Roller		56.7	49.7	N/A	N/A	N/A	N/A
Tractor		59.4	55.5	N/A	N/A	N/A	N/A
	Total	**75**	**72**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/7/2025
Case Description: OCPW New Fleet Services Facility - Paving

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Homes to West	Residential	55.8	53.1	52.5

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Mixer Truck	No	40		78.8	61	0
Concrete Mixer Truck	No	40		78.8	111	0
Paver	No	50		77.2	161	0
Paver	No	50		77.2	211	0
Paver	No	50		77.2	261	0
Roller	No	20		80	311	0
Roller	No	20		80	361	0
Tractor	No	40	84		411	0

Equipment		Calculated (dBA) *Lmax	Leq	Results Noise Limits (dBA) Day Lmax	Leq	Evening Lmax	Leq
Concrete Mixer Truck		77.1	73.1	N/A	N/A	N/A	N/A
Concrete Mixer Truck		71.9	67.9	N/A	N/A	N/A	N/A
Paver		67.1	64.1	N/A	N/A	N/A	N/A
Paver		64.7	61.7	N/A	N/A	N/A	N/A
Paver		62.9	59.9	N/A	N/A	N/A	N/A
Roller		64.1	57.1	N/A	N/A	N/A	N/A
Roller		62.8	55.8	N/A	N/A	N/A	N/A
Tractor		65.7	61.7	N/A	N/A	N/A	N/A
	Total	**77**	**75**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/7/2025
Case Description: OCPW New Fleet Services Facility - Paving

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
East Side of JFK School	Commercial	58.9	56.6	56.7

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Mixer Truck	No	40		78.8	21	6.8
Concrete Mixer Truck	No	40		78.8	71	6.8
Paver	No	50		77.2	121	6.8
Paver	No	50		77.2	171	6.8
Paver	No	50		77.2	221	6.8
Roller	No	20		80	271	6.8
Roller	No	20		80	321	6.8
Tractor	No	40	84		371	6.8

		Calculated (dBA)		Results Noise Limits (dBA)			
				Day		Evening	
Equipment		***Lmax**	**Leq**	Lmax	Leq	Lmax	Leq
Concrete Mixer Truck		79.5	75.6	N/A	N/A	N/A	N/A
Concrete Mixer Truck		69.0	65.0	N/A	N/A	N/A	N/A
Paver		62.7	59.7	N/A	N/A	N/A	N/A
Paver		59.7	56.7	N/A	N/A	N/A	N/A
Paver		57.5	54.5	N/A	N/A	N/A	N/A
Roller		58.5	51.5	N/A	N/A	N/A	N/A
Roller		57.0	50.1	N/A	N/A	N/A	N/A
Tractor		59.8	55.8	N/A	N/A	N/A	N/A
	Total	**80**	**76**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 11/7/2025
Case Description: OCPW New Fleet Services Facility - Painting

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
South Side of JFK School	Commercial	55.3	50.1	50.2

			Equipment Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Compressor (air)	No	40		77.7	36	6.8

		Results					
		Calculated (dBA)		Noise Limits (dBA)			
				Day		Evening	
Equipment		***Lmax**	**Leq**	Lmax	Leq	Lmax	Leq
Compressor (air)		73.7	69.7	N/A	N/A	N/A	N/A
	Total	**74**	**70**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Homes to West	Residential	55.8	53.1	52.5

			Equipment Spec	Actual	Receptor	Estimated
	Impact		Lmax	Lmax	Distance	Shielding
Description	Device	Usage(%)	(dBA)	(dBA)	(feet)	(dBA)
Compressor (air)	No	40		77.7	61	0

		Results					
		Calculated (dBA)		Noise Limits (dBA)			
				Day		Evening	
Equipment		***Lmax**	**Leq**	Lmax	Leq	Lmax	Leq
Compressor (air)		75.9	72.0	N/A	N/A	N/A	N/A
	Total	**76**	**72**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

APPENDIX D

Operational Reference Noise Measurement Printouts

Measurement Report

Report Summary

Meter's File Name	831_Data.001.s	Computer's File Name	831_0002509-20251104 121355-831_Data.001.ldbin
Meter	831 0002509	Firmware	2.403
User	GT	Location	30 ft east of Middle of Main Service Building
Job Description	OCPW Fleet Facility - 1102 E Fruit Street		
Note	Noise from compressor and impact wrenches (no siren or tire beading)		

Measurement

Start Time	2025-11-04 12:13:55	Duration	0:05:13.2		
End Time	2025-11-04 12:19:08	Run Time	0:05:13.2	Pause Time	0:00:00.0
Pre-Calibration	2025-11-04 12:05:03	Post-Calibration	None	Calibration Deviation	---

Results

Overall Metrics

LA_{eq}	65.0 dB		
LAE	90.0 dB	SEA	--- dB
EA	110.0 µPa²h		
LZ_{peak}	102.4 dB	2025-11-04 12:17:49	
LAS_{max}	85.4 dB	2025-11-04 12:17:49	
LAS_{min}	52.1 dB	2025-11-04 12:16:03	
LA_{eq}	65.0 dB		
LC_{eq}	72.6 dB	LC_{eq} - LA_{eq}	7.6 dB
LAI_{eq}	71.6 dB	LAI_{eq} - LA_{eq}	6.6 dB

Exceedances	Count	Duration
LAS > 65.0 dB	6	0:00:50.9
LAS > 85.0 dB	1	0:00:00.9
LZpk > 135.0 dB	0	0:00:00.0
LZpk > 137.0 dB	0	0:00:00.0
LZpk > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight
	65.0 dB	65.0 dB	--- dB

LDEN	LDay	LEve	LNight
65.0 dB	65.0 dB	--- dB	--- dB

Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	65.0 dB		72.6 dB		75.8 dB	
$L_{S(max)}$	85.4 dB	2025-11-04 12:17:49	84.7 dB	2025-11-04 12:17:49	86.7 dB	2025-11-04 12:16:46
$L_{F(max)}$	91.4 dB	2025-11-04 12:17:49	90.2 dB	2025-11-04 12:17:49	91.2 dB	2025-11-04 12:17:49
$L_{I(max)}$	93.2 dB	2025-11-04 12:17:49	91.9 dB	2025-11-04 12:17:49	92.8 dB	2025-11-04 12:17:49
$L_{S(min)}$	52.1 dB	2025-11-04 12:16:03	61.3 dB	2025-11-04 12:15:29	64.8 dB	2025-11-04 12:15:28
$L_{F(min)}$	51.2 dB	2025-11-04 12:15:21	59.2 dB	2025-11-04 12:15:26	61.8 dB	2025-11-04 12:15:26
$L_{I(min)}$	51.8 dB	2025-11-04 12:15:52	62.1 dB	2025-11-04 12:15:47	66.0 dB	2025-11-04 12:14:52
$L_{Peak(max)}$	103.6 dB	2025-11-04 12:17:49	101.9 dB	2025-11-04 12:17:49	102.4 dB	2025-11-04 12:17:49

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	0	0:00:00.0

Statistics

LAS 5.0	69.9 dB
LAS 10.0	67.8 dB
LAS 33.3	59.4 dB
LAS 50.0	57.0 dB
LAS 66.6	54.8 dB
LAS 90.0	52.9 dB

Measurement Report

Report Summary

Meter's File Name	831_Data.002.s	Computer's File Name	831_0002509-20251104 121929-831_Data.002.ldbin
Meter	831 0002509	Firmware	2.403
User	GT	Location	30 ft east of Middle of Main Service Building
Job Description	OCPW Fleet Facility - 1102 E Fruit Street		
Note	Noise from Siren test, tire beading, compressor and impact wrenches		

Measurement

Start Time	2025-11-04 12:19:29	Duration	0:05:01.2		
End Time	2025-11-04 12:24:30	Run Time	0:05:01.2	Pause Time	0:00:00.0
Pre-Calibration	2025-11-04 12:04:59	Post-Calibration	None	Calibration Deviation	---

Results

Overall Metrics

LA_{eq}	76.8 dB		
LAE	101.6 dB	SEA	--- dB
EA	1.6 mPa²h		
LZ_{peak}	111.1 dB	2025-11-04 12:21:43	
LAS_{max}	93.4 dB	2025-11-04 12:21:26	
LAS_{min}	53.7 dB	2025-11-04 12:21:08	
LA_{eq}	76.8 dB		
LC_{eq}	76.4 dB	LC_{eq} - LA_{eq}	-0.4 dB
LAI_{eq}	83.7 dB	LAI_{eq} - LA_{eq}	6.9 dB

Exceedances	Count	Duration
LAS > 65.0 dB	13	0:02:04.5
LAS > 85.0 dB	3	0:00:13.3
LZpk > 135.0 dB	0	0:00:00.0
LZpk > 137.0 dB	0	0:00:00.0
LZpk > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight
	76.8 dB	76.8 dB	--- dB

LDEN	LDay	LEve	LNight
76.8 dB	76.8 dB	--- dB	--- dB

Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	76.8 dB		76.4 dB		77.1 dB	
$L_{S(max)}$	93.4 dB	2025-11-04 12:21:26	92.7 dB	2025-11-04 12:21:26	92.7 dB	2025-11-04 12:21:26
$L_{F(max)}$	97.4 dB	2025-11-04 12:21:26	96.7 dB	2025-11-04 12:21:26	96.8 dB	2025-11-04 12:21:26
$L_{I(max)}$	99.8 dB	2025-11-04 12:21:26	99.1 dB	2025-11-04 12:21:26	99.1 dB	2025-11-04 12:21:26
$L_{S(min)}$	53.7 dB	2025-11-04 12:21:08	63.0 dB	2025-11-04 12:20:57	66.4 dB	2025-11-04 12:20:21
$L_{F(min)}$	53.1 dB	2025-11-04 12:20:41	61.4 dB	2025-11-04 12:20:56	64.5 dB	2025-11-04 12:20:14
$L_{I(min)}$	53.5 dB	2025-11-04 12:20:57	62.7 dB	2025-11-04 12:20:56	67.8 dB	2025-11-04 12:20:20
$L_{Peak(max)}$	110.9 dB	2025-11-04 12:21:43	110.4 dB	2025-11-04 12:21:43	111.1 dB	2025-11-04 12:21:43

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	0	0:00:00.0

Statistics

LAS 5.0	79.7 dB
LAS 10.0	69.0 dB
LAS 33.3	65.0 dB
LAS 50.0	60.4 dB
LAS 66.6	56.6 dB
LAS 90.0	54.6 dB

Measurement Report

Report Summary

Meter's File Name	831_Data.003.s	Computer's File Name	831_0002509-20251104 122511-831_Data.003.ldbin
Meter	831 0002509	Firmware	2.403
User	GT	Location	30 ft north of Bus Service Building
Job Description	OCPW Fleet Facility - 1102 E Fruit Street		
Note	Noise from running bus, compressor and impact wrenches		

Measurement

Start Time	2025-11-04 12:25:11	Duration	0:05:01.0		
End Time	2025-11-04 12:30:12	Run Time	0:05:01.0	Pause Time	0:00:00.0
Pre-Calibration	2025-11-04 12:04:59	Post-Calibration	None	Calibration Deviation	---

Results

Overall Metrics

LA_{eq}	70.9 dB		
LAE	95.7 dB	SEA	--- dB
EA	411.5 µPa²h		
LZ_{peak}	98.8 dB	2025-11-04 12:28:40	
LAS_{max}	82.2 dB	2025-11-04 12:28:42	
LAS_{min}	52.2 dB	2025-11-04 12:26:11	
LA_{eq}	70.9 dB		
LC_{eq}	74.5 dB	LC_{eq} - LA_{eq}	3.6 dB
LAI_{eq}	72.5 dB	LAI_{eq} - LA_{eq}	1.6 dB

Exceedances	Count	Duration
LAS > 65.0 dB	3	0:03:42.6
LAS > 85.0 dB	0	0:00:00.0
LZpk > 135.0 dB	0	0:00:00.0
LZpk > 137.0 dB	0	0:00:00.0
LZpk > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight
	70.9 dB	70.9 dB	--- dB

LDEN	LDay	LEve	LNight
70.9 dB	70.9 dB	--- dB	--- dB

Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	70.9 dB		74.5 dB		76.2 dB	
$L_{S(max)}$	82.2 dB	2025-11-04 12:28:42	83.9 dB	2025-11-04 12:28:29	85.0 dB	2025-11-04 12:25:12
$L_{F(max)}$	84.2 dB	2025-11-04 12:28:41	85.5 dB	2025-11-04 12:28:40	86.2 dB	2025-11-04 12:25:11
$L_{I(max)}$	86.3 dB	2025-11-04 12:28:41	86.7 dB	2025-11-04 12:28:41	88.4 dB	2025-11-04 12:30:12
$L_{S(min)}$	52.2 dB	2025-11-04 12:26:11	62.0 dB	2025-11-04 12:25:55	65.4 dB	2025-11-04 12:30:03
$L_{F(min)}$	51.8 dB	2025-11-04 12:26:00	60.3 dB	2025-11-04 12:29:52	63.2 dB	2025-11-04 12:29:52
$L_{I(min)}$	52.1 dB	2025-11-04 12:26:10	62.3 dB	2025-11-04 12:30:03	66.2 dB	2025-11-04 12:30:02
$L_{Peak(max)}$	96.6 dB	2025-11-04 12:28:41	98.2 dB	2025-11-04 12:28:40	98.8 dB	2025-11-04 12:28:40

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	0	0:00:00.0

Statistics

LAS 5.0	78.0 dB
LAS 10.0	71.3 dB
LAS 33.3	68.6 dB
LAS 50.0	67.9 dB
LAS 66.6	67.3 dB
LAS 90.0	55.9 dB

Measurement Report

Report Summary

Meter's File Name	831_Data.004.s	Computer's File Name	831_0002509-20251104 123141-831_Data.004.ldbin
Meter	831 0002509	Firmware	2.403
User	GT	Location	8 ft NW of compressor for Main Service Building
Job Description	OCPW Fleet Facility - 1102 E Fruit Street		
Note	Noise from Compressor and air hose		

Measurement

Start Time	2025-11-04 12:31:41	Duration	0:05:01.0		
End Time	2025-11-04 12:36:42	Run Time	0:05:01.0	Pause Time	0:00:00.0
Pre-Calibration	2025-11-04 12:04:59	Post-Calibration	None	Calibration Deviation	---

Results

Overall Metrics

LA_{eq}	83.6 dB		
LAE	108.4 dB	SEA	--- dB
EA	7.7 mPa²h		
LZ_{peak}	110.4 dB	2025-11-04 12:36:07	
LAS_{max}	96.8 dB	2025-11-04 12:36:07	
LAS_{min}	54.9 dB	2025-11-04 12:32:16	
LA_{eq}	83.6 dB		
LC_{eq}	84.8 dB	LC_{eq} - LA_{eq}	1.2 dB
LAI_{eq}	84.6 dB	LAI_{eq} - LA_{eq}	1.0 dB

Exceedances

	Count	Duration
LAS > 65.0 dB	8	0:04:34.6
LAS > 85.0 dB	3	0:01:21.8
LZpk > 135.0 dB	0	0:00:00.0
LZpk > 137.0 dB	0	0:00:00.0
LZpk > 140.0 dB	0	0:00:00.0

Community Noise

LDN	LDay	LNight
83.6 dB	83.6 dB	--- dB

LDEN	LDay	LEve	LNight
83.6 dB	83.6 dB	--- dB	--- dB

Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	83.6 dB		84.8 dB		86.3 dB	
$L_{S(max)}$	96.8 dB	2025-11-04 12:36:07	95.7 dB	2025-11-04 12:36:07	98.6 dB	2025-11-04 12:36:07
$L_{F(max)}$	97.2 dB	2025-11-04 12:36:06	96.0 dB	2025-11-04 12:36:06	98.9 dB	2025-11-04 12:36:06
$L_{I(max)}$	97.6 dB	2025-11-04 12:36:06	96.3 dB	2025-11-04 12:36:06	99.1 dB	2025-11-04 12:36:06
$L_{S(min)}$	54.9 dB	2025-11-04 12:32:16	63.5 dB	2025-11-04 12:32:04	66.1 dB	2025-11-04 12:32:05
$L_{F(min)}$	54.0 dB	2025-11-04 12:32:15	62.2 dB	2025-11-04 12:32:04	64.5 dB	2025-11-04 12:32:04
$L_{I(min)}$	54.5 dB	2025-11-04 12:32:16	63.3 dB	2025-11-04 12:32:04	67.0 dB	2025-11-04 12:32:04
$L_{Peak(max)}$	109.4 dB	2025-11-04 12:36:03	107.5 dB	2025-11-04 12:36:06	110.4 dB	2025-11-04 12:36:07

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	0	0:00:00.0

Statistics

LAS 5.0	86.3 dB
LAS 10.0	85.5 dB
LAS 33.3	83.1 dB
LAS 50.0	77.0 dB
LAS 66.6	76.4 dB
LAS 90.0	64.6 dB

Measurement Report

Report Summary

Meter's File Name	831_Data.005.s	Computer's File Name	831_0002509-20251104 123821-831_Data.005.ldbin
Meter	831 0002509	Firmware	2.403
User	GT	Location	10 ft South of Body Shop Door
Job Description	OCPW Fleet Facility - 1102 E Fruit Street		
Note	Noise from Body Shop - Grinder and Hammering		

Measurement

Start Time	2025-11-04 12:38:21	Duration	0:05:00.5		
End Time	2025-11-04 12:43:21	Run Time	0:05:00.5	Pause Time	0:00:00.0
Pre-Calibration	2025-11-04 12:04:59	Post-Calibration	None	Calibration Deviation	---

Results

Overall Metrics

LA_{eq}	82.8 dB		
LAE	107.6 dB	SEA	--- dB
EA	6.4 mPa²h		
LZ_{peak}	111.6 dB	2025-11-04 12:40:02	
LAS_{max}	92.0 dB	2025-11-04 12:40:00	
LAS_{min}	54.5 dB	2025-11-04 12:43:09	
LA_{eq}	82.8 dB		
LC_{eq}	83.4 dB	LC_{eq} - LA_{eq}	0.6 dB
LAI_{eq}	88.3 dB	LAI_{eq} - LA_{eq}	5.5 dB

Exceedances	Count	Duration
LAS > 65.0 dB	11	0:03:09.8
LAS > 85.0 dB	10	0:01:37.6
LZpk > 135.0 dB	0	0:00:00.0
LZpk > 137.0 dB	0	0:00:00.0
LZpk > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight
	82.8 dB	82.8 dB	--- dB

LDEN	LDay	LEve	LNight
82.8 dB	82.8 dB	--- dB	--- dB

Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	82.8 dB		83.4 dB		83.8 dB	
$L_{S(max)}$	92.0 dB	2025-11-04 12:40:00	91.5 dB	2025-11-04 12:40:00	91.7 dB	2025-11-04 12:40:00
$L_{F(max)}$	97.8 dB	2025-11-04 12:40:00	97.2 dB	2025-11-04 12:40:00	97.4 dB	2025-11-04 12:40:00
$L_{I(max)}$	100.8 dB	2025-11-04 12:40:00	100.2 dB	2025-11-04 12:40:00	100.4 dB	2025-11-04 12:40:00
$L_{S(min)}$	54.5 dB	2025-11-04 12:43:09	69.2 dB	2025-11-04 12:43:13	71.2 dB	2025-11-04 12:43:12
$L_{F(min)}$	52.9 dB	2025-11-04 12:41:49	67.8 dB	2025-11-04 12:43:19	69.9 dB	2025-11-04 12:43:19
$L_{I(min)}$	53.8 dB	2025-11-04 12:43:07	69.1 dB	2025-11-04 12:43:19	71.8 dB	2025-11-04 12:43:11
$L_{Peak(max)}$	112.2 dB	2025-11-04 12:40:02	111.5 dB	2025-11-04 12:40:02	111.6 dB	2025-11-04 12:40:02

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	0	0:00:00.0

Statistics

LAS 5.0	89.1 dB
LAS 10.0	87.7 dB
LAS 33.3	82.7 dB
LAS 50.0	71.2 dB
LAS 66.6	61.9 dB
LAS 90.0	56.6 dB

Measurement Report

Report Summary

Meter's File Name	831_Data.006.s	Computer's File Name	831_0002509-20251104 124356-831_Data.006.ldbin
Meter	831 0002509	Firmware	2.403
User	GT	Location	6 ft West of compressor for Body Shop
Job Description	OCPW Fleet Facility - 1102 E Fruit Street		
Note	Noise from Compressor		

Measurement

Start Time	2025-11-04 12:43:56	Duration	0:02:00.9		
End Time	2025-11-04 12:45:57	Run Time	0:02:00.9	Pause Time	0:00:00.0
Pre-Calibration	2025-11-04 12:04:59	Post-Calibration	None	Calibration Deviation	---

Results

Overall Metrics

LA_{eq}	86.4 dB		
LAE	107.2 dB	SEA	--- dB
EA	5.9 mPa²h		
LZ_{peak}	106.5 dB	2025-11-04 12:44:13	
LAS_{max}	88.1 dB	2025-11-04 12:44:20	
LAS_{min}	51.4 dB	2025-11-04 12:45:57	
LA_{eq}	86.4 dB		
LC_{eq}	88.8 dB	LC_{eq} - LA_{eq}	2.4 dB
LAI_{eq}	86.9 dB	LAI_{eq} - LA_{eq}	0.5 dB

Exceedances	Count	Duration
LAS > 65.0 dB	1	0:01:40.3
LAS > 85.0 dB	1	0:01:33.5
LZpk > 135.0 dB	0	0:00:00.0
LZpk > 137.0 dB	0	0:00:00.0
LZpk > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight
	86.4 dB	86.4 dB	--- dB

LDEN	LDay	LEve	LNight
86.4 dB	86.4 dB	--- dB	--- dB

Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	86.4 dB		88.8 dB		91.6 dB	
$L_{S(max)}$	88.1 dB	2025-11-04 12:44:20	90.4 dB	2025-11-04 12:45:18	93.0 dB	2025-11-04 12:44:20
$L_{F(max)}$	88.6 dB	2025-11-04 12:45:20	90.9 dB	2025-11-04 12:45:17	94.5 dB	2025-11-04 12:43:57
$L_{I(max)}$	89.4 dB	2025-11-04 12:45:20	92.0 dB	2025-11-04 12:45:17	96.0 dB	2025-11-04 12:43:57
$L_{S(min)}$	51.4 dB	2025-11-04 12:45:57	64.9 dB	2025-11-04 12:45:49	69.3 dB	2025-11-04 12:45:57
$L_{F(min)}$	50.0 dB	2025-11-04 12:45:37	62.5 dB	2025-11-04 12:45:48	66.8 dB	2025-11-04 12:45:48
$L_{I(min)}$	50.8 dB	2025-11-04 12:45:57	65.8 dB	2025-11-04 12:45:49	70.9 dB	2025-11-04 12:45:57
$L_{Peak(max)}$	101.4 dB	2025-11-04 12:45:07	103.5 dB	2025-11-04 12:45:05	106.5 dB	2025-11-04 12:44:13

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	0	0:00:00.0

Statistics

LAS 5.0	87.9 dB
LAS 10.0	87.8 dB
LAS 33.3	87.7 dB
LAS 50.0	87.5 dB
LAS 66.6	87.0 dB
LAS 90.0	52.6 dB

Measurement Report

Report Summary

Meter's File Name	831_Data.007.s	Computer's File Name	831_0002509-20251104 124643-831_Data.007.ldbin
Meter	831 0002509	Firmware	2.403
User	GT	Location	8 ft West of Weld Shop Door
Job Description	OCPW Fleet Facility - 1102 E Fruit Street		
Note	Noise from Weld Shop - Grinder and Hammering		

Measurement

Start Time	2025-11-04 12:46:43	Duration	0:05:00.8		
End Time	2025-11-04 12:51:43	Run Time	0:05:00.8	Pause Time	0:00:00.0
Pre-Calibration	2025-11-04 12:04:59	Post-Calibration	None	Calibration Deviation	---

Results

Overall Metrics

LA_{eq}	83.1 dB		
LAE	107.9 dB	SEA	141.0 dB
EA	6.8 mPa²h		
LZ_{peak}	126.4 dB	2025-11-04 12:48:23	
LAS_{max}	102.5 dB	2025-11-04 12:48:23	
LAS_{min}	48.1 dB	2025-11-04 12:51:15	
LA_{eq}	83.1 dB		
LC_{eq}	82.6 dB	LC_{eq} - LA_{eq}	-0.5 dB
LAI_{eq}	93.7 dB	LAI_{eq} - LA_{eq}	10.6 dB

Exceedances	Count	Duration
LAS > 65.0 dB	4	0:01:00.7
LAS > 85.0 dB	1	0:00:10.6
LZpk > 135.0 dB	0	0:00:00.0
LZpk > 137.0 dB	0	0:00:00.0
LZpk > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight
	83.1 dB	83.1 dB	--- dB

LDEN	LDay	LEve	LNight
83.1 dB	83.1 dB	--- dB	--- dB

Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	83.1 dB		82.6 dB		83.0 dB	
$L_{S(max)}$	102.5 dB	2025-11-04 12:48:23	102.0 dB	2025-11-04 12:48:23	102.2 dB	2025-11-04 12:48:23
$L_{F(max)}$	109.1 dB	2025-11-04 12:48:23	108.6 dB	2025-11-04 12:48:23	108.9 dB	2025-11-04 12:48:23
$L_{I(max)}$	112.6 dB	2025-11-04 12:48:23	112.2 dB	2025-11-04 12:48:23	112.4 dB	2025-11-04 12:48:23
$L_{S(min)}$	48.1 dB	2025-11-04 12:51:15	61.1 dB	2025-11-04 12:49:09	65.8 dB	2025-11-04 12:49:06
$L_{F(min)}$	47.0 dB	2025-11-04 12:50:58	58.7 dB	2025-11-04 12:49:06	62.7 dB	2025-11-04 12:49:06
$L_{I(min)}$	47.7 dB	2025-11-04 12:51:14	62.2 dB	2025-11-04 12:49:09	67.3 dB	2025-11-04 12:49:05
$L_{Peak(max)}$	126.4 dB	2025-11-04 12:48:23	126.1 dB	2025-11-04 12:48:23	126.4 dB	2025-11-04 12:48:23

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	0	0:00:00.0

Statistics

LAS 5.0	80.4 dB
LAS 10.0	77.0 dB
LAS 33.3	59.5 dB
LAS 50.0	56.4 dB
LAS 66.6	53.7 dB
LAS 90.0	50.3 dB

Measurement Report

Report Summary

Meter's File Name	831_Data.004	Computer's File Name	SLM_0002509_831_Data_004.02.ldbin
Meter	831		
Firmware	2.314		
User	GT	Location	
Description	Riverside - The Motorcycle Company - Phase 3		
Note	On Roof - Approx 6 feet from HVAC Unit		
Start Time	2020-05-09 13:23:15	Duration	0:10:00.2
End Time	2020-05-09 13:33:15	Run Time	0:10:00.2
Pause Time	0:00:00.0		

Results

Overall Metrics

LA_{eq}	65.1 dB		
LAE	92.9 dB	SEA	--- dB
EA	214.7 µPa²h		
LZ_{peak}	106.4 dB	2020-05-09 13:25:40	
LAS_{max}	80.1 dB	2020-05-09 13:25:19	
LAS_{min}	55.1 dB	2020-05-09 13:30:14	
LA_{eq}	65.1 dB		
LC_{eq}	78.1 dB	LC_{eq} - LA_{eq}	13.0 dB
LAI_{eq}	68.9 dB	LAI_{eq} - LA_{eq}	3.8 dB

Exceedances	Count	Duration
LAS > 65.0 dB	16	0:02:46.5
LAS > 85.0 dB	0	0:00:00.0
LZpeak > 135.0 dB	0	0:00:00.0
LZpeak > 137.0 dB	0	0:00:00.0
LZpeak > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight
	65.1 dB	65.1 dB	0.0 dB

	LDEN	LDay	LEve	LNight
	65.1 dB	65.1 dB	--- dB	--- dB

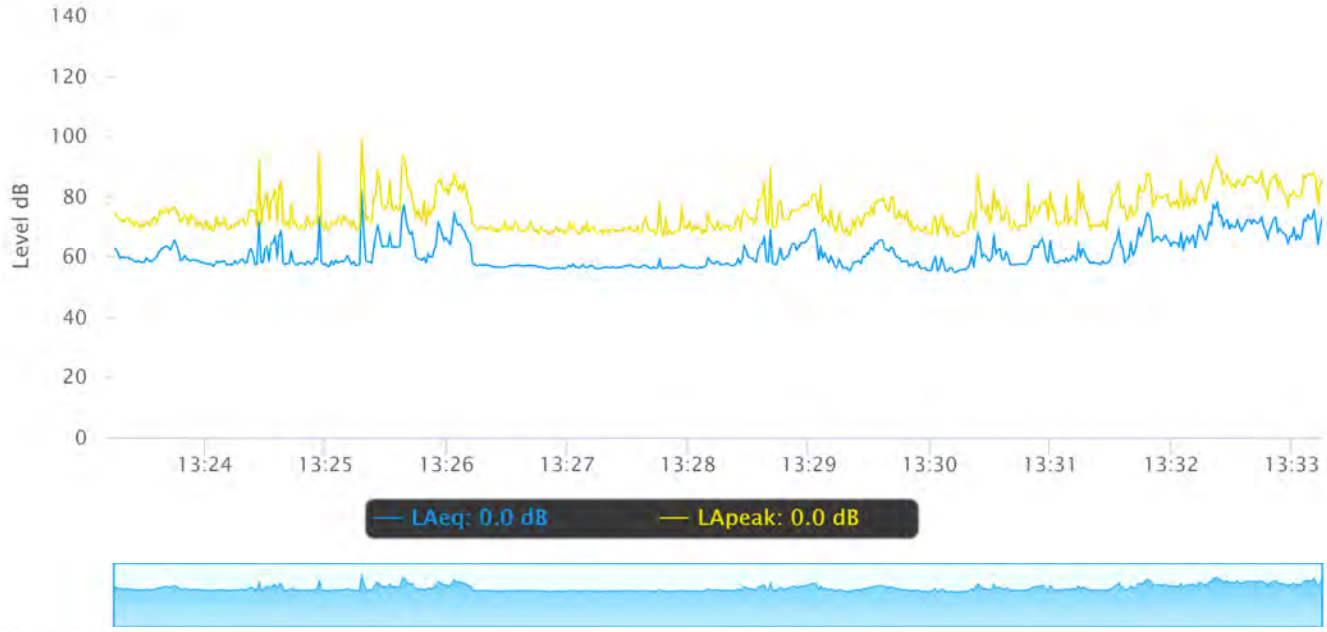
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	65.1 dB		78.1 dB		80.9 dB	
$LS_{(max)}$	80.1 dB	2020-05-09 13:25:19	91.6 dB	2020-05-09 13:26:05	97.4 dB	2020-05-09 13:23:15
$LF_{(max)}$	84.7 dB	2020-05-09 13:25:18	95.4 dB	2020-05-09 13:25:40	97.5 dB	2020-05-09 13:23:15
$LI_{(max)}$	86.7 dB	2020-05-09 13:25:18	97.5 dB	2020-05-09 13:25:40	99.6 dB	2020-05-09 13:23:15
$LS_{(min)}$	55.1 dB	2020-05-09 13:30:14	64.7 dB	2020-05-09 13:30:02	67.4 dB	2020-05-09 13:28:06
$LF_{(min)}$	54.3 dB	2020-05-09 13:30:13	63.0 dB	2020-05-09 13:30:12	65.8 dB	2020-05-09 13:27:31
$LI_{(min)}$	54.6 dB	2020-05-09 13:30:13	65.0 dB	2020-05-09 13:30:02	68.0 dB	2020-05-09 13:27:59
$L_{Peak(max)}$	98.9 dB	2020-05-09 13:25:18	105.7 dB	2020-05-09 13:25:40	106.4 dB	2020-05-09 13:25:40

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	0	0:00:00.0

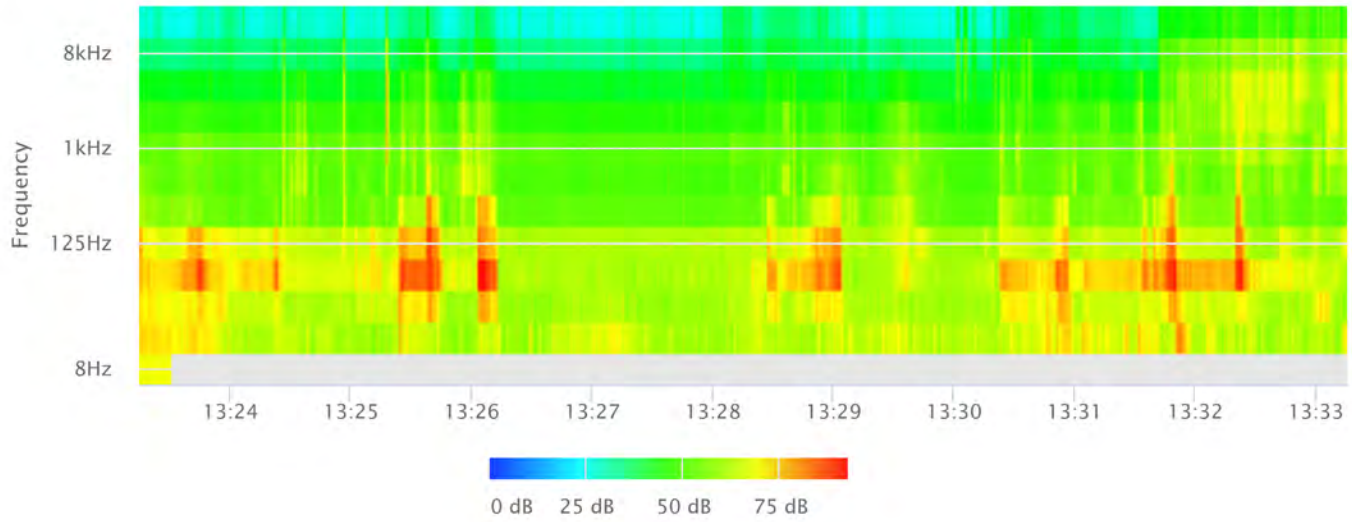
Statistics

LAS 5.0	71.5 dB
LAS 10.0	69.4 dB
LAS 33.3	62.7 dB
LAS 50.0	59.5 dB
LAS 66.6	58.1 dB
LAS 90.0	56.5 dB

Time History



OBA 1/1 Leq



APPENDIX E

Operational Noise Barrier Calculations Printouts

Operational Noise Calculations at JFK Elementary School to North

Stationary Noise Sources	Reference Measurements Distance	Leq	Use Factor*	At School Distance	Leq	Leq w UF
Service Bays	30	65.0	100	115	53.3	53.3
Siren in Service Bay	30	76.8	10	115	65.1	55.1
Bus Bays	30	70.9	100	115	59.2	59.2
Compressor at Service Shop	8	83.6	25	110	60.8	54.8
Body Shop	10	82.8	75	115	61.6	60.3
Compressor at Body Shop	6	86.4	25	110	61.1	55.1
Metal Fabrication Shop	8	83.1	75	115	59.9	58.7
Rooftop HVAC	6	65.1	50	120	39.1	36.1

1 (Line Source: hard=0, soft=.5; Point Source: hard=1, soft=1.5)
(eq. N-2141.2 of TeNS)
Leq with Use Factor = Leq + 10log(UF/100) from RCNM

Stationary Noise Sources	Distance from Receptor to Wall	Distance from source to Wall (feet)	Height of Wall (feet)	Without Wall Noise Level at School	With Wall Noise Level at School	Source Height (feet)	Exterior Observer Height (feet)	Source Frequency (hz)	barrier to receiver - b (all)	source to barrier - a	source to receiver - c	path difference y =a+b-c (auto)	(slope) (1 = blocked line of sight)	fresnel	Barrier Atten
Service Bays	5	115	12	53.3	**36.1**	4	5	800	8.602	115.278	120.004	3.876	1	11.025	-17.222
Siren in Service Bay	5	115	12	55.1	**37.9**	5	5	800	8.602	115.213	120.000	3.815	1	10.852	-17.202
Bus Bays	5	115	12	59.2	**42.1**	7	5	800	8.602	115.109	120.017	3.694	1	10.508	-17.16
Compressor at Service	5	110	12	54.8	**37.6**	4	5	800	8.602	110.291	115.004	3.889	1	11.061	-17.227
Body Shop	5	115	12	60.3	**43.1**	4	5	800	8.602	115.278	120.004	3.876	1	11.025	-17.222
Compressor at Body Sh	5	110	12	55.1	**37.9**	4	5	800	8.602	110.291	115.004	3.889	1	11.061	-17.227
Metal Fabrication Shop	5	115	12	58.7	**41.5**	4	5	800	8.602	115.278	120.004	3.876	1	11.025	-17.222
Rooftop HVAC	5	120	12	36.1	**36.1**	28	5	800	8.602	121.062	127.098	2.566	-1	-7.299	0
		Combined Noise Levels		**65.8**	**48.9**										

*Use Factor based on percent of use (based on a 30 minute analysis period)

Operational Noise Calculations at JFK Elementary School to North

Stationary Noise Sources	Reference Measurements Distance	Lmax	At School Distance	Lmax
Service Bays	30	85.4	115	73.7
Siren in Service Bay	30	93.4	115	81.7
Bus Bays	30	82.2	115	70.5
Compressor at Service Shop	8	96.8	110	74.0
Body Shop	10	92.0	115	70.8
Compressor at Body Shop	6	88.1	110	62.8
Metal Fabrication Shop	8	102.5	115	79.3
Rooftop HVAC	8	80.1	120	56.6

1 (Line Source: hard=0, soft=.5; Point Source: hard=1, soft=1.5)
(eq. N-2141.2 of TeNS)

Stationary Noise Sources	Distance from Receptor to Wall	Distance from source to Wall (feet)	Height of Wall (feet)	Without Wall Noise Level at School	With Wall Noise Level at School	Source Height (feet)	Exterior Observer Height (feet)	Source Frequency (hz)	barrier to receiver - b (all)	source to barrier - a	source to receiver - c	path difference y =a+b-c (auto)	(slope) (1̆ = blocked line of sight)	fresnel	Barrier Atten
Service Bays	5	115	12	73.7	**56.5**	4	5	800	8.602	115.278	120.004	3.876	1	11.025	-17.222
Siren in Service Bay	5	115	12	81.7	**64.5**	5	5	800	8.602	115.213	120.000	3.815	1	10.852	-17.202
Bus Bays	5	115	12	70.5	**53.4**	7	5	800	8.602	115.109	120.017	3.694	1	10.508	-17.16
Compressor at Service	5	110	12	74.0	**56.8**	4	5	800	8.602	110.291	115.004	3.889	1	11.061	-17.227
Body Shop	5	115	12	70.8	**53.6**	4	5	800	8.602	115.278	120.004	3.876	1	11.025	-17.222
Compressor at Body Sh	5	110	12	62.8	**45.6**	4	5	800	8.602	110.291	115.004	3.889	1	11.061	-17.227
Metal Fabrication Shop	5	115	12	79.3	**62.1**	4	5	800	8.602	115.278	120.004	3.876	1	11.025	-17.222
Rooftop HVAC	5	120	12	56.6	**56.6**	28	5	800	8.602	121.062	127.098	2.566	-1	-7.299	0
		Maximum Noise Level*		**81.7**	**64.5**										

*Maximum Noise Level based on highest single source, since unlikely peak noise would occur simutaneously from multiple sources

Operational Noise Calculations at Multi-Family Homes to West

Stationary Noise Sources	Reference Measurements Distance	Leq	Use Factor*	At Homes Distance	Leq	Leq w UF
Service Bays	30	65.0	100	190	49.0	49.0
Siren in Service Bay	30	76.8	10	190	60.8	50.8
Bus Bays	30	70.9	100	370	49.1	49.1
Compressor at Service Shop	8	83.6	25	190	56.1	50.1
Body Shop	10	82.8	75	85	64.2	63.0
Compressor at Body Shop	6	86.4	25	80	63.9	57.9
Metal Fabrication Shop	8	83.1	75	145	57.9	56.7
Rooftop HVAC	6	65.1	50	90	41.6	38.6

1 (Line Source: hard=0, soft=.5; Point Source: hard=1, soft=1.5)
(eq. N-2141.2 of TeNS)
Leq with Use Factor = Leq + 10log(UF/100) from RCNM

Stationary Noise Sources	Distance from Receptor to Wall	Distance from source to Wall (feet)	Height of Wall (feet)	Without Wall Noise Level at Homes	With Wall Noise Level at Homes	Source Height (feet)	Exterior Observer Height (feet)	Source Frequency (hz)	barrier to receiver - b (all)	source to barrier - a	source to receiver - c	path difference y =a+b-c (auto)	(slope) (1 = blocked line of sight)	fresnel	Barrier Atten
Service Bays	55	135	12	49.0	**36.8**	4	5	800	55.444	135.237	190.003	0.678	1	1.928	-12.14
Siren in Service Bay	55	135	12	50.8	**38.9**	5	5	800	55.444	135.181	190.000	0.625	1	1.778	-11.84
Bus Bays	55	315	12	49.1	**38.1**	7	5	800	55.444	315.040	370.005	0.478	1	1.359	-11
Compressor at Service	55	135	12	50.1	**37.9**	4	5	800	55.444	135.237	190.003	0.678	1	1.928	-12.14
Body Shop	55	30	12	63.0	**48.2**	4	5	800	55.444	31.048	85.006	1.486	1	4.227	-14.754
Compressor at Body Sh	55	25	12	57.9	**42.7**	4	5	800	55.444	26.249	80.006	1.686	1	4.796	-15.153
Metal Fabrication Shop	55	90	12	56.7	**44.0**	4	5	800	55.444	90.355	145.003	0.795	1	2.262	-12.638
Rooftop HVAC	55	35	12	38.6	**38.6**	28	5	800	55.444	38.484	92.892	1.035	-1	-2.944	0
		Combined Noise Levels		**65.4**	**51.5**										

*Use Factor based on percent of use (based on a 30 minute analysis period)

Operational Noise Calculations at Multi-Family Homes to West

Stationary Noise Sources	Reference Measurements Distance	Reference Measurements Lmax	At Homes Distance	At Homes Lmax
Service Bays	30	85.4	190	69.4
Siren in Service Bay	30	93.4	190	77.4
Bus Bays	30	82.2	370	60.4
Compressor at Service Shop	8	96.8	190	69.3
Body Shop	10	92.0	85	73.4
Compressor at Body Shop	6	88.1	80	65.6
Metal Fabrication Shop	8	102.5	145	77.3
Rooftop HVAC	8	80.1	90	59.1

1 (Line Source: hard=0, soft=.5; Point Source: hard=1, soft=1.5)
(eq. N-2141.2 of TeNS)

Stationary Noise Sources	Distance from Receptor to Wall	Distance from source to Wall (feet)	Height of Wall (feet)	Without Wall Noise Level at Homes	With Wall Noise Level at Homes	Source Height (feet)	Exterior Observer Height (feet)	Source Frequency (hz)	barrier to receiver - b (all)	source to barrier - a	source to receiver - c	path difference y =a+b-c (auto)	(slope) (1 = blocked line of sight)	fresnel	Barrier Atten
Service Bays	55	135	12	69.4	**57.2**	4	5	800	55.444	135.237	190.003	0.678	1	1.928	-12.14
Siren in Service Bay	55	135	12	77.4	**65.5**	5	5	800	55.444	135.181	190.000	0.625	1	1.778	-11.84
Bus Bays	55	315	12	60.4	**49.4**	7	5	800	55.444	315.040	370.005	0.478	1	1.359	-11
Compressor at Service	55	135	12	69.3	**57.1**	4	5	800	55.444	135.237	190.003	0.678	1	1.928	-12.14
Body Shop	55	30	12	73.4	**58.7**	4	5	800	55.444	31.048	85.006	1.486	1	4.227	-14.754
Compressor at Body Sh	55	25	12	65.6	**50.4**	4	5	800	55.444	26.249	80.006	1.686	1	4.796	-15.153
Metal Fabrication Shop	55	90	12	77.3	**64.7**	4	5	800	55.444	90.355	145.003	0.795	1	2.262	-12.638
Rooftop HVAC	55	35	12	59.1	**59.1**	28	5	800	55.444	38.484	92.892	1.035	-1	-2.944	0

Maximum Noise Level* **77.4** **65.5**

*Maximum Noise Level based on highest single source, since unlikely peak noise would occur simutaneously from multiple sources

Operational Noise Calculations at Multi-Family Homes to West - Body Shop Doors Closed

Stationary Noise Sources	Reference Measurements Distance	Leq	Use Factor*	At Homes Distance	Leq	Leq w UF
Service Bays	30	65.0	100	190	49.0	49.0
Siren in Service Bay	30	76.8	10	190	60.8	50.8
Bus Bays	30	70.9	100	370	49.1	49.1
Compressor at Service Shop	8	83.6	25	190	56.1	50.1
Body Shop (Door Closed)**	10	62.8	75	85	44.2	43.0
Compressor at Body Shop	6	86.4	25	80	63.9	57.9
Metal Fabrication Shop	8	83.1	75	145	57.9	56.7
Rooftop HVAC	6	65.1	50	90	41.6	38.6

1 (Line Source: hard=0, soft=.5; Point Source: hard=1, soft=1.5)
(eq. N-2141.2 of TeNS)
Leq with Use Factor = Leq + 10log(UF/100) from RCNM

Stationary Noise Sources	Distance from Receptor to Wall	Distance from source to Wall (feet)	Height of Wall (feet)	Without Wall Noise Level at Homes	With Wall Noise Level at Homes	Source Height (feet)	Exterior Observer Height (feet)	Source Frequency (hz)	barrier to receiver - b (all)	source to barrier - a	source to receiver - c	path difference y =a+b-c (auto)	(slope) (1 = blocked line of sight)	fresnel	Barrier Atten
Service Bays	55	135	12	49.0	**36.8**	4	5	800	55.444	135.237	190.003	0.678	1	1.928	-12.14
Siren in Service Bay	55	135	12	50.8	**38.9**	5	5	800	55.444	135.181	190.000	0.625	1	1.778	-11.84
Bus Bays	55	315	12	49.1	**38.1**	7	5	800	55.444	315.040	370.005	0.478	1	1.359	-11
Compressor at Service	55	135	12	50.1	**37.9**	4	5	800	55.444	135.237	190.003	0.678	1	1.928	-12.14
Body Shop (Door Close	55	30	12	43.0	**28.2**	4	5	800	55.444	31.048	85.006	1.486	1	4.227	-14.754
Compressor at Body Sh	55	25	12	57.9	**42.7**	4	5	800	55.444	26.249	80.006	1.686	1	4.796	-15.153
Metal Fabrication Shop	55	90	12	56.7	**44.0**	4	5	800	55.444	90.355	145.003	0.795	1	2.262	-12.638
Rooftop HVAC	55	35	12	38.6	**38.6**	28	5	800	55.444	38.484	92.892	1.035	-1	-2.944	0
		Combined Noise Levels		**61.7**	**48.9**										

*Use Factor based on percent of use (based on a 30 minute analysis period)

** The Door Closed condition is assumed to provide a 20 dB noise reduction to the source noise level.