Attachment No. 6

10744-10746 WASHINGTON BLVD, CULVER CITY, CA

Noise Impact Study Technical Report

Prepared for
Culver City Real Estate Holdings
10746 Washington Boulevard
Culver City, CA 90232

October 2019

ESA

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ACRONYMS AND ABBREVIATIONS

Acronym	Description
CEQA	California Environmental Quality Act
City	City of Culver City
CNEL	Community Noise Equivalent Level
dB	decibel
dBA	A-weighted decibels
L_{dn}	day-night average noise level
L_{eq}	equivalent sound level
L_{max}	maximum noise level
L_{min}	minimum noise level
Noise Element	City of Culver City General Plan Noise Element

EXECUTIVE SUMMARY

Culver City Real Estate Holdings proposes to develop a vehicle parking stacker system located at 10744-10746 Washington Boulevard (Project Site) in Culver City, California. In accordance with the requirements under the California Environmental Quality Act (CEQA), this Technical Report provides an estimate of noise levels for the Project and the potential impacts from associated operational activities. This analysis describes the existing noise environment in the vicinity of the Project Site, estimates future noise levels at surrounding noise-sensitive land uses resulting from operation of the Project, and identifies the potential for significant noise impacts based on applicable noise threshold of significance. Noise worksheets and technical data used in this analysis are provided in Appendices A through C of this report.

The Project would construct a vehicle parking stacker system. Development of the Project would require the demolition of the existing low-rise commercial buildings and surface parking lot. The findings of the analysis are as follows:

- The Project's noise impacts on existing residences in the project vicinity from operational on-site stationary noise sources would not exceed the established thresholds. Operational related noise impacts would be less than significant.

SECTION 1
Introduction

ESA has conducted a noise impact study with respect to potential noise impacts associated with operations of the proposed vehicle parking stacker system that have the potential to impact neighboring noise-sensitive land uses. The objectives of this noise impact study are to:

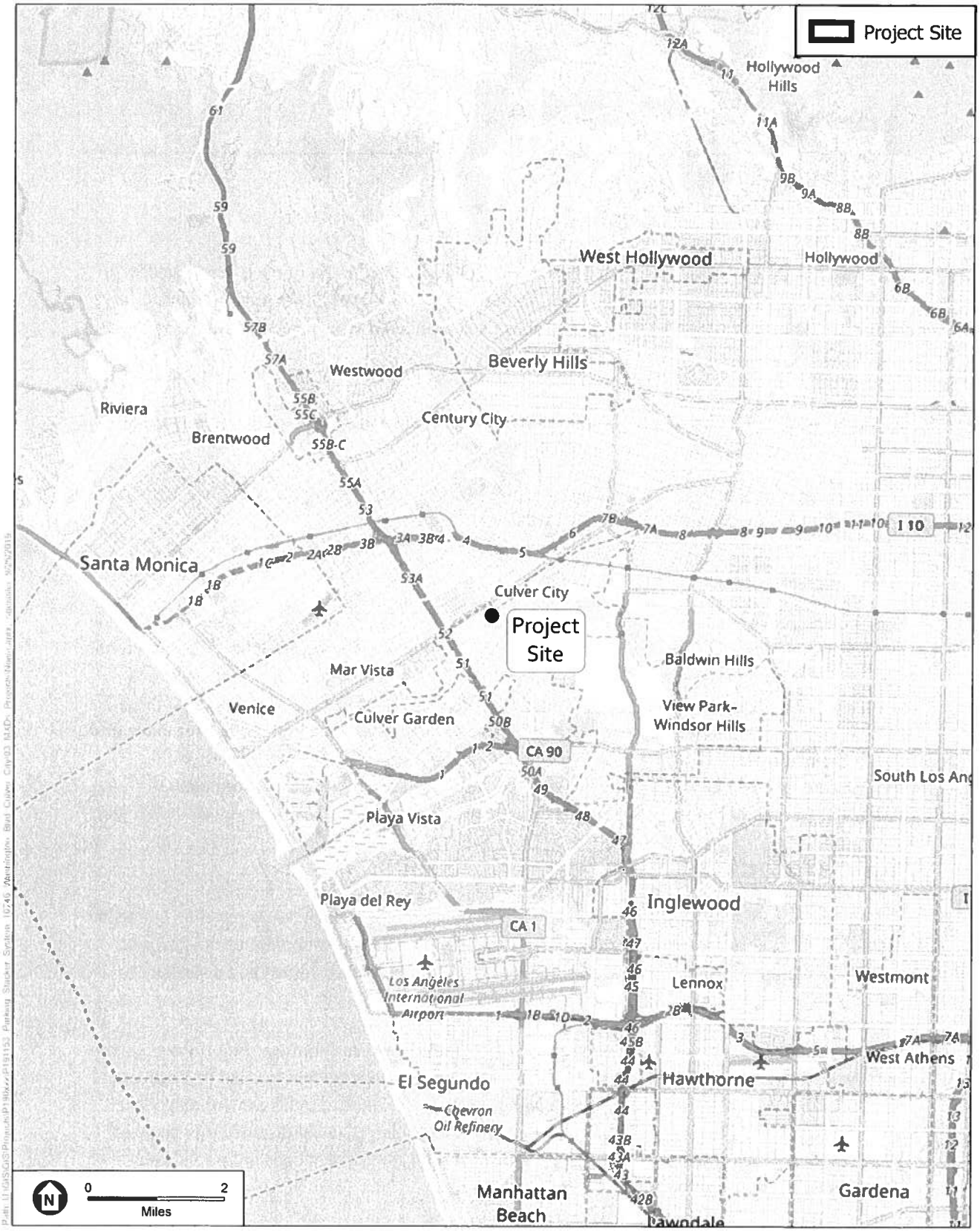
a. Establish the existing ambient noise environment in the vicinity of the proposed Project Site.

b. Evaluate the operational noise impacts to nearby noise-sensitive receptors (i.e., residential uses) based on applicable City standards and thresholds.

c. Provide, if needed, noise mitigation measures as required to meet applicable noise regulations and standards as specified by the City of Culver City.

1.1 Existing Conditions

The Project Site is located on the south side of Washington Boulevard between Overland Avenue and Midway Avenue in Culver City. The Project Site is bounded by Washington Boulevard to the north, an alley and existing residences to the south, and commercial buildings to the east and west. **Figure 1**, *Regional Location*, shows the Project Site. Nearby uses surrounding the Project Site include residential uses to the south across the alley and adjacent commercial uses to the east and west. **Figure 2**, *Aerial Photograph with Surrounding Land Uses*, shows the site and surrounding land uses. The Project Site is currently developed with low-level commercial buildings, all of which would be demolished and removed to support development of the Project.



SOURCE: ESA, 2019.

Culver City Vehicle Parking Stacker System

Figure 1
Regional Location

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SOURCE: ESA, 2019.

Culver City Vehicle Parking Stacker System

Figure 2
Aerial Photograph with Surrounding Uses

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1.2 Project Description

Culver City Real Estate Holdings proposes to develop a vehicle parking stacker system located at 10744-10746 Washington Boulevard in Culver City, California. Development of the Project would require the demolition of the existing low-level commercial buildings and a surface parking lot.

The Project could use a vehicle parking stacker system from either Parkmatic Smart Park System or Park Plus Inc. Triple Parking System, Model TP500H. The sales representative of Parkmatic Smart Park System indicates that noise levels associated with operating this system range from 55 to 60 A-weighted decibels (dBA) at a distance of one meter (or three feet) outside of the platform, as shown in Attachment A. The Park Plus System Product Manual does not provide any noise level reference for the product.

1.3 Noise Descriptors

Noise Principals and Descriptors

Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air). Noise is generally defined as unwanted sound (i.e., loud, unexpected, or annoying sound). Acoustics is defined as the physics of sound. In acoustics, the fundamental scientific model consists of a sound (or noise) source, a receiver, and the propagation path between the two. The loudness of the noise source and obstructions or atmospheric factors affecting the propagation path to the receiver determines the sound level and characteristics of the noise perceived by the receiver. Acoustics addresses primarily the propagation and control of sound.

Sound, traveling in the form of waves from a source, exerts a sound pressure level (referred to as sound level) that is measured in decibels (dB), which is the standard unit of sound amplitude measurement. The dB scale is a logarithmic scale that describes the physical intensity of the pressure vibrations that make up any sound, with 0 dB corresponding roughly to the threshold of human hearing and 120 to 140 dB corresponding to the threshold of pain. Pressure waves traveling through air exert a force registered by the human ear as sound.

Sound pressure fluctuations can be measured in units of hertz (Hz), which correspond to the frequency of a particular sound. Typically, sound does not consist of a single frequency, but rather a broad band of frequencies varying in levels of magnitude, with audible frequencies of the sound spectrum ranging from 20 Hz to 20,000 Hz. The typical human ear is not equally sensitive to this frequency range. As a consequence, when assessing potential noise impacts, sound is measured using an electronic filter that deemphasizes the frequencies below 1,000 Hz and above 5,000 Hz in a manner corresponding to the human ear's decreased sensitivity to these extremely low and extremely high frequencies. This method of frequency filtering or weighting is referred to as A-weighting, expressed in units of A-weighted decibels (i.e., dBA), which is typically applied to community noise measurements. Some representative common outdoor and indoor

noise sources and their corresponding A-weighted noise levels are shown in **Figure 3**, *Decibel Scale and Common Noise Sources*.

Noise Exposure and Community Noise

An individual's noise exposure is a measure of noise over a period of time, whereas a noise level is a measure of noise at a given instant in time, as presented in Figure 3. Noise levels rarely persist at that level over a long period of time. Community noise varies continuously over a period of time with respect to the sound sources contributing to the community noise environment. Community noise is primarily the product of many distant noise sources, which constitute a relatively stable background noise exposure, with many of the individual contributors unidentifiable. The background noise level changes throughout a typical day, but does so gradually, corresponding with the addition and subtraction of distant noise sources, such as changes in traffic volume. What makes community noise variable throughout a day, besides the slowly changing background noise, is the addition of short-duration, single-event noise sources (e.g., aircraft flyovers, motor vehicles, sirens) that are readily identifiable to the individual. These successive additions of sound to the community noise environment change the community noise level from instant to instant, requiring the noise exposure to be measured over periods of time to characterize an existing community noise environment. The following noise descriptors are used to characterize environmental noise levels over time, which are applicable to the Project.

L_{eq}: The equivalent sound level over a specified period of time, typically, 1 hour (L_{eq}). The L_{eq} may also be referred to as the average sound level.

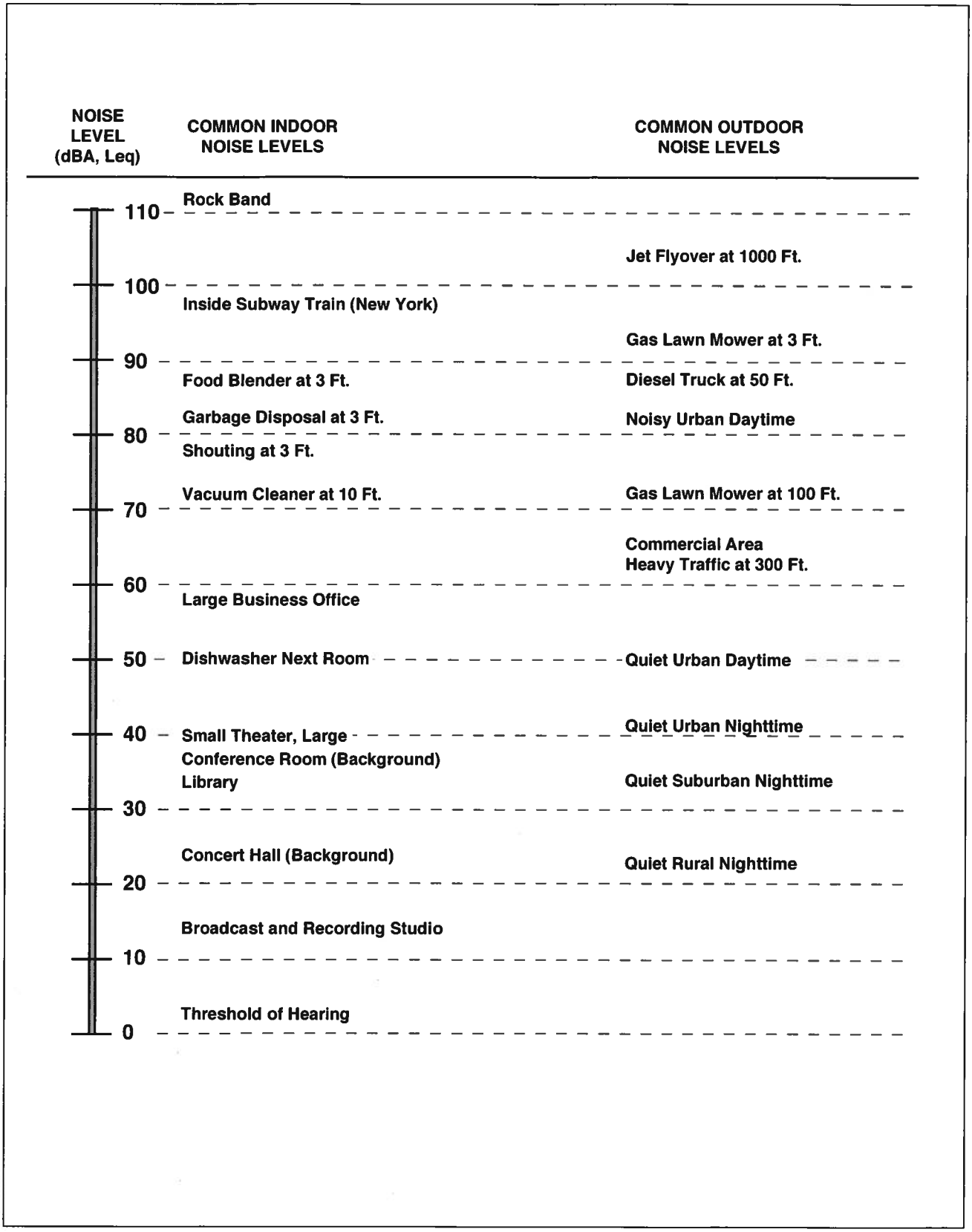
L_{max}: The maximum, instantaneous noise level experienced during a given period of time.

L_{min}: The minimum, instantaneous noise level experienced during a given period of time.

L_x: The noise level exceeded a percentage of a specified time period. For instance, L_{50} and L_{90} represent the noise levels that are exceeded 50 percent and 90 percent of the time, respectively.

L_{dn}: The average A-weighted noise level during a 24-hour day, obtained after an addition of 10 dB to measured noise levels between the hours of 10:00 p.m. to 7:00 a.m. to account nighttime noise sensitivity. The L_{dn} is also termed the day-night average noise level (DNL).

CNEL: The Community Noise Equivalent Level (CNEL) is the average A-weighted noise level during a 24-hour day that includes an addition of 5 dB to measured noise levels between the hours of 7:00 a.m. to 10:00 p.m. and an addition of 10 dB to noise levels between the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the evening and nighttime, respectively.



SOURCE: State of California, Department of Transportation (Caltrans), Technical Noise Supplement (TeNS). October 1998. Available: http://www.dot.ca.gov/hq/env/noise/pub/Technical Noise Supplement.pdf

Culver City Vehicle Parking Stacker System

Figure 3
Decibel Scale and Common Noise Sources

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Effects of Noise on People

Noise is generally loud, unpleasant, unexpected, or undesired sound that is typically associated with human activity that is a nuisance or disruptive. The effects of noise on people can be placed into four general categories:

- Subjective effects (e.g., dissatisfaction, annoyance)
- Interference effects (e.g., communication, sleep, and learning interference)
- Physiological effects (e.g., startle response)
- Physical effects (e.g., hearing loss)

Although exposure to high noise levels has been demonstrated to cause physical and physiological effects, the principal human responses to typical environmental noise exposure are related to subjective effects and interference with activities. Interference effects interrupt daily activities and include interference with human communication activities, such as normal conversations, watching television, telephone conversations, and interference with sleep (including awakening and arousal to a lesser state of sleep).[1]

With regard to the subjective effects, the responses of individuals to similar noise events are diverse and influenced by many factors, including the type of noise, the perceived importance of the noise, the appropriateness of the noise to the setting, the duration of the noise, the time of day and the type of activity during which the noise occurs, and individual noise sensitivity. Overall, there is no completely satisfactory way to measure the subjective effects of noise, or the corresponding reactions of annoyance and dissatisfaction on people. A wide variation in individual thresholds of annoyance exists, and different tolerances to noise tend to develop based on an individual's past experiences with noise. Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted (i.e., comparison to the ambient noise environment). In general, the more a new noise level exceeds the previously existing ambient noise level, the less acceptable the new noise level will be to those hearing it. With regard to increases in A-weighted noise level, the following relationships generally occur[2]:

- Except in carefully controlled laboratory experiments, a change of 1 dBA in ambient noise levels cannot be perceived.
- Outside of the laboratory, a 3 dBA change in ambient noise levels is considered to be a barely perceivable difference.
- A change in ambient noise levels of 5 dBA is considered to be a readily perceivable difference.
- A change in ambient noise levels of 10 dBA is subjectively heard as doubling of the perceived loudness.

1 California Department of Transportation, Technical Noise Supplement, Section 2.2.1, September 2013. http://www.dot.ca.gov/hq/env/noise/pub/TeNS_Sept_2013B.pdf. Accessed January 24, 2018.

2 California Department of Transportation, Technical Noise Supplement, Section 2.2.1, September 2013.

These relationships occur in part because of the logarithmic nature of sound and the decibel scale. The human ear perceives sound in a non-linear fashion; therefore, the dBA scale was developed. Because the dBA scale is based on logarithms, two noise sources do not combine in a simple additive fashion, but rather logarithmically. Under the dBA scale, a doubling of sound energy corresponds to a 3 dBA increase. In other words, when two sources are each producing sound of the same loudness, the resulting sound level at a given distance would be approximately 3 dBA higher than one of the sources under the same conditions. For example, if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA. Under the dB scale, three sources of equal loudness together produce a sound level of approximately 5 dBA louder than one source, and ten sources of equal loudness together produce a sound level of approximately 10 dBA louder than the single source.[3]

Noise Attenuation

When noise propagates over a distance, the noise level reduces with distance at a rate that depends on the type of noise source and the propagation path. Noise from a localized source (i.e., point source) propagates uniformly outward in a spherical pattern, referred to as "spherical spreading." Stationary point sources of noise, including stationary mobile sources such as idling vehicles, attenuate (i.e., reduce) at a rate between 6 dBA for acoustically "hard" sites and 7.5 dBA for "soft" sites for each doubling of distance from the reference measurement, as their energy is continuously spread out over a spherical surface (e.g., for hard surfaces, 80 dBA at 50 feet attenuates to 74 dBA at 100 feet, 68 dBA at 200 feet, etc.).[4] Hard sites are those with a reflective surface between the source and the receiver, such as asphalt or concrete surfaces or smooth bodies of water.[5] No excess ground attenuation is assumed for hard sites and the reduction in noise levels with distance (drop-off rate) is simply the geometric spreading of the noise from the source.[6] Soft sites have an absorptive ground surface, such as soft dirt, grass, or scattered bushes and trees, which, in addition to geometric spreading, provides an excess ground attenuation value of 1.5 dBA (per doubling distance).[7]

Roadways and highways consist of several localized noise sources on a defined path, and hence are treated as "line" sources, which approximate the effect of several point sources.[8] Noise from a line source propagates over a cylindrical surface, often referred to as "cylindrical spreading."[9] Line sources (e.g., traffic noise from vehicles) attenuate at a rate between 3 dBA for hard sites and 4.5 dBA for soft sites for each doubling of distance from the reference measurement.[10] Therefore, noise due to a line source attenuates less with distance than that of a point source with increased distance.

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3 California Department of Transportation, Technical Noise Supplement, Section 2.2.1.1, September 2013.
4 California Department of Transportation, Technical Noise Supplement, Section 2.1.4.2, September 2013.
5 California Department of Transportation, Technical Noise Supplement, Section 2.1.4.2, September 2013.
6 California Department of Transportation, Technical Noise Supplement, Section 2.1.4.2, September 2013.
7 California Department of Transportation, Technical Noise Supplement, Section 2.1.4.2, September 2013.
8 California Department of Transportation, Technical Noise Supplement, Section 2.1.4.1, September 2013.
9 California Department of Transportation, Technical Noise Supplement, Section 2.1.4.1, September 2013.
10 California Department of Transportation, Technical Noise Supplement, Section 2.1.4.1, September 2013.

Additionally, receptors located downwind from a noise source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels.[11] Atmospheric temperature inversion (i.e., increasing temperature with elevation) can increase sound levels at long distances (e.g., more than 500 feet). Other factors such as air temperature, humidity, and turbulence can also have significant effects on noise levels.[12]

1.4 Existing Noise Environment

Noise-Sensitive Receptor Locations

Some land uses are considered more sensitive to noise than others due to the types of activities typically involved at the receptor locations and the effect that noise can have on those activities and the persons engaged in them. Noise-sensitive receptors are defined as those specific land uses that have associated indoor and/or outdoor human activities that may be subject to stress and/or significant interference from noise produced by community sound sources. Typically, residences, hospitals, and schools are considered noise sensitive because their land uses of sleeping, recuperation, and concentration can be adversely affected by noise.

Existing noise-sensitive uses within 500 feet of the Project Site include the following, as shown in **Figure 4**, *Noise Measurement Locations and Existing Noise Sensitive Locations*:

- Residential Uses: Existing one- and two-story single-family residences are located across the alley to the south of the Project Site.

All other noise-sensitive uses are located at greater distances from the Project Site and would experience lower noise levels from potential sources of noise on the Project Site. Therefore, noise levels at additional sensitive receptors beyond those identified above are not evaluated.

Ambient Noise Levels

The predominant existing noise source surrounding the Project Site is traffic noise from Washington Boulevard to the north. Secondary noise sources include general commercial-related activities, such as loading dock/delivery truck activities, trash compaction, and refuse service activities, from the surrounding commercial land uses.

[11] California Department of Transportation, Technical Noise Supplement, Section 2.1.4.3, September 2013.
[12] California Department of Transportation, Technical Noise Supplement, Section 2.1.4.3, September 2013.

SOURCE: ESA, 2019.

Culver City Vehicle Parking Stacker System

Figure 4
Noise Measurement Locations
and Existing Noise Sensitive Locations

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Ambient noise measurements were taken at three locations, representing the project site and nearby land uses in the vicinity of the Project Site to establish conservative ambient noise levels. The measurement locations, along with existing development, are shown in **Figure 4**. Short-term (15-minute) measurements were taken at locations R1 through R3 on Tuesday, September 24.

The ambient noise measurements were conducted using the Larson-Davis 820 Precision Integrated Sound Level Meter, which is a Type 1 standard instrument as defined in the American National Standard Institute S1.4. All instruments were calibrated and operated according to the applicable manufacturer specifications. The microphone was placed at a height of 5 feet above the local grade at the following locations, as shown in Figure 4:

- Measurement Location R1: This measurement location represents the existing noise environment of the Project Site along Washington Boulevard, and is considered representative of the noise environment of the existing on-site receivers. The sound level meter was placed on the northern boundary of the Project Site approximately 150 feet from the nearest residences to the south.
- Measurement Location R2: This measurement location represents the existing noise environment of residential uses southwest of the Project Site across the alley. The sound level meter was placed at the alley next to the residence.
- Measurement Location R3: This measurement location represents the existing noise environment of single-family residential uses northeast of the Project Site across the alley. The sound level meter was placed at the alley next to the residence.

A summary of noise measurement data is provided in **Table 1,** *Summary of Ambient Noise Measurements*. Daytime average noise levels ranged from 54.3 dBA to 70.6 dBA L_{eq}.

TABLE 1
SUMMARY OF AMBIENT NOISE MEASUREMENTS

Location, Duration, Existing Land Uses, and Date of Measurements	Daytime Noise Level	Daytime Average L_{eq}
R1, 9/24/19 (15:30 P.M.to 15:45 P.M. Tuesday)	55.2 – 84.0	70.6
R2, 9/24/19 (15:48 P.M. to 16:03 P.M. Tuesday)	47.5 – 69.0	55.2
R3, 9/24/19 (16:04 P.M. to 16:19 P.M. Tuesday)	47.4 – 68.2	54.3

SECTION 2
Regulatory Framework

2.1 Federal

Federal Noise Standards

Under the authority of the Noise Control Act of 1972, the U.S. Environmental Protection Agency established noise emission criteria and testing methods published in Parts 201 through 205 of Title 40 of the Code of Federal Regulations that apply to some transportation equipment (e.g., interstate rail carriers, medium trucks, and heavy trucks) and construction equipment. In 1974, the U.S. Environmental Protection Agency issued guidance levels for the protection of public health and welfare in residential land use areas of an outdoor L_{dn} of 55 dBA and an indoor L_{dn} of 45 dBA. These guidance levels are not considered as standards or regulations and were developed without consideration of technical or economic feasibility.[13] There are no federal noise standards that directly regulate environmental noise related to the construction or operation of the Project.

2.2 State of California

California Noise Standards

The State of California has established noise insulation standards for new multi-family residential units, hotels, and motels that would be subject to relatively high levels of transportation-related noise. These requirements are collectively known as the California Noise Insulation Standards (Title 24, California Code of Regulations). The noise insulation standards set forth an interior standard of 45 dBA CNEL in any habitable room. The standards require an acoustical analysis demonstrating that dwelling units have been designed to meet this interior standard where such units are proposed in areas subject to exterior noise levels greater than 60 dBA CNEL. Title 24 standards are typically enforced by local jurisdictions through the building permit application process.

2.3 City of Culver City

Noise Standard

The City of Culver City Noise Standards are developed from those of several federal and state agencies, including the Federal Highway Administration, the U.S. Environmental Protection Agency, the Department of Housing and Urban Development, the American National Standards Institute, and the State of California Department of Health Services. These standards set limits on

[13] U.S. Environmental Protection Agency, EPA Identifies Noise Levels Affecting Health and Welfare. April 1974.

the noise exposure level for various land uses. **Table 2**, *City of Culver City Interior and Exterior Noise Standards*, lists interior and exterior noise level standards and the type of occupancy to which they should be applied.

TABLE 2
CITY OF CULVER CITY INTERIOR AND EXTERIOR NOISE STANDARDS

Zone	Interior Standard dBA (CNEL)	Exterior Standard dBA (CNEL)
Residential	45	65
Commercial Retail	55	--
Office Building	50	--
Open Space – Parks	--	65

Source: *City of Culver City Noise Element*

Section 9.07.055 of Culver City's Noise Regulations Chapter 9.07 states that it shall be prohibited for any persons to operate a loud speaker or sound-amplifying equipment for the purposes of transmitting messages, giving instructions, or providing entertainment that is audible at a distance of 50 feet or beyond the subject's property line without first filing an application and obtaining a permit. According to Section 9.07.055, every user of sound-amplifying equipment on public or private property—except block parties that have obtained a permit from the Chief of Police or activities in public parks that have obtained a permit for use of sound-amplifying equipment from the Parks, Recreation and Community Services Department—shall file an application with the Committee on Permits and Licenses at least 10 days prior to the day on which the sound-amplifying equipment is to be used. The commercial and noncommercial use of sound-amplifying equipment shall be subject to the following restrictions:

a. The only sounds permitted shall be either music or human speech, or both.

b. The operation of sound amplifying equipment shall occur only between the hours of:

   8:00 a.m. through 8:00 p.m. Monday through Thursday

   8:00 a.m. through 10:00 p.m. Friday

   10:00 a.m. through 10:00 p.m. Saturday

   10:00 a.m. through 8:00 p.m. Sunday and City specified holidays

Table 3, *Noise and Land Use Compatibility Matrix – California,* illustrates land use compatibility with regard to noise. These standards and criteria will be incorporated into the land use planning process to reduce future noise and land use incompatibilities. This table is the primary tool that allows the City of Culver City to ensure integrated planning for compatibility between land uses and outdoor noise. CNEL for specific land uses are classified into four categories: (1) Normally Acceptable, (2) Conditionally Acceptable, (3) Normally Unacceptable, and (4) Clearly Unacceptable. A CNEL value of 70 dBA is considered the dividing line between a conditionally acceptable and normally unacceptable noise environment for noise-sensitive land uses, including residences, transient lodgings, schools, and library.

TABLE 3
NOISE AND LAND USE COMPATIBILITY MATRIX – CALIFORNIA

Land Use	Community Noise Exposure CNEL (dBA)			
	Normally Acceptable[a]	Conditionally Acceptable[b]	Normally Unacceptable[c]	Clearly Unacceptable[d]
Residential – Low-Density, Single-Family, Duplex, Mobile Homes	50 – 60	55 – 70	70 – 75	75 – 85
Residential – Multiple Family	50 – 65	60 – 70	70 – 75	70 – 85
Transient Lodging – Motel, Hotels	50 – 65	60 – 70	70 – 80	80 – 85
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 – 70	60 – 70	70 – 80	80 – 85
Auditoriums, Concert Halls, Amphitheaters	NA	50 – 70	NA	65 – 85
Sports Arenas, Outdoor Spectator Sports	NA	50 – 75	NA	70 – 85
Playgrounds, Neighborhood Parks	50 – 70	NA	67.5 – 75	72.5 – 85
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 – 70	NA	70 – 80	80 – 85
Office Buildings, Business Commercial and Professional	50 – 70	67.5 – 77.5	75 – 85	NA
Industrial, Manufacturing, Utilities, Agriculture	50 – 75	70 – 80	75 – 85	NA

[a] **Normally Acceptable** – Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

[b] **Conditionally Acceptable** – New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.

[c] **Normally Unacceptable** – New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

[d] **Clearly Unacceptable** – New construction or development should generally not be undertaken.

NA: Not Applicable

Source: Office of Planning and Research, State of California General Plan Guidelines, October 2003.

The City's General Plan Noise Element includes Policy 2.A, pertaining to stationary noise sources, as follows:

> **Policy 2.A** Create a comprehensive ordinance establishing noise regulation criteria, and standards for noise sources and receptors to include but not be limited to the following:
>
> - Noise reduction features during site planning to mitigate anticipated noise impacts on affected noise sensitive land uses, such as schools, hospitals, convalescent homes, and libraries.
> - Temporary sound barrier installation at construction site if construction noise is impacting nearby noise sensitive land uses.
> - Noise abatement and acoustical design criteria for construction and operation of any new development.

Municipal Code

Chapter 9.07 of the Culver City Municipal Code provides specific noise restrictions and exemptions for noise sources within the city. Culver City Municipal Code noise regulations state that construction activity shall be prohibited, except between the hours of 8:00 a.m. and 8:00 p.m. Mondays through Fridays; 9:00 a.m. and 7:00 p.m. Saturdays; and 10:00 a.m. and 7:00 p.m. Sundays. It is prohibited for any person to operate any radio, disc player, cassette player, or similar device at a construction site in a manner that results in noise levels that are audible beyond the construction site property line.

SECTION 3
Thresholds of Significance

In accordance with the State CEQA Guidelines Appendix G, the Project would have a significant impact related to noise if it would result in:

a) **Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local General Plan or noise ordinance, or applicable standards of other agencies.**

The following significance thresholds evaluate potential noise impacts of the proposed Project based on the regulatory framework described above. The Project would result in potentially significant noise impacts under the following circumstances:

- The Project-related operations would cause ambient noise levels to increase by 5 dBA, L_{eq} or more.

SECTION 4
Methodology

4.1 Stationary Point-Source Noise (Operations)

Stationary point-source noise levels were evaluated by identifying the noise levels generated by outdoor stationary noise sources such as vehicle parking stacker system and lift, calculating the hourly L_{eq} noise level from the noise source at sensitive receiver property lines, and comparing such noise levels to existing ambient noise levels. More specifically, the following steps were undertaken to calculate outdoor stationary point-source noise impacts:

1. Ambient noise levels at surrounding representative sensitive receptor locations were estimated based on field measurement data (see Table 1).
2. Typical noise levels generated by each type of stationary point-source noise generator, including vehicle parking stacker system operations, were obtained from measured noise levels for similar equipment/activities, noise levels published in environmental noise assessment documents for land use development projects or scientific journals, or noise levels from equipment manufacturer specifications.
3. Distances between stationary point-source noise generators and surrounding sensitive receptor locations were measured using Project architectural drawings, Google Earth, and site plans.
4. Stationary point-source noise levels were then calculated for the nearest representative sensitive receptor location based on the standard point source's noise-distance attenuation factor of 6.0 dBA for each doubling of distance.
5. Noise level increases, if any, were compared to the stationary point source's noise significance thresholds identified above in Section 3, *Thresholds of Significance*.
6. The noise levels determined at the off-site noise-sensitive receptors were then compared to the stationary source noise significance thresholds identified in the Culver City Municipal Code.

SECTION 5
Environmental Impacts

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

Impact Statement: The Project would not result in the generation of a temporary or permanent increases in ambient noise levels in excess of the standards. Impacts would be less than significant.

5.1 Permanent Increase in Ambient Noise Levels

Impacts from On-Site Stationary Noise Sources

Automated Parking System

The Project proposes to install an automated parking system with two enclosed loading bays. The loading bays would be located on the south side of the property near the alley at ground level. The new buildings would surround the loading bays to the north and west. Each loading bay would be equipped with a retractable door that would shield the internal lift platforms, motors, and associated equipment from the residential uses to the south.

As mentioned above, the Project could use a vehicle parking stacker system from either Parkmatic Smart Park System or Park Plus Inc., Triple Parking System, Model TP500H. The operational manual of Parkmatic Smart Park System indicates that noise level associated with outside platform when operating this system ranges from 55 to 60 dBA, at a distance of one meter, or three feet. At a distance of 100 feet, the noise will attenuate by 30 dBA, with a maximum of 30 dBA at 50 feet. Even though it also provides noise levels for the Main Motor and Inside Platform, but these are noise levels measured inside the casing, not from outside; therefore, those noise levels are for reference only. The Park Plus System Product Manual does not provide any noise level reference for the product. **Appendix B** includes manuals for these two parking stacker systems.

Based on the data provided and confirmed by Parkmatic Smart Park System, noise generated by the equipment for the automated parking system loading bays were based on reference noise levels measured at one meter (or three feet) outside the platform (see the table included as **Appendix B** of this Technical Report).

Noise levels generated by the referenced parking stacker facility include noise from the electrical motor to power the vertical lift used by the car platform, the platform sideways movement, and the impact sound generated by the platform dropping on the ground level (on the way down) or lifting up and touching the overhead metal frame (on the way up). These sources of noise would also be included in the Project's automated parking system loading bays; however, as mentioned above, the Project's loading bays are enclosed, which would shield much of noise generated by these sources. **Table 4,** *Car Stacker Reference Noise Levels (Without Noise Attenuating Features)*, presents the measured noise levels from the Parkmatic Smart Park System.

TABLE 4
PARKING STACKER REFERENCE NOISE LEVELS

	Measured Noise Levels at one meter (1 m) distance from Car Stacker Equipment,[1]	
Car Stacker Equipment Noise Source	**In Normal, dBA**	**In Operations, dBA**
Outside Platform (1 m)	55	55 - 60
Main Motor (1 m)	50	72 (84, Act of brakes)
Inside Platform	50	60 (72, Act of brakes)

[1] Measured noise levels of a Parkmatic Smart Park car stacker system

Source: Parkmatic Smart Park System 2019

Assuming the two lifts are operating simultaneously, a minimum 20 dBA barrier insertion loss from the enclosure and retractable door, and using a reference level of 60 dBA L_{max} at 3 feet, the noise level at the residential uses 100 feet (30 dBA noise reduction compared to the noise level measured at 3 feet) south of the parking stacker system (R2 and R3) would be 30 dBA.[14] Even without the 20 dBA barrier insertion loss provided by the enclosure and retractable door, the noise level at 100 feet from the platform of the vehicle stacker system would be 50 dBA. This value is less than the measured daytime ambient noise levels at R2 (55.2 dBA) and R3 (54.3 dBA). Therefore, based on this analysis, the noise impacts from the parking stackers would be less than significant.

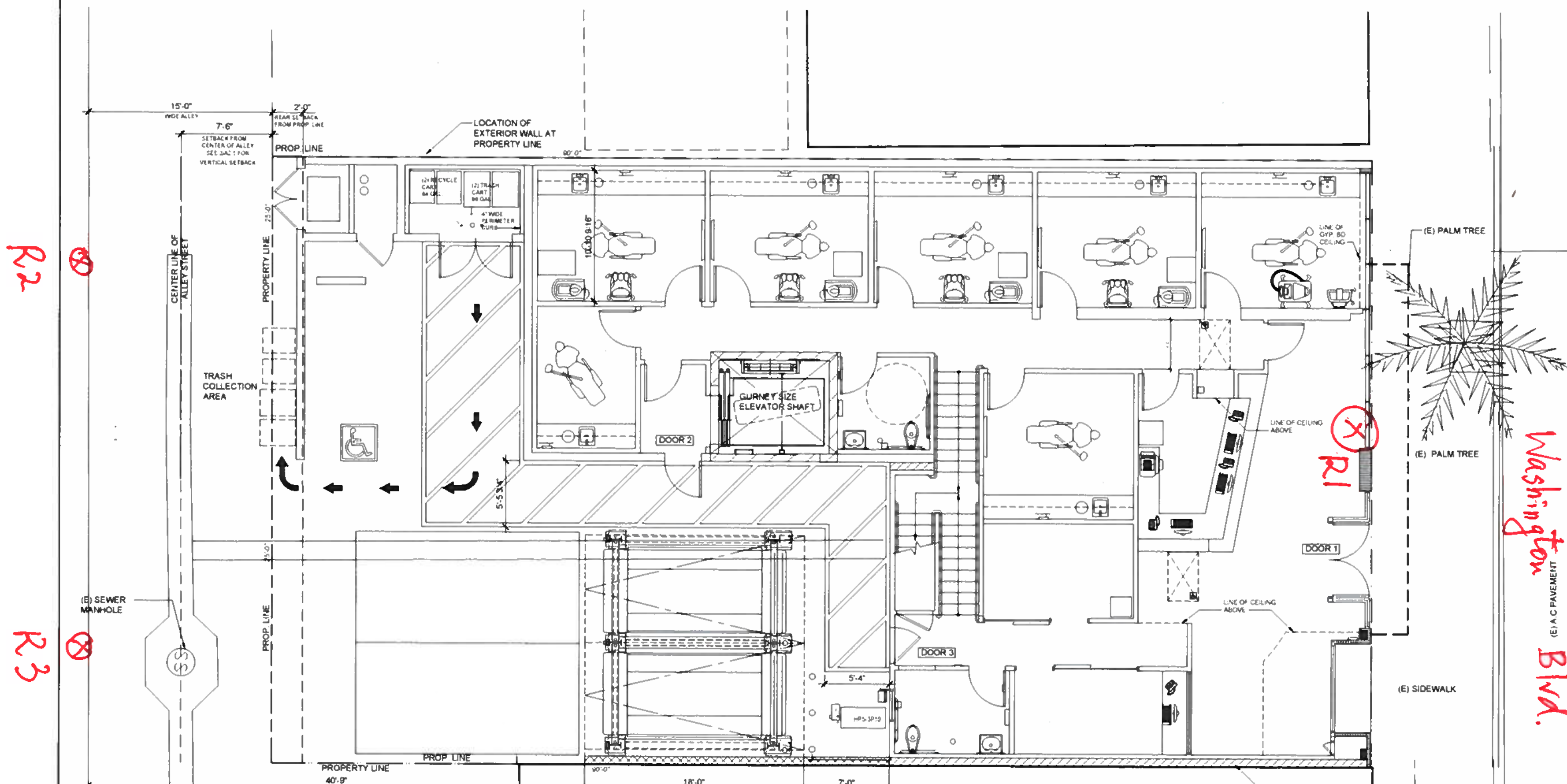
[14] Federal Highway Administration. Noise Barrier Design Handbook, Section 3.4.2. https://www.fhwa.dot.gov/environment/noise/noise_barriers/design_construction/design/design03.cfm. Accessed April 2019.

SECTION 6
Summary of Results

6.1 Operational Noise

The Project would result in less-than-significant operational impacts related to noise and no mitigation is required. The Project's noise impacts on existing development from operational on-site stationary noise sources would not exceed the established thresholds. Operational-related noise impacts would be less than significant.

Appendix A
Ambient Noise Data



DOOR 1	PAIR OF 3'-0" WIDE STOREFRONT DOORS WITH 60" X 60" ADA FLOOR CLEARANCE.
DOOR 2	3'-0" WIDE EXIT ONLY DOOR WITH MANEUVERING SPACE THAT EXTENDS 24" BEYOND LATCH SIDE OF THE DOOR AND 60" PERPENDICULAR TO THE DOOR.
DOOR 3	3'-0" WIDE ACCESSIBLE DOOR WITH MANEUVERING SPACE THAT EXTENDS 24" BEYOND LATCH SIDE OF THE DOOR AND 48" PERPENDICULAR TO THE DOOR.

FLOOR AREA CALCULATIONS

	AREA AS APPROVED	PROPOSED AREA	TOTAL AREA PER FLOOR
10746 WASHINGTON BLVD - FIRST FLOOR	966 SF	966 SF (NO CHANGE)	966 SF (NO CHANGE)
10746 WASHINGTON BLVD- SECOND FLOOR	963 SF	963 SF (NO CHANGE)	963 SF (NO CHANGE)
10744 WASHINGTON BLVD - FIRST FLOOR	2,145 SF	1,882 SF (PROPOSED) (LESS 263SF)	1,882 SF (PROPOSED)
10744 WASHINGTON BLVD- SECOND FLOOR	625 SF 145 SF (WALKWAY)	770 SF (RELOCATED SQ FT) 1,290 SF (PROPOSED SQ FT)	2,060 SF (TOTAL)

PARKING CALCULATIONS

	PARKING AS APPROVED	PROPOSED PARKING	REQUIRED PARKING
EXISTING PARKING APPROVED	3		
PROPOSED AREA @ 1 SPACE PER 350 SQ FT 1,290 SQ FT (NEW ADDITION) @350 3.6 ROUND TO 4		7 (PROVIDED BY 6 ON PARKING STACK AND 1 H/C) VEHICLE LIFT SYSTEM, TP500	
TOTAL PARKING REQUIRED			7

SCALE 1" = 4'-0"

REFER TO CIVIL DRAWINGS FOR SITE ABOVE GRADE SITE FEATURES.

1 PROPOSED SITE PLAN

SCALE 1/4" = 1'-0"

TECTA ASSOCIATES

2747 19th Street San Francisco, CA 94110 P 415 362 5887 F 415 362 5044 www.tecta.com

10250 Constellation Blvd Suite 2300, Los Angeles, CA 90067 P 213 335 2747

ARCHITECTURAL PROJECT NO 17.053

cosme AESTI ETICS

10744–10746 WASHINGTON BLVD
CULVER CITY, CA 90232

NO	REVISIONS	DATE
	CUP APPLICATION	11/1/18
	EPO SUBMISSION	12/20/18
	CUP RESUBMITTAL	1/12/19

ISSUE DATE 06/12/2019

DRAWING TITLE
PROPOSED SITE PLAN

DRAWING NUMBER
A0.2

Summary

File Name on Meter	LxT_Data.033
File Name on PC	SLM_0004983_LxT_Data_033.01.ldbin
Serial Number	0004983
Model	SoundTrack LxT®
Firmware Version	2.302
User	
Location	
Job Description	
Note	

Measurement

Description	
Start	2019-09-24 15:30:39
Stop	2019-09-24 15:45:39
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre Calibration	2019-09-24 15:29:03
Post Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting	
Peak Weight	A Weighting	
Detector	Slow	
Preamp	PRMLxT1	
Microphone Correction	Off	
Integration Method	Exponential	
Overload	144.7 dB	
	A	**C**
Under Range Peak	**101.0**	98.0
Under Range Limit	**50.0**	48.0
Noise Floor	36.8	37.5

Results

L_{ASeq}	70.6 dB	
LASE	100.2 dB	
EAS	1.152 mPa^2h	
EAS8	36.870 mPa^2h	
EAS40	184.348 mPa^2h	
$L_{Apeak\ (max)}$	2019-09-24 15:37:36	97.9
L_{ASmax}	2019-09-24 15:37:36	84.0
L_{ASmin}	2019-09-24 15:30:51	55.2
SEA	-99.9 dB	

LAS > 85.0 dB (Exceedance Counts / Duration)	0	0.0
LAS > 115.0 dB (Exceedance Counts / Duration)	0	0.0
LApeak > 135.0 dB (Exceedance Counts / Duration)	0	0.0
LApeak > 137.0 dB (Exceedance Counts / Duration)	0	0.0
LApeak > 140.0 dB (Exceedance Counts / Duration)	0	0.0

LCSeq	78.1 dB
LASeq	70.6 dB
LCSeq - LASeq	7.5 dB
LAIeq	71.9 dB
LAeq	70.6 dB
LAIeq - LAeq	1.3 dB

	A	
	dB	**Time Stamp**
Leq	70.6	
LS(max)	84.0	2019/09/24 15:37:36
LS(min)	55.2	2019/09/24 15:30:51
LPeak(max)	97.9	2019/09/24 15:37:36

# Overloads	0
Overload Duration	0.0 s

Dose Settings		
Dose Name	OSHA-1	OSHA-2
Exchange Rate	5	5
Threshold	90	80
Criterion Level	90	90
Criterion Duration	8	8

Results		
Dose	-99.9	0.00
Projected Dose	-99.9	0.07
TWA (Projected)	-99.9	38.1
TWA (t)	-99.9	13.1
Lep (t)	55.6	55.6

Statistics	
LAS5.00	75.5 dB
LAS10.00	74.4 dB
LAS33.30	71.1 dB
LAS50.00	68.5 dB
LAS66.60	64.2 dB
LAS90.00	59.4 dB

Calibration History		
Preamp	**Date**	**dB re. 1V/Pa**

Summary

File Name on Meter	LxT_Data.034
File Name on PC	SLM_0004983_LxT_Data_034.01.ldbin
Serial Number	0004983
Model	SoundTrack LxT®
Firmware Version	2.302
User	
Location	
Job Description	
Note	

Measurement

Description	
Start	2019-09-24 15:48:39
Stop	2019-09-24 16:03:39
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre Calibration	2019-09-24 15:29:02
Post Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting	
Peak Weight	A Weighting	
Detector	Slow	
Preamp	PRMLxT1	
Microphone Correction	Off	
Integration Method	Exponential	
Overload	144.7 dB	
	A	**C**
Under Range Peak	**101.0**	98.0
Under Range Limit	**50.0**	48.0
Noise Floor	36.8	37.5

Results

LA_{Seq}	55.2 dB	
LASE	84.8 dB	
EAS	33.284 µPa²h	
EAS8	1.065 mPa²h	
EAS40	5.325 mPa²h	
$LA_{peak\ (max)}$	2019-09-24 15:59:22	89.4
LAS_{max}	2019-09-24 15:51:08	69.0
LAS_{min}	2019-09-24 16:00:53	47.5
SEA	-99.9 dB	

LAS > 85.0 dB (Exceedance Counts / Duration)	0	0.0
LAS > 115.0 dB (Exceedance Counts / Duration)	0	0.0
LApeak > 135.0 dB (Exceedance Counts / Duration)	0	0.0
LApeak > 137.0 dB (Exceedance Counts / Duration)	0	0.0
LApeak > 140.0 dB (Exceedance Counts / Duration)	0	0.0

LCSeq	69.4 dB
LASeq	55.2 dB
LCSeq - LASeq	14.2 dB
LAIeq	57.2 dB
LAeq	55.2 dB
LAIeq - LAeq	2.0 dB

	A	
	dB	**Time Stamp**
Leq	55.2	
LS(max)	69.0	2019/09/24 15:51:08
LS(min)	47.5	2019/09/24 16:00:53
LPeak(max)	89.4	2019/09/24 15:59:22

# Overloads	0
Overload Duration	0.0 s

Dose Settings		
Dose Name	OSHA-1	OSHA-2
Exchange Rate	5	5
Threshold	90	80
Criterion Level	90	90
Criterion Duration	8	8

Results		
Dose	-99.9	-99.9
Projected Dose	-99.9	-99.9
TWA (Projected)	-99.9	-99.9
TWA (t)	-99.9	-99.9
Lep (t)	40.2	40.2

Statistics	
LAS5.00	59.8 dB
LAS10.00	57.0 dB
LAS33.30	53.7 dB
LAS50.00	52.4 dB
LAS66.60	51.7 dB
LAS90.00	49.7 dB

Calibration History		
Preamp	**Date**	**dB re. 1V/Pa**

Summary

File Name on Meter	LxT_Data.035
File Name on PC	SLM_0004983_LxT_Data_035.01.ldbin
Serial Number	0004983
Model	SoundTrack LxT®
Firmware Version	2.302
User	
Location	
Job Description	
Note	

Measurement

Description	
Start	2019-09-24 16:04:50
Stop	2019-09-24 16:19:50
Duration	00:15:00.0
Run Time	00:15:00.0
Pause	00:00:00.0
Pre Calibration	2019-09-24 15:29:02
Post Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting	
Peak Weight	A Weighting	
Detector	Slow	
Preamp	PRMLxT1	
Microphone Correction	Off	
Integration Method	Exponential	
Overload	144.7 dB	
	A	**C**
Under Range Peak	**101.0**	98.0
Under Range Limit	**50.0**	48.0
Noise Floor	36.8	37.5

Results

LA_{Seq}	54.3 dB		
LASE	83.8 dB		
EAS	26.646 μPa^2h		
EAS8	852.660 μPa^2h		
EAS40	4.263 mPa^2h		
$LA_{peak\ (max)}$	2019-09-24 16:08:32		92.4
LAS_{max}	2019-09-24 16:08:33		68.2
LAS_{min}	2019-09-24 16:05:36		**47.4**
SEA	-99.9 dB		

LAS > 85.0 dB (Exceedance Counts / Duration)	0	0.0
LAS > 115.0 dB (Exceedance Counts / Duration)	0	0.0
LApeak > 135.0 dB (Exceedance Counts / Duration)	0	0.0
LApeak > 137.0 dB (Exceedance Counts / Duration)	0	0.0
LApeak > 140.0 dB (Exceedance Counts / Duration)	0	0.0

LCSeq	73.4 dB
LASeq	54.3 dB
LCSeq - LASeq	19.1 dB
LAleq	56.4 dB
LAeq	54.3 dB
LAleq - LAeq	2.2 dB

	A	
	dB	**Time Stamp**
Leq	54.3	
LS(max)	68.2	2019/09/24 16:08:33
LS(min)	47.4	2019/09/24 16:05:36
LPeak(max)	92.4	2019/09/24 16:08:32

# Overloads	0
Overload Duration	0.0 s

Dose Settings		
Dose Name	OSHA-1	OSHA-2
Exchange Rate	5	5
Threshold	90	80
Criterion Level	90	90
Criterion Duration	8	8

Results		
Dose	-99.9	-99.9
Projected Dose	-99.9	-99.9
TWA (Projected)	-99.9	-99.9
TWA (t)	-99.9	-99.9
Lep (t)	39.2	39.2

Statistics	
LAS5.00	58.6 dB
LAS10.00	56.8 dB
LAS33.30	53.1 dB
LAS50.00	51.9 dB
LAS66.60	50.8 dB
LAS90.00	49.4 dB

Calibration History		
Preamp	**Date**	**dB re. 1V/Pa**

Appendix B

Parking Stacker System Manual

Measured position	Noise Level (dB)		Vibration Level (mm/sec)	
	In Normal	In Operation	In Normal	In Operation
Outside Platform(1m)	55	55~60		
Main Motor(1m)	50	72 84 (Act of brakes)		
Inside Platform	50	60 72 (Act of brakes)		
Checked plate of platform			0.0	0.1~0.2
Bracket to support wall in the lift shaft			0.0	0.3~0.4

*Reference : The noise test was performed in the including of the outside sounds. The vibration of building wall could not be inspected exactly because the error of inspection is so great.

20190605TK

Parkmatic

Operation Manual

Smart Park™

2. General Safety Instructions

2.1 Foreword

The operation manual is intended to help to user for safe operation of the SMART PARKING® and use its designated application possibilities. It contains information on the safe, proper and economic operation of the plant. By observing the information you can avoid hazards, reduce repair costs and downtimes and increase the reliability of the SMART PARKING®.

Read this part of manual through carefully before operating the SMART PARKING®.
In your own interests, please ensure that you understand all safety instructions and observe them when operating the SMART PARKING®.
If you detect any defects of the SMART PARKING®, please contact to Local Distributor or Company.

2.2 Warning instructions and signs

2.2.1 Safety instructions

User of the SMART PARKING® is responsible for the supervision of correct observance of the safety instructions.
In addition to this safety manual, observe the generally valid legal and other binding regulations concerning accident prevention and environmental protection.

General safety instructions

CAUTION 	To avoid personal injury and damage to property, the safety instructions must be observed. SMART PARKING® may only be used in technically perfect condition, observing safety instructions and hazard warnings in accordance with the Operation Manual. Faults which impair safety must be eliminated immediately, as otherwise liability obligations become null and void. The user may not make any modifications, additions or conversions, changes to software or euipment which affects the safety of SMART PARKING®.
WARNING 	SMART PARKING® is supplied generally without any installations for firefighting. Supply or adapt a firefighting facilities or fire extinguishers in accordance with the firefighting regulation if it is required.

Prior to park a car in to SMART PARKING®

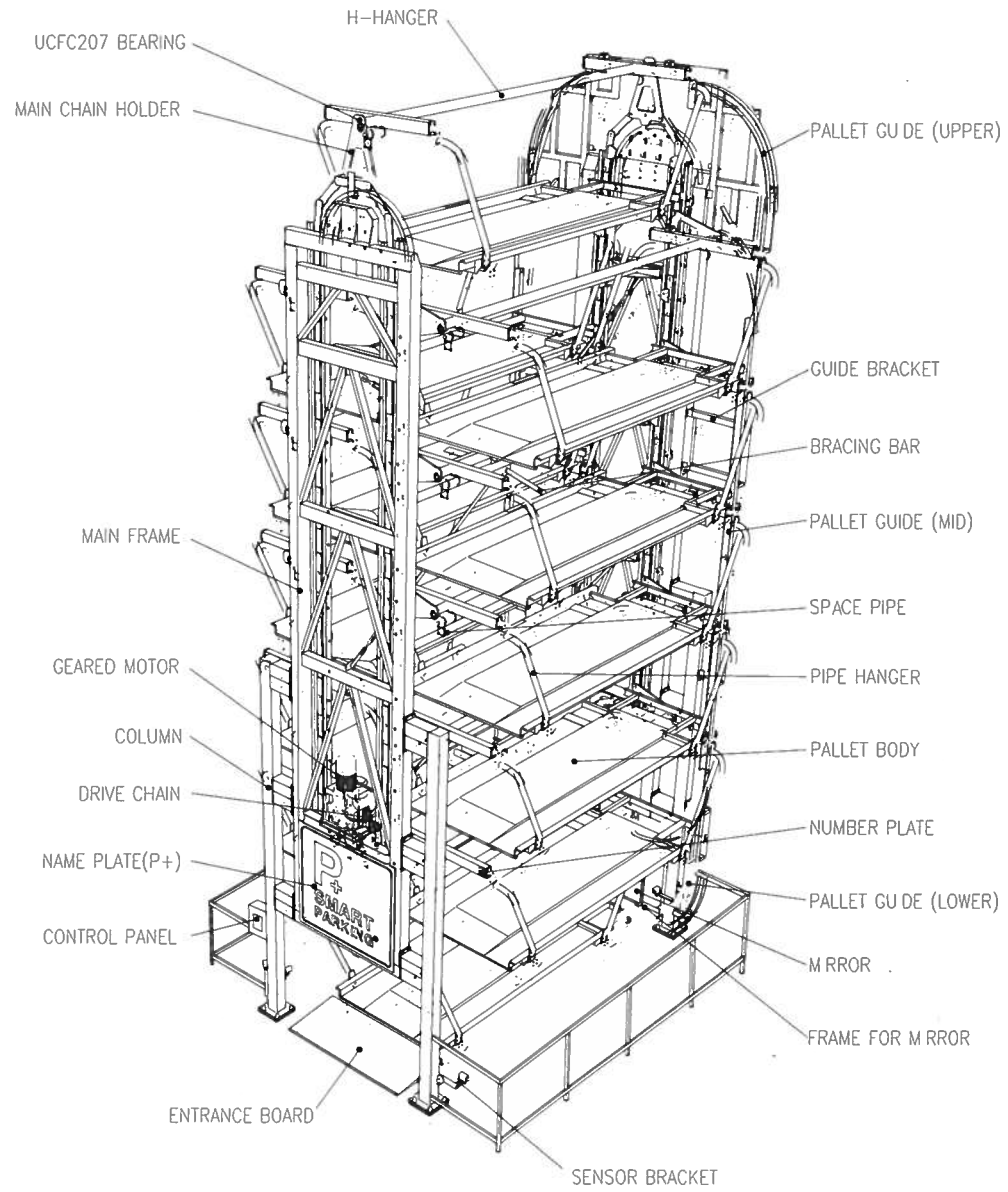
CAUTION 	• All passengers must get out from car at outside of SMART PARKING® • Check the overall height of car prior to enter in to entrance of SMART PARKING® • Lower or fold an exposed rod-antenna prior to park a car. • Fold side mirrors of car prior to park a car. • Move forward car slowly in to entrance. Speed limit is less than 4km/hr. • Make forward parking, reverse parking is not allowed.
WARNING 	• Do not enter into the SMART PARKING® during it is in operation. • Do not drive in to the SMART PARKING® if an empty pallet does not stop completely at right position at the entrance. • Check the car dimensions and do not park an over-sized car.

3. Specification

Products Name		SMART PARKING®							
Model No.		SM8L	SM10L	SM12L	SM14L	SM16L	SM8SU	SM10SU	SM12SU
Type of mechanical parking		Vertical Rotary type							
Dimension (mm)	Length(mm)	6,370	6,370	6,370	6,370	6,370	6,370	6,370	6,370
	Width(mm)	4,850	4,850	4,850	4,850	4,850	5,100	5,100	5,100
	Height(mm)	9,850	11,680	13,540	15,400	17,200	11,260	13,400	15,500
Parking Capacity (cars)		8	10	12	14	16	8	10	12
Available car	Length(mm)	5,200	5,200	5,200	5,200	5,200	5,200	5,200	5,200
	Width(mm)	2,100	2,100	2,100	2,100	2,100	2,100	2,100	2,100
	Height(mm)	1,600	1,600	1,600	1,600	1,600	1,900	1,900	1,900
	Weight(kgf)	2,150	2,150	2,150	2,150	2,150	2,400	2,400	2,400
Motor(kw)		7.5	7.5	7.5	11	15	7.5	7.5	11
Speed		4~8m/min							
Operation type		Pallet number / Ten-key / C – button Automatic empty pallet preparation							
Noise level		55-65dB							
Available temperature		-40℃ to +55℃							
Protection		IP54							
Power		AC 415/400/380/320V, 3Ph, 50/60Hz							
Parking manner		Forward parking & Reverse retrieving							
Safety Devices		Photo Sensor at the front, rear & both sides. EOCR (Electric Over Current Relay) Emergency Button Pallet Overrun Stopper Falling Prevention Device (Double guide rail)							
Attestation of Conformity of the CE marking		M8A 15 02 60033 007					M8A 15 02 60033 008		

4. Particulars of SMART PARKING®

4.1 Overall



NOTE.
THIS DRAWING SHOWS SM12L AS TYPICAL CONFIGURATION FOR REFERENCE.

MEMBER OF THE SPACEMAKER

PARKPLUS
HIGH DENSITY VEHICLE STORAGE

Park Plus Inc. Triple Parking System, Model TP500H

Product Manual

LARR# 930532

PARK PLUS INC.
CORP. HEADQUARTERS
83 Broad Avenue, Fairview NJ. 07022
Office: 1-800-966-5509 www.parkplusinc.com

PARK PLUS CALIFORNIA
WEST COAST OPERATIONS
8640 Tamarack Avenue, **Los Angeles, CA 91352**
Office 1-800-459-2604 info.ca@parkplusinc.com

Section 0: Copyright Disclaimer, Notes to Owner/Employer/Prop. Manager

Any owner, employer or property manager:

- Shall ensure that equipment operators are qualified and that they are trained in the safe use and operation of the equipment using the manufacturer's operating instructions.
- Shall establish procedures to periodically inspect the equipment in accordance with the equipment manufacturer's instructions and shall ensure that equipment inspectors are qualified and that they are adequately trained in the inspection of the equipment. Inspectors must tag and disconnect any car stacker considered to be unsafe for use or operation. For commercial installations inspections are required at quarterly intervals. For multi-family residential installations inspections are required at monthly intervals.
- Shall establish procedures to periodically maintain the equipment in accordance with the equipment manufacturer's instructions and ensure that equipment maintenance personnel are qualified and that they are adequately trained in the maintenance of the equipment. Maintenance personnel must be pre-approved by manufacturer.
- Shall maintain the periodic inspection and maintenance records recommended by the manufacturer.
- Shall display the equipment manufacturer's operating instructions in a conspicuous location in the area convenient to the operator.
- Shall supply each operator with a copy of this manual.
- Shall provide necessary lockout/ tag out means for energy sources before beginning any equipment repairs.
- Shall not modify the equipment in any manner without the prior written consent of the designer, manufacturer or supplier.
- Shall insure that all safety devices remain in proper working order.

Section 1: Scope, Purpose and Application

1. **Scope**
   This document is to be used as a guide to ensure safety requirements for the operation, inspection and maintenance of installed mechanical parking stackers.

2. **Purpose**
   The purpose of this guide is to provide a basis for common understanding among owners, users, service personnel, the general public and the regulatory community as to the minimum requirements for operating, inspecting and maintaining mechanical parking stackers.

3. **Application**
   The requirements of this guide covering the operation, inspection, and maintenance of mechanical parking stackers shall apply to those specified according to the type and model of installed equipment at a given location from the date of project hand-over.

Section 2: Product Description

The Park Plus SpaceMaker Triple Parking Lift model TP500, is a three (3) level car stacker device for parking automobiles one above another. The device is so designed as to lift two (2) automobiles on platforms and lock the platforms in place so that an additional automobile can be parked in the space below.

2.1 Structure:
The structural steel used in construction of the device is Q235 (closest grades are ASTM A 750 Gr.30 and GR.40) and the platform is composed of solid un-perforated 9 gauge (.1495") steel plate with wide U-section in the center longitudinally as well as U-Sections on both sides and shaped front and back ramps in order carry loads across the platform.

The entire assembly weighs approximately 10,000 lbs., delivered pre-welded and is assembled in the field with A307 bolts, except for certain critical bolts, which are A325 (high tensile – 120,000psi).

2.2 Hydraulics:
The stacker is operated by hydraulics. The hydraulic cylinder rods are chrome plated to prevent rusting. The hydraulic system, which raises and lowers the platforms consists of a pump and motor that are controlled by a 124-volt relay and valve combination. The hydraulic circuit maintains a constant rate of descent regardless of loading conditions. A manually operated emergency pump is provided in case of electrical failure to allow lowering of the platform without electrical power. *A pressure compensated hydraulic overload prevention circuit precludes operation of the unit with a load greater than 6,000 lbs/ platform.*

2.3 Safety:
The device is equipped with safety locking system. The "safety-hook with slide block" holds the full weight of the automobiles on the platforms in the locked position regardless of hydraulic or electric operation. Platforms are also equipped with anti-fall system.

Additional safety sensors to detect objects located under the platform or entering into the area below the platform are available

2.4 Location:
The car stacker has been designed to be mounted on grade with an engineered foundation or attachment system according to local Building Codes. It may be installed in a building provided the floor is certified to support the weight.

