

MEMORANDUM

DATE: December 23, 2019

To: Andy Loos, SRM Development

FROM: J.T. Stephens, LSA

SUBJECT: Noise and Vibration Impact Analysis Memorandum for the Proposed Culver City Senior Assisted Living Facility Project

INTRODUCTION

This Noise and Vibration Impact Analysis Memorandum evaluates the potential short-term and long-term noise impacts associated with the construction and operation of the Culver City Senior Assisted Living Facility Project (proposed project). This memorandum includes information from the on-site impact analysis provided in the *Culver City Senior Housing Environmental Noise Study* (A³ Acoustics LLP, June 2019) (*On-site Assessment*).

PROJECT DESCRIPTION

The proposed project involves the development of a five-story, 134-unit assisted living facility with 154 beds on a 0.88 acre project site in Culver City. As shown on Figure 1, the project site is located at 11141 Washington Boulevard in Culver City. Apart from its residential component, the project would also have a 420 square feet (sf) salon along its frontage on Washington Boulevard and an enclosed underground parking structure. Figures 2a and 2b depict the project's proposed ground level site plan and typical floorplans for the building's upper levels. Levels 2–5 would provide studio, one-bedroom, and two bedroom units for a total of 134 units and 154 beds. All floor plans in the assisted-living facility would feature fully equipped kitchens and a living and dining space. Level 1 would include the main entrance, lobby, medical facilities, memory care units, a physical therapy center, two outdoor courtyards, a bistro, a kitchen, a library, a theater, an activity room, and a common-area space.

Office spaces for facility employees would also be located on Level 1 and would include a reception area, a mailroom, a conference room, and a break room. Primary access to the facility would be provided at the main entrance, which is located on the alley that borders the project site to the west. A passenger drop-off zone would be located in front of the main entrance. Pedestrian access would be provided by existing sidewalks along Washington Boulevard. The project includes a subterranean parking garage with 85 parking spaces, 4 short-term metered parking stalls on the eastern perimeter of the project site, and 12 short-term bike parking spaces in the eastern, outdoor courtyard.



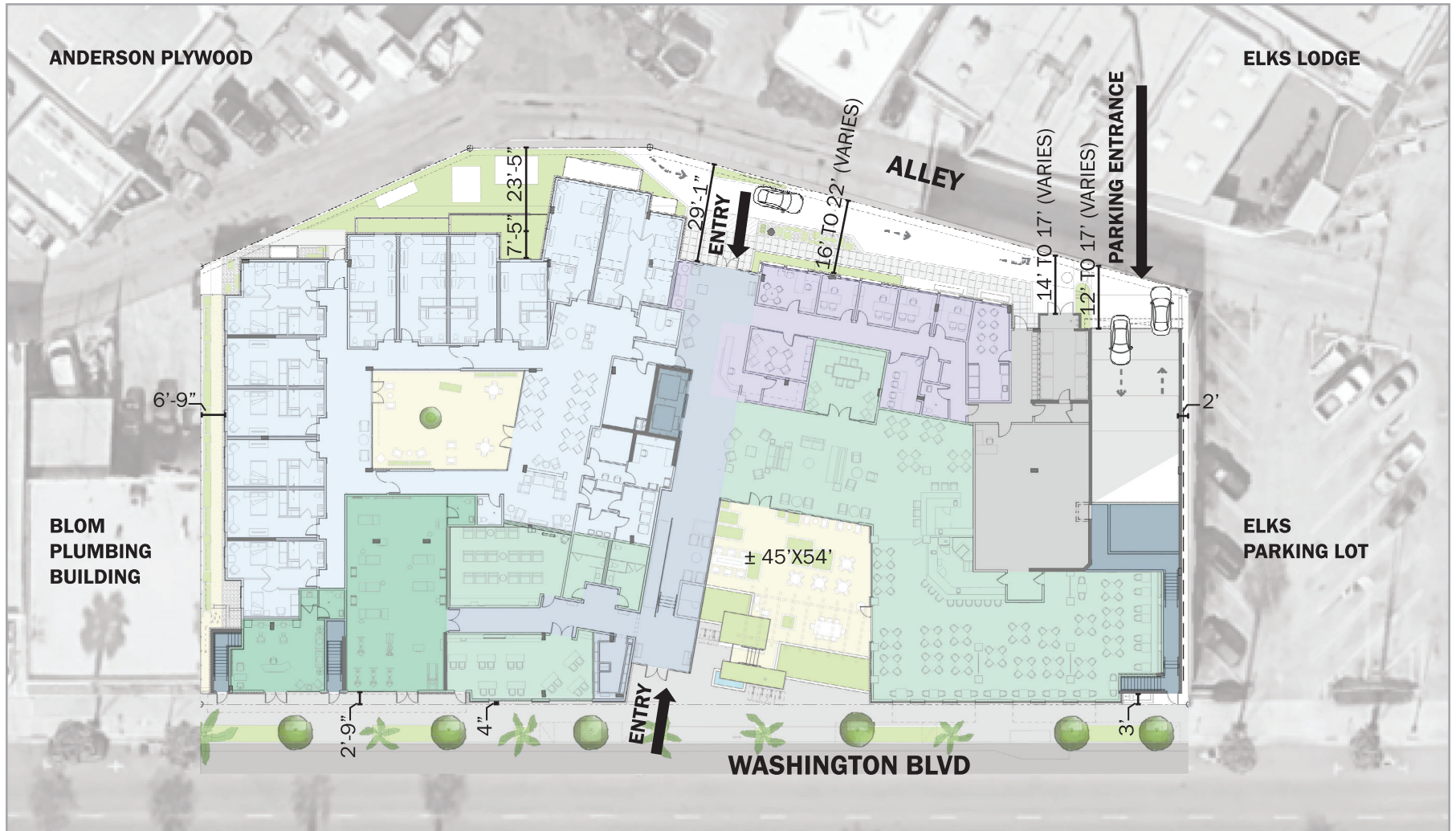
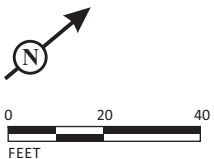


FIGURE 2a

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Culver City Senior Assisted Living Facility
Ground Level Site Plan



FIGURE 2b

Development of the project would involve demolition of the existing buildings on the project site, excavation to reach appropriate depths for project features, construction of the new building, installation of new wet and dry utilities, and landscaping. It is expected that construction would start in 2020 and conclude in 2021. The proposed project would incorporate photovoltaic (PV) solar panels and solar thermal water heating on the roof and would be built to an as-yet undecided third-party green building certification, such as the GreenPoint Rated program, LEED rating system, or Living Building Challenge.

METHODOLOGY

Evaluation of noise impacts associated with the proposed project includes the following:

- Determine the short-term construction noise levels at off-site noise sensitive uses and compare to the City's General Plan and Municipal Code Ordinance requirements;
- Determine the long-term noise levels at off-site noise sensitive uses and compare the levels to the City's pertinent noise standards; and
- Determine the required project features, such as mechanical ventilation or building façade enhancements, to reduce long-term, on-site noise impacts from all sources.

The evaluation of noise and vibration impacts was prepared in conformance with appropriate standards, utilizing procedures and methodologies in the City of Culver City Noise Element and Municipal Code. Construction noise and ground-borne vibration levels associated with construction-related activities for the proposed project were evaluated utilizing typical ground-borne vibration levels associated with construction equipment obtained from the FTA Transit Noise and Vibration Impact Assessment Manual (*FTA Manual*) (2018). Impacts modeled within the *On-Site Assessment* have been calculated with the CadnaA v2019 noise model. Please refer to the *On-Site Assessment* for additional details on the noise modeling methodology and assumptions used to estimate impacts in that analysis.

EXISTING ENVIRONMENTAL SETTING

Existing Project Site

The approximately 0.88-acre project site currently contains vacant commercial buildings that will be demolished as part of the proposed project.

Existing Sensitive Land uses in the Project Vicinity

Noise-sensitive land uses are generally considered to include those uses where noise exposure could result in health-related risks to individuals, as well as places where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Additional land uses such as parks, historic sites, cemeteries, and recreation areas are considered sensitive to increases in exterior noise levels. Schools, churches, hotels, libraries, and other places where low interior noise levels are essential are also considered noise-sensitive land uses.

Nearby noise-sensitive land uses consist of an existing hotel west of the project site and single-family homes to the east of Washington Boulevard behind a row of commercial uses. The uses to the north and south of the project site are commercial uses without exterior noise sensitive areas. The nearest sensitive receptor is the hotel to the west, approximately 45 feet from the proposed construction area.

Overview of the Existing Noise Sources

The noise environment in the vicinity of the project site is impacted by various noise sources. Mobile sources of noise, especially cars and trucks traveling on Washington Boulevard, Sepulveda Boulevard, and Interstate 405, are the most common and significant sources of noise in the vicinity of the project site. The project site is also affected by surrounding commercial uses.

Existing Ambient Noise Environment

In order to assess the existing noise conditions in the area, noise measurements were conducted at the project site. Two long-term 24-hour measurements were taken from November 13, 2019, to November 14, 2019. Additionally, as part of the *On-Site Assessment*, LT-3 was gathered from May 30, 2019 to May 31, 2019. The location of the noise measurements are shown on Figure 3 and the results are summarized in Table 1. Noise measurement data information is provided in Attachment A.



FIGURE 3

LSA

LEGEND

■ - Long Term Monitoring Locations



0 40 80
FEET

SOURCE: Google Earth

I:\SRD1801\G\Noise Monitoring Locations.cdr (12/24/2019)

Culver City Senior Assisted Living Facility
Noise Monitoring Locations

Table 1: Existing Noise Measurements

Location Number	Location Description	Daytime Noise Levels ¹ (dBA L _{eq})	Evening Noise Levels ² (dBA L _{eq})	Nighttime Noise Levels ³ (dBA L _{eq})	Average Daily Noise Levels (dBA CNEL)
LT-1	Located in front of 4116 Center Street, east of the project site.	58.7 – 66.5	56.8 – 60.3	49.0 – 57.8	63.7
LT-2	Located on the roof of the existing Cox Paint Center on the western portion of the project site.	58.2 – 65.1	59.9 – 60.4	53.4 – 62.0	66.1
LT-3 ⁴	Located on the eastern portion of the project site adjacent to Washington Boulevard.	65.0 – 70.0	64.0 – 66.0	55.0 – 65.0	69.0

Source: Compiled by LSA Associates, Inc. (November 2019).

¹ Daytime Noise Levels = noise levels during the hours of 7:00 a.m. to 7:00 p.m.

² Evening Noise Levels = noise levels during the hours of 7:00 p.m. to 10:00 p.m.

³ Nighttime Noise Levels = noise levels during the hours of 10:00 p.m. to 7:00 a.m.

⁴ Noise measurement LT-3 data was gathered from the *On-Site Assessment*.

dBA = A-weighted decibels

ft = feet

L_{eq} = equivalent continuous sound level

The project site is not located within an airport land use plan area or within two miles of a public airport or public use airport. The project site is not located within the vicinity of a private airstrip, or heliport or helistop. Airports and airfields in proximity to the project site include Los Angeles International Airport approximately 4 miles to the south, and the Santa Monica Airport approximately 2.1 miles to the west. Therefore, construction or operation of the proposed project would not expose people to excessive airport related noise levels.

REGULATORY SETTING

Federal Regulations

United States Noise Control Act

In 1972, Congress enacted the United States Noise Control Act. This act authorized the EPA to publish descriptive data on the effects of noise and establish levels of sound “requisite to protect the public welfare with an adequate margin of safety.” These levels are separated into health (hearing loss levels) and welfare (annoyance levels). For protection against hearing loss, 96 percent of the population would be protected if sound levels are less than or equal to 70 dBA during a 24-hour period of time. At 55 dBA L_{dn}, 95 percent sentence clarity (intelligibility) may be expected at 11 feet, with no community reaction. However, 1 percent of the population may complain about noise at this level and 17 percent may indicate annoyance. The EPA cautions that these identified levels are guidelines, not standards.

Federal Transit Administration

Vibration standards included in the *FTA Manual* are used in this analysis for ground-borne vibration impacts on human annoyance, as shown in Table 2. The criteria presented in Table 2 account for variation in project types as well as the frequency of events, which differ widely among projects. It is intuitive that when there will be fewer events per day, it should take higher vibration levels to evoke the same community response. This is accounted for in the criteria by distinguishing between projects with frequent and infrequent events, in which the term “occasional events” is defined as between 30 and 70 events per day.

Table 2: Ground-Borne Vibration Noise Impact Criteria

Land Use Category	Ground-Borne Vibration Impact Levels (VdB re 1 µin/sec)		
	Frequent ¹ Events	Occasional ² Events	Infrequent ³ Events
Category 1: Buildings where low ambient vibration is essential for interior operations.	65 VdB ⁴	65 VdB ⁴	65 VdB ⁴
Category 2: Residences and buildings where people normally sleep.	72 VdB	75 VdB	80 VdB
Category 3: Institutional land uses with primarily daytime use.	75 VdB	78 VdB	83 VdB

Source: *Transit Noise and Vibration Impact Assessment* (FTA 2006).

¹ Frequent events are defined as more than 70 events per day.

² Occasional events are defined as between 30 and 70 events per day.

³ Infrequent events are defined as fewer than 30 events per day.

⁴ This criterion limit is based on levels that are acceptable for most moderately sensitive equipment, such as optical microscopes.

Vibration-sensitive manufacturing or research will require detailed evaluation to define the acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the HVAC systems and stiffened floors.

µin/sec = microinches per second

dB = decibels

dBA = A-weighted decibels

FTA = Federal Transit Administration

HVAC = heating, ventilation, and air conditioning

VdB = vibration velocity decibels

The criteria for environmental impact from ground-borne vibration and noise are based on the maximum levels for a single event. Table 3 lists the potential vibration building damage criteria associated with construction activities, as suggested in the *FTA Manual*.

FTA Manual guidelines show that a vibration level of up to 0.5 in/sec in PPV is considered safe for buildings consisting of reinforced concrete, steel, or timber (no plaster), and would not result in any construction vibration damage. For a non-engineered timber and masonry building, the construction building vibration damage criterion is 0.2 in/sec in PPV.

Table 3: Construction Vibration Damage Criteria

Building Category	PPV (in/sec)
Reinforced concrete, steel, or timber (no plaster)	0.50
Engineered concrete and masonry (no plaster)	0.30
Non-engineered timber and masonry buildings	0.20
Buildings extremely susceptible to vibration damage	0.12

Source: *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018).

FTA = Federal Transit Administration PPV = peak particle velocity

in/sec = inches per second

State Regulations

State Noise Insulation Standard

The State of California's noise insulation standards are codified in the California Code of Regulations, Title 24, Building Standards Administrative Code, Part 2, and the California Building Code. These noise standards are applied to new construction in California for the purpose of controlling interior noise levels resulting from exterior noise sources. The regulations specify that acoustical studies must be prepared when noise-sensitive structures, such as residential buildings, schools, or hospitals, are developed near major transportation noise sources, and where such noise sources create an exterior noise level of 60 dBA CNEL or higher. Acoustical studies that accompany building plans for noise-sensitive land uses must demonstrate that the structure has been designed to limit interior noise in habitable rooms to acceptable noise levels. For new residential buildings, schools, and hospitals, the acceptable interior noise limit for new construction is 45 dBA CNEL.

State of California General Plan Guidelines

The State of California regulates vehicular and freeway noise affecting classrooms, sets standards for sound transmission and occupational noise control, and identifies noise insulation standards and airport noise/land-use compatibility criteria. The State of California General Plan Guidelines (OPR 2017), published by the OPR, also provides guidance for the acceptability of projects within specific CNEL/L_{dn} contours. The Guidelines present adjustment factors that may be used in order to arrive at noise acceptability standards that reflect the noise control goals of the community, the particular community's sensitivity to noise, and the community's assessment of the relative importance of noise pollution. The Land Use Compatibility Noise Guidelines are presented in Table 4 below.

Table 4: Land Use Compatibility Noise Guidelines¹

Land Use Category	Community Noise Exposure (dBA CNEL)			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
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 - Motels, and 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

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

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.

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.

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.
 Clearly Unacceptable – New construction or development
 dBA = A-weighted decibels

Regional Regulations

There are no regional regulations related to noise that are applicable to the proposed project.

Local Regulations

City of Culver City General Plan

The City of Culver City General Plan Noise Element defines interior and exterior noise standards in CNEL for different categories of land use. For residential multi-family use and institutional, the land uses applicable to the proposed project, interior environmental noise levels must be below 45 dBA CNEL, while noise levels at outdoor use areas must not exceed 65 dBA CNEL.

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.

As part of this policy Table 5 shows the City's stationary noise standards impacting residential uses.

Table 5: Stationary Noise Sources

Daytime Levels (L_{eq}) 7:00 a.m. – 10:00 p.m.	Nighttime Levels (L_{eq}) 10:00 p.m. – 7:00 a.m.	Duration
55	50	30 minutes (L ₅₀)
60	55	15 minutes (L ₂₅)
65	60	5 minutes (L ₈)
70	65	1 minutes (L ₂)
75	70	Never (L _{max})

Source: Culver City General Plan, Noise Element (City of Culver City 1996).

L_{eq} = Equivalent Continuous Noise Level

L_{max} = Maximum Instantaneous Noise Level

City of Culver City Municipal Code

The City of Culver City Municipal Code, Chapter 9.07, provides specific noise restrictions and exemptions for noise sources within Culver City. Culver City's 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; 10:00 A.M. and 7:00 P.M. Sundays.

THRESHOLDS OF SIGNIFICANCE

The thresholds for noise impacts used in this analysis are consistent with Appendix G of the California Environmental Quality Act Guidelines (*State CEQA Guidelines*) and the City's *Local Guidelines for Implementing CEQA* (2019). The proposed project may be deemed to have a significant impact with respect to noise if:

- Project construction activities occur between the hours of 8:00 p.m. and 8:00 a.m. Monday through Friday; 9:00 a.m. and 7:00 p.m. on Saturdays; 10:00 a.m. and 7:00 p.m. on Sundays.
- Project-related operations would exceed the criteria presented in Table 4.11.E or cause ambient noise levels to increase by 5 dBA L_{eq} or more.
- Project construction activities cause ground-borne vibration levels to exceed 0.5 inches-per-second PPV at the nearest building.
- Project construction activities cause ground-borne vibrations levels to exceed 72 VdB at the nearest residential building.

PROJECT IMPACTS

The following section discusses the potential noise and vibration impacts associated with the implementation of the proposed project.

Construction Noise

Construction noise associated with the proposed project would be temporary and would vary depending on the nature of the activities being performed. Noise generated would primarily be associated with the operation of off-road equipment for on-site construction activities as well as construction vehicle traffic on surrounding roadways. Construction noise typically occurs intermittently and varies depending on the nature or phase of construction (e.g., land clearing, grading, excavation, paving). Other primary sources of acoustical disturbance would be random incidents, such as dropping large pieces of equipment or the hydraulic movement of machinery lifts. During construction, exterior noise levels could negatively affect residences in the vicinity of the construction site. As previously stated, the closest sensitive uses are the hotel located west of the project site and the single-family residences located east of the project site behind a row of commercial uses opposite Washington Boulevard. Noise levels associated with individual construction equipment are summarized in Table 6.

In addition to the reference maximum noise level, the usage factor is utilized to calculate the hourly noise level impact for each piece of equipment based on the following equation:

$$L_{eq}(equip) = E.L. + 10 \log(U.F.) - 20 \log\left(\frac{D}{50}\right)$$

where: $L_{eq}(equip)$ = L_{eq} at a receiver resulting from the operation of a single piece of equipment over a specified time period

E.L. = noise emission level of the particular piece of equipment at a reference distance of 50 ft

U.F. = usage factor that accounts for the fraction of time that the equipment is in use over the specified period of time

D = distance from the receiver to the piece of equipment

As depicted in Table 6, noise levels generated by individual pieces of construction equipment typically range from approximately 70.0 dBA L_{eq} to 82.0 dBA L_{eq} at 50 feet. Noise levels associated with construction projects can vary, depending on the activities performed. Short-term increases in vehicle traffic, including worker commute trips and haul truck trips, may also result in temporary increases in ambient noise levels.

Table 6: Typical Construction Equipment Noise Levels

Type of Equipment	Maximum Noise (L_{max}) at 50 ft (dBA)	Maximum 8-Hour Noise (L_{eq}) at 50 ft (dBA)
Crane	80.6	72.6
Dozer	81.7	77.7
Excavator	80.7	76.7
Generator	80.6	77.6
Grader	85.0	81.0
Other Equipment (> 5 HP)	85.0	82.0
Paver	77.2	74.2
Roller	80.0	73.0
Tractor	84.0	80.0
Dump Truck	76.5	72.5
Concrete Pump Truck	81.4	74.4
Welder	74.0	70.0

Source: *Roadway Construction Noise Model (FHWA-HEP-05-054)* (Federal Highway Administration 2008).

dBA = A-weighted decibels

ft = foot/feet

HP = horsepower

L_{eq} = equivalent continuous sound level

L_{max} = maximum instantaneous noise level

During project construction, exterior noise levels could affect sensitive receptors in the vicinity. The hotel, approximately 50 feet to the west of the site, could be exposed to temporary and intermittent noise levels of 82 dBA L_{eq} while noise levels at the single-family homes to the east could be exposed to temporary and intermittent noise levels of 66 dBA L_{eq} when accounting for distance propagation and shielding provided by the intervening commercial buildings.

Through compliance with the standard condition outlined below, which includes construction hours specified in the City's Noise Ordinance and noise reducing measures, construction noise impacts would be addressed.

Operational Noise

Long-Term Mobile-Source Noise Impacts

In order to assess the potential traffic impacts related to the proposed project, LSA prepared the *11141 Washington Boulevard Focused Traffic Analysis (Transportation Memorandum)* in June 2019 for the proposed project. Based on the analysis results, it was determined that up to an additional 406 trips per day would be generated by the proposed project.

As presented in the *Transportation Memorandum* (June 2019), the existing ADT along Washington Boulevard is approximately 17,000 assuming a factor of 10 being applied to peak hour volumes. The following equation was used to determine potential impacts:

$$\text{Change in CNEL} = 10 \log_{10} [V_{e+ht}/V_{\text{existing}}]$$

Where: V_{existing} = the existing daily volume

V_{e+ht} = existing daily volumes plus project

Change in CNEL = the increase in noise level due to the project

The results of the calculations show that an increase of approximately 0.1 dBA CNEL (Community Noise Equivalent Level measured in A-weighted decibels) is expected. A noise level increase of less than 1 dBA would not be perceptible to the human ear.

Long-Term Stationary-Source Noise Impacts

The proposed project would have the potential to generate noise impacts from source such as parking activities, loading and unloading activities and mechanical equipment.

The proposed subterranean parking is located entirely underground and also contains spaces for which deliveries would occur. Due to the subterranean nature of the parking lot and loading zone, it is not expected that noise impacts would occur at the surrounding uses and noise impacts would be negligible.

The operation of mechanical equipment such as air conditioning equipment may generate audible noise levels. However, mechanical equipment would be shielded from nearby noise sensitive uses to attenuate noise and avoid conflicts with adjacent uses. In addition, the proposed project's mechanical equipment would be required to comply with the City's General Plan Noise Element, including Policy 2.A pertaining to stationary noise sources, which establish maximum permitted noise levels from mechanical equipment. Compliance with the City's noise standards would ensure that operational noise impacts of the proposed project are minimal.

Construction Vibration

Ground-borne noise and vibration from construction activity would be mostly low to moderate. While there is currently limited information regarding vibration source levels, to provide a comparison of vibration levels expected for a project of this size, a small bulldozer, as shown in Table 7, would generate approximately 0.003 PPV in/sec or 58 VdB of ground-borne vibration when measured at 25 ft, based on the *FTA Manual*. Table 7 further shows the PPV values and vibration

levels (in terms of VdB) from other construction vibration sources at 25 ft from construction vibration sources for comparison purposes.

Table 7: Vibration Source Amplitudes for Construction Equipment

Equipment	Reference PPV/L _v at 25 ft	
	PPV (in/sec)	L _v (VdB) ¹
Hoe Ram	0.089	87
Large Bulldozer	0.089	87
Caisson Drilling	0.089	87
Loaded Trucks	0.076	86
Jackhammer	0.035	79
Small Bulldozer	0.003	58

Source: *Transit Noise and Vibration Impact Assessment* (FTA 2006).

¹ RMS VdB re 1 μin/sec.

μin/sec = micro-inches per second

ft = feet

FTA = Federal Transit Administration

in/sec = inches per second

L_v = velocity in decibels

PPV = peak particle velocity

RMS = root-mean-square

VdB = vibration velocity in decibels

The formula for vibration transmission is provided below:

$$L_v \text{ dB (D)} = L_v \text{ dB (25 feet)} - 30 \log (D/25)$$

$$\text{PPV}_{\text{equip}} = \text{PPV}_{\text{ref}} \times (25/D)^{1.5}$$

The project site is surrounded by commercial and residential structures to the south and west. When construction activities utilizing small bulldozers or similar equipment, vibration levels would not exceed the vibration damage threshold of 0.5 PPV in/sec at the closest structure to the south. Therefore, construction would not result in any structural damage due to ground-borne vibration.

As stated above, the existing hotel to the west of the project site is the nearest sensitive receptor and would be located approximately 50 feet from the construction activity and would experience ground-borne vibration levels approaching 49 VdB.

Based on the standards provided, this level of ground-borne vibration is well below the threshold of distinctly perceptible, which is approximately 72 VdB for frequent events at uses where people sleep and would not exceed the FTA vibration threshold for human annoyance at the nearest sensitive use. Therefore, construction would not result in any ground-borne vibration annoyance.

LAND USE COMPATIBILITY ASSESSMENT

The expected noise impacts that would occur on-site were analyzed in the *On-site Assessment* for the proposed project. The results of the on-site modeling indicated that exterior noise levels would range from 49 dBA CNEL to 72 dBA CNEL. The *On-site Assessment* modeled noise level reductions created by the exterior wall and window combination to achieve an interior noise level of 45 dBA CNEL. Utilizing the wall details provided, it was determined that upgraded windows ranging from

STC 34 to STC 37 were needed at specific floor heights and facades. For all other locations, a double-pane window with STC 30 is recommended. Figures 10 through 13 in the *On-Site Assessment*, also provided in Attachment A of this document, identify the specific locations of the window ratings.

The On-Site Assessment also provided a review of the vertical terminal air conditioner (VTAC) units as the residential units on-site. The following design recommendations were made:

- The VTAC units located on the façade where STC 37 are being recommended should have a sheet metal elbow consisting of 22 ga added on the inside of the closet door to the return grille of the closet door. The elbow should be lined with 1" duct liner and extend 24" beyond the edge of the grille, as shown below. The closet door should consist of a 1-3/4" solid core-wood door and should have Pemko® S88 soundseals at the jamb and head, and a Pemko 2001 threshold.
- The walls of the VTAC closets should consist of 2x4 wood stud, 1 layer of 5/8" gypsum board on each side, and the cavity filled with 3.5" batt insulation.

With the above recommendations incorporated into the project design, the proposed project would comply with the City's interior noise level standard of 45 dBA CNEL.

STANDARD CONDITIONS

The proposed project would comply with the following Standard Conditions.

NOI-1

Construction Hours. Prior to issuance of demolition or grading permits, the project Applicant shall submit grading and construction plans for review and approval by the City of Culver City's (City) Director of Development Services, or designee. The plans shall include a condition that the construction contractor shall limit all construction-related activities between the hours of 8:00 a.m. and 8:00 p.m., Monday through Friday, from 9:00 a.m. to 7:00 p.m. on Saturday, and 10:00 a.m. to 7:00 p.m. on Sundays.

Short-Term Construction Noise Reduction Measures. Prior to issuance of construction permits, the project Applicant shall submit project improvement and building plans for review and approval by the City's Director of Development Services, or designee. These construction plans shall include the following requirements for construction activities.

- Construction contracts must specify that all construction equipment, fixed or mobile, shall be equipped with properly operating and maintained mufflers and other State-required noise attenuation devices.
- The Applicant shall designate a construction relations officer to serve as a liaison with surrounding residents and property owners who is responsible for responding to any concerns regarding construction noise and vibration. The liaison's telephone number(s) shall be prominently displayed at the

project site. Signs shall also be posted at the project site that includes permitted construction days and hours.

- Construction and demolition activities shall be scheduled so as to avoid operating several pieces of equipment simultaneously.
- Temporary noise barriers that provide a minimum of 10 dB noise reduction shall be used to block the line-of-site between construction equipment and noise-sensitive receptors during project construction. Noise barriers shall be a minimum of 10-foot tall along the west boundary.
- Contractors would phase in construction activity, use low-impact construction technologies, and avoid the use of heavy vibrating equipment where possible to avoid construction vibration impacts. Especially, contractors shall use smaller and lower impact construction technologies to avoid structure damage to the adjacent buildings. The construction contractor shall be responsible for implementing this measure during the construction phase.

Attachment: A: Noise Monitoring Data

Noise Measurement Survey – 24 HR

Project Number: SRD1801

Test Personnel: Corey Knips

Project Name: Culver City ALF

Equipment: Spark 18908

Site Number: LT-1 Date: 11/13-11/14/19

Time: From 1 pm To 1 pm

Site Location: In front of 4116 Center Street, east of the project site

Primary Noise Sources: Traffic on Washington Boulevard and surrounding streets

Comments: _____

Project Number: SRD1801

Test Personnel: Corey Knips

Project Name: Culver City ALF

Equipment: Spark 18907

Site Number: LT-2 Date: 11/13-11/14/19

Time: From 1 pm To 1 pm

Site Location: On roof of the existing Cox Paint Center on the western portion of the project site

Primary Noise Sources: Traffic on Washington Boulevard and surrounding streets

Comments: _____
