

# Technical Memorandum

**To:** Romo Planning Group

**From:** Kevin P. Carr, MS., KPC EHS Consultants

**Date:** December 1, 2021

**Re:** TTM 20494: Highland and Medical Center Project – Noise Assessment

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## 1.0 Purpose

The purpose of this memorandum is to document the impacts of construction, mobile, and operational noise as it relates to the potential environmental impacts associated with the construction and operation of the proposed Project 95 SFD Lots on 9.9 acres.

## 2.0 Project Location & Description

- 2.1 Project Location:** The proposed project site is located south of Highland Avenue and west of Medical Center Drive at 1761 West Highland Avenue and is referred to as APN: 0143-191-59.
- 2.2 Description:** The Applicant is proposing a tentative tract map (TTM) on an approximately 9.9-acre vacant lot into 95 dwelling units. Construction includes the residential structures, site improvements, landscaping, and two open space lots.

## 3.0 Noise Impacts

**3.1 Ambient Noise: 3.1** The primary source for existing ambient noise in the Project area is from traffic along Highland Avenue. The current average daily vehicle trips along Highland Avenue are approximately 15,000 average daily vehicle trips (ADT)<sup>1</sup>. Noise analysis performed on projects in the City indicate that noise levels along Highland Avenue west of Medical Center Drive have been calculated at 64.5 dBA CNEL 50 feet from the Roadway Centerline <sup>2</sup> as such outdoor ambient noise levels in the area of the Project are expected to be below 65 CNEL.

**3.2 Construction Noise:** Construction activities that would create noise include: site preparation, grading, building construction, paving, and architectural coating. Noise levels associated with the construction will vary with the different types of construction equipment, the duration of the activity, and distance from the source. Construction noise will have a temporary or periodic increase in the ambient noise level above the existing levels within

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<sup>1</sup> 2600 Cajon Boulevard Warehouse Project Initial Study/Mitigated Negative Declaration, November 2018.

<sup>2</sup> . 2600 Cajon Boulevard Warehouse Project Initial Study/Mitigated Negative Declaration Table L, November 2018

the Project vicinity. Typical operating cycles for these types of construction equipment may involve one or two minutes of full power operation followed by three to four minutes at lower power settings. Noise levels will be loudest during the site preparation and grading phases. Table 3.2-1, *Typical Construction Equipment Noise Levels* identifies the level of noise generated by construction equipment.

**Table 3.2-1 Typical Construction Equipment Noise Levels**

Type	Lmax (dBA) at 50 Feet	Lmax (dBA) at 100 Feet	Lmax (dBA) at 250 Feet
Backhoe	80	74.	66
Grader, Dozer, Excavator, Scraper	85	79	71
Truck	84	78	70
Concrete Mixer	85	79	71
Pneumatic Tool	85	79	71
Pump	77	71	63
Saw, Electric	76	70	62
Air Compressor	80	74	66
Generator	82	76	68
Paver	85	79	71
Roller	85	79	71

*Source: FTA Transit Noise and Vibration Impact Assessment Manual, Sept. 2018*

Residential uses around the proposed Project Site are located approximately 23 feet from the east boundary, approximately 10 feet from the south boundary, and approximately 350 feet from the west boundary. Additionally, the Magnolia at Highland Senior Apartment complex is approximately 350 feet east of the project boundary.

The City of San Bernardino has set restrictions to control noise impacts from construction activities. Section 8.54.070 of the San Bernardino Municipal Code states that no person shall be engaged or employed, or cause any person to be engaged or employed, in any work of construction, erection, alteration, repair, addition, movement, demolition, or improvement to any building or structure except within the hours of 7:00 a.m. and 8:00 p.m.

The Municipal Code also exempts certain activities associated with the proposed project. Section 8.54.060(l) states that noise resulting from “Construction, repair, or excavation work performed pursuant to a valid written agreement with the City, or any of its political subdivisions, which provides for noise mitigation measures” are exempt from the provisions of Chapter 8.

While the City establishes limits to the hours during which construction activity may take place, it does not identify specific noise level limits for construction noise levels. Therefore, to evaluate whether the Project will generate a substantial increase in the short-term noise levels at the offsite sensitive receptors (residences), the construction-related noise level threshold is based

on the National Institute for Occupational Safety and Health (NIOSH) recommended exposure limit (REL) for occupation noise exposure at 85 dBA, as an 8-hour time-weighted average (85 dBA – 8-hr TWA).

The highest equipment noise level as indicated in Table 3.2.1 will be equipment operating at 85 dBA. During the construction phase the noise levels will be the highest as heavy equipment pass along the Project site boundaries. During the site preparation and grading phases equipment will not be stationary, rather equipment will be moving throughout the site and varying speeds and power levels and as a result not operating at the maximum noise level for the entire work day. From the center of the site to the nearest sensitive receptor is 355-feet which would decrease the 85 dBA noise level to 68 dBA. These levels are below the NIOSH REL of 85 dBA 8-hour TWA and would be less than significant. Construction noise is of short-term duration and will not present any long-term impacts on the project site or the surrounding area.

### **3.3 Operational Noise:**

#### **3.3.1 Offsite Traffic Noise Impacts.**

Vehicle noise is a combination of the noises produced by the engine, exhaust, and tires. The primary source of noise generated by the Project will be from the vehicle traffic generated by the vehicle ingress and egress to the Project site. Under existing conditions, the site does not generate any traffic noise that impacts the surrounding area.

According to the Federal Highway Administration, *Highway Traffic Noise Analysis and Abatement Policy and Guidance*, the level of roadway traffic noise depends on three things: (1) the volume of the traffic, (2) the speed of the traffic, and (3) the number of trucks in the flow of the traffic. Generally, the loudness of traffic noise is increased by heavier traffic volumes, higher speeds, and greater numbers of trucks. These factors are discussed below.

- *The Volume of the Traffic*

Upon buildout, the proposed Project is expected to generate approximately 897 average daily vehicle trips<sup>3</sup>, which will increase the ambient traffic noise levels in the vicinity of the Project site in comparison to the existing site conditions (~~radio station and~~ vacant land). General Plan Figure C-2, *Circulation*, classifies Highland Avenue as a “Major Arterial” roadway and Medical Center Drive a “Secondary Arterial” roadway. Highland Avenue is designed to accommodate higher traffic volumes as primary linking thoroughfares to and from the City to adjacent cities and the regional highway system. Medical Center Drive is designed to carry traffic along the perimeters of major developments, provide support to the major arterials to enable traffic to travel uninterrupted for longer distances.

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<sup>3</sup> Technical Memo TTM20494: Highland & Medical Center Project – Air Quality/GHG Assessment CalEEMod Datasheets Table 4.2 Trip Summary

As discussed in Section 3.1, the primary source for existing ambient noise in the Project area is from traffic along Highland Avenue. The current average daily vehicle trips along Highland Avenue are approximately 15,000 average daily vehicle trips (ADT). Noise analysis performed on projects in the City indicate that noise levels along Highland Avenue west of Medical Center Drive have been calculated at 64.5 dBA CNEL 50 feet from the roadway centerline. Additionally, the assessments indicate that an increase of 800 vehicles per day would create an approximately 0.2 dBA increase in traffic generated noise.<sup>4</sup> The Project is expected to increase traffic by approximately 897 average daily vehicle trips, as such increases in to the ambient noise level created by the project will be less than significant.

According to Caltrans, the human ear is able to begin to detect sound level increases of 3 decibels (dB) in typical noisy environments.<sup>5</sup> A doubling of sound energy (e.g., doubling the volume of traffic on a highway) that would result in a 3-dBA increase in sound, would generally be barely detectable. Implementation of the Project will increase traffic volumes in the area occurring along Highland Avenue and Medical Center Drive but not to the extent that traffic volumes will be doubled creating a +3dBA noise increase or result in a perceivable noise increase. Therefore, operational noise impacts would be less than significant.

- *The Speed of Traffic*

Highland Avenue and Medical Center Drive have speed limits of 40 mph. These low levels of speeds do not result in vehicles generating high levels of noise.

- *The Number of Trucks in the Flow of the Traffic*

The Project is a residential development and it will not generate noise from large trucks.

### 3.3.2 Residential Activities

Typical operational sound levels generated by single-family residential activities include normal outdoor conversations, air conditioner units, and lawn care equipment with levels as indicated below:

- Normal conversation, air conditioner - 60 dBA
- Gas-powered lawnmowers and leaf blowers – 80 to 85 dBA.<sup>6</sup>

Noise generated from air conditioners and lawn care equipment are not at constant and consistent levels throughout the day. Lawn care is performed during daylight hours for short durations and although air conditioners are operating both day and night they are cycling on/off with windows closed conditions. As indicated in Section 3.2 of this memorandum noise levels

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<sup>4</sup> 2600 Cajon Boulevard Warehouse Project Initial Study/Mitigated Negative Declaration Table L, November 2018.

<sup>5</sup> Caltrans, Traffic Noise Analysis Protocol, April 2020, p.7-1.

<sup>6</sup> Center for Disease Control, "*Loud Noised Can Cause Hearing Loss*". ,[https://www.cdc.gov/nceh/hearing\\_loss/default.html](https://www.cdc.gov/nceh/hearing_loss/default.html), accessed on November 9, 2021.

would be attenuated as with mobile noise sources with standard building construction and windows closed by approximately 25 dBA.

The USEPA identifies noise levels affecting health and welfare as exposure levels over 70 dBA over a 24-hour period. Noise levels for various levels are identified according to the use of the area. Levels of 45 dbA are associated with indoor residential areas, hospitals, and schools, whereas 55 dBA is identified for outdoor areas where typical residential human activity takes place. According to the USEPA levels of 55 dbA outdoors and 45 dbA indoors are identified as levels of noise considered to permit spoken conversation and other activities such as sleeping, working, and recreation, which are part of the daily human condition.<sup>7</sup> Levels exceeding 55 dbA in a residential setting are normally short in duration and not significant in affecting health and welfare of residents.

#### **4.0 Conclusion**

Based on the assessment in Section 3.0 through compliance with mandatory City requirements and ordinances to reduce noise during construction, the Project's construction noise impacts will not result in the generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project. In addition, the Project's operational noise would be less than significant for mobile and operational noise and as such impacts to the environment for Noise are less than significant.

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<sup>7</sup> USEPA "EPA Identifies Noise Levels Affecting Health and Welfare" <https://archive.epa.gov/epa/aboutepa/epa-identifies-noise-levels-affecting-health-and-welfare.html> accessed November 9, 2021.