SECTION SUMMARY

This section presents the existing noise conditions in the area of analysis and discusses potential noise levels from the proposed project. An analysis of potential noise and groundborne vibration impacts associated with the alternatives is detailed in Chapter 4 Analysis of Alternatives.

Section 3.10 Noise provides the following:

- A description of existing noise setting in the project site and surrounding area;
- A description of noise characteristics;
- A discussion on the methodology and thresholds used to determine whether the proposed project would result in a significant impact related to noise and groundborne vibration;
- An impact analysis of the proposed project associated with noise and groundborne vibration;
- A description of any Conditions of Approval that the City of Redondo Beach (City) would impose, or mitigation measures proposed to reduce any potential impacts and residual impacts (i.e., impacts remaining after mitigation), if applicable;
- An analysis of potential cumulative impacts associated with noise and groundborne vibration;
- A summary of noise and groundborne vibration impact determinations associated with the proposed project, cumulative growth, and mitigation measures; and
- A description of significant unavoidable impacts associated with noise and groundborne vibration, if any.

Key Points of Section 3.10:

Construction

Construction activities associated with the proposed project would normally occur during the week in daytime hours and performed in accordance with the Redondo Beach Municipal Code (Section 4-24.701). Groundborne vibration from construction activities associated with the proposed project has the potential to result in significant impacts relative to potential structural damage if pile drivers (impact type) operate within 55 feet of non-engineered timber and masonry buildings or within 30 feet of structures or buildings constructed of reinforced-concrete, steel, or timber. The following mitigation measure is proposed to address potential structural damage associated with construction-related vibration:
MM NOI-1: Pile Driving Vibration.

Prior to approval of grading plans and/or prior to issuance of demolition, grading and building permits for construction activities involving the use of pile drivers (impact) within 55 feet of non-engineered timber and masonry structures/buildings or within 30 feet of structures/buildings constructed of reinforced-concrete, steel, or timber, and to the satisfaction of the City of Redondo Beach Building and Safety Division, the project applicant shall retain a Professional Structural Engineer to perform the following tasks:

• Review the project plans for demolition and construction;

• Investigate the area where pile driving is proposed to occur, including geological testing, if required; and

• Prepare and submit a report to the Director of Building and Safety to include, but not be limited to, the following:

  - Description of existing conditions at the subject area;

  - Vibration level limits based on building conditions, soil conditions, and pile driving approach to ensure vibration levels would be below 0.2 in/sec for non-engineered timber and masonry buildings if nearby or 0.5 in/sec for structures or buildings constructed of reinforced-concrete, steel, or timber if nearby; and

  - Specific measures to be taken during pile driving to ensure the specified vibration level limits are not exceeded.

With implementation of MM NOI-1, impacts related to potential structural damage from constructed –related vibration, particularly as related to pile driving (impact) would be less than significant.

Additionally, short-term significant impacts related to human annoyance from vibration would occur during construction activities in close proximity to sensitive receptors. No feasible mitigation measures are available relative to human annoyance from construction-related vibration, although such impacts would only be short-term and periodic. Nevertheless, the impact would be significant and unavoidable.

Construction

Construction of the proposed project would cause a substantial temporary and periodic increase in ambient noise levels in the project vicinity above levels existing without the project (i.e., construction activities lasting more than one day would exceed existing ambient exterior noise levels by 10 dBA or more at a noise sensitive use); a significant noise impact would occur. However, construction impacts on ambient noise levels would be short-term and would not result in permanent increases in ambient noise levels. Implementation of the following mitigation measures would help reduce construction noise impacts:

MM NOI-2: Equipment Mufflers.

During all project construction, all construction equipment, fixed or mobile, shall be operated with closed engine doors, if so equipped, and shall include properly operating and maintained residential-grade mufflers consistent with manufacturers’ standards.
MM NOI-3: Stationary Equipment.

Stationary construction equipment (fixed equipment such as compressors, generator, fans, as well as idling vehicles, etc.) operating in proximity to noise sensitive receptors (i.e., residential structures) shall be placed a minimum of 50 feet away from such receptors so that emitted noise is naturally dissipated from the receptors.

MM NOI-4: Equipment Staging Areas.

Equipment staging shall be located in areas that are shielded from and/or set back noise sensitive receptors, with a minimum of 50 feet separation between the sensitive receptor and the nearest edge of the staging area.

MM NOI-5: Electrically-Powered Tools and Facilities.

Where available, electrical power from a grid connection shall be used to run air compressors and similar power tools and to power any temporary equipment.

MM NOI-6: Sound Barriers.

Temporary sound barriers shall be installed and maintained by the construction contractor between the construction site and the residences to the east as needed during construction phases with high noise levels. Temporary sound barriers shall consist of either sound blankets capable of blocking approximately 20 A-weighted decibels (dBA) of construction noise or other sound barriers/techniques such as acoustic padding or acoustic walls placed near the existing residential buildings to the east of the project site that would reduce construction noise by approximately 20 dBA. Barriers shall be placed such that the line-of-sight between the construction equipment and immediately adjacent sensitive land uses is blocked.

Even with implementation of mitigation measures MM NOI-2 through MM NOI-6, the construction noise impact relative to the condominiums east of the site would remain significant and unavoidable.

Operation

The proposed project would revitalize the waterfront and increase patronage. However, noise levels from the proposed commercial and recreational uses would be typical of commercial developments and operational noise would not be substantially different from the noise characteristics of the existing commercial and recreational uses that currently occupy the project site. Notwithstanding, the following Condition of Approval would be applied to the operation of the proposed project to minimize noise spillover into nearby noise sensitive uses:

COA NOI-1: Parking Area/Structure Design.

Parking areas and structures proposed in proximity to noise sensitive uses, specifically the residential and hotel uses to the east of the project site and the boat slips (allowing liveaboards) in Basin 2 to the north of the project site, shall be designed to include buffers and/or shielding by walls, fences, or adequate landscaping to reduce noise exposure to nearby noise sensitive receptors. Additionally, design measures for parking structures near noise sensitive uses shall include: the use of materials that reduce sound transmission; the configuration of interior spaces to minimize sound amplification and
transmission; or other suitable and appropriate means to reduce noise exposure to nearby noise sensitive receptors.

Operation of the proposed project would not perceptibly increase groundborne vibration or groundborne noise due to the proposed nature of the project (i.e., there are no notable sources of vibration associated with the proposed uses). A permanent increase in noise from the proposed project would cause a substantial permanent increase in the ambient noise levels in the project vicinity (i.e., Torrance Circle/Boulevard between the Project Site and Catalina Avenue) above levels existing without the project. No mitigation is feasible; therefore, impacts would be significant and unavoidable.

In addition to the potential noise impacts addressed in this section, Section 3.3 Biological Resources of this Draft EIR discusses potential noise impacts that could affect birds and marine mammals.
3.10.1 Introduction

This section provides an overview of the existing noise environment at the project site and surrounding area, the regulatory framework, an analysis of potential noise and vibration impacts at nearby sensitive receptors that would result from implementation of the proposed project, the level of significance of proposed noise and vibration exposure, Conditions of Approval and/or mitigation measures where appropriate. As discussed in the NOP/IS (Appendix A of the Draft EIR), the project is not located within two miles of a public airport or a private airstrip; therefore, the proposed project would not expose people residing or working in the project area to excessive noise levels from aircraft activity. Noise calculation worksheets are included in Appendix J of this Draft EIR.

3.10.2 Environmental Setting

3.10.2.1 Technical Background

Noise Characteristics

Noise can be generally defined as unwanted sound. Sound, traveling in the form of waves from a source, is characterized by various parameters that include the rate of oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). In particular, the sound pressure level (referred to as sound level) is the most common descriptor used to characterize the loudness of an ambient sound level. It is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing and 120 to 140 dB corresponding to the threshold of pain.

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 (sound power). The sound pressure level, therefore, constitutes the additive force exerted by a sound corresponding to the frequency/sound power level spectrum. The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. As a consequence, when assessing potential noise impacts, sound is measured using an electronic filter that de-emphasizes the frequencies below 1,000 Hz and above 5,000 Hz in a manner corresponding to the human ear’s decreased sensitivity to low and extremely high frequencies and greater sensitivity to mid-range frequencies. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted dB (dBA). Frequency A-weighting follows an international standard methodology of frequency de-emphasis and is typically applied to community noise measurements. Some representative noise sources and their corresponding A-weighted noise levels are shown in Table 3.10-1.
### Table 3.10-1: Typical A-Weighted Noise Levels

<table>
<thead>
<tr>
<th>Common Outdoor Activities</th>
<th>Noise Level (dBA)</th>
<th>Common Indoor Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jet flyover at 1,000 feet</td>
<td>110</td>
<td>Rock band</td>
</tr>
<tr>
<td>Gas lawnmower at 3 feet</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Diesel truck at 50 feet at 50 mph</td>
<td>90</td>
<td>Food blender at 3 feet</td>
</tr>
<tr>
<td>Noise urban area, daytime</td>
<td>80</td>
<td>Garbage disposal at 3 feet</td>
</tr>
<tr>
<td>Gas lawnmower, 100 feet</td>
<td>70</td>
<td>Vacuum cleaner at 10 feet</td>
</tr>
<tr>
<td>Commercial area</td>
<td></td>
<td>Normal speech at 3 feet</td>
</tr>
<tr>
<td>Heavy traffic at 300 feet</td>
<td>60</td>
<td>Large business office</td>
</tr>
<tr>
<td>Quiet urban daytime</td>
<td>50</td>
<td>Dishwasher in next room</td>
</tr>
<tr>
<td>Quiet urban nighttime</td>
<td>40</td>
<td>Theater, large conference room (background)</td>
</tr>
<tr>
<td>Quiet suburb nighttime</td>
<td>30</td>
<td>Library</td>
</tr>
<tr>
<td>Quiet rural nighttime</td>
<td></td>
<td>Bedroom at night, concert hall (background)</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>Broadcast/recording studio</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Source: California Department of Transportation (Caltrans), 2013a

### Noise Exposure

Noise levels rarely persist continuously over a long period of time. Rather, noise levels vary with time, such that the noise experienced in any one place, or the community noise environment, varies continuously over time. Specifically, ambient noise is the result of many distant noise sources, such as roadways, that constitute a relatively stable background noise exposure where the individual contributors are unidentifiable. Throughout the day, short duration single-event noise sources (e.g., aircraft flyovers, nearby motor vehicles, sirens) that are readily identifiable to the individual add to the existing background noise level. The combination of the slowly changing background noise and single-event noise events make the community noise environment constantly variable throughout a day. Given the variation of community noise level over time, different noise metrics have been developed which measure noise levels over an extended period of time. This time-varying characteristic of environmental noise is described using statistical noise descriptors. The noise descriptors used in this discussion are summarized below:
Leq: The energy-equivalent sound level is used to describe noise over a specified period of time, typically one hour, in terms of a single numerical value. The Leq is the constant sound level which would contain the same acoustic energy as the varying sound level, during the same time period (i.e., the average noise exposure level for the given time period).

Lmax: The instantaneous maximum noise level for a specified period of time.

Ldn: Also abbreviated DNL, it is a 24-hour day and night noise exposure level that accounts for the greater sensitivity of most people to nighttime noise by penalizing nighttime noises. Noise between 10:00 PM and 7:00 AM is penalized by adding 10 dBA to take into account the greater annoyance of nighttime noises.

CNEL: Similar to Ldn, the Community Noise Equivalent Level (CNEL) adds a 5-dBA “penalty” for the evening hours between 7:00 PM and 10:00 PM in addition to a 10-dBA penalty between the hours of 10:00 PM and 7:00 AM. CNEL is commonly used in California instead of the Ldn. In practice, CNEL and Ldn are often used interchangeably.

As a general rule, in areas where the noise environment is dominated by traffic, the Leq during the peak-hour is generally within one to two dB of the Ldn at that location (Caltrans, 2013a). Additionally, relative to the relationship between Leq and Ldn (CNEL) ambient noise levels, and the Leq during daytime hours (i.e., 7:00 AM to 7:00 PM) can be generally considered to be two dB higher than the Ldn (Federal Transit Administration [FTA], 2006). While discussion of these noise metrics is not included in the City’s Municipal Code, these metrics are described in the City’s General Plan Noise Element (General Plan Section 4.2, Table 50 [“Standard Noise Level Measurement Definitions”]).

**Effects of Noise on People**

The effects of noise on people can be placed into three categories:

- Subjective effects of annoyance, nuisance, dissatisfaction;
- Interference with activities such as speech, sleep, and learning; and
- Physiological effects such as hearing loss or sudden startling.

These potential effects can be caused by both short and long-term exposure to very loud noises and long-term exposure to lower levels of sound. However, there is no completely satisfactory way to measure the subjective effects of noise or the corresponding reactions of annoyance and dissatisfaction. A wide variation exists in the individual thresholds of annoyance, and different tolerances to noise tend to develop based on an individual’s past experiences with noise. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise would be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships occur:

- Except in carefully controlled laboratory experiments, a change of 1-dBA cannot be perceived;
- Outside of the laboratory, a 3-dBA change is considered a just-perceivable difference;
- A change in level of at least 5-dBA is required before any noticeable change in human response would be expected; and
• A 10-dBA change is subjectively heard as approximately a doubling in loudness, and can cause adverse response.

These relationships occur in part because of the logarithmic nature of sound and the dB system. The human ear perceives sound in a non-linear fashion; hence, the dB scale was developed. Because the dB scale is based on logarithms, two noise sources do not combine in a simple additive fashion, but rather logarithmically. For example, if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA. However, where ambient noise levels are high in comparison to a new noise source, there will be a small change in noise levels. For example, when 70 dBA ambient noise levels are combined with a 60 dBA noise sources, the resulting noise level equals 70.4 dBA.

Nighttime noise can potentially affect sleep. Noise can make it difficult to fall asleep, can create momentary disturbances of natural sleep patterns by causing shifts from deep to lighter stages, and can cause awakening. (Los Angeles World Airports [LAWA], 2012). Although nighttime awakenings occur independent of noise, Fidell, et al., provided the following summary of night awakenings: “Depending on the definition adopted for “awakening,” people may awaken for reasons having nothing to do with noise many times per night, at moments which may or may not closely coincide in time with the occurrence of noise events.” According to Basner et al., “people exhibit an average of 21 electro physiologically detectable arousals per hour of sleep, or about 144 spontaneous arousals per night.” Counting both shifts from deeper to lighter sleep states and momentary awakenings, Ollerhead et al., reported about 45 “awakenings or arousals” per night, of which only 40 percent were thought to represent even momentary awakenings. People commonly attain full waking consciousness two or three times per night for reasons having nothing to do with noise exposure.1 Given that the proposed uses associated with the project are comparable to those that currently exist at the project site, no notable change in nighttime noise levels at and around the site is anticipated to occur.

Health effects from noise have been studied around the world for nearly 30 years. Scientists have attempted to determine if high noise levels can adversely affect human health apart from auditory damage. In a review of 30 studies conducted worldwide between 1993 and 1998, a team of international researchers concluded that, while some findings suggest that noise can affect health, improved research concepts and methods are needed to verify or discredit such a relationship. The team of international researchers called for more study of the numerous environmental and behavioral factors than can confound, mediate, or moderate survey findings. Until science refines the research process, a direct link between a single source noise exposure and nonauditory health effects remains to be demonstrated. (LAWA, 2012).

The Occupational Safety and Health Administration has an established noise exposure limit of 90 dBA for eight hours per day (or higher for shorter duration exposures) to protect an individual from hearing loss (29 Code of Federal Regulations [CFR] 1910.95). Noise levels in neighborhoods, even near a major airport or a major freeway, are not sufficiently loud to cause hearing loss (LAWA, 2012).

---

Noise Attenuation

Stationary point sources of noise, including stationary mobile sources such as idling vehicles, attenuate (lessen) at a rate of 6 to 7.5 dBA per doubling of distance from the source, depending on the topography of the area and environmental conditions (e.g., atmospheric conditions, presence of noise barriers). Thus, a noise measured to be 90 dBA at 50 feet from the source would be about 84 dBA at 100 feet, 78 dBA at 200 feet, 72 dBA at 400 feet, and so forth (absent intervening topography or structures). Widely distributed noise, such as a large industrial facility spread over many acres or a street with moving vehicles, would typically attenuate at a lower rate, approximately 3 to 4.5 dBA per doubling of distance from the source. Topographic features and structural barriers that absorb, reflect, or scatter sound waves can affect the reduction of noise levels. A barrier will typically provide at least a 5 dB noise reduction when it just breaks the line of sight between a noise source and a receiver, and additional noise reduction is achieved with increased height of the barrier and/or with the use of sound absorbing material (i.e., sound blankets on the noise source side of the barrier). Atmospheric conditions (wind speeds and directions, humidity levels, and temperatures) and the presence of dense vegetation can also affect the degree to which sound is attenuated over distance.

Vibration Principles

Vibration refers to groundborne noise and perceptible motion. Groundborne vibration is not a common environmental problem in contrast to airborne noise, as sources of any notable levels of vibration are relatively limited and vibration levels attenuate rapidly with distance. Common sources of groundborne vibration include trains, buses on rough roads, and construction activities (e.g., blasting, sheet pile-driving and operating heavy earth-moving equipment). As further described below, an example construction vibration level of 0.210 inches per second (in/sec), measured as Peak Particle Velocity (PPV), at 25 feet from a vibratory roller diminishes to 0.07 PPV in/sec at 50 feet from that equipment. For context, a vibration level of 0.20 PPV in/sec is recognized by the Federal Transit Authority as the guideline criterion for posing potential structural damage to non-engineered timber and masonry buildings.

The most common impacts from groundborne vibration include annoyance, movement of the building floors, rattling of windows, shaking of items on shelves or hanging on walls, disruption of vibration-sensitive operations or activities, and triggering of landslides. In extreme cases, the vibration can cause damage to buildings or equipment. In most circumstances common ground-induced vibrations related to roadway traffic and construction activities pose no threat to buildings or structures, with the occasional exception of blasting and sheet pile-driving during construction. Annoyance from vibration often occurs when the vibration exceeds the threshold of perception. A vibration level that causes annoyance would be well below the damage threshold for normal buildings. Generally, groundborne vibration does not provoke adverse human reaction to those who are outdoors as the effects associated with the shaking of building are absent.

Vibrations caused by construction can be interpreted as energy transmitted in waves through the soil mass. These energy waves generally dissipate with distance from the vibration source, due to spreading of the energy and frictional losses. Thus, groundborne vibrations from most construction activities very rarely reach the levels that can damage structures but can achieve the audible and perceptible ranges in buildings very close to construction sites (FTA, 2006). For example, a vibratory roller having a vibration level of approximately 0.28 PPV in/sec at 20 feet would be noticeable at that distance, based on the California Department of
Transportations (Caltrans) vibration annoyance criteria indicating a PPV of 0.24 in/sec would be “distinctly perceptible” (Caltrans, 2013b).

**Units of Vibration**

In order to assess the potential for structural damage associated with vibration, the vibratory ground motion in the vicinity of the affected structure is measured in terms of PPV in the vertical and horizontal directions, typically in units of in/sec. The PPV is defined as the maximum instantaneous peak of the vibration signal. The root mean square (rms) amplitude is most frequently used to describe the effect of vibration on the human body. The rms amplitude is defined as the average of the squared amplitude of the signal and is approximately 70 percent of the PPV for a single frequency vibration. Vibration velocity level in dB notation (VdB) is commonly used to measure rms. The dB notation acts to compress the range of numbers required to describe vibration and are referenced to $1 \times 10^{-6}$ in/sec in the U.S.

According to FTA guidelines, the construction vibration damage criterion for non-engineered timber and masonry buildings is 0.2 in/sec and that of structures or buildings constructed of reinforced-concrete, steel, or timber is 0.5 in/sec. The threshold of perception is typically around 64 VdB, and the threshold of human annoyance to ground-borne vibration is 75 VdB for frequent to occasional vibration to 80 VdB for infrequent vibration (i.e., less than 30 vibration events per day) (FTA, 2006).

### 3.10.2.2 Existing Setting

**Ambient Noise Levels**

The ambient noise environment in the project vicinity is typical of an urban area, being influenced by a variety of human-caused sources of noise typical for urban areas, most notably vehicular traffic on local roadways, along with occasional aircraft overflights and activities associated with commercial businesses. Many of the existing structures on the site include HVAC systems (heating, ventilation, air conditioning). In addition, natural sources of sound, such as ocean waves breaking on the shore, wind blowing through trees/vegetation, and birds contribute to the ambient noise environment in the project vicinity, and, in the case of the project site, is particularly influenced by coastal commercial and marina activities associated with its proximity to the Pacific Ocean/Santa Monica Bay.

Existing ambient noise levels were measured in 2015 on April 29 and 30, May 13, and June 16, 22, and 23 using a tripod mounted Type 1 SoundPro DL sound level meter. Fifteen-minute measurements were collected at 14 locations, representing the existing noise sensitive receptors in the vicinity of the project site and proposed haul routes. Measured levels are provided below in Table 3.10-2 Measured Existing Noise Levels and Figure 3.10-1a and Figure 3.10-1b, Daytime Measured Noise Levels Near the Project Site.
Figure 3.10-1a

Daytime Measured Noise Levels near the Project Site

Legend
- Noise Measurement Location
- Project Area
- Existing Structured Public Parking
- Breakwater Fill Area

Source: CDM Smith, 2015; City of Redondo Beach, 2008; Noble Consultants, Inc., 2015
Daytime Measured Noise Levels along the Haul Routes

Source: CDM Smith, 2015

Figure 3.10-1b

Legend
- Noise Measurement Location
- Project Area

The Waterfront Draft EIR
<table>
<thead>
<tr>
<th>Location</th>
<th>Receptor Type</th>
<th>Measured Ambient Noise Level (dBA Leq)</th>
<th>Estimated CNEL (24 Hour)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Area</strong></td>
<td></td>
<td>Daytime Hours (7:00 am to 10:00 pm)</td>
<td>Nighttime Hours (10:00 pm to 7:00 am)</td>
</tr>
<tr>
<td>1 Crowne Plaza on North Harbor Drive</td>
<td>Hotel</td>
<td>61</td>
<td>49</td>
</tr>
<tr>
<td>2 Basin 2 along Portofino Way</td>
<td>Residential</td>
<td>63</td>
<td>53</td>
</tr>
<tr>
<td>3 Condominiums on North Pacific Avenue</td>
<td>Residential</td>
<td>60</td>
<td>56</td>
</tr>
<tr>
<td>4 Czuleger Park</td>
<td>Recreational</td>
<td>55</td>
<td>--^2</td>
</tr>
<tr>
<td>5 Elevated walkway above the International Boardwalk in front of Basin 3</td>
<td>Recreational</td>
<td>55</td>
<td>--^2</td>
</tr>
<tr>
<td>6 Pier Plaza Parking Structure Upper Level</td>
<td>Commercial</td>
<td>52</td>
<td>51</td>
</tr>
<tr>
<td>7 Condominiums near Torrance Circle</td>
<td>Residential</td>
<td>63</td>
<td>50</td>
</tr>
<tr>
<td><strong>Haul Routes</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 Condominiums on North Catalina Avenue between Emerald and Garnet Streets</td>
<td>Residential</td>
<td>69</td>
<td>55</td>
</tr>
<tr>
<td>9 North Catalina Avenue at North Francisca Avenue</td>
<td>Residential</td>
<td>69</td>
<td>NM</td>
</tr>
<tr>
<td>10 Herondo Street near Monterey Boulevard</td>
<td>Residential</td>
<td>69</td>
<td>NM</td>
</tr>
<tr>
<td>11 Pacific Coast Highway at 18th Street</td>
<td>Residential</td>
<td>73</td>
<td>NM</td>
</tr>
<tr>
<td>12 Artesia Boulevard at Reed Street</td>
<td>Residential</td>
<td>71</td>
<td>NM</td>
</tr>
<tr>
<td>13 Hawthorne Boulevard near Darien Street</td>
<td>Residential</td>
<td>71</td>
<td>NM</td>
</tr>
<tr>
<td>14 Torrance Boulevard near Victor Street</td>
<td>Residential</td>
<td>73</td>
<td>NM</td>
</tr>
</tbody>
</table>

Source: CDM Smith, 2015

Notes:
1. Estimated based on short-term (15-minute) noise measurements according to FTA procedures where both daytime ambient noise measurement data and nighttime ambient noise measurement data are available and Ldn value can be computed, or, in cases where only daytime ambient noise measurement data are available, are assumed to be 2 dBA lower than the daytime Leq per FTA guidelines (FTA, 2006).
2. Ambient noise level measurements representative of existing conditions at this site were not able to be taken due to unusually windy conditions at the time, which would have resulted in artificially high noise levels being reported.

NM – Not measured. Nighttime noise measurements focused on those locations in close proximity to project site. The nighttime noise measurements conducted near project site provided additional data used to estimate existing CNELs.
As indicated in Table 3.10-2, the existing daytime ambient noise levels at the measurement locations in the project area ranged from 52 dBA (Leq) to 63 dBA (Leq) and at measurement locations along the potential haul routes ranged from 69 dBA (Leq) to 73 dBA (Leq). The existing nighttime ambient noise levels at the measurement locations in the project area ranged from 49 dBA (Leq) to 56 dBA (Leq). Nighttime ambient noise levels along the potential haul routes were measured in the immediate vicinity of the project site, and found to be 55 dBA (Leq) near the condominiums on North Catalina Avenue between Emerald Street and Garnet Street. Table 3.10-2 also presents the estimated CNEL at each location.

**Existing Groundborne Vibration Levels**

Based on field observations, the only source of groundborne vibration in the project vicinity is vehicular travel (including delivery trucks and transit buses) on local roadways. According to an FTA technical study, typical road traffic induced vibration levels are unlikely to be perceptible by people. Typical background velocity level in residential areas is usually 50 VdB or lower, or below the threshold of perception for humans. (FTA, 2006).

**Sensitive Receptors**

Some land uses are considered more sensitive to ambient noise and groundborne vibration levels than others. People in residences, motels and hotels, schools, libraries, churches, hospitals, nursing homes, auditoriums, natural areas, parks and outdoor recreation areas are generally more sensitive to noise than are people at commercial and industrial establishments. Consequently, the noise standards for sensitive land uses are more stringent than for those at less sensitive uses. Figure 3.10-2 provides an overview of the land uses adjacent to the project site. Local residential receptors include existing condominiums and apartment buildings to the east of the project site, and liveaboards (i.e., people who live on boats) in the marinas within and to the north of the project site (i.e., Basin 3 and Basin 2, respectively). The residential uses to the east are separated from the main portions of the project site by a bike bath/pedestrian walkway (i.e., the International Boardwalk), privacy walls, and landscaping. The nearest school is Redondo Union High School, located half-mile northeast of the project site. The nearest parks and recreational facilities to the project site include Veterans Park and Czuleger Park to the south and east, respectively, adjacent to the project site. Notably, schools, parks, and recreational land uses are not considered as sensitive to noise as residential uses and places where people sleep.

Table 3.10-3 indicates the approximate distances between the project site and nearby noise sensitive receptors, as measured at their nearest points (i.e., the closest distance between site and receptor).
Local Vicinity and Existing Conditions

Figure 3.10-2

Legend

- Project Area
- Existing Structured Public Parking
- Breakwater Fill Area

Source: City of Redondo Beach, 2008; Psomas, 2014; Noble Consultants, Inc., 2015
Table 3.10-3: Distances Between Project Site and Nearby Noise-Sensitive Receptors

<table>
<thead>
<tr>
<th>Type of Noise Sensitive Receptor</th>
<th>Location Relative to Project Site</th>
<th>Approximate Distance at Closest Point Between Noise Sensitive Receptor and Edge of Project Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liveaboard Boats in Portofino and Port Royal Marinas at Basin 2</td>
<td>Northwest of Project Site</td>
<td>75 feet</td>
</tr>
<tr>
<td>Hotel (Crowne Plaza)</td>
<td>Northeast of Project Site</td>
<td>100 feet</td>
</tr>
<tr>
<td>Residential Development</td>
<td>East of Project Site near intersection of North Harbor Drive and North Pacific Avenue</td>
<td>140 feet</td>
</tr>
<tr>
<td>Czulegar Park</td>
<td>East of Project Site near Plaza Parking Structure</td>
<td>120 feet</td>
</tr>
<tr>
<td>Residential Development</td>
<td>East of International Boardwalk</td>
<td>25 feet</td>
</tr>
<tr>
<td>Veterans Park</td>
<td>South of Project Site, adjacent to Torrance Circle</td>
<td>30 feet</td>
</tr>
</tbody>
</table>

Source: CDM Smith, 2015

### 3.10.3 Regulatory Framework

#### 3.10.3.1 State

The State of California has adopted noise standards in areas of regulation not preempted by the Federal government. State standards regulate noise levels of motor vehicles, sound transmission through buildings, occupational noise control, and noise insulation. Title 24 of the California Code of Regulations, also known as the California Buildings Standards Code, establishes building standards applicable to all occupancies throughout the state. The Code provides acoustical regulations for both exterior-to-interior sound insulation, as well as sound and impact isolation between adjacent spaces of various occupied units. Title 24 regulations generally state that interior noise levels generated by exterior noise sources shall not exceed 45 dBA Ldn/CNEL, with windows closed, in any habitable room for general residential uses.

#### 3.10.3.2 Local

Local regulation of noise is implemented through general plan policies and noise ordinance standards, which are described further below. A general plan identifies general principles intended to guide and influence development plans, and a noise ordinance sets forth the specific standards and procedures for addressing particular noise sources and activities. General plans recognize that different types of land uses have different sensitivities toward their noise environment. Noise ordinances typically set forth standards related to construction activities, nuisance-type noise sources, and industrial property-line noise levels.

### Noise Element of General Plan

The Noise Element of the City of Redondo Beach General Plan (Section 4.2) establishes acceptable noise levels for various land uses, with emphasis on requirements for residential areas and other sensitive noise receptors, such as hospitals and schools. In addition, the Noise Element provides guidelines for determining project impacts and CNEL guidelines for
noise/land use compatibility. The Noise Element contains the following goals and policies that are applicable to the proposed project:

- Goal 10B Ensures that residents, employees, and visitors in the City of Redondo Beach are protected from the adverse human health and environmental impacts of excessive overall (ambient) noise levels, and take all necessary and appropriate action to avoid or mitigate the detrimental effects of such excessive noise level exposure impacts on the community.
  - Objective 10.3 Prevent and mitigate the adverse impacts of excessive noise exposure on the residents, employees, and visitors of the community.
    - Policy 10.3.2 Implement requirements under Title 24 of the State Building Code to ensure that interior noise levels attributable to exterior sources shall not exceed an Ldn of 45 dB(A) in any habitable room within new hotels, motels, dormitories, long-term care facilities, apartment houses, and dwellings other than detached single-family units.
    - Policy 10.3.4 Prohibit the development of new industrial, commercial, or related land uses or the expansion of existing land uses when it can be demonstrated that such new or expanded land uses would be directly responsible for causing overall (ambient) noise levels to exceed an Ldn of 65 dB(A) exterior upon areas containing housing, schools, health care facilities, or other “noise-sensitive” land uses (as determined by the City of Redondo Beach).
    - Policy 10.3.5 Encourage “noise sensitive” land uses, including schools, libraries, health care facilities, and residential uses, to incorporate fences, walls, landscaping, and/or other noise buffers and barriers, where appropriate and feasible to do so.
  - Objective 10.5 Minimize noise spillover or encroachment from commercial and industrial uses into adjoining residential neighborhoods or “noise-sensitive” uses.
    - Policy 10.5.2 Require that all parking areas for commercial and industrial land uses abutting residential areas be buffered and shielded by walls, fences, or adequate landscaping.
    - Policy 10.5.3 Require that parking structures serving commercial or industrial land uses be designed to minimize the potential noise impacts of vehicles using these facilities both on site and on adjacent land uses or properties. The design measures used may include: 1) the use of materials which mitigate sound transmission; or 2) the configuration of interior spaces to minimize sound amplification and transmission.
  - Objective 10.7 Minimize the impacts of construction noise on adjacent uses.
    - Policy 10.7.1 Ensure that the prohibitions relative to legal hours of operation for construction activities contained within the existing City of Redondo Noise Ordinance and/or any future/revised Noise Ordinance be adhered to and enforced.
    - Policy 10.7.2 Require that construction activities adjacent to residential land uses and dwelling units be regulated, as necessary, to prevent the generation of adverse and/or excessive noise impacts.
Policy 10.7.3 Require that construction activities employ feasible and practical techniques and practices which minimize the generation of adverse and/or excessive noise impacts on adjacent land uses.

**Municipal Code**

The City of Redondo Beach Municipal Code (RBMC), under Chapter 24 of Title 4, Noise Regulation (effective August 11, 1976), provides the local government ordinance relative to community noise level exposure, guidelines, and regulations. The ordinance provides local noise limits by setting out a series of permissible exterior (for sensitive receptors only) sound levels by land use categories. These limits differ between daytime hours (7:00 AM to 10:00 PM) and nighttime hours (10:00 PM and 7:00 AM), with the nighttime being more restrictive. The RBMC states that “no person may operate, or cause to be operated, any source of sound at any location within the City or allow the creation of any noise on property owned, leased, occupied, or otherwise controlled by such person which causes the noise level when measured on any other property to exceed” the presumed for the various land use categories shown in Table 3.10-4 (RBMC Section 4-24.301). Where the land use borders another land use category, the lower land use category limit is increased by 5 dB. However, where actual ambient noise levels exceed the presumed ambient noise levels in the City’s Municipal Code, the allowable noise exposure standard shall be increased in 5 dB increments as appropriate to encompass or reflect such ambient noise level. For these regulations, the City uses the Leq metric based upon the City’s Noise Element (Table 50). These levels are not applicable to motor vehicles operating on public rights-of-way (RBMC Section 4-24.603) and are not applicable to construction noise levels, which are regulated exclusively by hour of operation limitations contained in RBMC Section 4-24.503.

<table>
<thead>
<tr>
<th>Land Use Type</th>
<th>Time Period</th>
<th>Permissible Ambient Level (dBA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Density Residential (R-1-A, R-1, R-2, P-D-R, P-U-D, Overlay)</td>
<td>7:00 AM – 10:00 PM</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>10:00 PM – 7:00 AM</td>
<td>45</td>
</tr>
<tr>
<td>Medium Density Residential (R-3, R4, P-D-R, P-U-D, Overlay)</td>
<td>7:00 AM – 10:00 PM</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td>10:00 PM – 7:00 AM</td>
<td>50</td>
</tr>
<tr>
<td>High Density Residential (R-5, R-6, P-D-R, P-U-D, Overlay, C-I)</td>
<td>7:00 AM – 10:00 PM</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>10:00 PM – 7:00 AM</td>
<td>55</td>
</tr>
<tr>
<td>Commercial/Industrial (NSC, CSC, GC, P-D-C, P-D-I)</td>
<td>7:00 AM – 10:00 PM</td>
<td>65</td>
</tr>
<tr>
<td></td>
<td>10:00 PM – 7:00 AM</td>
<td>60</td>
</tr>
<tr>
<td>Industrial (P-I)</td>
<td>7:00 AM – 10:00 PM</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>10:00 PM – 7:00 AM</td>
<td>70</td>
</tr>
</tbody>
</table>

For operational interior noise, Section 4-24.401 of the RBMC states that the allowable interior noise level (dBA) for residential properties is 40 dBA from 10:00 PM to 7:00 AM and 45 dBA from 7:00 AM to 10:00 PM. Again, these limits are not applicable to construction noise.
In addition, City noise regulations limit construction activity to between the hours of 7:00 AM to 6:00 PM, Monday through Friday, and between the hours of 9:00 AM and 5:00 PM on Saturday. No construction activity is permitted to occur on Sundays or holidays (New Year’s Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day). (RBMC Sections 4-24.503 and 9-1.12).

3.10.4 Impacts and Mitigation Measures

The focus of this analysis is on potential temporary construction and long-term impacts to local noise-sensitive receptor sites located near the project site. Potential sources of construction noise addressed in this section include off-road construction equipment and traffic from trucks and construction workers, and operational noise impacts are addressed relative to patronage associated with the proposed project. Sensitive noise receptors potentially affected by the proposed project include the following locations (including sensitive receptors located in close proximity to these locations) condominiums and other residential buildings along the waterfront and haul routes, liveaboards in Basin 2, hotels at the north end of the project site, and Veterans and Czuleger Parks. Liveaboards that are currently present in Basin 3 would be relocated to Basin 2 during construction. The following discussion describes the methodology, criteria for determining significance of effects, and environmental consequences and mitigation measures associated with effects of the proposed project.

3.10.4.1 Methodology

On-site Construction Noise

Construction noise estimates considered the equations and guiding principles from the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM). In addition to the RCNM, the analysis of potential construction noise impacts estimated noise levels at sensitive receptors near the project site that would be associated with various phases of development, such as site clearing, excavation and grading, foundation work and building construction, paving, and finishing, when there would be a particular mix of construction equipment types specific to each phase. Table 3.10-5 delineates typical noise levels associated with various phases of construction as estimated to distances of 25 feet, 50 feet, 100 feet, and 150 feet.

The noise level at nearby sensitive receptors, such as the receptors identified above in Table 3.10-3, during the construction of the proposed project was calculated by: 1) attenuating the construction sound level for distance to the receptor and 2) logarithmically adding the attenuated construction noise source level to the ambient noise level. The estimated noise levels at sensitive receptor locations did not take into account any intervening topography, structures/barriers, or other such factors that would attenuate the noise between source and received; therefore, the noise level estimates at sensitive receptor locations are conservative.

Construction of the proposed project would commence in 2017 and is anticipated to extend for 27 to 30 months. Typically, construction work would be performed during normal workdays for eight hours a day. Based on the construction schedule presented in Section 2.5 in Chapter 2 Project Description of this Draft EIR, noise from overlapping construction phases in similar areas were added to determine the maximum construction noise level at each sensitive receptor area.
### Table 3.10-5: Typical Noise Levels Associated with Different Phases of Construction

<table>
<thead>
<tr>
<th>Construction Phase</th>
<th>Type of Equipment</th>
<th>Average Noise Level (dBA) at a Distance of: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>25 Feet</td>
</tr>
<tr>
<td>Clearing</td>
<td>Rubber tired dozers</td>
<td>89</td>
</tr>
<tr>
<td></td>
<td>Tractors/Loaders/Backhoes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Water Trucks</td>
<td></td>
</tr>
<tr>
<td>Excavation and Grading</td>
<td>Graders</td>
<td>91</td>
</tr>
<tr>
<td></td>
<td>Excavators</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Compactors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rubber tired dozers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tractors/Loaders/Backhoes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Water Trucks</td>
<td></td>
</tr>
<tr>
<td>Foundation Work/Conditioning and Building Erection 2</td>
<td>Graders</td>
<td>91</td>
</tr>
<tr>
<td></td>
<td>Rubber tired dozers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tractors/Loaders/Backhoes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Water Trucks</td>
<td></td>
</tr>
<tr>
<td>Laying Subbase, Paving</td>
<td>Cement and Mortar Mixers</td>
<td>87</td>
</tr>
<tr>
<td></td>
<td>Pavers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rollers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tractors/Loaders/Backhoes</td>
<td></td>
</tr>
<tr>
<td>Finishing and Cleanup</td>
<td>Forklifts</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td>Tractors/Loaders/Backhoes</td>
<td></td>
</tr>
</tbody>
</table>

Source: Reference construction phase noise levels from FHWA Highway Construction Noise Handbook, 2010

1. Noise levels at various distances based on point-source noise attenuation factor (i.e., noise fall-off rate) of 6
2. Noise levels associated with building erection considered to be comparable to that of foundation work/conditioning, based on USEPA report *Noise from Construction Equipment and Operations, Building Equipment and Home Appliances* (PB 206717 1971) which indicates building erection noise levels to be 85 dBA at 50 feet, which is the same level as foundation/conditioning identified in the FHWA Highway Construction Noise Handbook.

### Vibration from Construction Sites

In addition to noise, construction activities have the potential to produce vibration that may cause damage to structures and may be annoying or disturbing to humans; however, such impacts tend to be more localized than noise impacts. As noted above in Section 3.10.2.1, further described below, an example construction vibration level of 0.210 PPV in/sec at 25 feet from a vibratory roller diminishes to 0.07 PPV in/sec at 50 feet from that equipment, and, for context, a vibration level of 0.20 PPV in/sec is recognized by the FTA as the guideline criterion for posing potential structural damage to non-engineered timber and masonry buildings. Relative to human annoyance, a vibratory roller with a vibration level of 94 Lv at 25 feet would diminish to 84 Lv at 50 feet and 76 Lv at 100 feet, and the typical threshold for annoyance from infrequent vibration is 80 Lv.
Highest levels of vibration from construction projects are caused by soil compacting, jack hammering, and demolition. Table 3.10-6 presents the PPV and vibration velocity level (Lv) for typical construction equipment as published by the FTA (2006). The equivalent PPV and Lv at each receptor was calculated based on the distance between the source of vibration and the receptors. The impact of all construction equipment was calculated for Lv, like noise, but a separate PPV was evaluated for each equipment, as PPVs are generally not additive because peaks often last for only a fraction of a second (Caltrans, 2013b).

### Table 3.10-6: Vibration Levels for Construction Equipment

<table>
<thead>
<tr>
<th>Equipment Types</th>
<th>PPV at 25 feet (in/sec)</th>
<th>Lv at 25 feet (VdB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pile Driver (impact)</td>
<td>0.644</td>
<td>104</td>
</tr>
<tr>
<td>Vibratory Roller</td>
<td>0.210</td>
<td>94</td>
</tr>
<tr>
<td>Large Bulldozer / Hoe Ram</td>
<td>0.089</td>
<td>87</td>
</tr>
<tr>
<td>Loaded Trucks</td>
<td>0.076</td>
<td>86</td>
</tr>
<tr>
<td>Jackhammer</td>
<td>0.035</td>
<td>79</td>
</tr>
<tr>
<td>Small Bulldozer</td>
<td>0.003</td>
<td>58</td>
</tr>
</tbody>
</table>

Source: FTA, 2006

### Construction-Related Traffic Noise

The transportation noise impacts associated with construction worker commute and trucks hauling waste and construction materials focus on sensitive land uses along local and regional roadways. Details of the roadways affected by this proposed project are presented in Section 3.13 Traffic and Transportation. As indicated in Section 2.5.1 Construction Assumptions and Sequencing in Chapter 2 Project Description of this Draft EIR, existing uses at the project site would cease operations during project construction, with the exception of Kincaid’s. Potential increases in roadway noise associated with construction worker commute and trucks trips would be partially offset by reductions in roadway noise due to elimination of vehicle trips associated with current site operations.

Haul trucks are anticipated to access the project site primarily from the Interstate (I)-405 freeway via Torrance Boulevard and Hawthorne Boulevard (See Figure 2-24 in Chapter 2 Project Description). Heavy loads (commercial vehicle having a fully laden weight of 20,000 pounds or more) would be prohibited from using 190th/Anita/Herondo Street between Pacific Coast Highway and Beryl Street and would need to use Artesia Boulevard to Pacific Coast Highway or Hawthorne Boulevard to Torrance Boulevard. It is anticipated that construction debris would be hauled to Gardena or Rialto.

The number of construction workers on the site on any given day would vary depending on activities at the time, and is assumed to range up to a maximum of approximately 620 workers during the peak overlapping sequences of construction activities. Similarly, the number of vehicle trips, transporting workers and materials to and from the project site would also vary, and is assumed to range up to a maximum of approximately 1,895 trips per day during the peak overlapping sequences of construction activities. That peak construction trip generation estimate includes a “passenger car equivalent” (PCE) adjustment for truck trips whereby each truck trip was multiplied by 2.5 to account for the increased physical dimensions of trucks in comparison to passenger vehicles. Construction workers are anticipated to commute to the
project site using mostly the same roads as the haul trucks. Additional details are provided in Section 3.13 Traffic and Transportation.

Changes in existing roadway noise levels due to construction-related traffic were estimated based on increases in traffic volumes on the roadways mainly affected by construction trips. Doubling of traffic on a roadway would result in an increase of approximately 3 dB if road conditions are LOS A or B. However, when traffic conditions are already at LOS C, D, E, or F, increased traffic volumes may result in decreasing speeds, and traffic noise would get progressively quieter based on reduced engine operation levels, reduced drive-train and tire rotations, and reduced wind shear. Nevertheless, this analysis conservatively assumes noise levels will increase as traffic volumes increase. As such, the following formula was used to quantify the estimated increase in roadway noise: 10 log ([Project-related traffic + Existing traffic]/Existing traffic). As further described in Section 2.6 Project Construction and Phasing, the potential haul routes are anticipated to mainly include Catalina Avenue, Pacific Coast Highway, Artesia Boulevard, Torrance Boulevard, and Hawthorne Boulevard, with Harbor Drive and Herondo Street being potential alternative routes. The amount of roadway noise increase was then evaluated in light of the applicable threshold of significance (see discussion below), assuming a worst-case scenario that all of the peak 1,895 construction trips per day occur on any one of the potential routes, notwithstanding that it is far more likely that multiple haul routes would be in use on any given day.

**Operational Noise**

The proposed project includes revitalization and improvements to existing commercial and recreational features of the project site, including retail, restaurants, cinema, market hall, parking structures, offices, beaches, boardwalks, open spaces, and a boutique hotel. Noise associated with the proposed commercial uses within the proposed project site would be typical of existing commercial land uses, including conversations, music, customer vehicle trips, and delivery trucks. As the land uses proposed for the project site are generally comparable to the existing land uses, it is anticipated that future on-site noise sources and levels would, in general, also be similar to existing noise sources and levels. While revitalization of the waterfront area is expected to generate more patrons at the project site, the increases in activities compared to current conditions would occur within, and be primarily oriented towards, the interior and waterfront portions of the project site, away from sensitive receptors located to the north, east, and south of the project site. Additionally, noise sources associated with increased patronage, such as more buildings with HVAC, loading/delivery areas, etc. would be subject to the noise control requirements of the City’s noise ordinance and municipal code, as further discussed below.

As noted above, the revitalization of the waterfront area is expected to generate more patrons and therefore more vehicle trips, posing the potential for increased noise levels along affected roadways off-site, which is addressed in a manner similar to construction traffic described above; however, instead of assuming that all 12,981 new operations-related daily trips occur on any single roadway, the trip distribution/assignment assumptions reflected in the traffic model were used to estimate the amounts of project-related trips that would be added to the main roadways in the project vicinity. Additional details are provided in Section 3.13 Traffic and Transportation of this Draft EIR.

The operational noise analysis also accounts for new roadway noise associated with the project. Currently, vehicle access to the project site is via Portofino Way and Harbor Drive from the north and Torrance Circle from the south. There is no public vehicle access between
the north and south areas of the project site and patrons must use Catalina Avenue between Harbor Drive and Torrance Boulevard to travel from one end of the site to the other. The pedestrian and bike access on the International Boardwalk would be replaced by a lower elevation two-lane roadway (Pacific Avenue Reconnection) with a walkway and bicycle path to the east of the roadway. The reconnection of Pacific Avenue would result in vehicle traffic between the existing residential area and the waterfront. Traffic noise impact from the Pacific Avenue Reconnection was estimated using the FHWA Traffic Noise Model (TNM2.5). Approximately 480 vehicles are anticipated to travel on the reconnected Pacific Avenue section during the peak hour. The closest sensitive receptor would be 45 feet from the road centerline on the second through fourth floors of an apartment building. Noise levels at receptors on multiple floors were modeled in TNM2.5. In addition, the model took into account noise attenuation due to site topography and existing features (i.e., retaining walls).

In the northern portion of the site, service and loading areas would be located at the rear of Buildings A, B, C, and F, as described in Chapter 2. Under existing conditions, there are service and loading areas associated with the existing restaurants in this general area, which would be removed with project implementation. Crowne Plaza on North Harbor Drive and liveaboards in Basin 2 would be more than 200 feet away from the loading area behind Buildings A and B, and would also be screened from noise at the service and loading area by the development of the intervening parking structure. Similarly, the service and loading area at Building C would be approximately 200 feet away from Crowne Plaza and would be shielded by the intervening parking structure. Sensitive receptors closest to the Building F service and loading location would be approximately 350 feet away. The service and loading area by the proposed hotel in the southern portion of the site would be approximately 150 feet from the nearest sensitive receptor (i.e., residential condominiums to the east) and would be partially screened from sensitive receptors by the adjacent parking structure on the south side and by elevation differences between the subject area and the sensitive receptors. There is currently service and loading along the International Boardwalk near Basin 3, which would no longer occur with project implementation. The nature and level of service and loading activities at the project site are not anticipated to substantially change with project implementation.

3.10.4.2 Thresholds of Significance

The significance criteria described below were developed consistent with the CEQA Guidelines (applicable to this project) to determine the significance of potential impacts on noise that could result from implementation of the project. Impacts on noise would be considered potentially significant if the project would result in:

**NOI-1** Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance.

**NOI-2** Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.

**NOI-3** A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.

**NOI-4** A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.
The evaluation of impacts under Impact NOI-1 is based primarily on compatibility with the noise standards set forth in the RBMC, Chapter 24 of Title 4, Noise Regulation.

According to FTA guidelines, a vibration criterion of 0.2 in/sec is the significant impact level for non-engineered timber and masonry buildings. Furthermore, structures or buildings constructed of reinforced-concrete, steel, or timber, have a vibration damage criterion of 0.5 in/sec pursuant to the FTA guidelines. Also, frequent to occasional groundborne vibration of 75 VdB or infrequent vibration (less than 30 vibration events per day) of 80 VdB or above would be annoying. These thresholds were used to evaluate Impact NOI-2.

The FTA has developed methodology and significance criteria to evaluate incremental noise impacts from surface transportation modes (i.e., on road motor vehicles and trains), which is summarized in Table 3.10-7 (FTA, 2006). These incremental noise impact criteria are based on USEPA findings and subsequent studies of annoyance in communities affected by transportation noise. As baseline ambient levels increase, smaller increments are allowed to limit expected increase in community annoyance. For example, in residential areas with a baseline ambient noise level of 50 dBA CNEL, a less-than-five dBA increase in noise levels would produce a minimal increase in community annoyance levels, while at 70 dBA CNEL, only a one-dBA increase could be accommodated before a significant annoyance increase would occur. These thresholds were used to determine significance for Impact NOI-3.

### Table 3.10-7: Significance of Changes in Operational Roadway Noise Exposure

<table>
<thead>
<tr>
<th>Outdoor Ldn in dBA</th>
<th>Existing Noise Exposure</th>
<th>Allowable Cumulative Noise Exposure Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>45 – 50</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>50 – 55</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>55 – 60</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>60 – 65</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>65 – 75</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>75+</td>
<td>0</td>
</tr>
</tbody>
</table>

Since the Pacific Avenue Reconnection is a roadway that currently does not exist, thresholds used by Caltrans to evaluate impacts from new roadways was used. Caltrans considers a traffic noise impact to be significant if the predicted noise level is within 1 dBA of the Noise Abatement Criteria (i.e., 67 dBA Leq(h) exterior noise level for residential receptors), or if the predicted noise level exceeds the existing peak noise level by 12 dBA or more (Caltrans, 2011).

While the construction noise standards set forth in RBMC, Chapter 24 of Title 4, Noise Regulation, can normally serve as a basis for determining the significance of construction noise impacts, given that those noise standards are intended to protect residences and other noise sensitive uses from substantial disturbance due to nearby construction activities, often lasting just a short duration, the size and construction duration of the proposed project were taken into consideration in applying an additional quantitative significance threshold specific to construction activities associated with the proposed project. Similar to the City of Los
Angeles CEQA Thresholds Guide (2006) significance threshold for construction noise, the following criteria were used in assessing impacts relative to Impact NOI-4.

- The project would have a significant impact on noise levels from construction if construction activities lasting more than 1 day would exceed existing ambient exterior noise levels by 10 dBA or more at a noise sensitive use; or if construction activities lasting more than 10 days in a 3-month period would exceed existing ambient exterior noise levels by 5 dBA or more at a noise sensitive use.

The significance criteria described above apply to the noise receptors that could be affected by the proposed project. Changes in noise levels are determined relative to existing conditions.

3.10.4.3 Impact Determination

Impact NOI-1: The proposed project would not expose sensitive receptors to a generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

Construction

Construction activities are anticipated to occur during daytime hours between 7:00 AM and 6:00 PM. Although not proposed on a regular basis, construction could occur on Saturday between 9:00 AM to 5:00 PM, in accordance with the RBMC (Section 4-24.503). Should construction be required (e.g., to perform utility connections) during nighttime hours, Sunday, or on holidays, an afterhours construction permit would be required in accordance with the RBMC (Section 4-24.701). The construction activities for the proposed project are not anticipated to violate the RBMC. Additional analysis of construction noise is provided under Impact NOI-4.

Operation

Noise levels from the proposed commercial and recreational uses would be typical of commercial developments. Noise sources would include conversations, music, patron vehicles, delivery trucks, rooftop ventilation, and trash hauling. These noise sources do not differ from existing noise sources, and the noise levels are not anticipated to change significantly. In particular, the nature, location and orientation of uses proposed in the central and southern portions of the site would be comparable to those of existing conditions, with marina uses continuing within Basin 3, a parking structure occupying the southeastern portion of the site, and commercial/office uses occurring in the southeastern portion of the site. Within the northern portion of the site, parking would occupy the northeastern area, similar to existing conditions, and while new commercial/office buildings would replace much of the other surface parking areas that currently exist, such new development would be generally removed from and/or oriented away from noise sensitive uses, such as the hotel development, located to the east. Relative to sensitive noise receptors located northwest of the project site, specifically the liveaboards within Basin 2, the surface parking that is proposed within the project site and retention of the seaside lagoon area would provide for activities with noise characteristics comparable to those that currently exist. As such, implementation of the proposed project is not expected to result in any exceedance of the RBMC maximum permissible sound levels for land use types at and adjacent to the project site.
As described above in Section 3.10.4.1, the nature and level of service and loading activities at the project site are not anticipated to substantially change from those of existing conditions and, for the most part, the locations of service and loading areas proposed within the project site are removed from noise sensitive receptors and shielded by intervening buildings. The one potential exception is the service and loading proposed in the southern portion of the site near the hotel and parking structure, which would be located approximately 150 feet from the nearest sensitive receptor (i.e., residential condominiums located directly east of the project site). Trucks accessing this service and loading area could include a combination of heavy- and medium-duty trucks with noise levels ranging from 71 to 79 dBA Leq at 50 feet.\(^2\) Back-up safety alarms would generate a single event noise level of approximately 79 dBA at 50 feet.\(^3\) Noise levels at a distance of 150 feet would range from approximately to 61.5 to 69.5 dBA, based on a sound fall-off (natural attenuation) rate of 6 dB per doubling of distance. This noise level estimate is conservative in that it does not account for elevation differences between the noise source and noise receptor, which would provide for some noise reduction due to natural shielding. The loading dock would be situated at the back of an 80-foot deep area with sidewalls and a roof that extend the length of the area, and would The noise sensitive receptor (i.e., residential development) to the east of the proposed service and loading area is zoned for medium density multi-family (RMD) use, at which, based on Table 3.10-4, the maximum permissible noise level during daytime hours (7:00 AM to 10:00 PM) is 55 dBA Leq and during nighttime hours (10:00 PM to 7:00 AM) is 50 dBA Leq. The estimated project-related noise level of less than 44.5 dBA would be below both the daytime and the nighttime thresholds; hence, the impact would be less than significant. It should be noted that the provision of this service and loading facility within an area designated and specifically designed for that purpose would be an improvement over existing conditions where delivery trucks serving the project site often park curbside on the Torrance Circle to the south, consequently exposing existing noise sensitive receptors located to the east (i.e., residences) and south (i.e., Veterans Park) to periodic noise exposure that cannot be shielded.

Relative to the goals, objectives, and policies of the General Plan Noise Element, the design and operation of the project seek to ensure that residents, employees, and visitors in the City are protected from detrimental effects of excessive noise level exposure impacts. As described above, the nature, location, and orientation of uses proposed within the project site are comparable to those that currently exist; consequently, implementation of the proposed project is not expected to cause an overall increase in ambient noise level at or near the site. Based on the above, operational noise from the proposed project would not expose sensitive receptors to a generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies; therefore, impacts would be less than significant impact and no mitigation is required. Notwithstanding, the following Condition of Approval for the project is proposed:

---


\(^3\) The back-up safety alarm noise level was based on regulations set forth by the Occupational Safety and Health Administration.
Condition of Approval

COA NOI-1: Parking Area/Structure Design.

Parking areas and structures proposed in proximity to noise sensitive uses, specifically the residential and hotel uses to the east of the project site and the boat slips (allowing liveaboards) in Basin 2 to the north of the project site, shall be designed to include buffers and/or shielding by walls, fences, or adequate landscaping, to reduce noise exposure to nearby noise sensitive receptors. Additionally, design measures for parking structures near noise sensitive uses shall include: the use of materials that reduce sound transmission; the configuration of interior spaces to minimize sound amplification and transmission; or other suitable and appropriate means to reduce noise to nearby noise sensitive receptors.

Mitigation Measures
No mitigation is required.

Residual Impacts
Impacts would be less than significant.

Impact NOI-2: The proposed project would expose sensitive receptors to or generation of excessive groundborne vibration or groundborne noise levels.

Construction equipment associated with the proposed project, such as dozers and plate compactors, would generate vibrations that could result in groundborne noise or vibration that may affect nearby structures and sensitive receptors. Table 3.10-8 Potential Vibration Impacts, provides an overview of the vibration levels associated with the types of construction equipment identified in Table 3.10-6, as estimated to occur at the nearest locations of the sensitive receptors around the project site, and also indicates whether the estimated vibration levels at each location would exceed the applicable thresholds of significance.
### Table 3.10-8: Potential Vibration Impacts

<table>
<thead>
<tr>
<th>Sensitive Receptor (Approximate closest distance between Project Site and Receptor)</th>
<th>Liveboard Boats Northwest of Project Site (75 ft)</th>
<th>Crowne Plaza Hotel Northeast of Project Site (100 ft)</th>
<th>Residential Development East of Project Site near intersection of Harbor Dr. and Pacific Ave. (140 ft)</th>
<th>Czulegar Park (120 ft)</th>
<th>Residential Development East of International Boardwalk (25 ft)</th>
<th>Veterans Park (30 ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equipment Types</td>
<td>PPV (in/sec)</td>
<td>Lv (VdB)</td>
<td>PPV (in/sec)</td>
<td>Lv (VdB)</td>
<td>PPV (in/sec)</td>
<td>Lv (VdB)</td>
</tr>
<tr>
<td>Pile Driver (impact)</td>
<td>0.124</td>
<td>90</td>
<td>0.081</td>
<td>86</td>
<td>0.049</td>
<td>82</td>
</tr>
<tr>
<td>Pile Driver (sonic/vibratory)</td>
<td>0.033</td>
<td>79</td>
<td>0.021</td>
<td>75</td>
<td>0.013</td>
<td>71</td>
</tr>
<tr>
<td>Vibratory Roller</td>
<td>0.040</td>
<td>80</td>
<td>0.026</td>
<td>76</td>
<td>0.016</td>
<td>72</td>
</tr>
<tr>
<td>Large Bulldozer / Hoe Ram</td>
<td>0.017</td>
<td>73</td>
<td>0.011</td>
<td>69</td>
<td>0.007</td>
<td>65</td>
</tr>
<tr>
<td>Loaded Trucks</td>
<td>0.015</td>
<td>72</td>
<td>0.010</td>
<td>68</td>
<td>0.006</td>
<td>64</td>
</tr>
<tr>
<td>Jackhammer</td>
<td>0.007</td>
<td>65</td>
<td>0.004</td>
<td>61</td>
<td>0.003</td>
<td>57</td>
</tr>
<tr>
<td>Small Bulldozer</td>
<td>0.001</td>
<td>44</td>
<td>0.000</td>
<td>40</td>
<td>0.000</td>
<td>36</td>
</tr>
</tbody>
</table>

Source: CDM Smith, 2015

Notes:
Values shown in **Bold Regular** type exceed significance threshold of 0.2 in/sec for potential structural damage to non-engineered timber and masonry structures.
Values shown in **Bold Italic** type exceed significance threshold of 0.5 in/sec for potential structural damage to structures constructed of reinforced-concrete, steel, or timber.
Values shown in **Underlined Regular** type exceed significance threshold of 75 Vbd for annoyance impacts associated with frequent to occasional vibration.
Values shown in **Underlined Italic** type exceed significance threshold of 80 Vbd for annoyance impacts associated with infrequent vibration (less than 30 vibrations per day).
As indicated in the table, the estimated vibration levels would be below the significance thresholds at the majority of receptor locations for most construction equipment. The most notable exception would be for pile drivers (impact type), which would exceed the annoyance thresholds at all locations and the structural damage thresholds at receptors close to the project site such as the residential condominiums adjacent to the eastern edge of the site. Although the vibration level associated with pile drivers would also exceed the structural damage threshold at the northern edge of Veterans Park, there are no buildings in that area; only a couple of short retaining walls that face Torrance Circle/Boulevard. The estimated distances whereby vibration levels associated with pile drivers would be less than the 0.2 PPV in/sec and 0.5 PPV in/sec thresholds would be approximately 55 feet and 30 feet, respectively. The other exception to estimated noise levels being less than the structural damage significance thresholds would be for vibratory rollers operating in very close proximity to the residential condominiums adjacent to the eastern edge of the site. As indicated in the table, the estimated vibration level would barely exceed the significance threshold (i.e., 0.21 in/sec vibration level versus 0.2 in/sec threshold). At a distance of 26 feet or greater, the estimated vibration level associated with a vibratory roller would be at or less than the threshold of 0.2 in/sec for non-engineered timber and masonry buildings, and at a distance of 14 feet or greater, the estimated vibration level associated with a vibratory roller would be at or less than the threshold of 0.5 in/sec for structures or buildings constructed of reinforced-concrete, steel, or timber. It is expected that the subject residential condominiums are constructed of reinforced-concrete, steel, and timber; hence, the applicable 0.5 in/sec would not be exceeded.

Relative to other aspects of construction vibration near sensitive receptors possibly resulting in annoyance impacts, vibration associated with several other types of construction equipment operating in close proximity to sensitive receptors, such as large bulldozers, hoe rams, and loaded trucks, operating directly adjacent to the residential condominiums along the eastern edge of the site or Veterans Park, would exceed the significance threshold, as reflected in Table 3.10-8.

Any potentially sensitive structures in the project site would be demolished as part of the proposed project. The adjacent Monstad Pier was originally built in 1928 and has undergone various maintenance activities (including the replacement of piers/piles) and may be sensitive to vibration. The most vibratory piece of equipment anticipated to be used near Monstad Pier would be a pile driver, as may be used in conjunction with replacing or reinforcing pier supports at Horseshoe Pier, if determined necessary. Depending on the type of pile driver to be used, vibration from an impact pile driver would exceed the criterion for potential damage of non-engineered wooden buildings/structures (0.2 in/sec) at a distance of 53 feet or less, and vibration from a sonic/vibratory pile driver would exceed that criterion at a distance of 23 feet or less. Based on the physical relationship between the Horseshoe Pier and the Monstad Pier, such proximity would only occur at the two points where the piers meet. With regard to potential for human annoyance of patrons within businesses on Monstad Pier, which are anticipated to remain open during project construction, vibration levels associated with an impact pile driver would exceed the 75 VdB threshold at a distance of 230 feet or less and would exceed the 80 VdB threshold at a distance of 150 feet or less. Those impact distances would extend from the Horseshoe Pier to almost all of the businesses on Monstad Pier, with the exception of those near the southern apex of the Pier. Vibration levels associated with a sonic/vibratory pile driver would exceed the 75 VdB threshold at a distance of 99 feet or less and would exceed the 80 VdB threshold at a distance of 46 feet or less. Those impact distances would affect primarily the businesses located at the western end of Monstad Pier.
Operation of the proposed project would not perceptibly increase groundborne vibration or groundborne noise due to the proposed nature of the project (i.e., there are no notable sources of vibration associated with the proposed uses).

Based on the above, vibration from construction activities associated with the proposed project would result in significant impacts relative to potential structural damage when pile drivers (impact type) operate within 55 feet of non-engineered timber and masonry buildings or within 30 feet of structures or buildings constructed of reinforced-concrete, steel, or timber. Additionally, short-term significant impacts related to human annoyance from vibration would occur during construction activities in close proximity to sensitive receptors.

**Mitigation Measures**

The following mitigation measure is proposed to address potential structural damage associated with construction-related vibration:

**MM NOI-1: Pile Driving Vibration.**

Prior to approval of grading plans and/or prior to issuance of demolition, grading and building permits for construction activities involving the use of pile drivers (impact) within 55 feet of non-engineered timber and masonry structures/buildings or within 30 feet of structures/buildings constructed of reinforced-concrete, steel, or timber, and to the satisfaction of the City of Redondo Beach Building and Safety Division, the project applicant shall retain a Professional Structural Engineer to perform the following tasks:

- Review the project plans for demolition and construction;
- Investigate the area where pile driving is proposed to occur, including geological testing, if required; and
- Prepare and submit a report to the Director of Building and Safety to include, but not be limited to, the following:
  - Description of existing conditions at the subject area;
  - Vibration level limits based on building conditions, soil conditions, and pile driving approach to ensure vibration levels would be below 0.2 in/sec for non-engineered timber and masonry buildings if nearby or 0.5 in/sec for structures or buildings constructed of reinforced-concrete, steel, or timber if nearby; and
  - Specific measures to be taken during pile driving to ensure the specified vibration level limits are not exceeded.
**Residual Impacts**

With implementation of MM NOI-1, impacts related to potential structural damage from construction-related vibration, particularly as related to pile driving (impact) would be less than significant.

No feasible mitigation measures are available relative to human annoyance from construction-related vibration, although such impacts would only be short-term and periodic. Nevertheless, the impact would be significant and unavoidable.

**Impact NOI-3: The proposed project would cause a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.**

Construction impacts on ambient noise levels would be short-term and would not result in permanent increases in ambient noise levels.

As described in the analysis of Impact NOI-1 above, implementation of the project would not result in a notable change in ambient noise levels because the noise levels at existing conditions would be similar to the proposed project. Increased patronage associated with revitalization of the project site is anticipated to result in increased traffic on local roadways. As such, there is the potential for increased roadway noise level to result from project-related operational traffic. The greatest potential for increased roadway noise levels would occur in close proximity to the project site where increased traffic directly associated with the proposed project would be most prominent (i.e., project-related traffic would be more dispersed, using different streets, at greater distances from the project site). Table 3.10-9 identifies roadways in close proximity to the project site that have noise sensitive uses (i.e., residential or hotel) nearby, the estimated existing CNEL along each roadway, the existing average daily traffic (ADT) for each road, the ADT for existing plus project-related traffic for each road, and the amount of CNEL increase attributable to the project-related traffic.
### Table 3.10-9: Roadway Noise Level Changes Due to Project Operations-Related Traffic

| Roadway | Nearest Noise Monitoring Location  \( ^{1} \) | Estimated Existing CNEL (dBA)  \( ^{2} \) | Existing ADT  \( ^{3} \) | Existing + Project ADT  \( ^{4} \) | Project-Related Change in CNEL (dBA)  \( ^{5} \) | Significance threshold in CNEL (dB)  \( ^{6} \) | Does Project Increase Exceed Allowable Increase? | Does Project Increase Exceed Allowable Increase? |
|---------|-----------------------------------------------|---------------------------------|-----------------|-------------------------------|-----------------------------------------------|-----------------------------------------------|-----------------------------------------------|
| Beryl St. east of Harbor Dr.  
(between Project Site and Catalina Ave.) | 1 | 58 | 12,867 | 11,656 | -0.4 | 3 | No |
| Harbor Dr. south of Portofino Way | 1 | 58 | 7,263 | 12,330 | +2.3 | 3 | No |
| Torrance Blvd.  
*between Project Site and Catalina Ave.* | 7 | 60 | 5,869 | 16,083 | +4.4 | 2 | Yes |
| Torrance Blvd.  
(between Catalina Ave. and Francisca) | 7 | 60 | 22,616 | 23,573 | +0.2 | 2 | No |
| Catalina Ave. north of Beryl St. | 8 | 61 | 18,340 | 20,440 | +0.5 | 2 | No |
| Catalina Ave. south of Beryl St. | 9 | 67 | 19,683 | 17,182 | -0.6 | 1 | No |
| Pacific Coast Highway north of Herondo St. | 11 | 71 | 52,500  \( ^{7} \) | 54,000 | +0.1 | 1 | No |

**Source:** CDM Smith, 2015

**Notes:**
1. See Figures 3.10-1a and 3.10-1b
2. See Table 3.10-2
3. ADT – Average Daily Traffic
4. Project ADT estimated based on PM Peak Hour traffic, which represents approximately nine percent of the ADT, as determined through traffic counts in the local area, and the distribution of project-related traffic onto the local roadway system, as determined through the traffic modelling analysis completed for the project.
5. Increase in CNEL based on 10 LOG ((Project-related ADT + Existing ADT)/Existing ADT)
6. Allowable increase in CNEL based on Table 3.10-7
7. Based on 2013 Caltrans traffic data for PCH between Pier Ave and Aviation Blvd
As indicated in the table above, the estimated existing CNEL values along the subject existing roadways range from 57 dBA to 67 dBA adjacent. According to the FTA significance thresholds presented above in Table 3.10-7, the allowable operational roadway noise increase for such existing noise exposure levels would range from 1 to 3 dBA. As shown in Table 3.10-9, the project-related increases in daily traffic on most of the local roadways with noise sensitive uses nearby would not exceed the allowable increments that define a significant impact; however, the project’s operations-related increase in traffic and associated roadway noise on Torrance Circle/Boulevard between Project Site and Catalina Avenue would exceed the significance threshold and would, therefore, be a significant noise impact.

Relative to increased ambient noise levels resulting from new traffic associated with the Pacific Avenue Reconnection (i.e., new roadway segment), the peak noise level for such traffic was estimated to be approximately 58 to 59 dBA at a distance of 45 feet from the centerline. The ambient noise level in this vicinity is approximately 55 dBA. The combined noise level (i.e., existing ambient noise level combined with roadway noise level from new traffic on the Pacific Avenue Reconnection) would be approximately 60 dBA or less and would be similar to existing noise levels measured on North Pacific Avenue and North Harbor Drive. This estimated noise increase would not violate the RBMC thresholds, nor would it be considered a significant impact according to the Caltrans threshold discussed above (i.e., less than 66 dBA or less than a 12 dBA increase from existing noise levels). Therefore, the traffic noise from Pacific Avenue Reconnection would be a less than significant impact.

Based on the above, a permanent increase in noise from the proposed project would cause a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; therefore, the impact would be significant.

**Mitigation Measures**

No mitigation is available for the significant increase in the roadway noise level on Torrance Circle/Boulevard between Project Site and Catalina Avenue.

**Residual Impacts**

Impact would be significant and unavoidable.

**Impact NOI-4: The proposed project would cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.**

The potential for a substantial temporary or periodic increase in ambient noise levels in the project vicinity above existing levels without the project would pertain to construction activities; such an impact would not occur with project operations.

Construction activities associated with the proposed project would normally occur during the week in daytime hours. As described above in Section 3.10.2.2, existing ambient noise levels during the daytime at sensitive receptor areas around the site range from approximately 52 dBA to 63 dBA. As indicated in Table 3.10.5, noise levels associated with various types of construction equipment generally range around 80 dBA to 90 dBA at 50 feet, and as indicated in Table 3.10-5, construction noise levels associated with typical phases of development (i.e., multiple pieces of construction equipment operating at the same time during each phase), such as site clearing, grading, foundation work, construction, paving, and finishing, range from approximately 81 dBA to 85 dBA at 50 feet. Table 3.10-10 Construction Noise Levels at
Nearby Sensitive Receptors, presents the estimated maximum construction noise levels at sensitive noise receptors around the project site, as calculated at locations nearest to the project site. The table presents the estimated range of construction noise levels associated with the various construction phases identified above in Table 3.10-5. The estimated noise levels presented below in Table 3.10-10 do not take into account any intervening topography, walls, or other noise barriers and are, therefore, conservative. It should also be noted that during project construction, existing ambient noise levels near the project site may be lower than indicated in Tables 3.10-2 and 3.10-10, given that the current ambient noise levels at many of the sensitive noise receptor locations are influenced primarily by vehicle traffic, which would likely decrease during project construction when existing commercial uses at the site are not operating. Any such decrease in existing ambient noise levels would not, however, change the anticipated future ambient noise levels during construction activities shown in Table 3.10-10, since there is already such a difference between existing ambient noise levels and estimated maximum construction noise levels in the table (i.e., the future ambient noise levels would still be dominated by construction noise).

### Table 3.10-10: Construction Noise Levels at Nearby Sensitive Receptors

<table>
<thead>
<tr>
<th>Noise Sensitive Receptor</th>
<th>Existing Ambient Noise Level (dBA)¹</th>
<th>Maximum Construction Noise Level (dBA)²</th>
<th>Ambient Noise Level During Construction Activities (dBA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liveaboard Boats Northwest of Project Site</td>
<td>63</td>
<td>77-81</td>
<td>77-81</td>
</tr>
<tr>
<td>Crowne Plaza Hotel Northeast of Project Site</td>
<td>61</td>
<td>75-79</td>
<td>75-79</td>
</tr>
<tr>
<td>Residential Development East of Project Site near intersection of N. Harbor Dr. and N. Pacific Ave.</td>
<td>60</td>
<td>72-76</td>
<td>72-76</td>
</tr>
<tr>
<td>Czulegar Park</td>
<td>55</td>
<td>73-77</td>
<td>73-77</td>
</tr>
<tr>
<td>Residential Development East of International Boardwalk</td>
<td>55</td>
<td>87-91</td>
<td>87-91</td>
</tr>
<tr>
<td>Veterans Park</td>
<td>63</td>
<td>85-89</td>
<td>85-89</td>
</tr>
</tbody>
</table>

Source: CDM Smith, 2015

1. Existing ambient noise level based on daytime Leq measures at nearest noise monitoring location indicated on Table 3.10-2.

2. Based on range of construction phase noise levels indicated on Table 3.10-5, and distance closest to project site as indicated in Table 3.10-8.

In addition to the potential construction noise impacts to the sensitive receptors identified above, existing commercial businesses on the Monstad Pier, particularly near the west end of the pier, that remain open during project construction could be periodically exposed to construction noise impacts from the project. Most of those businesses are located 50 feet or more from the project site and would therefore be exposed to construction noise levels of between 81 dBA and 85 dBA at 50 feet, or less at greater distances, as reflected in Table 3.10-5.
Based on the information presented above in Table 3.10-10, it is concluded that construction of the proposed project would cause a substantial temporary and periodic increase in ambient noise levels in the project vicinity above levels existing without the project (i.e., construction activities lasting more than one day would exceed existing ambient exterior noise levels by 10 dBA or more at a noise sensitive use); a significant noise impact would occur.

With regard to potential noise impacts from construction-related traffic, Table 3.10-11 indicates the estimated increase in CNEL along haul route segments nearest to the project site, with a worst-case assumption that all 1,895 peak construction trips occur on any one of those segments.

### Table 3.10-11: Roadway Noise Level Increases Due to Project Construction-Related Traffic

<table>
<thead>
<tr>
<th>Roadway</th>
<th>Nearest Noise Monitoring Location</th>
<th>Estimated Existing CNEL (dBA)</th>
<th>Existing ADT</th>
<th>Existing + Worst-Case Construction Traffic ADT</th>
<th>Construction-Related Increase in CNEL (dB)</th>
<th>Allowable Increase in CNEL (dB)</th>
<th>Does Project Increase Exceed Allowable Increase?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beryl St. east of Harbor Dr.</td>
<td>1</td>
<td>58</td>
<td>12,867</td>
<td>14,762</td>
<td>0.6</td>
<td>3</td>
<td>No</td>
</tr>
<tr>
<td>Harbor Dr. south of Portofino Way</td>
<td>1</td>
<td>58</td>
<td>7,263</td>
<td>9,158</td>
<td>1.0</td>
<td>3</td>
<td>No</td>
</tr>
<tr>
<td>Torrance Blvd. between Project Site and Catalina Ave.</td>
<td>7</td>
<td>60</td>
<td>5,869</td>
<td>7,764</td>
<td>1.2</td>
<td>2</td>
<td>No</td>
</tr>
<tr>
<td>Torrance Blvd. between Catalina Ave. and Francisca</td>
<td>7</td>
<td>60</td>
<td>22,616</td>
<td>24,511</td>
<td>0.3</td>
<td>2</td>
<td>No</td>
</tr>
<tr>
<td>Catalina Ave. north of Beryl St.</td>
<td>8</td>
<td>61</td>
<td>18,340</td>
<td>20,235</td>
<td>0.4</td>
<td>2</td>
<td>No</td>
</tr>
<tr>
<td>Catalina Ave. south of Beryl St.</td>
<td>9</td>
<td>67</td>
<td>19,683</td>
<td>21,578</td>
<td>0.4</td>
<td>1</td>
<td>No</td>
</tr>
<tr>
<td>Pacific Coast Highway north of Herondo Street</td>
<td>11</td>
<td>71</td>
<td>52,500^{7}</td>
<td>54,395</td>
<td>0.1</td>
<td>1</td>
<td>No</td>
</tr>
</tbody>
</table>

Source: CDM Smith, 2015

Notes:
1. See Figures 3.10-1a and 3.10-1b
2. See Table 3.10-2
3. ADT – Average Daily Traffic
4. Assumes all 1,895 of the peak construction-related trips occur on subject roadway link
5. Increase in CNEL based on 10 log ((Construction-related ADT + Existing ADT)/Existing ADT)
6. Allowable increase in CNEL based on Table 3.10-7
7. Based on 2013 Caltrans traffic data for PCH between Pier Ave and Aviation Blvd
As indicated above in Table 3.10-11, even under a worst-case assumption that all of the peak construction-related trips occur on any one of the haul route segments near the project site, the increase in CNEL along the affected roadway would be less than the allowable threshold. While it is possible that there may be some overlap in noise from on-site construction equipment and noise from haul trucks, such overlap would be very limited in occurrences, duration, and geographic extent of combined noise levels. On-site construction equipment operating in close proximity to a haul truck would generally be limited to a front-end loader or excavator that when operating (i.e., when placing a load into the truck), the truck would be idling in a stationary position and once loaded, the truck would move away from the excavator/loader, consequently the overlap in noise would be very localized and of a very limited duration. It should also be noted that, as shown in Figure 2-24 in Chapter 2 Project Description of this Draft EIR, the truck haul routes extend directly away from the project site, and not along and adjacent to the project site. As such, it is not anticipated that there would be any overlap of noise from haul trucks in transit with noise from on-site construction equipment. Based on the above, roadway noise impacts associated with construction traffic would be less than significant.

Mitigation Measures

Construction

The following mitigation measures are proposed to address construction noise impacts:

MM NOI-2: Equipment Mufflers.

During all project construction, all construction equipment, fixed or mobile, shall be operated with closed engine doors, if so equipped, and shall include properly operating and maintained residential-grade mufflers consistent with manufacturers’ standards.

MM NOI-3: Stationary Equipment.

Stationary construction equipment (fixed equipment such as compressors, generator, fans, as well as idling vehicles, etc.) operating in proximity to noise sensitive receptors (i.e., residential structures) shall be placed a minimum of 50 feet away from such receptors so that emitted noise is naturally dissipated from the receptors.

MM NOI-4: Equipment Staging Areas.

Equipment staging shall be located in areas that are shielded from and/or set back noise sensitive receptors, with a minimum of 50 feet separation between the sensitive receptor and the nearest edge of the staging area.

MM NOI-5: Electrically-Powered Tools and Facilities.

Where available, electrical power from a grid connection shall be used to run air compressors and similar power tools and to power any temporary equipment.
MM NOI-6: Sound Barriers.

Temporary sound barriers shall be installed and maintained by the construction contractor between the construction site and the residences to the east as needed during construction phases with high noise levels. Temporary sound barriers shall consist of either sound blankets capable of blocking approximately 20 A-weighted decibels (dBA) of construction noise or other sound barriers/techniques such as acoustic padding or acoustic walls placed near the existing residential buildings to the east of the project site that would reduce construction noise by approximately 20 dBA. Barriers shall be placed such that the line-of-sight between the construction equipment and immediately adjacent sensitive land uses is blocked.

Operation

No mitigation is required.

Residual Impacts

Construction

Implementation of mitigation measures MM NOI-2 through MM NOI-5 would help reduce construction noise impacts, and mitigation measure MM NOI-6 could provide for a substantial reduction in construction noise impacts. With a 20 dBA of noise reduction associated with such noise barriers, the attenuated construction noise levels at most of the noise sensitive receptors around the project site would be generally comparable to, if not less than, existing ambient noise levels. The exceptions would be: (1) the western edge of Czulegar Park; (2) the northern edge of Veterans Park; (3) the western portions of the condominium complexes located immediately east of the project site; and (4) the Crowne Plaza Hotel during construction of the upper levels of multi-story structures within the project site. At Czulegar Park, the 20 dBA noise reduction offered by MM NOI-5 would largely, but not fully, reduce the noise exposure impact to a level that is less than significant. Similarly, a 20 dBA noise reduction offered by placement of a noise barrier along the northern edge of Veterans Park would largely, but not fully, address the construction noise impact. Relative to the condominiums east of the site, the combination of their close proximity to the project site and their elevated and multi-story nature would render any noise barrier as being unable to achieve a construction noise level reduction that would make the impact less than significant. A noise barrier located along the edge of the project site, which is approximately 20+/- feet lower than the base elevation of the condominiums, could not effectively shield/attenuate construction noise from reaching the westernmost portions of those condominium complexes, and even if it did, a 20 dBA noise reduction would not be sufficient. With regard to differences in elevation, construction of the upper levels of multi-story structures within the eastern portions of the project site, such as Buildings A and D and the parking structures at the north and south ends of the site, may expose adjacent noise sensitive receptors, such as the Crowne Plaza Hotel and the condominiums east of the site, to temporary periods of construction noise that cannot be shielded/attenuated by construction noise barriers.

Based on the above, implementation of the proposed project would result in an unavoidable significant construction noise impact.
Operation
Impacts would be less than significant.

3.10.4.4 Cumulative Impacts

Short-term construction noise and vibration impacts tend to be location-specific and do not compound or increase in combination with other cumulative projects unless it is occurring concurrently adjacent to or close enough to the same sensitive receptors. Any future development within the geographic scope of the City (i.e., the boundary of the City) would be required to meet all City regulations and plans to minimize impacts.

Cumulative long-term operations-related noise impacts pertain to changes in roadway noise levels that could result from future traffic associated with anticipated regional growth along with traffic from the proposed project. Table 3.10-12, Roadway Noise Level Changes Due to Future Cumulative Traffic, delineates the estimated changes in the CNEL along roadways in the project vicinity that would occur from changes in future cumulative traffic, compared to existing conditions, both with operation of the proposed project and without operation of the proposed project.

Table 3.10-12: Roadway Noise Level Changes Due to Future Cumulative Traffic

<table>
<thead>
<tr>
<th>Roadway</th>
<th>Existing ADT</th>
<th>Future Cumulative ADT - With Project</th>
<th>Change from Existing CNEL (dB) for Future Cumulative With Project</th>
<th>Does Cumulative Change in CNEL With Project Exceed Allowable Increase?</th>
<th>Future Cumulative ADT – Without Project</th>
<th>Change from Existing CNEL (dB) for Future Cumulative Without Project</th>
<th>Does Cumulative Change in CNEL Without Project Exceed Allowable Increase?</th>
<th>Is Project’s Contribution to Change in CNEL Cumulatively Considerable?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beryl St. east of Harbor Dr. (between Project Site and Catalina Ave.)</td>
<td>12,867</td>
<td>11,834</td>
<td>-0.4</td>
<td>3</td>
<td>No</td>
<td>13,134</td>
<td>+0.1</td>
<td>No</td>
</tr>
<tr>
<td>Harbor Dr. south of Portofino Way</td>
<td>7,263</td>
<td>12,563</td>
<td>+2.4</td>
<td>3</td>
<td>No</td>
<td>7,407</td>
<td>+0.1</td>
<td>No</td>
</tr>
<tr>
<td>Torrance Blvd. between Project Site and Catalina Ave.</td>
<td>5,869</td>
<td>16,383</td>
<td>+4.5</td>
<td>2</td>
<td>Yes</td>
<td>6,026</td>
<td>+0.1</td>
<td>Yes</td>
</tr>
<tr>
<td>Torrance Blvd. between Catalina Ave. and Francisca</td>
<td>22,616</td>
<td>24,759</td>
<td>+0.4</td>
<td>2</td>
<td>No</td>
<td>23,802</td>
<td>+0.2</td>
<td>No</td>
</tr>
</tbody>
</table>
As indicated in the Table 3.10-12, the changes in CNEL along the local roadways for future cumulative traffic conditions with the proposed project would be below the allowable limits for all the modeled roadways, except for Torrance Circle/Boulevard between the Project Site and Catalina Avenue. As such, there would be a cumulative traffic noise impact for that roadway segment. That significant increase in cumulative traffic noise along Torrance Circle/Boulevard is due primarily to project-related traffic; hence, the project would result in a cumulatively considerable contribution to the significant impact. Other potential noise and vibration impacts associated with anticipated growth within and around the city would be localized in nature and would be addressed by implementation and enforcement of the local ordinance; compliance with building code standards; and plans, policies, and programs adopted by the City. Notwithstanding, implementation of the proposed project would result in unavoidable significant vibration impacts, consequently, implementation of the project in conjunction with other past, present, and future projects would result in a significant cumulative impact.

Based on the above, implementation of the proposed project would not result in a cumulatively considerable contribution to significant noise impacts associated with the exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies (i.e., Impact NOI-1). Implementation of the proposed project would, however, result in a cumulatively considerable contribution to: exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels (i.e., Impact NOI-2); a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project and in excess of the City’s standards (i.e., Impact NOI-3); and, significant noise and vibration impacts associated with the a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project (i.e., Impact NOI-4).

**Cumulative Mitigation Measures**

Implementation of mitigation measures MM NOI-2 through MM NOI-7 would largely, but not completely, mitigate the proposed project’s cumulatively considerable contribution to a significant cumulative impact. No other additional mitigation measures are available.

**Cumulative Residual Impacts**

Impacts would be significant and unavoidable.
### Summary of Impact Determinations

The following Table 3.10-13 summarizes the impact determinations of the proposed project and proposed project in addition to adopted growth projections (i.e., potential cumulative impacts) related to noise, as described in the detailed discussion above.

Table 3.10-13: Summary Matrix of Potential Impacts and Mitigation Measures for Noise Associated with the Proposed Project and Cumulative Growth

<table>
<thead>
<tr>
<th>Environmental Impacts</th>
<th>Impact Determination</th>
<th>Mitigation Measures</th>
<th>Impacts after Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOI-1: The proposed project would not expose sensitive receptors to a generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.</td>
<td>Proposed Project: Less than significant</td>
<td>Proposed Project: No mitigation is required</td>
<td>Proposed Project: Less than significant</td>
</tr>
<tr>
<td></td>
<td>Cumulative: Less than significant (no cumulatively considerable contribution)</td>
<td>Cumulative: No mitigation is required</td>
<td>Cumulative: Less than significant (not cumulatively considerable)</td>
</tr>
<tr>
<td>NOI-2: The proposed project would expose sensitive receptors to or generation of excessive groundborne vibration or groundborne noise levels.</td>
<td>Proposed Project: Significant – construction</td>
<td>Proposed Project: Mitigation measure MM NOI-1</td>
<td>Proposed Project: Significant and unavoidable - construction</td>
</tr>
<tr>
<td></td>
<td>Cumulative: Significant (cumulatively considerable contribution) – construction</td>
<td>Cumulative: Mitigation measure MM NOI-1</td>
<td>Cumulative: Significant and unavoidable (cumulatively considerable contribution) – construction</td>
</tr>
<tr>
<td>NOI-3: NOI-3: The proposed project would cause a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project and in excess of the City’s standards.</td>
<td>Proposed Project: Significant – operation</td>
<td>Proposed Project: No mitigation is available</td>
<td>Proposed Project: Significant and unavoidable – operation</td>
</tr>
<tr>
<td></td>
<td>Cumulative: Significant (cumulatively considerable contribution) – operation</td>
<td>Cumulative: No mitigation is available</td>
<td>Cumulative: Significant and unavoidable (cumulatively considerable contribution) – operation</td>
</tr>
<tr>
<td>NOI-4: The proposed project would cause a substantial temporary or periodic increase in</td>
<td>Proposed Project: Significant – construction</td>
<td>Proposed Project: Mitigation measure MM NOI-2 through MM NOI-6</td>
<td>Proposed Project: Significant and unavoidable – construction</td>
</tr>
</tbody>
</table>
Table 3.10-13: Summary Matrix of Potential Impacts and Mitigation Measures for Noise Associated with the Proposed Project and Cumulative Growth

<table>
<thead>
<tr>
<th>Environmental Impacts</th>
<th>Impact Determination</th>
<th>Mitigation Measures</th>
<th>Impacts after Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>ambient noise levels in the project vicinity above levels existing without the project and in excess of the City’s standards.</td>
<td>Cumulative: Significant (cumulatively considerable contribution) – construction</td>
<td>Cumulative: Mitigation measure MM NOI-2 through MM NOI-6</td>
<td>Cumulative: Significant and unavoidable (cumulatively considerable contribution) – construction</td>
</tr>
</tbody>
</table>

3.10.4.6 Summary of Mitigation Measures

Implementation of the following mitigation measures would be required to reduce significant vibration and noise impacts associated with project construction:

**MM NOI-1: Pile Driving Vibration.**

Prior to approval of grading plans and/or prior to issuance of demolition, grading and building permits for construction activities involving the use of pile drivers (impact) within 55 feet of non-engineered timber and masonry structures/buildings or within 30 feet of structures/buildings constructed of reinforced-concrete, steel, or timber, and to the satisfaction of the City of Redondo Beach Building and Safety Division, the project applicant shall retain a Professional Structural Engineer to perform the following tasks:

- Review the project plans for demolition and construction;

- Investigate the area where pile driving is proposed to occur, including geological testing, if required; and

- Prepare and submit a report to the Director of Building and Safety to include, but not be limited to, the following:

  - Description of existing conditions at the subject area;

  - Vibration level limits based on building conditions, soil conditions, and pile driving approach to ensure vibration levels would be below 0.2 in/sec for non-engineered timber and masonry buildings if nearby or 0.5 in/sec for structures or buildings constructed of reinforced-concrete, steel, or timber if nearby; and

  - Specific measures to be taken during pile driving to ensure the specified vibration level limits are not exceeded.
MM NOI-2: Equipment Mufflers.
During all project construction, all construction equipment, fixed or mobile, shall be operated with closed engine doors, if so equipped, and shall include properly operating and maintained residential-grade mufflers consistent with manufacturers’ standards.

MM NOI-3: Stationary Equipment.
Stationary construction (fixed equipment such as compressors, generator, fans, as well as idling vehicles, etc.) equipment operating in proximity to noise sensitive receptors (i.e., residential structures) shall be placed a minimum of 50 feet away from such receptors so that emitted noise is naturally dissipated from the receptors.

MM NOI-4: Equipment Staging Areas.
Equipment staging shall be located in areas that are shielded from and/or set back noise sensitive receptors, with a minimum of 50 feet separation between the sensitive receptor and the nearest edge of the staging area.

MM NOI-5: Electrically-Powered Tools and Facilities.
Where available, electrical power from a grid connection shall be used to run air compressors and similar power tools and to power any temporary equipment.

MM NOI-6: Sound Barriers.
Temporary sound barriers shall be installed and maintained by the construction contractor between the construction site and the residences to the east as needed during construction phases with high noise levels. Temporary sound barriers shall consist of either sound blankets capable of blocking approximately 20 A-weighted decibels (dBA) of construction noise or other sound barriers/techniques such as acoustic padding or acoustic walls placed near the existing residential buildings to the east of the project site that would reduce construction noise by approximately 20 dBA. Barriers shall be placed such that the line-of-sight between the construction equipment and immediately adjacent sensitive land uses is blocked.

3.10.5 Significant Unavoidable Impacts

Short-term significant impacts related to human annoyance from vibration would occur during construction activities in close proximity to sensitive receptors. No feasible mitigation measures are available relative to human annoyance from construction-related vibration, although such impacts would only be short-term and periodic. Nevertheless, the impact would be significant and unavoidable.

Construction of the proposed project would cause a substantial temporary and periodic increase in ambient noise levels in the project vicinity above levels existing without the project (i.e., construction activities lasting more than one day would exceed existing ambient exterior noise levels by 10 dBA or more at a noise sensitive use); a significant noise impact would occur. Even with implementation of mitigation measures MM NOI-2 through MM NOI-6, the
construction noise impact relative to the condominiums east of the site would remain significant and unavoidable.

A permanent increase in noise from the proposed project would cause a substantial permanent increase in the ambient noise levels in the project vicinity (i.e., Torrance Circle/Boulevard between the Project Site and Catalina Avenue) above levels existing without the project. No mitigation is feasible; therefore, impacts would be significant and unavoidable.

Therefore, significant unavoidable noise and groundborne vibration impacts would occur as a result of construction or operation of the proposed project.