

4.5 NOISE AND VIBRATION

This section addresses the impact of the noise and vibration that would be generated by the proposed project on nearby noise-sensitive land uses, as well as the effect of current and future noise and vibration levels on the proposed project.

4.5.1 Setting

a. Overview of Sound Measurement. Noise level (or volume) is generally measured in decibels (dB) using the A-weighted sound pressure level (dBA). The A-weighting scale is an adjustment to the actual sound power levels to be consistent with that of human hearing response, which is most sensitive to frequencies around 4,000 Hertz (about the highest note on a piano) and less sensitive to low frequencies (below 100 Hertz).

Sound pressure level is measured on a logarithmic scale with the 0 dB level based on the lowest detectable sound pressure level that people can perceive (an audible sound that is not zero sound pressure level). Based on the logarithmic scale, a doubling of sound energy is equivalent to an increase of 3 dB, and a sound that is 10 dB less than the ambient sound level has no effect on ambient noise. Because of the nature of the human ear, a sound must be about 10 dB greater than the reference sound to be judged as twice as loud. In general, a 3 dB change in community noise levels is noticeable, while 1-2 dB changes generally are not perceived. Quiet suburban areas typically have noise levels in the range of 40-50 dBA, while those along arterial streets are in the 50-60+ dBA range. Normal conversational levels are in the 60-65 dBA range, and ambient noise levels greater than 65 dBA can interrupt conversations.

Noise levels typically attenuate (or drop off) at a rate of 6 dBA per doubling of distance from point sources such as industrial machinery. Noise from lightly traveled roads typically attenuates at a rate of about 4.5 dBA per doubling of distance. Noise from heavily traveled roads typically attenuates at about 3 dBA per doubling of distance.

In addition to the instantaneous measurement of sound levels, the duration of sound is important since sounds that occur over a long period of time are more likely to be an annoyance or cause direct physical damage or environmental stress. One of the most frequently used noise metrics that considers both duration and sound power level is the equivalent noise level (Leq). The Leq is defined as the single steady A-weighted level that is equivalent to the same amount of energy as that contained in the actual fluctuating levels over a period of time (essentially, the average noise level). Typically, Leq is summed over a one-hour period.

The time period in which noise occurs is also important since noise that occurs at night tends to be more disturbing than that which occurs during the daytime. Two commonly used noise metrics - the Day-Night average level (Ldn) and the Community Noise Equivalent Level (CNEL) - recognize this fact by weighting hourly Leqs over a 24-hour period. The Ldn is a 24-hour average noise level that adds 10 dBA to actual nighttime (10 p.m. to 7 AM) noise levels to account for the greater sensitivity to noise during that time period. The CNEL is identical to the Ldn, except it also adds a 5 dBA penalty for noise occurring during the evening (7 PM to 10 p.m.).



b. Vibration. Vibration is a unique form of noise because its energy is carried through buildings, structures, and the ground, whereas noise is simply carried through the air. Thus, vibration is generally felt rather than heard. The ground motion caused by vibration is measured as particle velocity in inches per second and is referenced as vibration decibels (VdB) in the United States. Policies and standards related to ground-borne vibration are provided in Section 8.80.200 of the Long Beach Municipal Code (LBMC), where operating or permitting the operation of any device that creates vibration above the vibration perception threshold of an individual at or beyond the property boundary of the source, if on private property, or at 150 feet from the source if on a public space or public right-of-way, is a code violation. Section 8.80.200(g) is described in more detail below under *Regulatory Setting*.

The vibration velocity level threshold of perception for humans is approximately 65 VdB. A vibration velocity of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels for many people (Federal Transit Administration, 2006). A vibration velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels for many people. Consequently, the FTA recommends an 80 VdB threshold for infrequent events at residences and buildings where people normally sleep (e.g., the future on-site residences and the residences and hotels in the vicinity). In terms of ground-borne vibration impacts on structures, the FTA states that ground-borne vibration levels in excess of 100 VdB would damage fragile buildings and levels in excess of 95 VdB would damage extremely fragile historic buildings.

c. Sensitive Receptors. Noise exposure goals for various types of land uses reflect the varying noise sensitivities associated with those uses. Residences, hospitals, schools, guest lodging, and libraries are most sensitive to noise intrusion and therefore have more stringent noise exposure targets than manufacturing or agricultural uses that are not subject to effects such as sleep disturbance. Noise sensitive land uses near the project area include residences, a library, and a school. The nearest existing residential receptors are located 100 feet north of the project site boundary on Third Street. The First Congregational Church of Long Beach, located at 241 Cedar Avenue, is also a sensitive receptor and is located 85 feet west of the proposed construction area near the 3rd and Pacific Block.

d. Regulatory Setting. Chapter 8.80 of the LBMC provides regulations regarding noise levels in the City. Section 8.80.160 sets exterior noise level limits for districts identified in the municipal code. The project site is located in District 2. The following exterior noise level standards would therefore apply to the project site:

- *Daytime (7:00 a.m. – 10:00 p.m.): 60 dBA*
- *Nighttime (10:00 p.m. – 7:00 a.m.) 55 dBA*

Receptors to the northwest of the project site, west of Queens Way, are located in District 1 and the following exterior noise level standards are applicable to those receptors:

- *Daytime (7:00 a.m. – 10:00 p.m.): 50 dBA*
- *Nighttime (10:00p.m. – 7:00 a.m.) 45 dBA*



Section 8.80.150 states that the noise standards provided in Section 8.80.160 shall be applied as follows:

No person shall operate or cause to be operated any source of sound at any location within the incorporated limits of 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 from any other property, either incorporated or unincorporated, to exceed:

- 1) *The noise standard for that land use district as specified in Table A in Section 8.80.160 for a cumulative period of more than thirty (30) minutes in any hour; or*
- 2) *The noise standard plus five (5) decibels for a cumulative period of more than fifteen (15) minutes in any hour; or*
- 3) *The noise standard plus ten (10) decibels for a cumulative period of more than five (5) minutes in any hour; or*
- 4) *The noise standard plus fifteen (15) decibels for a cumulative period of more than one (1) minute in any hour; or*
- 5) *The noise standard plus twenty (20) decibels or the maximum measured ambient, for any period of time.*

Section 8.80.170 of the LBMC sets interior noise levels for specific types of development, as shown in Table 4.5-1.

**Table 4.5-1
 City of Long Beach Interior Noise Level Standards**

Land Use	Time Interval	Allowable Noise Level (dBA)
Residential	10:00 p.m. – 7:00 a.m.	35
	7:00 a.m. – 10:00 p.m.	45
School	7:00 a.m. – 10:00 p.m. (While school is in session)	45
Hospital, designated quiet zones, and noise sensitive zones	Anytime	40

Source: Long Beach Municipal Code Sec. 8.80.170

Section 8.80.202 of the Long Beach Municipal Code sets restrictions on construction activities as follows:

- *No person shall operate or permit the operation of any tools or equipment used for construction, alteration, repair, remodeling, drilling, demolition or any other related building activity which produce loud or unusual noise which annoys or disturbs a reasonable person of normal sensitivity*



between the hours of 7:00 p.m. and 7:00 a.m. the following day on weekdays or federal holidays, except for emergency work authorized by the Building Official.

- *No person shall operate or permit the operation of any tools or equipment used for construction, alteration, repair, remodeling, drilling, demolition or any other related building activity which produce loud or unusual noise which annoys or disturbs a reasonable person of normal sensitivity between the hours of 7:00 p.m. on Friday and 9:00 a.m. on Saturday and after 6:00 p.m. on Saturday, except for emergency work authorized by the Building Official.*
- *No person shall operate or permit the operation of any tools or equipment used for construction, alteration, repair, remodeling, drilling, demolition or any other related building activity at any time on Sunday, except for emergency work authorized by the Building Official or except for work authorized by permit issued by the Noise Control Officer.*

The Long Beach Municipal Code 8.80.200(n) requires that air conditioning equipment generate noise levels of no more than 55 dBA at any point on a neighboring property line. This standard would apply to all air conditioning and refrigerating equipment.

The Long Beach General Plan Noise Element provides outdoor and indoor noise standards for different types of land uses, as summarized in Table 4.5-2.

**Table 4.5-2
 City of Long Beach General Plan Noise Level Standards**

Land Use	Outdoor			Indoor (Ldn)
	Peak	L10	L50	
Residential (7:00 a.m.–10:00 p.m.)	70	55	45	45
Residential (10:00 p.m.–7:00 a.m.)	60	45	35	35
Commercial (any time)	75	65	55	-
Industrial (any time)	85	70	60	-

Source: Long Beach General Plan Noise Element.

The Long Beach General Plan Noise Element also contains the following goal related to transportation noise.

Goal 2: Discouraging within transportation noise zones the development of noise sensitive uses that cannot be sufficiently insulated against externally generated noise at a reasonable cost.

The Long Beach General Plan Noise Element contains the following goals related to population and housing.

Goal 3 To reduce the level of noise generated by the population into the environment of the City.

Goal 6 To require better sound deadening design on new housing units where acoustical problems could develop.



Goal 7 To reduce the level of incoming and outgoing noise into and from residential dwellings within the City.

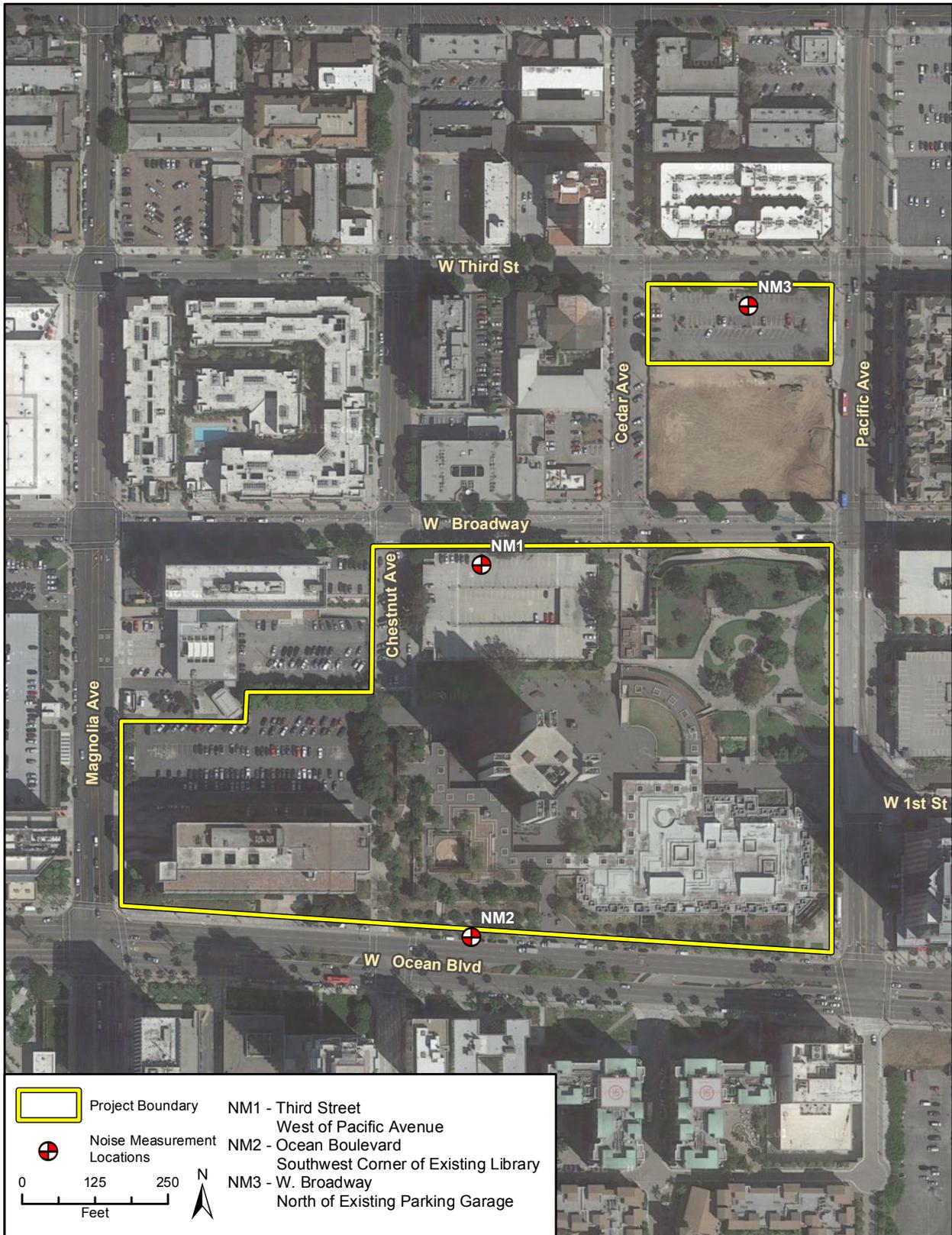
The California Department of Health Services establishes noise criteria for various land uses. Noise exposure for a residential land use is “normally acceptable” when the CNEL at exterior residential locations is equal or below 60 dBA, “conditionally acceptable” when the CNEL is between 60 and 70 dBA, “normally unacceptable” when the CNEL is between 70 and 75 dBA, and “clearly unacceptable” when the CNEL is greater than 75 dBA.

Section 8.80.200(g) of the Long Beach Municipal Code regulates vibration as follows:

Operating or permitting the operation of any device that creates vibration which is above the vibration perception threshold of an individual at or beyond the property boundary of the source if on private property or at one hundred fifty feet (150') (forty-six (46) meters) from the source if on a public space or public right-of-way. For the purposes of this subsection, "vibration perception threshold" means the minimum ground or structure-borne vibrational motion necessary to cause a normal person to be aware of the vibration by such directed means as, but not limited to, sensation by touch or visual observation of moving objects. The perception threshold shall be presumed to be .001 g's in the frequency range 0 – 30 hertz and .003 g's in the frequency range between thirty and one hundred hertz.

e. Existing Noise Sources. The most common source of noise in the project site vicinity is traffic on surrounding roads. Motor vehicle noise is of concern because it is characterized by a high number of individual events, which often create sustained noise levels. Ambient noise levels would be expected to be highest during the daytime and rush hour unless congestion slows speeds substantially. Existing noise sources within the project site consist of commercial and government buildings, as well as the existing library and park. To determine ambient noise levels at nearby sensitive receptors, three 15-minute noise measurements were taken between 7:00 a.m. and 9:00 a.m. (peak hour) on May 20, 2015 using an ANSI Type II integrating sound level meter (refer to Appendix D for noise measurement data). Table 4.5-3 lists the ambient noise levels measured at these locations. See Figure 4.5-1 for the locations of noise measurements and Figure 4.5-2 for the locations of existing and proposed sensitive receptors within the project area.

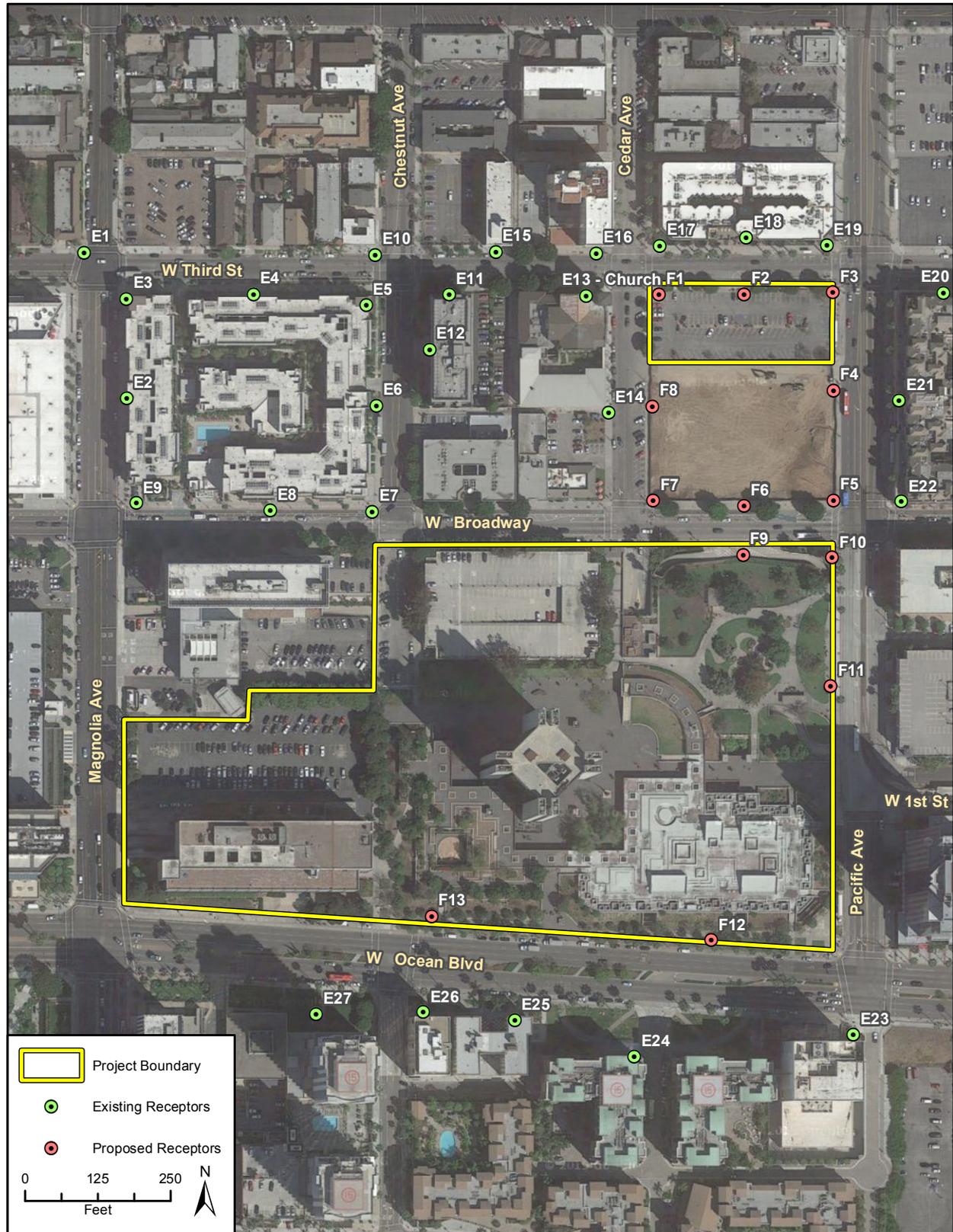




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Noise Measurement Locations

Figure 4.5-1
 City of Long Beach



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Modeled Existing and Future Receptor Locations Figure 4.5-2

**Table 4.5-3
 Noise Measurements**

Measurement Number	Measurement Location	Distance to Nearest Sensitive Receptor	Distance from Centerline of Roadway	Sample Time	Leq (dBA)
1	Third Street west of Pacific Avenue	80 ft (to apartments on Third St.)	40 ft	7:25 a.m.– 7:40 a.m.	64.9
2	Ocean Boulevard on the southwest corner of the existing library	100 ft (to existing library)	50 ft	8:00 a.m. – 8:15 a.m.	70.8
3	W. Broadway, north of the existing parking garage	230 ft (to apartments on W. Broadway)	35 ft	8:30 a.m. – 8:45 a.m.	68.5

All measurements were taken using ANSI Type II Integrating sound level meter.

Refer to Figure 4.5-1 for noise measurement locations.

Refer to the Appendix D for noise monitoring data sheets

Long Beach Municipal Airport is located approximately four miles northeast of the project site, and the project site is outside its Airport Influence Area (Los Angeles County Airport Land Use Commission, 2003).

LLG prepared the *Transportation Impact Analysis* for the project and analyzed local roadway segments and intersections in the surrounding roadway network and provided average daily trip (ADT) rates and peak hour trips (see Appendix E). Using the trip data, existing traffic-generated noise levels along these segments were estimated using the U.S. Department of Transportation, Federal Highway Administration’s (FHWA) Traffic Noise Model Version 2.5 (FHWA, 2004). Table 4.5-4 shows the estimated noise levels at existing sensitive receptors near the project site. Each of the sensitive receptor locations listed is the edge or corner of an existing residential building, with the exception of “Cedar – Church btwn Third and Broadway,” which is the First Congregational Church of Broadway.



**Table 4.5-4
Existing Traffic-Generated Noise**

Receptor Location	Modeled Noise Level Leq (dBA)
Broadway btwn Chestnut and Magnolia	69.3
Broadway NE Corner of Broadway and Magnolia	71.9
Broadway NW Corner of Chestnut and Broadway	69.2
Cedar - Church btwn Third and Broadway	65.8
Chestnut btwn Third and Broadway	65.3
Chestnut E of Chestnut btwn Third and Broadway	64.1
Magnolia btwn Third and Broadway	70.0
Ocean btwn Cedar and Chestnut	71.8
Ocean btwn Chestnut and Magnolia	70.3
Ocean NE Corner of Ocean and Chestnut	71.9
Ocean NW Corner of Ocean and Cedar	69.2
Ocean NW Corner of Ocean and Pacific	71.8
Pacific E of Pacific btwn Third and Broadway	68.4
Pacific NE Corner of Pacific and Broadway	71.1
Third btwn Cedar and Chestnut	69.3
Third btwn Magnolia and Chestnut	67.5
Third E of Pacific	68.0
Third NE Corner of Pacific and Cedar	67.9
Third NE Corner of Third and Magnolia	69.1
Third North of Third West of Pacific	69.5
Third NW Corner of Third and Cedar	70.2
Third NW Corner of Third and Chestnut	70.5
Third NW Corner of Third and Magnolia	70.9
Third NW Corner of Third and Pacific	70.9
Third SE of Chestnut and Pacific Intersection	67.4
Third SW Corner of Third and Cedar	69.4
Third SW Corner of Third and Chestnut	68.3

Refer to Appendix D for these estimates. Calculated using the FHWA Traffic Noise Model.

Modeled noise levels range from 64.1 dBA to 71.9 dBA for existing sensitive receptors. The highest modeled noise level was identified at Ocean on the northeast corner of Ocean and Chestnut and at Broadway on the northeast corner of Broadway and Magnolia. Modeled noise



exceeds the measured noise levels at the same locations because the model includes the greatest amount of traffic observed during PM peak hours, whereas the measurements were taken during AM peak hour and traffic was slightly lower. Nonetheless, the noise levels at the measurement locations indicate that the model is an appropriate tool for determining existing and future noise levels for this area.

4.5.2 Previous Environmental Review

The Long Beach Downtown Plan EIR examined the noise setting of the region and the potential impacts associated with development of the entire Downtown Plan area. The EIR determined that construction noise impacts associated with the Downtown Plan would be significant but mitigable because Downtown Plan implementation would expose businesses and residences throughout the Downtown Plan Area to temporary elevated levels of noise throughout years of construction. The project would be subject to the mitigation measures identified in the EIR, specifically Noise-1(a), which required noise reduction techniques such as equipment mufflers, “quiet” construction equipment models, prohibition of idling, and routing of construction-related traffic, as well as Noise-1(b), which requires the construction of temporary noise barriers and a project-specific noise analysis to determine further necessary noise reduction techniques.

The Downtown Plan EIR determined that noise associated with traffic generated by the Downtown Plan would be less than significant as it affects existing sensitive receptors, but that traffic noise and land use compatibility impacts would be significant but mitigable for proposed receptors. Operation of the proposed project would generate traffic and would locate sensitive receptors, including residences and a library, in areas that could be exposed to levels of noise that exceed applicable standards. The project would be subject to the mitigation measures identified in the EIR, specifically Noise-5, which requires a site-specific noise study for projects in areas where new residential development would be exposed to noise levels exceeding 65 dBA.

The project includes the demolition of the former Long Beach Courthouse. The Long Beach Courthouse Demolition Project was studied in a Draft EIR (SCH# 2014051003) that was circulated in October and November of 2014, but was not adopted. The Long Beach Courthouse Demolition Project Draft EIR determined that impacts related to noise and vibration would be significant and unavoidable despite implementation of mitigation involving the erection of temporary sound barriers, installation of mufflers, use of electric equipment, and the establishment of a noise disturbance coordinator. If demolition occurs by implosion, the Downtown Plan EIR recommended mitigation requiring the development and approval of a Noise Control Plan and a Vibration Control Plan to protect human health and adjacent buildings.

The Downtown Plan EIR determined that construction of the Downtown Plan would include vibration sources, including pile driving that would result in a significant and unavoidable impact. The project would be subject to EIR Measure Noise-2(a), which requires a site-specific vibration study for all construction projects in order to determine the area of impact and identify appropriate mitigation measures.



4.5.3 Impact Analysis

a. Methodology and Thresholds of Significance.

Methodology. The analysis of noise impacts considers the effects of both temporary construction-related noise and long-term noise associated with operation of the proposed project. Construction noise estimates are based upon noise levels reported by the Federal Transit Administration (FTA), Office of Planning and Environment (FTA, May 2006), and the distance to nearby sensitive receptors. Reference noise levels from that document were then used to estimate noise levels at nearby sensitive receptors based on a standard noise attenuation rate of 6 dBA per doubling of distance (line-of-sight method of sound attenuation for point sources of noise). Construction noise level estimates do not account for the presence of intervening structures or topography, which could reduce noise levels at receptor locations. Therefore, the noise levels presented herein represent a conservative, reasonable worst-case estimate of actual construction noise.

To determine ambient noise levels at nearby sensitive receptors, Rincon Consultants, Inc. took three 15-minute noise measurements between 7:00 a.m. and 9:00 a.m. (peak hour) on May 20, 2015, using an ANSI Type II integrating sound level meter (see Figure 4.5-1 above for noise measurement locations relative to the project site; see Appendix D for noise measurement data). These locations were selected to represent ambient noise levels experienced by sensitive receptors near the project site, as well as noise levels generated by land uses similar to the project. At each location, consideration was given to site-specific characteristics, and the sound level meter was placed away from walls and topographic features which might skew noise measurements. The noise measurements recorded the equivalent noise level (Leq) at each location.

Rincon calculated noise levels associated with existing and future traffic along local roadways using the U.S. Department of Transportation, Federal Highway Administration's (FHWA) Traffic Noise Model Version 2.5 (FHWA, 2004) (noise modeling data sheets can be viewed in Appendix D) and the *Transportation Impact Analysis* (see Appendix E and Section 4.6, *Transportation and Traffic*). Roadway noise level estimates do not account for all intervening barriers, such as trees or walls, which may shield individual receptors from the noise source. Therefore, the levels presented represent a conservative estimate of the noise levels that would be experienced at individual receptor locations.

The future exterior noise levels associated with traffic for the proposed residences and library were also calculated using the FHWA Traffic Noise Model Version 2.5 (FHWA, 2004). The interior noise level is the difference between the projected exterior noise level at the structure's façade and the noise reduction provided by the structure itself. Typical residential construction in California provides approximately 15 dBA of noise reduction from exterior noise sources with windows partially open, and approximately 20 to 25 dBA of noise reduction with windows kept closed (DOT, 2009). For this analysis, interior noise level was determined by subtracting the estimated noise reduction achieved by the building shell from the estimated exterior noise level of the project site.



Significance Thresholds. Pursuant to Appendix G of the *State CEQA Guidelines*, potentially significant impacts would occur if the project would result in any of the following conditions:

- *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;*
- *Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels;*
- *A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;*
- *A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;*
- *For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, exposure of people residing or working in the project area to excessive noise levels; and/or*
- *For a project within the vicinity of a private airstrip, exposure of people residing or working in the project area to excessive noise levels.*

As discussed in the Initial Study (Appendix A), the project site is not located in the vicinity of a private airstrip nor is it located within two miles of an airport or within an airport land use plan. Impacts related to airport noise would therefore be less than significant and are not discussed further in this section. The SEIR analyzes potential temporary and permanent impacts from construction and operation of the proposed project, including potential vibration impacts.

Existing off-site development would primarily be affected by potential increased noise associated with increased traffic volumes attributable to the project at various roadway segments. Impacts to existing development are considered significant if project-generated traffic results in exposure of sensitive receptors to an unacceptable increase in noise levels. The level of significance changes with increasing noise exposure, such that smaller changes in ambient noise levels result in significant impacts at higher existing noise levels. Table 4.5-5 shows the relevant significance thresholds for increases in traffic related noise levels caused either by the project alone or by cumulative development.

Impacts related to operational on-site activities and traffic noise would also be significant if project-related activities cause occupied sensitive receptors to experience noise levels exceeding the standards shown in Table 4.5-5.

**Table 4.5-5
 Significant Change in Ambient Noise Levels**

Existing Ambient Noise Level, CNEL/Ldn	Significant Increase
< 60 dBA	+ 5 dBA or greater
> 60 dBA	+ 3 dBA or greater

Source: Long Beach Downtown Community Plan – Noise Impact Analysis (Appendix F of the Long Beach Downtown Plan EIR)



Impacts related to construction would be significant if project-related activities cause occupied sensitive receptors to experience noise levels exceeding the following federal noise standards shown in Table 4.5-6 or if it would occur during hours when construction activity is prohibited under the Long Beach Municipal Code (see *Regulatory Setting*).

**Table 4.5-6
 Construction Noise Level Limits**

Land Use	8-hour Noise Limit (dBA Leq)
Residential	80
Commercial	85
Industrial	90

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

b. Project Impacts and Mitigation Measures.

<i>CEQA Checklist Threshold</i>	<i>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>
<i>CEQA Checklist Threshold</i>	<i>A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.</i>
<i>Quantitative Threshold</i>	<i>See Table 4.5-6</i>

Impact N-1 Construction-related activities associated with the proposed project would generate noise that could exceed City of Long Beach standards at existing receptors. Residential uses proposed by the project may also be exposed to noise levels that exceed City standards. The Downtown Plan EIR determined that construction associated with buildout of the Downtown Plan would result in a potentially significant impact unless mitigation is incorporated. The proposed project would contribute to this impact and mitigation would not be feasible to reduce the impact to a less than significant level. This is a Class I, significant and unavoidable impact.

Construction would not cause permanent impacts since it would be temporary and daily construction activities would be limited by the City’s Noise Ordinance (Section 8.80.202) to less noise sensitive daytime hours. Construction noise impacts primarily result when construction activities occur during times of day when people are most sensitive to noise (early morning,



evening, or nighttime hours), the construction occurs in areas immediately adjoining noise-sensitive land uses, or when construction durations last over extended periods of time.

As discussed in the Downtown Plan EIR, adoption of the Downtown Plan could subject nearby residents to excessive noise levels. The Downtown Plan EIR includes Mitigation Measure Noise-1(a), which requires that: construction equipment be equipped with mufflers; “quiet” models of stationary equipment be used; stationary noise-generating equipment be located as far as possible from receptors; engines do not idle for longer than five minutes; as well as other requirements to reduce noise impacts from construction. The Downtown Plan EIR also includes Mitigation Measure Noise-1(b), which requires construction of temporary noise barriers around construction sites within 300 feet of operational businesses, residences, and other-noise sensitive land uses. Noise-1(b) also requires that if a project-specific noise analysis determines that the barriers described above would not be sufficient to avoid a significant construction noise impact, a temporary sound control blanket must be erected along building façades facing construction sites.

Temporary noise impacts associated with construction of the proposed project may adversely affect adjacent sensitive receptors. The grading/excavation phase of project construction tends to create the highest construction noise levels because of the operation of heavy equipment. As shown in Table 4.5-7, the maximum noise level associated with heavy equipment at construction sites can range from about 74 to 88 dBA at 50 feet from the source, depending upon the types of equipment in operation at any given time and phase of construction (FTA, 2006). During grading operations, equipment is dispersed in various portions of the site in both time and space. Due to site and equipment limitations, only a limited amount of equipment can operate near a given location at a particular time.

Construction noise levels would diminish at approximately 6 dBA per doubling of distance. Table 4.5-7 shows typical maximum construction noise levels at various distances from construction activity. The nearest existing sensitive receptor is the First Congregational Church of Long Beach, which is approximately 85 feet from the nearest proposed construction areas; however, construction would not occur on Sunday mornings when the church would be in use and, therefore, would not impact this receptor. The nearest sensitive receptor that would be in use during construction activities is a residential building located 100 feet from the project site. The maximum noise level at that location would be about 82 dBA. The residential component of the project is concentrated on the 3rd and Pacific Block, which is located approximately 300 feet north of the where construction on the remainder of the project site would occur, and on Center Block, operation of which would occur after all other components are constructed. Therefore, the proposed library would be the only onsite sensitive receptor that would be located adjacent to project construction. The library could be approximately 50 feet from construction activity and could experience a maximum noise level of approximately 88 dBA during construction of both the Center Block and the Lincoln Park and New Library Block.



**Table 4.5-7
 Typical Construction Equipment Noise Levels**

Equipment	Noise Level at 50 feet from Source	Noise Level at 100 feet from Source	Noise Level at 300 feet from Source
Augur Drill Rig	84	78	69
Backhoe	78	72	63
Compactor (ground)	83	77	68
Dozer	82	76	67
Dump Truck	76	70	61
Excavator	81	75	66
Flat Bed Truck	74	68	59
Front End Loader	79	72	63
Generator	81	75	66
Grader	83	77	68
Jackhammer	88	82	73
Pickup Truck	75	69	60
Pneumatic Tools	85	79	70
Roller	80	74	65
Scraper	84	78	69
Warning Horn	83	77	68
Welder/Torch	74	68	59

Source: FTA, 2006.

A temporary noise barrier, as required by Mitigation Measure Noise-1(b) would attenuate construction noise at locations for which the barrier breaks the line of sight between the source and the receptor by up to 10 dBA (FHWA, 2001). However, given the height of the surrounding buildings, which includes residential buildings of over ten stories, a temporary noise barrier would not break the line-of-sight between the construction activities and upper-floor receptors. In order for a barrier to successfully reduce noise at a receptor, it must disrupt the line-of-sight and directly shield the receptor. It would not be feasible to construct a noise barrier tall enough to shield high-rise buildings. Therefore, while Mitigation Measure Noise-1(b) would reduce noise levels to a less than significant level for receptors located on the first floor and would be implemented as a requirement of the Downtown Plan EIR, it would not be sufficient to reduce noise levels to less than 80 dBA Leq for eight hours for noise-sensitive uses located on higher floors. Therefore, impacts would significant and unavoidable at existing and proposed residential units.

Temporary noise from construction would exceed the ambient noise levels near the project site, which are between 65 and 71 dBA. Therefore, City noise standards would be exceeded, despite



implementation of mitigation measures Noise-1(a) and Noise-1(b). This would be a significant and unavoidable impact.

Furthermore, as described in the Long Beach Courthouse Demolition Project Draft EIR, demolition of the former Long Beach Courthouse would result in impacts related to noise that would be significant and unavoidable despite implementation of mitigation involving the erection of temporary sound barriers, installation of mufflers, use of electric equipment, and the establishment of a noise disturbance coordinator. If demolition occurs by implosion, the Downtown Plan EIR recommended mitigation requiring the development and approval of a Noise Control Plan to protect human health and adjacent buildings. Nonetheless, mitigation required by the Downtown Plan EIR and Long Beach Courthouse Demolition Project Draft EIR would not reduce impacts related to construction to a less than significant level. Due to the height of the surrounding residential and commercial buildings, and the potential for demolition to occur by implosion, mitigation would not be feasible for all receptors. Impacts would be significant and unavoidable.

Mitigation Measures. Along with the mitigation required by the Downtown Plan EIR, the following mitigation would be required to reduce impacts from the demolition of the former Courthouse to the extent feasible.

Noise-1 **Noise Control Plan.** If demolition occurs by implosion, the City shall approve a Noise Control Plan that protects public health and includes:

- A site-specific map that delineates the hearing damage radius;
- Safety measures to ensure that community members would not be within this radius during the implosion;
- Control measures designed by an implosion expert to reduce noise at the source of the implosion; and
- A statement that all demolition-related damage shall be repaired.

Significance After Mitigation. The Downtown Plan EIR determined that construction associated with buildout of the Downtown Plan would result in a potentially significant impact unless mitigation is incorporated. The proposed project would contribute to this impact and mitigation would not be feasible to reduce impacts to a less than significant level. The Long Beach Courthouse Demolition Project Draft EIR determined that construction associated with the demolition of the Courthouse would result in a significant and unavoidable noise impact; the proposed project would contribute to that impact. Therefore, impacts associated with construction noise would be significant and unavoidable.



<i>CEQA Checklist Threshold</i>	<i>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>
<i>CEQA Checklist Threshold</i>	<i>A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.</i>
<i>CEQA Checklist Threshold</i>	<i>A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.</i>
<i>Quantitative Threshold</i>	<i>See Table 4.5-1 and Table 4.5-2</i>

Impact N-2 Operational activities associated with the proposed project would generate noise that could exceed City of Long Beach standards at existing receptors. Residential uses proposed by the project may also be exposed to noise levels that exceed City standards. The Downtown Plan EIR determined that operation associated with buildout of the Downtown Plan would result in a potentially significant impact unless mitigation is incorporated. The proposed project would contribute to this impact and mitigation would be required. This is a Class II, significant but mitigable impact.

As discussed in the Downtown Plan EIR, point source noise levels associated with commercial uses have the potential to expose nearby existing and future noise sensitive receptors to excessive noise levels that violate the City Noise Ordinance and that would permanently or temporarily exceed existing ambient noise levels. Downtown Plan EIR Mitigation Measure Noise-6 requires a site-specific noise study prior to issuance of building permits in areas where new residential development would be located adjacent to commercial uses to determine the area of impact and to present appropriate mitigation measures. The mitigation measures required as a result of the noise study may include:

- *Require the placement of loading and unloading areas so that commercial buildings shield nearby residential land uses from noise generated by loading dock and delivery activities. If necessary, additional sound barriers shall be constructed on the commercial sites to protect nearby noise sensitive uses.*
- *Require the placement of all commercial HVAC machinery to be placed within mechanical equipment rooms wherever possible.*
- *Require the provision of localized noise barriers or rooftop parapets around HVAC, cooling towers, and mechanical equipment so that line-of-sight to the noise source from the property line of the noise sensitive receptors is blocked.*

The buildings proposed on the 3rd and Pacific Block, as well as the Center Block, would locate residential uses adjacent to commercial uses. Noise sources associated with commercial land uses include mechanical equipment operation, public address systems, parking lot noise (e.g., opening and closing of vehicle doors, people talking, car alarms), delivery activities (e.g., use of



forklifts, hydraulic lifts), trash compactors, and air compressors. Noise from such equipment can reach intermittent levels of approximately 90 dBA, 50 feet from the source (City of Long Beach, 2011). These elevated noise levels, which have the potential to be generated by commercial uses within mixed use land use designations, would expose nearby noise sensitive land uses (e.g., residential units both existing and proposed) to excessive noise levels that violate the City Noise Ordinance and permanently increase noise levels above ambient levels.

The Third and Pacific Block includes commercial uses on the first floor of the proposed buildings. The nearest sensitive receptor to the Block is the First Congregational Church of Long Beach, which is located 85 feet west. However, the church would be occupied on Sunday mornings, at which time the commercial uses would not generate high levels of noise. The residential building located 100 feet north across Third Street is the nearest sensitive receptor that would be occupied. While the proposed commercial uses are not expected to generate high levels of noise, the highest noise generator would be the loading and unloading areas for trucks. Loading/unloading areas could be located 100 feet from the nearest residences. Thus, point source noise levels associated with commercial land uses could potentially expose nearby existing noise sensitive receptors to excessive noise levels that violate the City Noise Ordinance and mitigation would be required to reduce these impacts.

The Third and Pacific Block would include residential uses above the commercial uses described above. The proposed residential uses could also be exposed to intermittent levels of up to 90 dBA, 50 feet from the source as a result of the commercial activities; therefore, mitigation would be required to reduce these impacts for proposed receptors as well.

Relocation of the park would place it in closer proximity to the residential uses that are south of Ocean Boulevard (approximately 150 feet away). While there may be periodic events in the park that generate noise, the park would not generally generate noise that would impact sensitive users. This impact would be less than significant.

Mitigation Measures. The following mitigation measures would be required to reduce operational noise impacts to existing and proposed receptors to a less than significant level.

- Noise-2(a) Loading Areas.** The applicant shall submit site plans to the Department of Development Services showing that all loading and unloading areas would be oriented away from existing sensitive receptors and/or shielded by the proposed buildings such that the line-of-sight would be broken.

- Noise-2(b) Sound-Rated Windows and Glass Doors Near Commercial Uses.** The applicant shall install sound-rated windows and sliding glass doors on all residential units that are within 50 feet of commercial uses. Windows shall be at least STC 35 to ensure that commercial activities do not result in interior noise levels exceeding 35 dBA when the windows are closed.

Significance After Mitigation. The Downtown Plan EIR determined that operation associated with buildout of the Downtown Plan would result in a potentially significant impact unless mitigation is incorporated. The proposed project would contribute to this impact and mitigation would be required to reduce impacts to a less than significant level.



<i>CEQA Checklist Threshold</i>	<i>Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels.</i>
<i>Quantitative Threshold</i>	<i>80 VdB for residences and buildings where people normally sleep. 100 VdB for damage to fragile buildings (LPMC 8.80.200(g); Federal Transit Administration, May 2006).</i>

Impact N-3 Construction-activities associated with the proposed project could generate ground-borne vibration. The Downtown Plan EIR and Long Beach Courthouse Demolition Project Draft EIR determined that impacts related to construction-generated vibration would be significant and unavoidable. The proposed project would contribute to this impact and construction-related vibration would therefore be a Class I, significant and unavoidable impact.

As discussed in the Downtown Plan EIR, adoption of the Downtown Plan could subject nearby residents to excessive levels of vibration. The Downtown Plan EIR includes Mitigation Measure Noise-2(a), which requires that the City review all construction projects for potential vibration-generating activities from demolition, excavation, pile-driving, and construction within 100 feet of existing structures and require site-specific vibration studies to be conducted by a qualified structure engineer in order to determine the area of impact and identify appropriate mitigation measures. Mitigation Measure Noise-2(b) requires that construction near schools that generates vibration exceeding the “vibration perception threshold” be scheduled at a time when school is not in session. Because the nearest school, Edison Elementary School is 2,250 feet northwest of the project site, Noise-2(b) would not be required for the proposed project.

The Long Beach Courthouse Demolition Project Draft EIR determined that impacts related to vibration would be significant and unavoidable despite implementation of mitigation measures if demolition occurs by implosion. The Downtown Plan EIR recommended mitigation requiring the development and approval of a Vibration Control Plan to protect human health and adjacent buildings if demolition occurs by implosion.

Project construction activities would result in vibration that may be felt on properties in the immediate vicinity of the project site, as commonly occurs with construction projects. Table 4.5-8 identifies various vibration velocity levels for different types of construction equipment. Pile-driving would not be required for the proposed project. Project construction would likely involve the use of bulldozers and jackhammers on the project site for all building elements. Additionally, loaded trucks carrying construction materials would operate on the project site and some surrounding streets during construction.



**Table 4.5-8
Vibration Source Levels for Construction Equipment**

Equipment	Approximate VdB					
	10 Feet	40 Feet	75 Feet	100 Feet	200 Feet	300 Feet
Large Bulldozer	97	79	73	69	60	55
Loaded Trucks	93	77	71	68	59	54
Jackhammer	87	71	65	61	52	47
Small Bulldozer	66	49	43	40	31	26

Source: FTA, 2006.

None of the proposed project components would require use of a large bulldozer within 40 feet of an existing or proposed structure that would include residential uses. Therefore, vibration levels would not exceed the vibration threshold established by the FTA of 80 VdB for residences and buildings where people normally sleep. No new impact would occur and impacts would be less than significant.

As described above, impacts related to vibration would be significant and unavoidable despite implementation of mitigation measures if demolition of the former Courthouse occurs by implosion. Implosion is not included in the vibration estimates shown in Table 4.5-8 above. The proposed project includes the demolition of the former Courthouse, as well as other existing structures. Therefore, impacts would be significant and unavoidable.

Mitigation Measures. Along with the mitigation required by the Downtown Plan EIR, the following mitigation would be required to reduce impacts from the demolition of the former Courthouse to the extent feasible.

Noise-3

Vibration Control Plan. If demolition occurs by implosion, the City shall approve a Vibration Control Plan that protects public health and adjacent buildings, and includes:

- A site-specific estimate of the potential zones of vibration perceptibility and building damage;
- A pre-construction survey to assess the foundations and facades of buildings within the damage zone;
- A post-construction survey to assess damage, if any, caused by implosion; and
- A statement that all demolition-related damage shall be repaired.

Significance After Mitigation. The proposed project would contribute to the significant and unavoidable impact as described in the Long Beach Courthouse Demolition Project Draft EIR. Therefore, project impacts would be significant and unavoidable.



<i>CEQA Checklist Threshold</i>	<i>Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels.</i>
<i>Quantitative Threshold</i>	<i>80 VdB for residences and buildings where people normally sleep. 100 VdB for damage to fragile buildings (LBMC 8.80.200(g); Federal Transit Administration, May 2006).</i>

Impact N-4 **Operational activities associated with the proposed project could generate ground-borne vibration. The Downtown Plan EIR determined that impacts related to operational vibration would be less than significant. The proposed project would not result in additional impacts beyond those determined in the Downtown Plan EIR and operational vibration would therefore be a Class III, less than significant impact.**

The Downtown Plan EIR determined that heavy trucks used for delivery and distribution of materials to and from commercial sites generally operate at low speeds while on the commercial site; and the operational characteristics of mechanical equipment and distribution methods used for general commercial land uses would not result in excessive ground-borne vibration levels.

The types of tenants that would occupy commercial spaces and the number of trucks that would visit these facilities on any given day were not known at the time the Downtown Plan was analyzed in the Downtown Plan EIR. However, it was anticipated that the types of commercial uses proposed for the Downtown Plan Area would not involve large-scale trucking operations. Linscott, Law, and Greenspan, Engineers estimates that the project would accommodate approximately 83 trucks per day. These truck trips would be distributed throughout the project area to the multiple proposed commercial uses. Therefore, operational noise associated with heavy trucks would not generate a substantial level of ground-borne vibration at any sensitive receptors and no new impacts would result from the proposed project.

Mitigation Measures. No mitigation would be required.

Significance After Mitigation. Impacts would be less than significant without mitigation. The Downtown Plan EIR determined that operational vibration impacts would be less than significant. Impacts would be less than significant (Class III).

<i>CEQA Checklist Threshold</i>	<i>A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.</i>
<i>Quantitative threshold</i>	<i>See Table 4.5-5 above.</i>



Impact N-5 Traffic generated by the proposed project is not anticipated to result in noise level increases along roadways in the project vicinity. Traffic-related increases in noise would not exceed the City's threshold at sensitive receptors along roadway segments. The Downtown Plan EIR also determined that traffic-generated noise increases resulting from the Downtown Plan would be less than significant. This is a Class III, *less than significant* impact.

The Downtown Plan EIR determined that traffic-generated noise increases resulting from the Downtown Plan would be less than significant. The traffic noise level increases directly attributable to the project were estimated to be no greater than 1 dBA, which would not be perceptible and would be less than the 3-dBA significance criterion.

Development of the proposed project would increase the number of vehicle trips to and from the site, which would increase traffic noise on surrounding roadways within the vicinity of the project site. The *Transportation Impact Analysis* prepared for the proposed project (Shane Green, personal communication, June 2015; see Appendix E) determined the existing and future traffic levels on Third Street, Broadway, Ocean Boulevard, Magnolia Avenue, Chestnut Avenue, Cedar Avenue, Pacific Avenue, and First Street, as well as the traffic levels expected as a result of the proposed project. These traffic levels were used to determine existing and potential future sound levels at existing sensitive receptors along these roadways, including residences and the First Congregational Church of Long Beach, located at 241 Cedar Avenue.

These estimates are based on noise modeling using the FHWA Traffic Noise Model. The fleet mix for vehicle trips along the roadways was estimated at between 86 to 95% passenger vehicles, 2.5% light- and medium-duty trucks, 2.5% heavy-duty trucks, and between 0 to 9% buses. This estimate is considered reasonable for these roadways based on the urban/downtown nature of the area, as well as the actual bus schedule. The sensitive receptors closest to the roadways were selected to determine the highest noise levels that would occur at receptors located along these roadways. Receptors that were not modeled would experience the similar or lower increases in noise than those receptors that were modeled based on their proximity to the roadways. Table 4.5-9 shows estimates of exterior noise level increases that would result from project-related traffic increases on local roadways within the immediate vicinity of the project site and Figure 4.5-2 shows the locations of the modeled receptors.



**Table 4.5-9
Pre-Project and Post-Project Traffic Noise**

Receptor Location	Projected Noise Level (dBA CNEL)		Change In Noise Level (dBA CNEL)	Significance Threshold (dBA) ⁴	Significant Impact?
	Existing ¹	Existing Plus Project ³			
Broadway btwn Chestnut and Magnolia	69.3	69.9	0.6	3	No
Broadway NE Corner of Broadway and Magnolia	71.9	72.4	0.5	3	No
Broadway NW Corner of Chestnut and Broadway	69.2	70.4	1.2	3	No
Cedar - Church btwn Third and Broadway	65.8	70.1	4.3	3	No ⁵
Chestnut btwn Third and Broadway	65.3	67.2	1.9	3	No
Chestnut E of Chestnut btwn Third and Broadway	64.1	66.6	2.5	3	No
Magnolia btwn Third and Broadway	70	70.7	0.1	3	No
Ocean btwn Cedar and Chestnut	71.8	71.9	0.1	3	No
Ocean btwn Chestnut and Magnolia	70.3	70.3	0	3	No
Ocean NE Corner of Ocean and Chestnut	71.9	72	0.1	3	No
Ocean NW Corner of Ocean and Cedar	69.2	69.3	0.1	3	No
Ocean NW Corner of Ocean and Pacific	71.8	71.8	0	3	No
Pacific E of Pacific btwn Third and Broadway	68.4	69.0	0.6	3	No
Pacific NE Corner of Pacific and Broadway	71.1	71.5	0.4	3	No
Third btwn Cedar and Chestnut	69.3	70.1	0.8	3	No
Third btwn Magnolia and Chestnut	67.5	68.3	0.8	3	No
Third E of Pacific	68	68.5	0.5	3	No
Third NE Corner of Pacific and Cedar	67.9	69.4	1.5	3	No
Third NE Corner of Third and Magnolia	69.1	69.8	0.7	3	No
Third North of Third West of Pacific	69.5	70.4	0.9	3	No
Third NW Corner of Third and Cedar	70.2	71.2	1	3	No



**Table 4.5-9
 Pre-Project and Post-Project Traffic Noise**

Receptor Location	Projected Noise Level (dBA CNEL)		Change In Noise Level (dBA CNEL)	Significance Threshold (dBA) ⁴	Significant Impact?
	Existing ¹	Existing Plus Project ³			
Third NW Corner of Third and Chestnut	70.5	71.5	1	3	No
Third NW Corner of Third and Magnolia	70.9	71.6	0.7	3	No
Third NW Corner of Third and Pacific	70.9	71.6	0.7	3	No
Third SE of Chestnut and Pacific Intersection	67.4	68.3	0.9	3	No
Third SW Corner of Third and Cedar	69.4	70.4	1	3	No
Third SW Corner of Third and Chestnut	68.3	69.4	1.1	3	No

1. Existing noise is based on measured noise, except where measurements were not taken, in which case noise estimates based on U.S. Department of Transportation, Federal Highway Administration's (FHWA) Traffic Noise Model Version 2.5 were used.
2. Existing noise reflects modeled estimates based on traffic from roadways as determined in the Traffic Impact Analysis. Refer to Appendix E for the traffic analysis and Appendix D for the estimates from the FHWA Traffic Noise Model Version 2.5.
3. Existing Plus Project noise reflects estimates generated using FHWA Traffic Noise Model Version 2.5.
4. As shown in Table 4.5-5, an increase of 5 dBA would be considered significant when existing ambient noise is less than 60 dBA and an increase of 3 dBA would be considered significant when existing ambient noise is greater than 60 dBA.
5. The noise level at the First Congregational Church of Long Beach could increase by as much as 4.3 dBA during peak-hour traffic. However, the church would not be occupied during peak-hour traffic on weekday mornings or evenings.

Existing plus project traffic volumes would increase exterior noise levels by less than 3 dBA for all existing residences, which are represented by the locations listed in Table 4.5-9. Additional receptors are located along the roadways included in Table 4.5-9 and throughout the buildings, which extend further back from the roadways, and would also not experience exterior noise level increases greater than 3 dBA. Therefore, impacts from project-related traffic noise increases would be less than significant.

Future noise levels were also calculated using the FHWA Traffic Noise Model. In order to make a realistic estimate of future on-street conditions prior to implementation of the proposed project, the status of other known development projects (cumulative projects) in the area was researched, as described in Section 4.6, *Transportation and Traffic*. Eleven cumulative projects within a two-mile radius of the project site are located in the City of Long Beach. These cumulative projects have either been built, but are not yet fully occupied, or are being processed for approval and have been included as part of the cumulative background setting. Noise levels were estimated for a scenario including only these cumulative projects and a scenario including the cumulative projects and the proposed Civic Center Project. The change in noise level that would occur as a result of the proposed project is again compared to the 3 dBA threshold described in Table 4.5-5. Exterior noise levels are shown in Table 4.5-10.



**Table 4.5-10
 Cumulative Traffic Noise Impacts**

Roadway	Projected Noise Level (dBA CNEL)			Change In Noise Level (Future Plus Project - Existing) (dBA CNEL)	Project Contribution to Change in Noise Level (Future Plus Project - Future) (dBA CNEL)	Significance Threshold (dBA) ⁴	Significant?
	Existing ¹	Future	Future Plus Project ³				
Broadway btwn Chestnut and Magnolia	69.3	69.9	71	1.7	1.1	3	No
Broadway NE Corner of Broadway and Magnolia	71.9	72.4	73.4	1.5	1	3	No
Broadway NW Corner of Chestnut and Broadway	69.2	69.5	70.8	1.6	1.3	3	No
Cedar - Church btwn Third and Broadway	65.8	66.1	70.1	4.3	4	3	No ⁵
Chestnut btwn Third and Broadway	65.3	65.5	66.7	1.4	1.2	3	No
Chestnut E of Chestnut btwn Third and Broadway	64.1	64.3	65.9	1.8	1.6	3	No
Magnolia btwn Third and Broadway	70	70.4	70.9	0.9	0.5	3	No
Ocean btwn Cedar and Chestnut	71.8	72.2	72.2	0.4	0	3	No
Ocean btwn Chestnut and Magnolia	70.3	70.9	70.8	0.5	-0.1	3	No
Ocean NE Corner of Ocean and Chestnut	71.9	72.3	72.3	0.4	0	3	No



**Table 4.5-10
 Cumulative Traffic Noise Impacts**

Roadway	Projected Noise Level (dBA CNEL)			Change In Noise Level (Future)	Project Contribution to	Significance Threshold	Significant?
Ocean NW Corner of Ocean and Cedar	69.2	69.6	69.6	0.4	0	3	No
Ocean NW Corner of Ocean and Pacific	71.8	71.6	72.5	0.7	0.9	3	No
Pacific E of Pacific btwn Third and Broadway	68.4	69.0	69.3	0.9	0.3	3	No
Pacific NE Corner of Pacific and Broadway	71.1	71.6	71.9	0.8	0.3	3	No
Third btwn Cedar and Chestnut	69.3	69.6	70.5	1.2	0.9	3	No
Third btwn Magnolia and Chestnut	67.5	67.7	68.6	1.1	0.9	3	No
Third E of Pacific	68.0	68.3	68.8	0.8	0.5	3	No
Third NE Corner of Pacific and Cedar	67.9	68.3	69.7	1.8	1.4	3	No
Third NE Corner of Third and Magnolia	69.1	69.5	70.1	1	0.6	3	No
Third North of Third West of Pacific	69.5	70.0	70.8	1.3	0.8	3	No
Third NW Corner of Third and Cedar	70.2	70.5	71.6	1.4	1.1	3	No
Third NW Corner of Third and Chestnut	70.5	70.8	71.7	1.2	0.9	3	No



**Table 4.5-10
 Cumulative Traffic Noise Impacts**

Roadway	Projected Noise Level (dBA CNEL)			Change In Noise Level (Future)	Project Contribution to	Significance Threshold	Significant?
	Existing	Existing Plus Project	Existing Plus Project Plus Future				
Third NW Corner of Third and Magnolia	70.9	71.2	71.9	1	0.7	3	No
Third NW Corner of Third and Pacific	70.9	71.4	72.0	1.1	0.6	3	No
Third SE of Chestnut and Pacific Intersection	67.4	67.6	68.5	1.1	0.9	3	No
Third SW Corner of Third and Cedar	69.4	69.7	70.7	1.3	1.0	3	No
Third SW Corner of Third and Chestnut	68.3	68.5	69.4	1.1	0.9	3	No

1. Existing noise is based on noise estimates from Federal Highway Administration's (FHWA) Traffic Noise Model Version 2.5.
2. Existing noise reflects modeled estimates based on traffic from roadways as determined in the Traffic Impact Analysis. Refer to Appendix E for the traffic analysis and Appendix D for the estimates from the FHWA Traffic Noise Model Version 2.5.
3. Existing Plus Project noise reflects estimates generated using FHWA Traffic Noise Model Version 2.5.
4. As shown in Table 4.5-5, an increase of 5 dBA would be considered significant when existing ambient noise is less than 60 dBA and an increase of 3 dBA would be considered significant when existing ambient noise is greater than 60 dBA.
5. The noise level at the First Congregational Church of Long Beach could increase by as much as 4.3 dBA during peak-hour traffic. However, the church would not be occupied during peak-hour traffic on weekday mornings or evenings.



Similar to the existing and existing plus project conditions, the project's contribution to the future plus project change in noise levels would only exceed the 3 dBA increase at the First Congregational Church of Long Beach. However, as described above, this increase in noise was determined based on peak hour traffic, which occurs on weekday mornings and evenings. Services are held at the First Congregational Church of Long Beach on weekends; therefore the church would not be occupied during peak-hour traffic. Impacts from project-related traffic noise increases under future conditions would be less than significant.

Mitigation Measures. Because impacts would be less than significant, no mitigation is required.

Significance After Mitigation. Impacts would be less than significant without mitigation.

<i>CEQA Checklist Threshold</i>	<i>Exposure of persons to or generation of noise levels in exceed of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.</i>
<i>Quantitative threshold</i>	<i>See Table 4.5-5 above.</i>

Impact N-6 Noise levels at proposed sensitive receptors may exceed City thresholds for interior and exterior noise. The Downtown Plan EIR determined that the Downtown Plan would result in a Class II impact, potentially significant unless mitigation is incorporated, as it would allow sensitive receptors to be located in areas exceeding the City's noise standards. The Downtown Plan required site-specific noise analysis and mitigation for individual projects. The proposed project would contribute to this impact and such mitigation would be required. This is a Class II, *significant but mitigable impact.*

The Downtown Plan EIR determined that because the Downtown Plan would allow the location of sensitive receptors in areas that would exceed the standards identified for the applicable land use by the Noise Element of the Long Beach General Plan, impacts would be significant but mitigable. The project would be subject to the mitigation measure identified in the EIR, specifically Mitigation Measure Noise-5, which requires a site-specific noise study and mitigation in areas where new residential development would be exposed to noise levels exceeding 65 dBA. This noise study requirement has been met in this EIR and is described below.

The *Transportation Impact Analysis* prepared for the proposed project (Shane Green, personal communication, June 2015; see Appendix E) determined the traffic levels expected as a result of the proposed project. Traffic is the largest source of noise in the project area; therefore, these traffic levels were used to determine potential sound levels at proposed receptors, including proposed residences and the proposed library location (Figure 4.5-2 shows the locations of the modeled receptors). The sensitive receptors that would be closest to the roadways were selected to determine the highest noise levels that would occur at receptors located along these roadways. Receptors that were not modeled would experience similar or lower increases in noise level than those receptors that were modeled based on their proximity to the roadways.



Table 4.5-11 shows exterior and interior noise levels that would be experienced at the proposed residences and library. As shown, exterior noise levels would exceed 65 dBA at all proposed receptors adjacent to roadways. As described in Section 4.5.3(a), typical residential construction in California provides approximately 15 dBA of noise reduction from exterior noise sources with windows partially open, and approximately 20 to 25 dBA of noise reduction with windows kept closed (DOT, 2009).

**Table 4.5-11
 Projected Noise Levels
 for Proposed Receptors**

Roadway	Projected Noise Level
Future Library NW corner Broadway and Pacific	71.6
Future Library on Broadway btwn Pacific and Cedar	72.4
Future Library on Pacific btwn Broadway and First	68.6
NE corner Broadway and Chestnut	69.4
E of Cedar btwn Broadway and Third	69.9
NE corner Broadway and Cedar	70.5
North of Broadway btwn Pacific and Cedar	68.3
NW corner Pacific and Broadway	72.0
SE Corner Third and Cedar	70.1
SW Corner Third and Pacific	70.4
W of Pacific btwn Third and Broadway	68.7

Where exterior noise levels are below 70 dBA Ldn, interior noise can be mitigated with standard wall and window construction, and the inclusion of mechanical forced-air ventilation to allow occupants the option of maintaining windows closed to control noise, as required by Mitigation Measure Noise-6(a). Where exterior noise levels exceed 70 dBA Ldn, noise-sensitive uses would not normally be able to meet the 45-dBA Ldn interior standard simply through typical construction methods. Thus, noise-sensitive uses, including the proposed library and the residences located adjacent to Broadway, Pacific Avenue, Third Street, and Cedar Avenue, would require additional noise reduction measures described in Mitigation Measure Noise-6(b).

Mitigation Measures. The following mitigation measures would be required to reduce impacts to future receptors to a less than significant level. These mitigation measures include features that were recommended in Mitigation Measure Noise-5 of the Downtown Plan EIR.

- Noise-6(a) Mechanical Ventilation.** The applicant shall provide mechanical ventilation in all residential units proposed along Broadway, Pacific Avenue, Third Street, Cedar Avenue, Chestnut Avenue, and First Street, so that windows can remain closed at the choice



of the occupants to maintain interior noise levels below ~~45~~35 dBA Ldn.

Noise-6(b) Sound-Rated Windows and Sliding Glass Doors. The applicant shall install sound-rated windows and sliding glass doors on the residential units that face Broadway, Pacific Avenue, Third Street, and Cedar Avenue, as well as the proposed library, such that interior noise levels would not exceed ~~45~~35 dBA Ldn when the windows are closed.

Significance After Mitigation. With implementation of mitigation measures Noise-6(a) and Noise-6(b), impacts to interior noise levels for proposed residences and the proposed library would be reduced to less than significant levels.

c. Cumulative Impacts. The Downtown Plan Area, which surrounds the project site, is the geographic extent for cumulative impacts associated with noise. Cumulative development in the City of Long Beach would result in the development of eleven projects also served by the larger roadway network surrounding the project site, as described in Section 4.6, *Traffic and Transportation*. As shown in Table 4.5-10, cumulative impacts along the analyzed surrounding roadway network would contribute to further exceedance of the exterior noise standard over time. Cumulative traffic noise increases from project-generated traffic along the analyzed road segments would range from 0.0 to 4.2 dBA and in some cases the project would result in a decrease in traffic noise compared to future without project traffic, due to the extension of existing roadways.

The operational noise generation of cumulative projects is not known, but because future uses would be similar to the existing uses in the area, cumulative projects would not create cumulative operational noise impacts in combination with the proposed project. All future development would be required to comply with the City's noise and vibration standards, which restrict the level of noise and vibration that can be generated near a property according to its designated use. Cumulative impacts would be less than significant.

