2.2.6 Noise

This section addresses potential noise effects associated with the construction and operation of the proposed Gerald Desmond Bridge Replacement Project. Noise discussion is based on the 2009 Noise Technical Study (Parsons, 2009).

2.2.6.1 Regulatory Setting

NEPA and CEQA provide the broad basis for analyzing and abating highway traffic noise effects. The intent of these laws is to promote the general welfare and to foster a healthy environment. The requirements for noise analysis and consideration of noise abatement and/or mitigation, however, differ between NEPA and CEQA.

California Environmental Quality Act

CEQA requires a strictly baseline versus build analysis to assess whether a proposed project will have a noise impact. If a proposed project is determined to have a significant noise impact under CEQA, then CEQA dictates that mitigation measures must be incorporated into the project unless such measures are not feasible. The rest of this section will focus on the NEPA 23 CFR 772 noise analysis; please see Chapter 3 for further information on noise analysis under CEQA.

National Environmental Policy Act and 23 CFR 772

For highway transportation projects with FHWA (and Caltrans, as assigned) involvement, the Federal-Aid Highway Act of 1970 and the associated implementing regulations (23 CFR 772) govern the analysis and abatement of traffic noise impacts. The regulations require that potential noise impacts in areas of frequent human use be identified during the planning and design of a highway project. The regulations contain noise abatement criteria (NAC) that are used to determine when a noise impact would occur. The NAC differ depending on the type of land use under analysis. For example, the NAC for residences (67 A-weighted decibels [dBA]) is lower than the NAC for commercial areas (72 dBA). The closest noise-sensitive receptors are located to the east of the project area, across the Los Angeles River. Land use within these areas falls within Activity Category B. All other potentially affected areas to the north, south, and west of the project area are characterized predominantly by Port or Port-related industrial/ commercial developments. Land use within these areas fall within Activity Category C. Table 2.2.6-1 lists the NAC for use in the NEPA 23 CFR 772 analysis.

Table 2.2.6-1
Noise Abatement Criteria

Activity Category	Noise Abatement Criteria (dBA) L_{eq}	Description of Activity Category
A	57 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 (Exterior)	Developed lands, properties, or activities not included in Categories A or B above.
D	–	Undeveloped lands.
E	52 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

Source: 23 CFR Part 772, 2001.

Exhibit 2.2.6-1 lists the noise levels of common activities to enable readers to compare the actual and predicted highway noise-levels discussed in this section with common activities.

In accordance with the Caltrans *Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects* (2006), a noise impact occurs when the future noise level with the project results in a substantial increase in noise level (defined as a 12 dBA or more increase) or when the future noise level with the project approaches or exceeds the NAC. Approaching the NAC is defined as coming within 1 dBA of the NAC.

If it is determined that the project will have noise impacts, then potential abatement measures must be considered. If noise abatement measures are determined to be reasonable and feasible, then they would be incorporated into the project plans and specifications during final design.

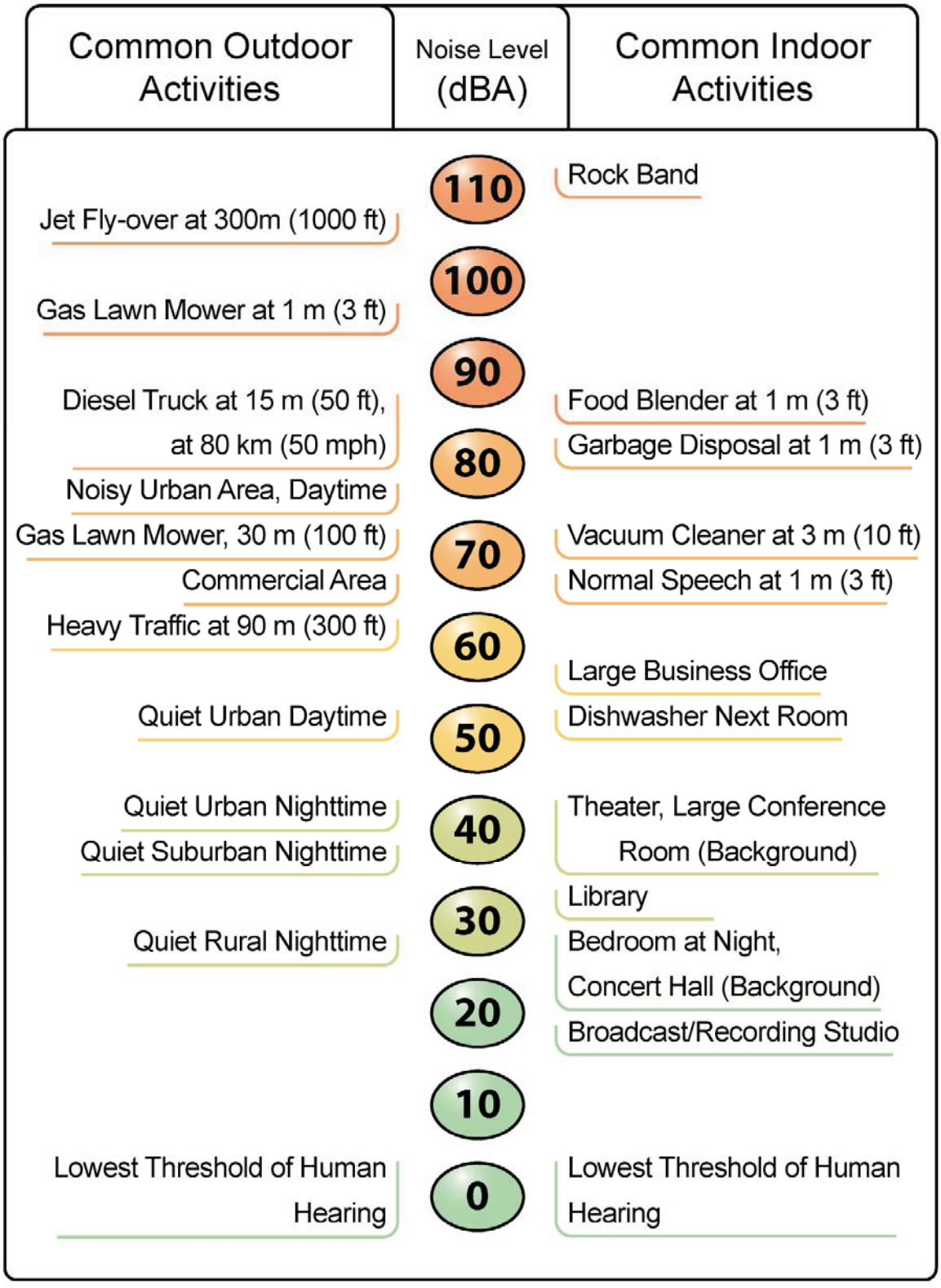

Exhibit 2.2.6-1
Typical Sound Levels from Indoor and Outdoor Noise Sources

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The Caltrans *Traffic Noise Analysis Protocol* sets forth criteria for determining when an abatement measure is reasonable and feasible. A minimum 5-dBA reduction in the future noise level must be achieved for an abatement measure to be considered feasible. Other considerations include topography, access requirements, other noise sources, and safety considerations. The reasonableness determination is primarily a cost-benefit analysis. Factors used in determining whether a proposed noise abatement measure is reasonable include residents' acceptance, the absolute noise level, build versus existing noise, environmental impacts of abatement, public and local agencies input, newly constructed development versus development pre-dating 1978, and the cost per benefited residence.

City of Long Beach Noise Ordinance

According to the City of Long Beach Noise Control Ordinance, within any area of the Port (i.e., industrial land use), a noise level of 70 dBA L_{eq} is considered the threshold for construction and operational impacts during any time of the day or night. For predominantly residential areas with other land uses also present, defined in the ordinance as Land Use District One, the presumed noise limit during daytime hours is 50 dBA. For areas where the ambient noise levels already exceed the presumed permissible noise limits, the allowable noise exposure limits for the appropriate land use districts shall be increased by 5-dB increments to encompass or reflect the ambient noise level. For example, if the existing ambient noise level at a residential area were measured at 62 dBA, then the allowable noise limit would be increased to 65 dBA. In addition, it is stated in the ordinance that construction activities should occur only during the hours of 7:00 a.m. to 7:00 p.m. on weekdays, 9:00 a.m. to 6:00 p.m. on Saturdays, and no construction activities should occur on Sunday except for emergency work authorized by the building official or for work authorized by a permit issued by the noise control officer.

2.2.6.2 Affected Environment

Noise is often defined as unwanted sound. Sound is easily measured with instruments, but the human variability in subjective and physical responses to sound complicates the understanding of its impact on people. People judge the relative magnitude of sound by subjective terms such as "loudness" or "noisiness."

Physically, sound-pressure magnitude is measured and quantified in terms of a logarithmic scale in decibels (dB). Research on human hearing sensitivity has shown that a 3-dB increase in sound is barely noticeable and a 10-dB increase would be perceived as twice as loud. The human hearing system, however, is not equally sensitive to sound at all frequencies; therefore, a frequency-dependent adjustment called "A-weighting" has been devised so that sound may be measured similar to the way the human hearing system responds. The A-weighted sound level is often abbreviated "dBA" or "dB (A)." Exhibit 2.2.6-1 provides typical A-weighted sound levels of various common indoor and outdoor activities.

Community noise levels usually change continuously during the day; however, community noise exhibits a daily, weekly, and yearly pattern. Several descriptors have been developed to compare noise levels over different time periods. One of the most common descriptors is the energy equivalent sound level (L_{eq}). The L_{eq} is the equivalent steady-state A-weighted sound level that would contain the same acoustical energy as the time-varying A-weighted sound level during the same time interval. To adjust for the increased sensitivity to noise during evening (7:00 p.m. to 10:00 p.m.) and nighttime hours (10:00 p.m. to 7:00 a.m.), the Community Noise Equivalent Level (CNEL) is often used in California. CNEL adjusts for the increased sensitivity by adding factors of 5 dBA and 10 dBA to noises generated during the evening and nighttime periods, respectively.

The maximum sound level (L_{max}) is the highest instantaneous sound level measured during a single noise measurement interval no matter how long this sound may persist and whether the noise source is ambient or project related. Another sound descriptor is the Percentile-Exceeded Sound Level (L_{xx}), which represents the sound level exceeded a percent of a specific time period. L_{10} is the sound level exceeded 10 percent of the time.

Existing Noise Environment. The project is located in the middle of an industrial district within the POLB. Laborers that work outdoors at adjacent facilities within areas of close proximity to the project site are the only identified potential noise-sensitive receptors. The only other noise-sensitive receptors are located at a distance of approximately 1,300 to 1,500 ft (396 to 457 m) across the river; they include Cesar Chavez Park and Cesar Chavez Elementary School, as well as several condominium buildings. The existing noise environment in the vicinity of the proposed project consists primarily of typical noise sources related

to port operations and associated transportation traffic noise. Noise-sensitive receptors, discussed above, located outside of the Port's boundaries may be affected by traffic noise generated by local freeways and major surface streets.

A major freeway, such as the adjacent Long Beach Freeway (SR 710), usually is the dominant noise source for adjacent land uses in urbanized areas. SR 710 generates noise levels greater than 75 dBA CNEL within 100 ft (30 m) of the freeway and approximately 65 dBA at 700 ft (213 m) from the freeway (URS, 2001).

Per noise measurements conducted by the POLB for the Middle Harbor Project, existing peak daytime ambient noise levels (Year 2006) within the noise-sensitive areas on the east side of the Los Angeles River ranged from 61 to 68 dBA; nighttime noise levels ranged from 47 to 56 dBA (POLB, 2009). Additional noise measurements were conducted on July 16, 2009, to evaluate existing ambient noise levels at the noise-sensitive receptors. The 2009 measurements were collected at two locations. These measurements are representative of existing noise levels at: (1) Cesar Chavez Park and adjacent condominium buildings; and (2) the outdoor use areas at Cesar Chavez Elementary School. At the park and adjacent condominium buildings, the measured daytime L_{eq} was 61 dBA. At the outdoor use area of the school, the measured daytime L_{eq} was 64 dBA.

2.2.6.3 Environmental Consequences

Evaluation Criteria

Neither the federal government nor the state has specific regulations for community noise. FHWA and Caltrans have established noise standards for traffic noise. The State of California requires that counties and cities prepare and implement noise elements as part of their mandated general plans. Counties and cities also have noise ordinances protecting the public from potential hearing damage and various other possible adverse psychological and social effects associated with noise. Noise impacts associated with the project may be considered adverse if:

- There is a substantial noise increase;
- The predicted operational noise levels at noise-sensitive locations with frequent outdoor use areas approach or exceed the NAC; or
- Construction or operational noise levels exceed the City of Long Beach Noise Control Ordinance thresholds during construction or operation.

No Action Alternative

Under the No Action Alternative, only increases in ambient noise levels associated with increases in future traffic or from surrounding land use activities are anticipated.

Construction and Demolition Impacts

North-side Alignment Alternative

Normally, construction activities are carried out in phases, and each phase has its own noise characteristics based on the mix of construction equipment in use. The maximum construction noise levels for this project are expected to be generated during the demolition phases. Table 2.2.6-2 presents the noise level of individual equipment and the overall noise level for each of the construction phases. Distances referenced in the table are at 50 ft (15 m) from the center of the construction activity, as well as, at 500, 1,300, and 1,500 ft (152, 396, and 457 m). All surrounding land uses in the immediate project vicinity are zoned industrial, except for sensitive land uses east of the Los Angeles River. In computing the L_{eq} for equipment noise, it was assumed that during use most of the equipment would be operating at, or near, maximum sound levels 30 percent of the time and the pile driver would be operating at maximum sound levels 20 percent of the time.

All construction activities are assumed to occur Monday through Friday 7:00 a.m. to 7:00 p.m. and on Saturday 9:00 a.m. to 6:00 p.m. No construction activity is expected to occur on Sundays or on legal holidays. As shown in Table 2.2.6-2, at 500 ft (152 m) from the construction activity, the highest noise levels when all equipment is operating simultaneously are expected to reach approximately 68 dBA (i.e., below the threshold for allowable construction noise for the industrial land use district) during demolition of the existing bridge main span and side span. At 1,300 and 1,500 ft (396 and 457 m) from the construction activity, which corresponds to the distances from the nearest demolition activity to the nearest noise-sensitive receptors at Cesar Chavez Park and Cesar Chavez Elementary School, the noise levels are expected to be approximately 60 and 59 dBA, respectively. Consistent with the Long Beach municipal code, given the measured ambient noise level of 61 to 64 dBA, the allowable noise exposure limit would be 65 dBA. Demolition noise levels at these receptor locations would be below the allowable limit in accordance with the City of Long Beach ordinance.

Table 2.2.6-2
Estimated Construction Noise Levels

Construction Activity Equipment	Number of Equipment Vehicles	Max Sound Level at 50 ft [15 m], dBA	Effective Usage Factor	L_{eq}(h) at 50 ft [15 m], dBA	L_{eq}(h) at 500 ft [152 m], dBA	L_{eq}(h) at 1300 ft [396 m], dBA	L_{eq}(h) at 1500 ft [457 m], dBA
CONSTRUCTION OF NEW BRIDGE							
Piling Operation							
Pile Driver	1	97	0.15	89	69	60	59
Drill Rig	1	80	0.30	75	55	46	45
140T Crane	1	83	0.30	78	58	49	48
Flat Bed Truck	1	80	0.15	72	52	43	42
Portable Generator (5 kw)	1	71	0.30	66	46	37	36
		Overall L_{eq} =		**89**	**69**	**61**	**60**
Footing Construction							
140T Crane	1	86	0.30	81	61	52	51
Hydraulic Excavator	1	85	0.30	80	60	51	50
Dump Truck	2	80	0.23	74	54	45	44
Main Generator (15 kw)	1	76	0.15	68	48	39	38
		Overall L_{eq} =		**82**	**62**	**53**	**52**
Column Construction							
140T Crane	1	86	0.30	81	61	52	51
Main Generator (15 kw)	1	76	0.30	71	51	42	41
		Overall L_{eq} =		**81**	**61**	**53**	**52**
Tower Construction							
Tower Crane	1	84	0.30	79	59	50	49
Main Generator (15 kw)	1	76	0.30	71	51	42	41
		Overall L_{eq} =		**79**	**59**	**51**	**50**
Approach Span Erection							
275T Crane	1	88	0.15	80	60	51	50
Segment Delivery Truck	2	85	0.30	80	60	51	50
Service Crane	1	83	0.30	78	58	49	48
Flat Bed Truck	1	80	0.15	72	52	43	42
Forklift	1	67	0.15	59	39	30	29
Main Generator (15 kw)	1	76	0.30	71	51	42	41
Portable Generators (5 kw)	2	71	0.30	66	46	37	36
		Overall L_{eq} =		**84**	**64**	**56**	**55**
Main Span Erection							
Segment Lifters	4	83	0.60	81	61	52	51
Delta Frame Lifters	2	83	0.30	78	58	49	48
Segment Delivery Truck	2	85	0.30	80	60	51	50
Service Crane	1	83	0.15	75	55	46	45
Flat Bed Truck	1	80	0.15	72	52	43	42
Forklift	1	67	0.15	59	39	30	29
Main Generator (15 kw)	1	76	0.30	71	51	42	41
Portable Generators (5 kw)	2	71	0.30	66	46	37	36
		Overall L_{eq} =		**85**	**65**	**57**	**56**

Source: Parsons

Table 2.2.6-2 (continued)
Estimated Construction Noise Levels

Construction Activity Equipment	Number of Equipment Vehicles	Max Sound Level at 50 ft [15 m], dBA	Effective Usage Factor	L_{eq}(h) at 50 ft [15 m], dBA	L_{eq}(h) at 500 ft [152 m], dBA	L_{eq}(h) at 1300 ft [396 m], dBA	L_{eq}(h) at 1500 ft [457 m], dBA
DEMOLITION OF EXISTING BRIDGE							
Main Span and Side Span Deck Demolition							
100T Derrick	2	84	0.30	79	59	50	49
Backhoe w/Breaker	2	90	0.30	85	65	56	55
Concrete Saws	2	83	0.60	81	61	52	51
Dump Trucks	4	80	1.20	81	61	52	51
Generator (15 kw)	2	76	0.60	74	54	45	44
			Overall L_{eq} =	**88**	**68**	**60**	**59**
Truss Demolition - Main Span							
100T Crane	2	84	0.60	82	62	53	52
65T R/T Crane	2	85	0.60	83	63	54	53
Flat Bed Truck	4	80	1.20	81	61	52	51
Generator (15kw)	2	76	0.60	74	54	45	44
			Overall L_{eq} =	**85**	**65**	**56**	**55**
Truss Demolition - Side Span							
100T Crane	2	84	0.60	82	62	53	52
200T Crane	2	88	0.60	86	66	57	56
Flat Bed Truck	4	80	1.20	81	61	52	51
Generator (15kw)	2	76	0.60	74	54	45	44
			Overall L_{eq} =	**85**	**65**	**56**	**55**
Approach Span Deck Demolition							
Backhoe w/Breaker	2	90	0.60	88	68	59	58
Concrete Saws	2	83	0.60	81	61	52	51
Dump Trucks	4	80	1.20	81	61	52	51
Generator (15kw)	2	76	0.60	74	54	45	44
			Overall L_{eq} =	**89**	**69**	**61**	**60**
Demolition of Approach Span Girders							
200T Crane	2	88	0.60	86	66	57	56
Flat Bed Truck	4	80	1.20	81	61	52	51
Generator (15kw)	2	76	0.60	74	54	45	44
			Overall L_{eq} =	**82**	**62**	**53**	**52**
Concrete Pier Demolition							
Backhoe w/Breaker	2	90	0.60	88	68	59	39
200T Crane	2	88	0.60	86	66	57	37
Concrete Saws	2	83	0.60	81	61	52	51
Dump Trucks	4	80	1.20	81	61	52	51
Generator (15kw)	2	76	0.60	74	54	45	44
			Overall L_{eq} =	**89**	**69**	**61**	**60**
Concrete Footing Demolition							
Backhoe w/Breaker	2	90	0.60	88	68	59	58
Dump Trucks	4	80	1.20	81	61	52	51
Generator (15kw)	2	76	0.60	74	54	45	44
			Overall L_{eq} =	**89**	**69**	**60**	**59**
REHABILITATION OF EXISTING BRIDGE							
Deck Replacement, Steel Column Casings, and other Retrofits							
Excavator	1	76	0.30	71	51	42	41
Crawler	1	80	0.30	75	55	46	45
Mobile Crane	1	84	0.30	79	59	50	49
Concrete Saws	2	83	0.60	81	61	52	51
Genie Lifts	2	75	0.60	73	53	44	43
Haul Trucks	2	80	0.60	78	58	49	48
Concrete Trucks	2	80	0.30	75	55	46	45
			Overall L_{eq} =	**85**	**65**	**57**	**56**

Source: Parsons

During the period when there is piling activities, hourly L_{eq} noise levels are expected to be approximately 69 dBA at a distance of 500 ft (152 m). Other than the port/harbor workers who may be working outdoors in areas close to the construction sites, no other noise-sensitive receptors closer than 1,300 ft (396 m) are expected to be in the vicinity of the nearest piling activity. Port workers working in areas closer than 450 ft (137 m) during a piling activity would potentially be affected by these intermittent elevated noise levels that exceed the City of Long Beach threshold for construction activities.

Noise levels during piling activities at the nearest sensitive receptors outside of the industrial land use district (i.e., Cesar Chavez Park [1,300 ft] and Cesar Chavez Elementary School [1,500 ft]) are predicted to be 61 and 60 dBA, respectively. Piling activity noise levels at these receptor locations would be below the allowable limit in accordance with the City of Long Beach ordinance of 65 dBA, as previously described.

Even though no adverse construction noise impacts are anticipated, in response to comments on the revised Draft EIR/EA and in the interest of maintaining a noise environment that results in less intrusion on students and Cesar Chavez Elementary School, the contract specifications will incorporate the following noise control measures:

- The Contractor will install noise barriers between pile-driving activities and Cesar Chavez Elementary School at all pile-driving locations within 0.5-mile (2,640 ft) of the school; and
- Pile-driving activities will be limited to the hours of 7:00 a.m. to 7:00 p.m. on weekdays, between 9:00 a.m. and 6:00 p.m. on Saturdays, and prohibited anytime on Sundays and holidays, as prescribed by Section 8.80.202 of the LBMC
- Comply with all appropriate provisions of the City Noise Ordinances including, but not limited to, the restrictions on hours of construction and mechanical equipment noise levels; however, in the event that construction schedule necessitates construction activities to occur outside of the hours allowed by the City's noise ordinance, a variance/permit would be obtained from the noise control officer.
- Where applicable, alternative construction methods or equipment, (i.e., alternative pile driving methods) that generate the lowest noise levels will be required.
- Whenever possible, construction will be scheduled in a manner that would reduce the amount of concurrent noise sources.
- When feasible, the duration and timing of construction activities will be scheduled to minimize noise impacts on potentially exposed individuals.
- Area residents and businesses will be informed of the schedule, duration, and progress of the construction to minimize public objections of unavoidable noise. This will include notification of potentially affected parties in advance of high noise construction activities (e.g., pile-driving).

Temporary increases in noise on terrestrial special-status species at existing falcon and bat nesting/roosting areas associated with construction and demolition activities could influence nesting/ roosting site selection. No substantial effect on aquatic species is anticipated because all work would occur outside of the channel (at least 150 ft [45 m]). Subsequent to completion of the proposed project, no long-term effects on special-status terrestrial or aquatic wildlife species are anticipated (see Section 2.3.5 [Threatened and Endangered Species]). There would be no adverse noise effects associated with the North-side Alignment Alternative construction and demolition activities.

South-Side Alignment Alternative

The construction and demolition scope, as well as the overall project magnitude, would be essentially the same as discussed for the North-side Alignment Alternative. There would be no discernable difference in overall construction activities, the types or amount of construction equipment, or the noise effects on Port/harbor workers, sensitive receptors, or on protected wildlife between the North- and South-side Alignment Alternatives. This alternative would comply with the City of Long Beach noise ordinance and would incorporate all other measures as discussed under the North-side Alignment Alternative. There would be no adverse noise effects associated with the South-side Alignment Alternative construction and demolition activities.

Rehabilitation Alternative

Construction activities for the Rehabilitation Alternative would result in improvements to the existing facility only. This alternative would have a shorter construction duration and would eliminate

the need for the bridge demolition phase. This alternative would require less construction equipment and less pile driving; therefore, the Rehabilitation Alternative would result in reduced construction noise effects when compared with the North- and South-Side Alignment Alternatives. Most of the retrofit activities would occur during normal daytime construction hours; however, bridge deck replacement activities would occur between the hours of 7:00 p.m. and 7:00 a.m. Nighttime construction noise levels at the nearest sensitive receptor are predicted to be 56 to 57 dBA, which is below ambient conditions; however, construction activity would still require a variance/permit from the City noise control officer.

As shown in Table 2.2.6-2, the predicted construction noise levels associated with this alternative would not be higher than 65 dBA at a distance of 500 ft (152 m) and further. Additionally, the nighttime bridge deck replacement activities would be located on the Gerald Desmond Bridge, more than 0.3-mi (1,500 ft) from the nearest potential sensitive receptor, which is Cesar Chavez Elementary School, located at 730 West Third Street. This alternative would comply with the City of Long Beach construction noise threshold. There would be no adverse noise effects associated with the Rehabilitation Alternative construction activities.

Operational Impacts

North Side-Alignment Alternative

According to the Caltrans Noise Analysis Protocol, this project is considered a Type 1 project. A Type 1 project is defined as construction on a roadway that substantially changes its horizontal or vertical alignment, or which increases the number of through-traffic lanes. The major source of operational noise would be associated with vehicular traffic within the project area and on other nearby roadways. The predominant traffic noise sources within the project area are the vehicular traffic on Ocean Boulevard, which includes the Gerald Desmond Bridge, and the I-710 freeway.

The segments of Ocean Boulevard were analyzed using a computer noise prediction model. Noise levels for the future conditions with and without the project were predicted using the FHWA Traffic Noise Model (FHWA-RD-77-108).

Freeway traffic noise is not expected to increase. SR 710 is congested and already operating at its capacity. Maximum (i.e., worst-case) traffic noise is generated when traffic is operating at the highest capacity under free-flowing conditions. Because the project would not increase capacity on SR 710, no increase in vehicle speed is anticipated; therefore, freeway traffic noise would not increase during operation of the proposed project.

The closest noise-sensitive areas to SR 710 potentially affected by operation of the proposed project include Cesar Chavez Park and adjacent residences and Cesar Chavez Elementary School. Cesar Chavez Park, the nearest sensitive land use, is located a minimum of 1,200 ft (366 m) east of the I-710 ROW across the Los Angeles River. Future noise levels were modeled to assess potential noise impacts at the sensitive receptors. An analysis of the worst-case scenario was modeled based on 2030 predicted AM peak-hour traffic volumes on the SR 710 mainlines, which included the highest percentage of trucks throughout the day (4,203 cars and 2,262 trucks on the NB side; 4,066 cars and 2,110 trucks on the SB side). For the worst-case scenario, all trucks were assumed to be heavy trucks, and no intervening terrain or natural barriers were taken into account. Based on the analysis, the predicted peak-hour L_{eq} noise levels at a distance of 1,200 ft (366 m) from SR 710 are not expected to exceed 64 dBA. This is below the NAC and would not be considered a substantial noise increase (i.e., when the existing noise level is exceeded by 12 dB or more as a result of the project); therefore, no adverse noise impacts at the sensitive receptors are anticipated.

Ocean Boulevard traffic data for 2005 was used for the existing baseline condition. The existing and future vehicular traffic noise levels generated by Ocean Boulevard were assessed by analytical procedures using a computer noise prediction model. Vehicular traffic noise levels for the future conditions with and without the project were predicted using procedures in the FHWA Traffic Noise Model (FHWA-RD-77-108).

Predicted Ocean Boulevard traffic data for 2030 were used to calculate future noise levels. Table 2.2.6-3 presents the traffic data used for the traffic noise analysis, and Table 2.2.6-4 summarizes the results of the traffic noise analysis. Traffic modeling output files are available for review in the Appendix of the Noise Technical Study.

No substantial increases in future noise levels were predicted. Based on the expected increase in traffic volumes, the noise study results indicate that the future traffic noise levels with the project at all other modeled distances from the roadway centerline would not exceed the applicable noise

standards for the proposed project. At a 500-ft (152-m) distance from the roadway centerline, the noise contribution from Ocean Boulevard is not expected to exceed 69 dBA. At 1,000 ft (305 m), the highest noise level expected from the roadway would be 64 dBA. The expected increase in overall noise levels due to operation of the North-side Alignment Alternative, when compared to the overall future ambient noise levels without the project, would be no more than 1-dBA (2030 No Action versus Build). This difference in noise levels would normally be imperceptible to the human hearing; therefore, no adverse operational noise effects are anticipated as a result of the project.

No substantial operational noise effects on falcons and bats within the project area are expected. Operational effects on falcons and bats would be mainly associated with the demolition of their existing nesting/roosting locations. The North-side Alignment Alternative includes creation of nesting/ roosting locations on the new bridge (see Section 2.3.5 [Threatened and Endangered Species]). Assuming that falcons and bats find the new nesting/roosting locations suitable for use, these species would acclimate to the new noise environment just as they have to past noise increases associated with the adjacent industrial/ commercial area where the ambient noise level is already high. It is not anticipated that the predicted increase of 1-dB, would be a main factor in future use of the new bridge by falcons and bats. No adverse noise effects on falcons and bats associated with the long-term operation of the North-side Alignment Alternative are anticipated.

South-side Alignment Alternative

The operational noise analysis for the North-side Alignment Alternative is based on noise levels associated with forecasted traffic volumes and vehicle fleet composition. Implementation of the South-side Alignment Alternative would not result in a discernable difference in operational characteristics, forecasted volumes, or fleet composition compared to the North-side Alignment Alternative. The operational noise effects for the South-side Alignment Alternative would be the same as discussed under the North-side Alignment Alternative. There would be no adverse noise effects associated with the long-term operation of the South-side Alignment Alternative.

Rehabilitation Alternative

This alternative would not result in any changes to the profile, lane configuration, or roadway capacity. The operational noise effects associated with this alternative would be the same as discussed/ modeled for the future No Action Alternative. The Rehabilitation Alternative would result in increased ambient noise levels associated with increased future traffic volumes and surrounding land use activities. There would be no adverse noise effects associated with the long-term operation of the Rehabilitation Alternative.

2.2.6.4 Avoidance, Minimization and/or Mitigation Measures

No measures required.

Table 2.2.6-3
Traffic Data Used for Noise Analysis

Roadway Segment	Traffic Volumes											Speed (mph)
	ADT		A.M. Peak Hr		A.M.	Mid-day Peak Hr		Mid.	P.M. Peak Hr		P.M	
	Total Vol.	Trucks*	Cars	Trucks*	Peak Hr %	Cars	Trucks*	Peak Hr %	Cars	Trucks*	Peak Hr %	
Year 2005 Existing Condition												
Ocean Boulevard												
Navy Way to Pier S	62,000	17,500	2,530	1,038	5.8%	1,977	1,329	5.3%	3,485	983	7.2%	45
Pier S to Route 47	67,000	18,700	2,510	1,178	5.5%	1,917	1,438	5.0%	3,414	1,145	6.8%	45
Route 47 to Terminal Island East Interchange (Pier T)	62,400	17,000	2,386	947	5.3%	1,804	1,255	4.9%	3,211	886	6.6%	45
Terminal Island East Interchange (Pier T) to Pico Ave	59,700	15,200	2,836	1,104	6.6%	2,239	1,101	5.6%	3,373	855	7.1%	45
Year 2030 Without Project												
Ocean Boulevard												
Navy Way to Pier S	117,260	44,670	3,941	2,754	5.7%	2,598	3,229	5.0%	5,099	2,204	6.2%	45
Pier S to Route 47	97,540	32,270	2,348	1,517	4.0%	1,720	1,393	3.2%	3,244	1,134	4.5%	45
Route 47 to Terminal Island East Interchange (Pier T)	110,380	41,140	2,662	1,780	4.0%	2,254	1,979	3.8%	4,113	1,438	5.0%	45
Terminal Island East Interchange (Pier T) to Pico Ave	124,670	54,360	2,468	2,052	3.6%	2,045	2,288	3.5%	3,619	1,771	4.3%	45
Year 2030 With Project												
Ocean Boulevard												
Navy Way to Pier S	122,030	44,800	4,138	2,760	5.7%	2,813	3,214	4.9%	5,435	2,240	6.3%	50
Pier S to Route 47	103,030	39,430	2,616	1,643	4.1%	1,902	1,580	3.4%	3,596	1,288	4.7%	50
Route 47 to Terminal Island East Interchange (Pier T)	117,170	40,970	2,647	1,958	3.9%	2,237	2,219	3.8%	4,015	1,611	4.8%	50
Terminal Island East Interchange (Pier T) to Pico Ave	135,930	59,730	2,770	2,464	3.9%	2,312	2,810	3.8%	4,244	2,055	4.6%	50

* All trucks are considered heavy trucks.
ADT - Average daily traffic

Source: Iteris, 2009

Table 2.2.6-4
Predicted Traffic Noise Levels

Location	Distance from Roadway Centerline, Feet [meters]	Predicted Noise Levels, Hourly Leq, dBA [1,2]								
		Existing Conditions			Future Conditions - Design Year 2030					
					Ambient w/o Project			With Project		
		A.M. Peak Hr.	Mid-day Peak Hr.	P.M. Peak Hr.	A.M. Peak Hr.	Mid-day Peak Hr.	P.M. Peak Hr.	A.M. Peak Hr.	Mid-day Peak Hr.	P.M. Peak Hr.
Ocean Boulevard										
Navy Way to Pier S	300 [91]	67	68	67	72	72	71	72	73	71
	500 [152]	63	64	64	68	69	68	69	69	68
	1000 [305]	58	59	59	63	64	63	64	64	63
Pier S to Route 47	300 [91]	68	69	68	69	69	68	70	70	69
	500 [152]	65	66	65	66	65	65	67	66	66
	1000 [305]	60	60	60	61	60	60	62	61	61
Route 47 to Pier T Interchange	300 [91]	67	68	67	70	70	69	71	71	70
	500 [152]	64	65	64	66	67	66	67	68	67
	1000 [305]	59	60	59	61	62	61	62	63	62
Pier T Interchange to Pico Avenue	300 [91]	68	68	67	71	71	70	72	72	71
	500 [152]	65	65	64	67	67	67	68	69	68
	1000 [305]	60	59	59	62	62	62	63	64	63

Notes
1 - All noise levels are expressed in hourly Leq, which is an average level in dBA (dB re: 20 μ Pa)
2 - All noise levels calculated assuming that all trucks are heavy trucks.

Source: Parsons