

2.14 Noise and Vibration

2.14.1 Regulatory Setting

The National Environmental Policy Act (NEPA) of 1969 and the California Environmental Quality Act (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, as described in the following sections.

2.14.1.1 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 Code of Federal Regulations (CFR) 772 noise analysis. Appendix A, CEQA Evaluation, provides the noise analysis under CEQA.

2.14.1.2 National Environmental Policy Act and 23 CFR 772

For highway transportation projects with Federal Highway Administration (FHWA) (and California Department of Transportation [Department], 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. Those 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). Table 2.14-1 lists the noise abatement criteria for use in the NEPA-23 CFR 772 analysis.

Table 2.14-2 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.

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Table 2.14-1 Noise Abatement Criteria for use in NEPA-23 CFR 772 Analysis

Activity Category	NAC, Hourly A-Weighted Noise Level, dBA $L_{eq}(h)$	Description of Activities
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 sport 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: = Standard Environmental Reference (California Department of Transportation, July 2010).
 CFR = Code of Federal Regulations
 dBA = A-weighted decibels
 $L_{eq}(h)$ = one-hour A-weighted equivalent continuous noise level
 NAC = Noise Abatement Criteria
 NEPA = National Environmental Policy Act

Table 2.14-2 Noise Levels of Common Activities

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Jet Fly-over at 300m (1000 ft)	110	Rock Band
Gas Lawn Mower at 1 m (3 ft)	100	
Diesel Truck at 15 m (50 ft), at 80 km (50 mph)	90	Food Blender at 1 m (3 ft)
Noisy Urban Area, Daytime	80	Garbage Disposal at 1 m (3 ft)
Gas Lawn Mower, 30 m (100 ft) Commercial Area	70	Vacuum Cleaner at 3 m (10 ft) Normal Speech at 1 m (3 ft)
Heavy Traffic at 90 m (300 ft)	60	Large Business Office
Quiet Urban Daytime	50	Dishwasher Next Room
Quiet Urban Nighttime Quiet Suburban Nighttime	40	Theater, Large Conference Room (Background)
Quiet Rural Nighttime	30	Library Bedroom at Night, Concert Hall (Background)
	20	Broadcast/Recording Studio
	10	
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

Source: Standard Environmental Reference (California Department of Transportation, July 2010).
 dBA = A-weighted decibels
 ft = foot/feet
 m = meter, meters
 mph = miles per hour

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

If it is determined that the I-5 HOV Lane Extension Project will have noise impacts, then potential abatement measures must be considered. Noise abatement measures that are determined to be reasonable and feasible at the time of final design will be incorporated into the project plans and specifications. This section discusses noise abatement measures that would likely be incorporated in the I-5 HOV Lane Extension Project Build Alternative [4](#).

The Department's Protocol sets forth the criteria for determining when an abatement measure is reasonable and feasible. Feasibility of noise abatement is primarily an engineering concern. 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 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.

2.14.2 Affected Environment

This section is based on the *Noise Study Report (NSR)* (September 2010) and the *Noise Abatement Decision Report (NADR)* (September 2010) prepared for the proposed project. The NSR followed Department Protocol. The NSR modeled and evaluated traffic noise levels in noise-sensitive areas within the boundaries of the proposed project. This section summarizes the NSR results.

2.14.2.1 Surrounding Land Use and Sensitive Receivers

A general reconnaissance of the study area was conducted within project limits to identify noise-sensitive land uses. Sensitive receivers were identified in those areas where outdoor frequent human use would occur, such as single-family residences, multifamily residences, mobile home parks, schools, churches, a senior living facility, a sports park, and a hotel. Other land uses within the project area include a golf course, two medical

offices, and commercial and office uses. Existing land uses in the project area are described below in further detail.

- **West of I-5, South of Avenida Pico:** Land uses in this area include single-family residences, one hotel, and commercial uses that are approximately 5 to 25 ft lower in elevation than I-5. There are two outdoor active use areas located south of Avenida Pico, west of I-5: an outdoor swimming pool associated with the Holiday Inn Express and an outdoor eating area associated with the Bad to the Bone BBQ restaurant. These land uses were evaluated under Activity Categories B and C, which have an exterior NAC of 67 dBA L_{eq} and 72 dBA L_{eq} , respectively. Other commercial uses were not evaluated because there are no associated outdoor active use areas.
- **East of I-5, South of Avenida Pico:** Land uses in this area include single-family residences, Ole Hanson Elementary School, San Clemente High School, and commercial uses that are located approximately 20 to 45 ft higher in elevation than I-5. These land uses were evaluated under Activity Category B, which has an exterior NAC of 67 dBA L_{eq} . The classroom building at Ole Hanson Elementary School was evaluated under Activity Category E, which has an interior NAC of 52 dBA L_{eq} . The commercial uses were not evaluated because there are no associated outdoor active use areas.
- **West of I-5, Between Avenida Pico and Avenida Vista Hermosa:** Land uses in this area include a future planned commercial development (Marblehead Development) and existing commercial uses. No receivers were modeled in this area because there are no outdoor active uses associated with both the existing and future commercial uses.
- **East of I-5, Between Avenida Pico and Avenida Vista Hermosa:** Land uses in this area include single-family and multifamily residences and two churches located approximately 25–140 ft higher in elevation than I-5. Currently, multifamily residences located near Avenida Hermosa are shielded by 6 ft high Plexiglas barriers that surround each ground-floor patio. Single-family and multifamily residences located between Avenida Pico and Avenida Vista Hermosa are shielded by an existing 8 ft high wall and a 3–5 ft high wall along the residential property line, respectively. Lastly, multifamily residences located near Avenida Vista Hermosa are shielded by a 5–12 ft high existing wall (EW) along the existing ROW/residential property line. These land uses were evaluated under Activity Category B, which has an exterior NAC of 67 dBA L_{eq} . The church meeting rooms were evaluated under Activity Category E, which has an interior NAC of 52 dBA L_{eq} .

- **West of I-5, Between Avenida Vista Hermosa and Avenida Vaquero:** Land uses in this area include single-family residences, a sports park, and a golf course that are located approximately 15–50 ft higher in elevation than I-5. A small portion of the area is located approximately 50 ft lower in elevation than I-5. Currently, single-family residences located near Avenida Vista Hermosa are shielded by an existing 16–20 ft high wall along the edge of the shoulder. Also, single-family residences located between Avenida Vista Hermosa and Avenida Vaquero are shielded by an existing 10–12 ft high wall along the edge of the shoulder. These land uses were evaluated under Activity Category B, which has an exterior NAC of 67 dBA L_{eq} .
- **East of I-5, Between Avenida Vista Hermosa and Avenida Vaquero:** Land uses in this area include single-family and multifamily residences that are located up to 60 ft higher in elevation than I-5. Currently, multifamily residences near Avenida Vista Hermosa are shielded by an existing 7–9.5 ft high wall along the existing ROW/residential property line. Single-family residences located between Avenida Vista Hermosa and Avenida Vaquero are shielded by an existing 6 ft high wall along the residential property line. Lastly, single-family residences located near Avenida Vaquero are shielded by an existing 6 ft high wall along the residential property line. These land uses were evaluated under Activity Category B, which has an exterior NAC of 67 dBA L_{eq} .
- **West of I-5, Between Avenida Vaquero and Camino de Estrella:** Land uses in this area include single-family and multifamily residences and commercial uses that are located approximately 5–30 ft higher in elevation than I-5. A small portion of the area is located approximately 35 ft lower in elevation than I-5. Currently, two existing 3–16 ft and 6–16 ft high walls separated by a berm along the edge of the shoulder shield these residences. These land uses were evaluated under Activity Category B, which has an exterior NAC of 67 dBA L_{eq} . The commercial uses were not evaluated because there are no associated outdoor active use areas.
- **East of I-5, Between Avenida Vaquero and Camino de Estrella:** Land uses in this area include single-family and multifamily residences, a senior living facility, a golf course, two medical facilities, an office, and commercial uses that are approximately 40–50 ft higher in elevation than I-5. A small portion of the area is located approximately 5 ft lower in elevation than I-5. Currently, single-family residences located near Avenida Vaquero are shielded by an existing 6–10 ft high wall within the existing State ROW. Also, the swimming pool area of the San Clemente Villas Luxury Senior Living facility is shielded by an existing 6 ft high wall along the residential property line. These land uses were evaluated under Activity Category B, which has an exterior NAC of 67 dBA L_{eq} . As there are no designated frequent

human use areas such as a bench, the golf course is not considered noise-sensitive. The medical, office, and commercial uses were not evaluated because there are no associated outdoor active use areas.

- **West of I-5, Between Camino de Estrella and Camino Las Ramblas/PCH:** Land uses in this area include single-family residences. Areas near Camino de Estrella are located at approximately the same elevation as I-5. Areas between Camino de Estrella and Camino Las Ramblas/PCH are located approximately 5–20 ft higher in elevation than I-5. Areas near Camino Las Ramblas/PCH are located up to 40 ft higher in elevation than I-5. Currently, an existing 14–16 ft high wall along the edge of the shoulder and a 14–15 ft high wall along the State ROW shield these residences. These land uses were evaluated under Activity Category B, which has an exterior NAC of 67 dBA L_{eq} .
- **East of I-5, Between Camino de Estrella and Camino Las Ramblas/PCH:** Land uses in this area include single-family residences and two churches that are located up to 40 ft higher in elevation than I-5. A small portion of the area is located approximately 5 ft lower in elevation than I-5. Currently, an existing 4–16 ft high wall along the State ROW/residential property line shields the residences and two churches. These land uses were evaluated under Activity Category B, which has an exterior NAC of 67 dBA L_{eq} . The two church meeting rooms were evaluated under Activity Category E, which has an interior NAC of 52 dBA L_{eq} .
- **West of I-5, Between Camino Las Ramblas/PCH and San Juan Creek Road:** Land uses in this area include multifamily residences, a trailer park, and office and commercial uses that are located up to 100 ft lower in elevation than I-5. Currently, two existing 2.5–8 ft and 2.5–6 ft high walls along the residential property line shield residences located at the trailer park. These land uses were evaluated under Activity Category B, which has an exterior NAC of 67 dBA L_{eq} . Office and commercial uses were not evaluated because there are no associated outdoor active use areas.
- **East of I-5, Between Camino Las Ramblas/PCH and San Juan Creek Road:** Land uses in this area include single-family residences, multifamily residences, mobile home parks, and office and commercial uses that are located up to 170 ft higher in elevation than I-5. Currently, multifamily residences located near Camino Las Ramblas/PCH are shielded by two existing 14 ft high walls along the edge of the shoulder and State ROW. Single-family residences located along Paseo Puerto are shielded by an existing 7 ft high wall consisting of Plexiglas along the residential property line. Existing and future single-family residences farther north along Valle Road are shielded by an existing 6–7.5 ft high wall along the residential property line. Lastly, the mobile home park is shielded by an existing 14 ft high wall along the edge

of the shoulder. These land uses were evaluated under Activity Category B, which has an exterior NAC of 67 dBA L_{eq} . Office and commercial uses were not evaluated because there are no associated outdoor active use areas.

2.14.2.2 Existing Noise Level Measurements

The existing noise environment in the study area is described below based on short- and long-term noise monitoring that was conducted at representative noise-sensitive receiver locations. In addition, simultaneous interior and exterior noise level measurements were conducted to evaluate potential interior noise impacts associated with land uses under Activity Category E.

A total of 460 receiver locations were selected to represent noise-sensitive land uses in the project vicinity. Receivers, as used in this section, are those locations at which noise impacts were evaluated. As shown in the tables below, the majority of the sensitive receiver locations are residential uses.

Short-Term Monitoring

The primary source of noise in the project area is traffic on I-5. Short-term (15-minute) noise level measurements were conducted to document existing noise levels at 55 representative sensitive receiver locations along the I-5 within the project limits. Short-term noise level measurements were conducted using Larson Davis Models 824 and 820 Type 1 sound level meters. Table 2.14-3 contains the results of the short-term noise level measurements. These short-term noise level measurements were used to calibrate the noise model and to calculate the noise levels at all 460 modeled sensitive receivers in the project area. The short-term monitoring locations are shown on Figure 2.14-1. The noise monitoring results, concurrent traffic counts, and measured vehicle speeds for each monitoring site are included in Appendix A of the NSR.

Long-Term Monitoring

The purpose of long-term monitoring is to document the traffic noise level patterns in the study area and describe sound levels throughout the day rather than absolute levels at a specific receiver location over a specific time period. Four long-term measurements were conducted using a Larson Davis Model 720 Type 2 sound level meter. The first long-term noise level measurement was conducted at 2113 Calle Ola Verde from 11:00 a.m. on Tuesday, September 29, 2009, to 10:00 a.m. on Wednesday, September 30, 2009.

Table 2.14-3 Short-Term Ambient Noise Monitoring Results

Monitor No.	Address	Land Use	Date	Start Time	Duration (minutes)	Measured Noise Level (dBA)
M-1	183 Avenida La Cuesta San Clemente, CA 92672	Residential	4/1/2010	1:02 p.m.	15	65.4
M-2	189 Avenida La Cuesta San Clemente, CA 92672	School	4/1/2010	4:26 p.m.	15	63.8
M-3	189 Avenida La Cuesta San Clemente, CA 92672 Classroom U-18	School	9/23/2009	10:02 a.m.	15	67.6
M-4	700 Avenida Pico San Clemente, CA 92672 Football Field	School	9/22/2009	9:48 a.m.	15	58.9
M-5	114 Calle Campo	Residential	3/30/2010	3:23 p.m.	15	55.3
M-6	35 Via Pico Plaza San Clemente, CA 92672	Hotel	9/22/2009	10:57 a.m.	15	55.6
M-7	107 Via Pico Plaza San Clemente, CA 92672	Restaurant	9/22/2009	10:57 a.m.	15	62.7
M-8	2001 Calle Frontera San Clemente, CA 92673	Church	9/30/2009	1:10 p.m.	15	59.2
M-9	2021 Via Concha San Clemente, CA 92673	Residential	9/22/2009	11:42 a.m.	15	67.2
M-10	2119 Calle Ola Verde San Clemente, CA 92673	Residential	9/22/2009	11:42 a.m.	15	67.3
M-11	2177 Calle Ola Verde San Clemente, CA 92673	Residential	9/22/2009	12:20 p.m.	15	60.2
M-12	2301 Calle Lobina San Clemente, CA 92673	Residential	9/22/2009	12:20 p.m.	15	57.3
M-13	613 Via Barracuda San Clemente, CA 92673	Residential	9/22/2009	2:08 p.m.	15	61.4
M-14	2917 Calle Frontera San Clemente, CA 92673	Residential	9/22/2009	2:08 p.m.	15	58.4
M-15	2947 Calle Frontera San Clemente, CA 92673	Residential	9/22/2009	2:48 p.m.	15	64.0
M-16	3013 Calle Juarez San Clemente, CA 92673	Residential	9/22/2009	2:48 p.m.	15	67.2
M-17	505 Via Juarez San Clemente, CA 92673	Residential	9/22/2009	3:25 p.m.	15	64.7
M-18	271 Via Ballena San Clemente, CA 92672	Residential	9/22/2009	4:49 p.m.	15	54.0
M-19	2710 Via Montezuma San Clemente, CA 92672	Residential	9/22/2009	4:48 p.m.	15	49.9
M-20	428 Calle Vista Torito San Clemente, CA 92672	Residential	9/22/2009	4:05 p.m.	15	48.6
M-21	600 Calle Vicente San Clemente, CA 92763	Residential	9/23/2009	11:08 a.m.	15	60.2
M-22	600 Calle Canasta San Clemente, CA 92763	Residential	9/23/2009	11:07 a.m.	15	60.6
M-23	660 Camino de Los Mares San Clemente, CA 92763	Residential	9/23/2009	11:55 a.m.	15	67.7

Table 2.14-3 Short-Term Ambient Noise Monitoring Results

Monitor No.	Address	Land Use	Date	Start Time	Duration (minutes)	Measured Noise Level (dBA)
M-24	3007 Calle Arco San Clemente, CA 92672	Residential	9/22/2009	4:05 p.m.	15	55.9
M-25	3212 Calle Grande Vista San Clemente, CA 92762	Residential	9/23/2009	12:44 p.m.	15	62.4
M-26	Between 3245 and 3347 Paseo Halcon San Clemente, CA 92762	Residential	9/23/2009	12:44 p.m.	15	53.8
M-27	3477 Paseo Flamenco San Clemente, CA 92762	Residential	9/23/2009	11:57 a.m.	15	54.7
M-28	34623 Calle Portola Dana Point, CA 92624	Residential	3/30/2010	1:00 p.m.	15	63.5
M-29	34617 Calle Portola Dana Point, CA 92624	Residential	3/30/2010	1:24 p.m.	15	62.9
M-30	34611 Calle Portola Dana Point, CA 92624	Residential	3/30/2010	1:49 p.m.	15	65.6
M-31	34607 Calle Portola Dana Point, CA 92624	Residential	3/30/2010	2:12 p.m.	15	61.5
M-32	34597 Calle Portola Dana Point, CA 92624	Residential	9/23/2009	4:35 p.m.	15	57.6
M-33	34555 Calle Portola Dana Point, CA 92624	Residential	9/23/2009	4:32 p.m.	15	59.9
M-34	34536 Calle Portola Dana Point, CA 92624	Residential	9/23/2009	5:13 p.m.	15	56.1
M-35	34461 Calle Portola Dana Point, CA 92624	Residential	9/23/2009	5:12 p.m.	15	61.8
M-36	26685 Calle Velez Dana Point, CA 92624	Residential	9/24/2009	8:41 a.m.	15	54.4
M-37	34182 Via Velez Capistrano Beach, CA 92624	Residential	9/24/2009	8:40 a.m.	15	51.4
M-38	26571 Via California Dana Point, CA 92624	Residential	9/24/2009	9:38 a.m.	15	69.1
M-39	27045 Avenida Las Palmas #B Dana Point, CA 92624	Residential	9/23/2009	2:45 p.m.	15	54.4
M-40	34612 Calle Las Robles Dana Point, CA 92624	Residential	9/23/2009	2:45 p.m.	15	51.8
M-41	34532 Calle Juanita Dana Point, CA 92624	Residential	9/23/2009	3:34 p.m.	15	54.3
M-42	36701 Calle Ultima Dana Point, CA 92624	Residential	9/23/2009	3:35 p.m.	15	53.0
M-43	26721 Calle Ultima Dana Point, CA 92624	Residential	3/31/2010	2:18 p.m.	15	55.8
M-44	34265 Via Lopez Dana Point, CA 92624	Residential	9/24/2009	11:13 a.m.	15	44.8
M-45	26389 Via Canon Dana Point, CA 92624	Residential	9/24/2009	11:15 a.m.	15	62.5
M-46	26451 Camino de Vista San Juan Capistrano, CA 92675	Residential	9/24/2009	10:18 a.m.	15	71.0

Table 2.14-3 Short-Term Ambient Noise Monitoring Results

Monitor No.	Address	Land Use	Date	Start Time	Duration (minutes)	Measured Noise Level (dBA)
M-47	Undeveloped lot next to 33721 Paseo del Puerto San Juan Capistrano, CA 92675	Residential	9/24/2009	2:49 p.m.	15	60.5
M-48	34148 Via Corona Dana Point, CA 92624	Residential	9/24/2009	12:02 p.m.	15	50.0
M-49	33831 Doheny Park Road Dana Point, CA 92624	Residential	1/14/2010	10:21 a.m.	15	59.6
M-50	33831 Doheny Park Road Pool Dana Point, CA 92624	Residential	9/24/2009	12:01 p.m.	15	53.8
M-51	33521 Valle Road San Juan Capistrano, CA 92675	Residential	3/31/2010	1:21 p.m.	15	67.2
M-52	Open lots for development near 33521 Valle Road San Juan Capistrano, CA 92675	Residential	3/31/2010	12:47 p.m.	15	62.7
M-53	32802 Valle Road #59 San Juan Capistrano, CA 92675	Residential	9/24/2009	2:52 p.m.	15	74.8
M-54	32802 Valle Road #82 San Juan Capistrano, CA 92675	Residential	9/24/2009	3:46 p.m.	15	64.7
M-55	32802 Valle Road #117 San Juan Capistrano, CA 92675	Residential	9/24/2009	3:44 p.m.	15	60.3

Source: *Noise Study Report*, LSA Associates, Inc., September 2010.
dBA = A-weighted decibels



LEGEND

- ▲ Short-Term Monitoring Locations
- Receiver Locations
- ◆ Interior/Exterior Monitoring Locations
- 24-hour Monitor
- Existing ROW
- Existing Walls

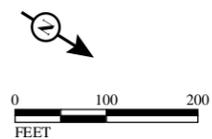


FIGURE 2.14-1

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I-5 HOV Lane Extension Project
Monitoring and Modeled Receiver Locations

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SOURCE: Bing Maps (2009); RBF (08/2009); RMC (08/2009)

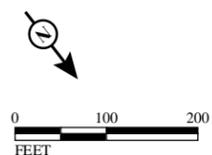
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- ▲ Short-Term Monitoring Locations
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- Existing Walls



SOURCE: Bing Maps (2009); RBF (08/2009); RMC (08/2009)

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FIGURE 2.14-1

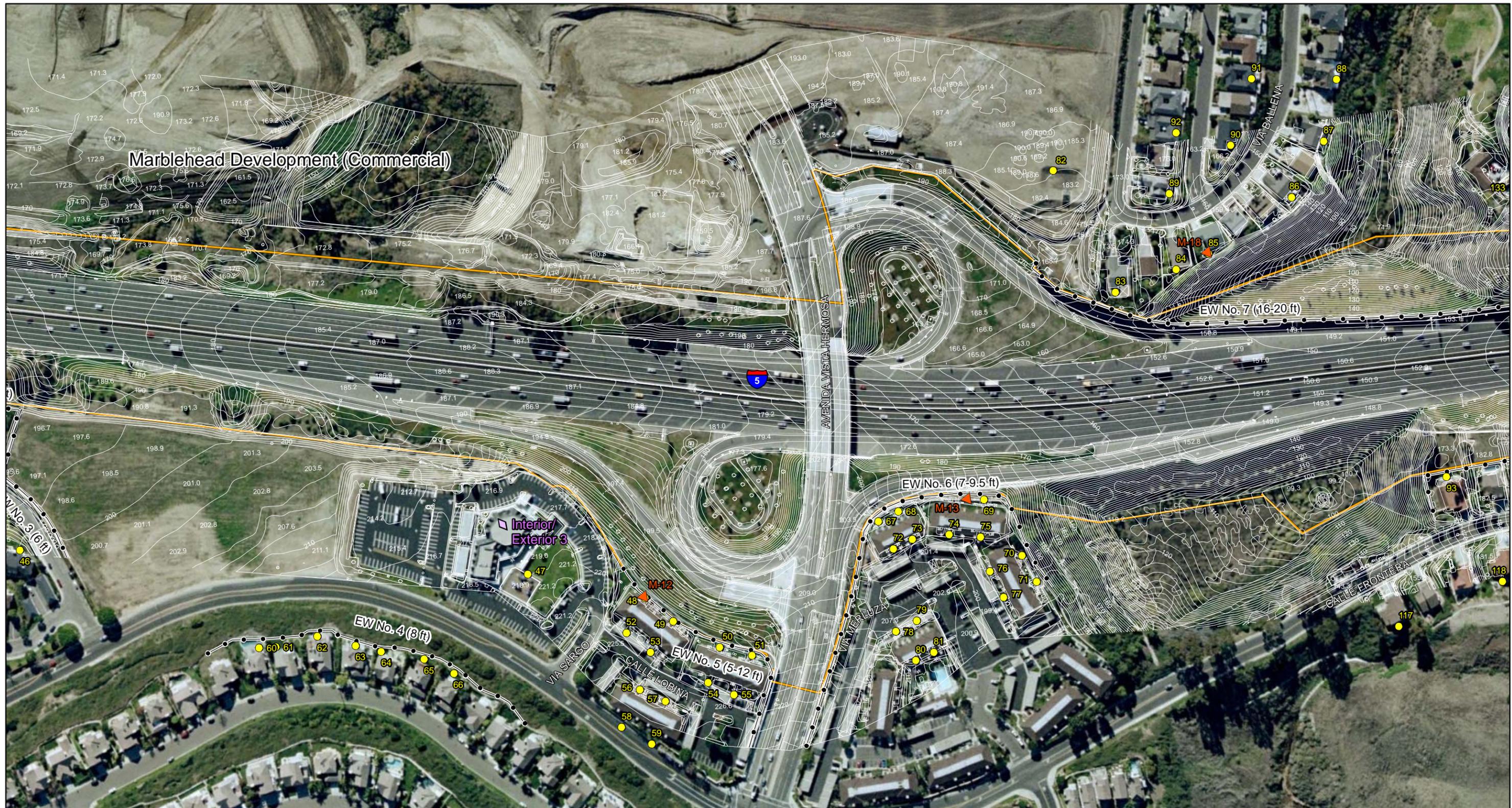
Sheet 2 of 12

I-5 HOV Lane Extension Project
Monitoring and Modeled Receiver Locations

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- ▲ Short-Term Monitoring Locations
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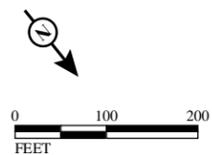


FIGURE 2.14-1

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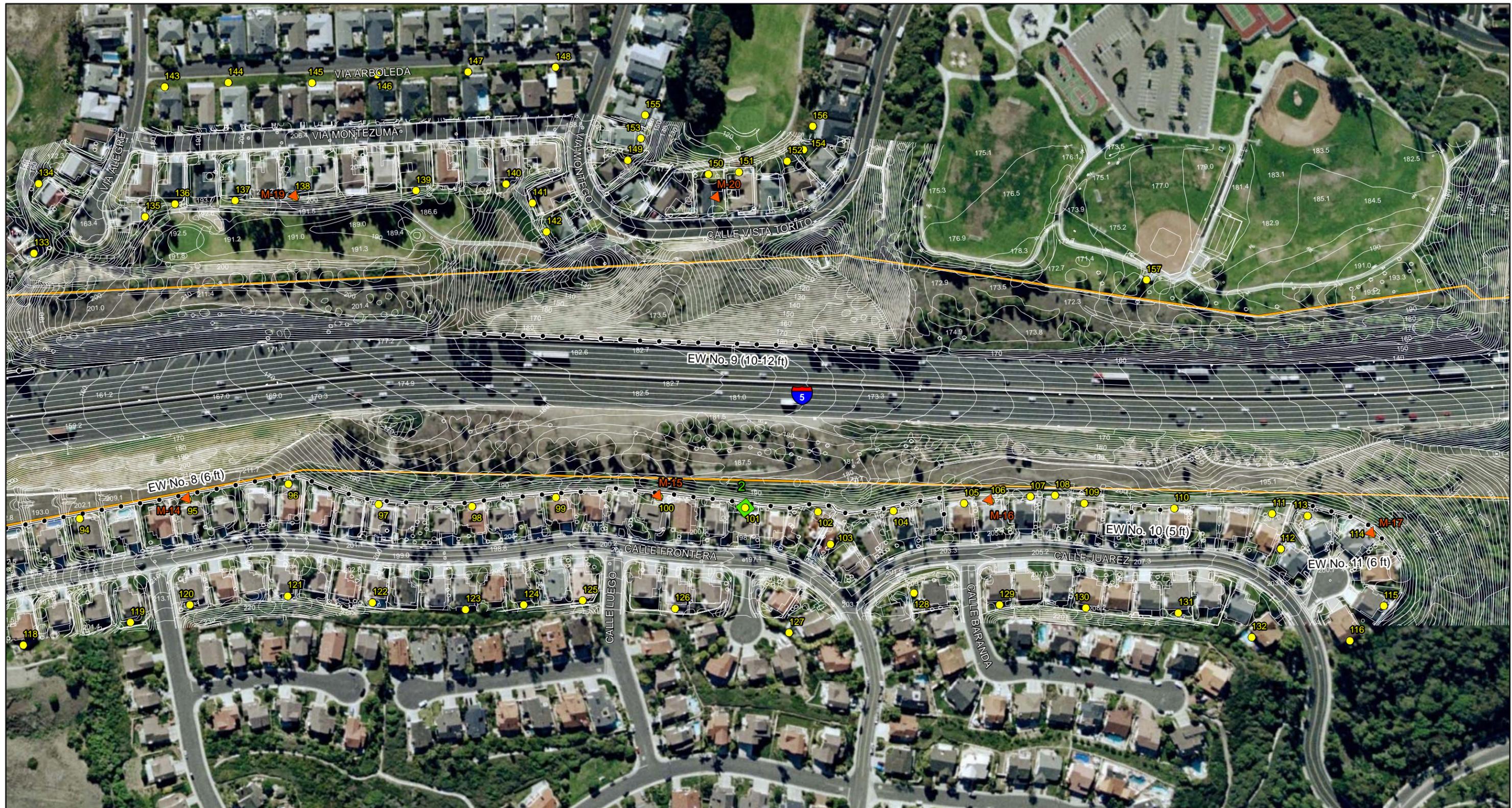
I-5 HOV Lane Extension Project
Monitoring and Modeled Receiver Locations

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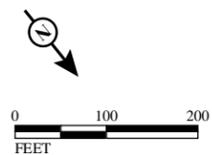


FIGURE 2.14-1

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I-5 HOV Lane Extension Project
Monitoring and Modeled Receiver Locations

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SOURCE: Bing Maps (2009); RBF (08/2009); RMC (08/2009)

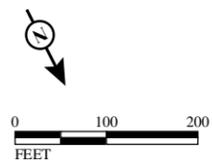
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SOURCE: Bing Maps (2009); RBF (08/2009); RMC (08/2009)

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FIGURE 2.14-1

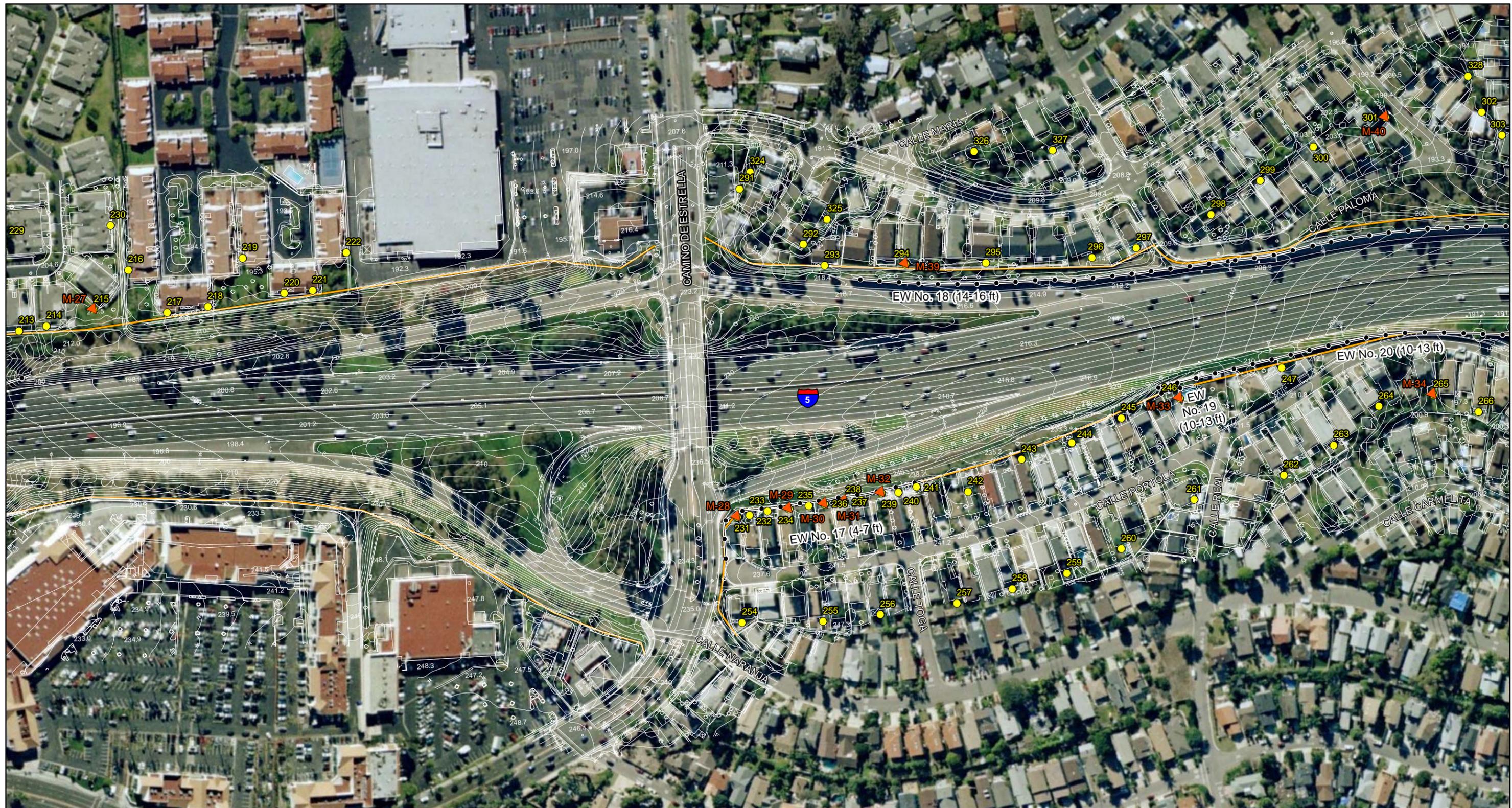
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I-5 HOV Lane Extension Project
Monitoring and Modeled Receiver Locations

12-ORA-5 PM 3.0/8.7

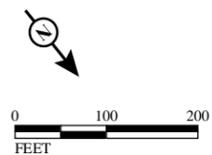
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LEGEND

- ▲ Short-Term Monitoring Locations
- Receiver Locations
- ◆ Interior/Exterior Monitoring Locations
- 24-hour Monitor
- Existing ROW
- Existing Walls



SOURCE: Bing Maps (2009); RBF (08/2009); RMC (08/2009)

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FIGURE 2.14-1

Sheet 6 of 12

I-5 HOV Lane Extension Project
Monitoring and Modeled Receiver Locations

12-ORA-5 PM 3.0/8.7

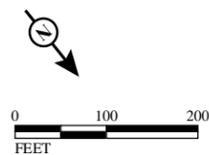
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LEGEND

-  Short-Term Monitoring Locations
-  Receiver Locations
-  Interior/Exterior Monitoring Locations
-  24-hour Monitor
-  Existing ROW
-  Existing Walls



SOURCE: Bing Maps (2009); RBF (08/2009); RMC (08/2009)

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FIGURE 2.14-1

Sheet 7 of 12

I-5 HOV Lane Extension Project
Monitoring and Modeled Receiver Locations

12-ORA-5 PM 3.0/8.7

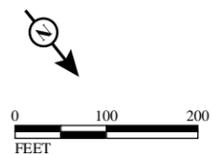
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LEGEND

- ▲ Short-Term Monitoring Locations
- Receiver Locations
- ◆ Interior/Exterior Monitoring Locations
- 24-hour Monitor
- Existing ROW
- Existing Walls



SOURCE: Bing Maps (2009); RBF (08/2009); RMC (08/2009)

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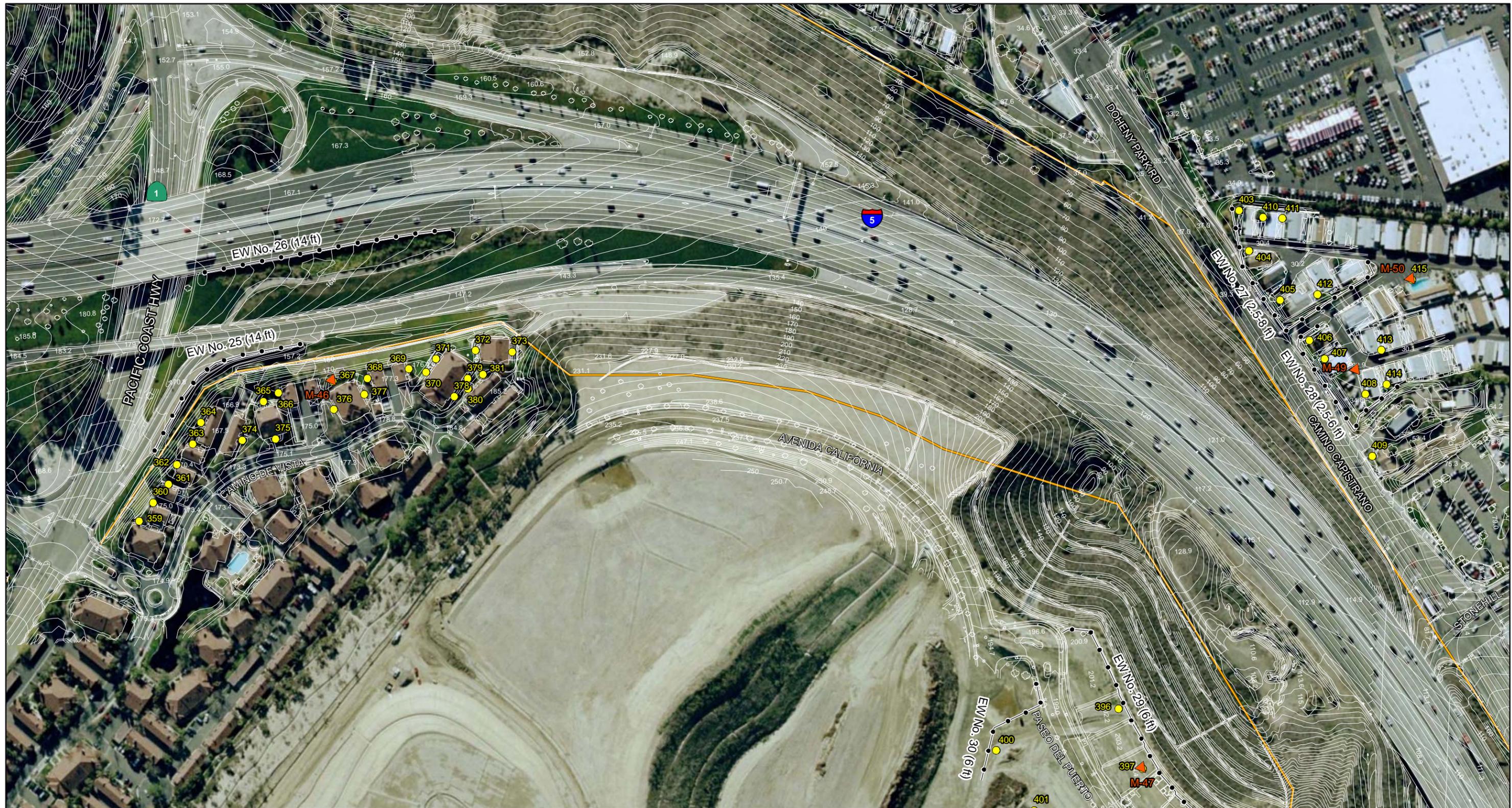
FIGURE 2.14-1

Sheet 8 of 12

I-5 HOV Lane Extension Project
Monitoring and Modeled Receiver Locations

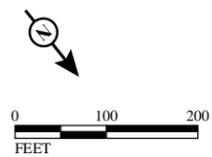
12-ORA-5 PM 3.0/8.7
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LEGEND

- ▲ Short-Term Monitoring Locations
- Receiver Locations
- ◆ Interior/Exterior Monitoring Locations
- 24-hour Monitor
- Existing ROW
- Existing Walls



SOURCE: Bing Maps (2009); RBF (08/2009); RMC (08/2009)

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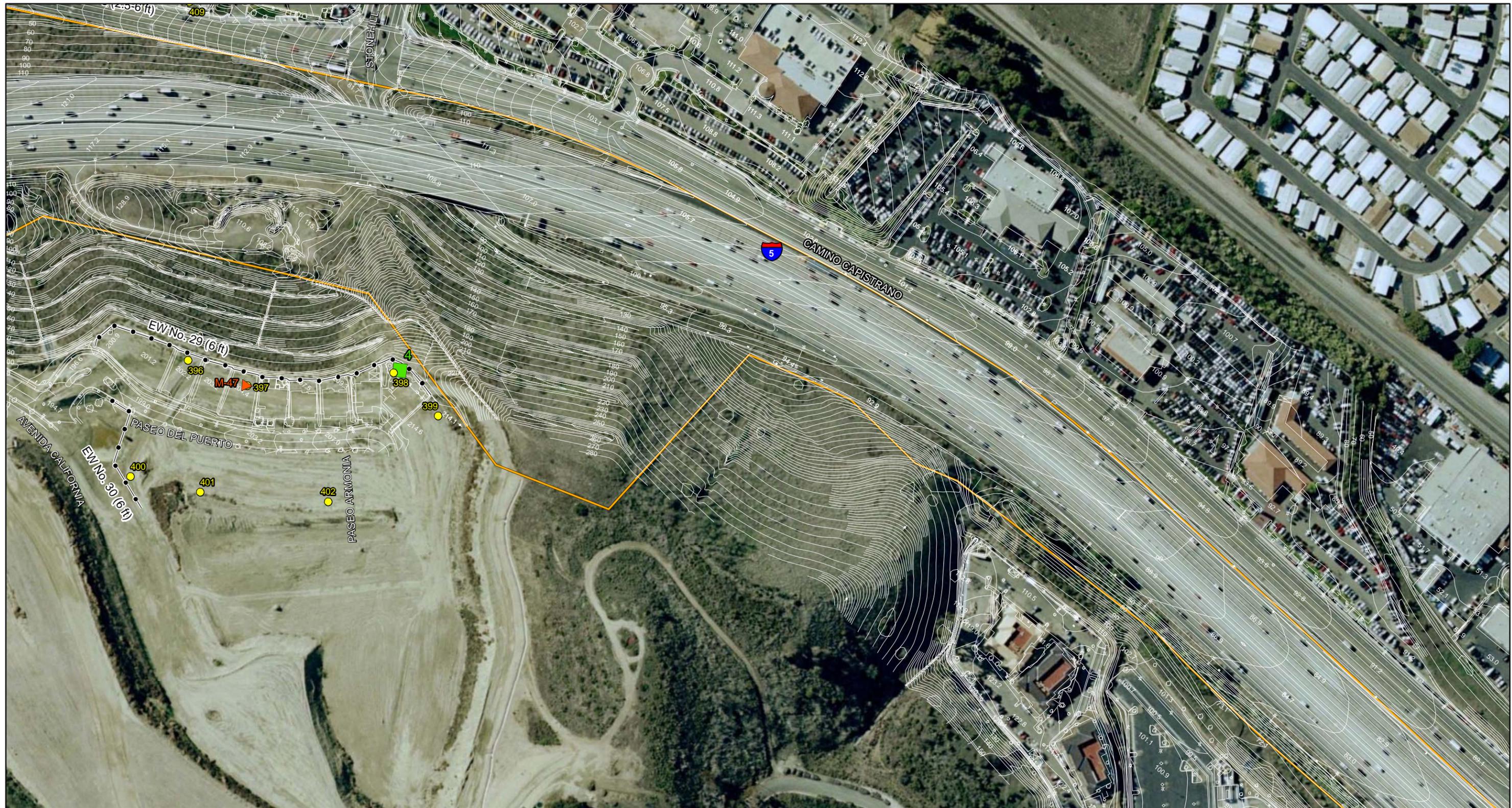
FIGURE 2.14-1

Sheet 9 of 12

I-5 HOV Lane Extension Project
Monitoring and Modeled Receiver Locations

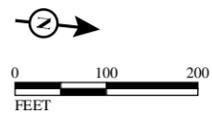
12-ORA-5 PM 3.0/8.7
EA# 0F9600

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LEGEND

- ▲ Short-Term Monitoring Locations
- Receiver Locations
- ◆ Interior/Exterior Monitoring Locations
- 24-hour Monitor
- Existing ROW
- Existing Walls



SOURCE: Bing Maps (2009); RBF (08/2009); RMC (08/2009)

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FIGURE 2.14-1

Sheet 10 of 12

I-5 HOV Lane Extension Project
Monitoring and Modeled Receiver Locations

12-ORA-5 PM 3.0/8.7

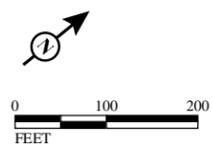
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LEGEND

- ▲ Short-Term Monitoring Locations
- Receiver Locations
- ◆ Interior/Exterior Monitoring Locations
- 24-hour Monitor
- Existing ROW
- - - Existing Walls



SOURCE: Bing Maps (2009); RBF (08/2009); RMC (08/2009)

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FIGURE 2.14-1

Sheet 11 of 12

I-5 HOV Lane Extension Project
Monitoring and Modeled Receiver Locations

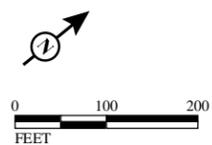
12-ORA-5 PM 3.0/8.7
 EA# 0F9600

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LEGEND

- ▲ Short-Term Monitoring Locations
- Receiver Locations
- ◆ Interior/Exterior Monitoring Locations
- 24-hour Monitor
- Existing ROW
- Existing Walls



SOURCE: Bing Maps (2009); RBF (08/2009); RMC (08/2009)

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FIGURE 2.14-1

Sheet 12 of 12

I-5 HOV Lane Extension Project
Monitoring and Modeled Receiver Locations

12-ORA-5 PM 3.0/8.7
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The second long-term noise level measurement was conducted at 2953 Calle Frontera from 1:00 p.m. on Tuesday, September 29, 2009, to 12:00 p.m. on Wednesday, September 30, 2009. The third long-term noise level measurement was conducted at 34431 Calle Portola at 3:00 p.m. on Wednesday, September 30, 2009, to 2:00 p.m. on Thursday, October 1, 2009. The fourth long-term noise level measurement was conducted at 33681 Paseo Del Puerto at 3:00 p.m. on Wednesday, September 30, 2009, to 2:00 p.m. on Thursday, October 1, 2009.

Table 2.14-4 shows that traffic noise peaks at the first location from 10:00 a.m. to 7:00 p.m. Table 2.14-5 shows that traffic noise peaks at the second location from 10:00 a.m. to 6:00 p.m. Table 2.14-6 shows that traffic noise peaks at the third location from 6:00 a.m. to 9:00 a.m. Table 2.14-7 shows that traffic noise peaks at the fourth location from 6:00 a.m. to 8:00 a.m.

Interior/Exterior Noise Level Measurements

Interior and exterior noise level measurements were conducted at Ole Hanson Elementary School, St. Andrew's By-the-Sea United Methodist Church, Pacific Coast Church, and Kingdom Hall of Jehovah's Witnesses to determine exterior-to-interior noise level reductions. The elementary school classroom and church rooms on the first floor closest to I-5 were evaluated to ensure that the interior noise standard of 52 dBA L_{eq} NAC is preserved. Table 2.14-8 shows the results of the interior and exterior noise level measurements.

2.14.2.3 Existing Noise Levels

The worst-case traffic volumes and posted vehicle speeds were coded into Traffic Noise Model (TNM) 2.5 with existing roadway conditions. The results of the existing traffic noise modeling are shown in Table 2.14-9. Currently, of the 460 modeled receiver locations, 68 receivers approach or exceed the 67 dBA L_{eq} NAC. Figure 2.14-1 shows the locations of the modeled receiver locations. The model input and output data for the existing conditions are included in Appendix B of the NSR.

2.14.3 Environmental Consequences

This section discusses data used in the analysis and predicts worst-case traffic noise impacts for Build Alternative [4 with Design Option A](#).

**Table 2.14-4 Long-Term 24-Hour Noise Monitoring Results
at 2113 Calle Ola Verde, San Clemente, California**

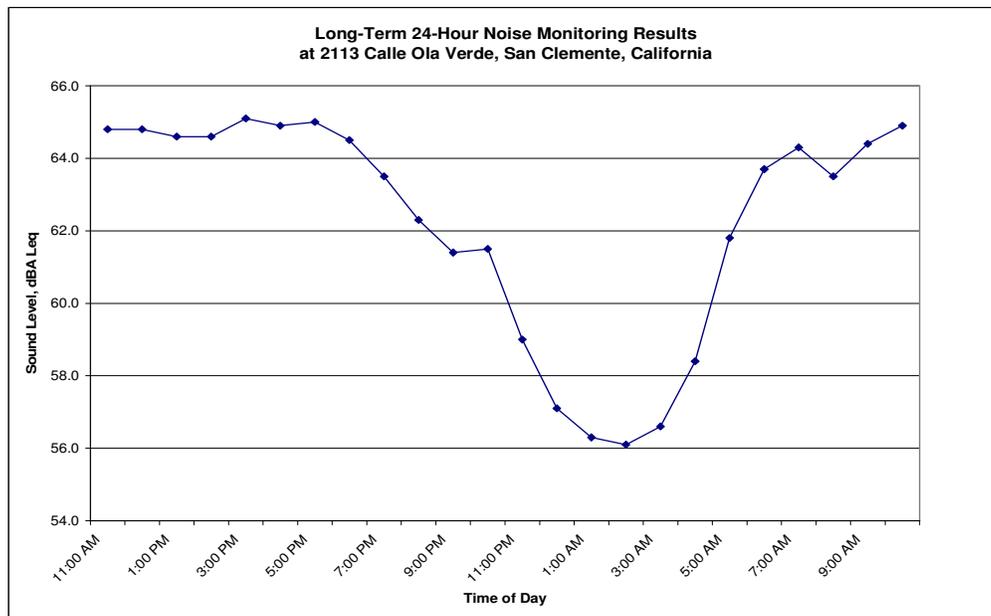
Hour	Start Time	Date	Noise Level (dBA L _{eq})
1	11:00 a.m.	9/29/09	64.8
2	12:00 p.m.	9/29/09	64.8
3	1:00 p.m.	9/29/09	64.6
4	2:00 p.m.	9/29/09	64.6
5	3:00 p.m.	9/29/09	65.1
6	4:00 p.m.	9/29/09	64.9
7	5:00 p.m.	9/29/09	65.0
8	6:00 p.m.	9/29/09	64.5
9	7:00 p.m.	9/29/09	63.5
10	8:00 p.m.	9/29/09	62.3
11	9:00 p.m.	9/29/09	61.4
12	10:00 p.m.	9/29/09	61.5
13	11:00 p.m.	9/29/09	59.0
14	12:00 a.m.	9/30/09	57.1
15	1:00 a.m.	9/30/09	56.3
16	2:00 a.m.	9/30/09	56.1
17	3:00 a.m.	9/30/09	56.6
18	4:00 a.m.	9/30/09	58.4
19	5:00 a.m.	9/30/09	61.8
20	6:00 a.m.	9/30/09	63.7
21	7:00 a.m.	9/30/09	64.3
22	8:00 a.m.	9/30/09	63.5
23	9:00 a.m.	9/30/09	64.4
24	10:00 a.m.	9/30/09	64.9

Source: *Noise Study Report*, LSA Associates, Inc., September 2010.

Bold denotes the peak traffic noise hour.

dBA = A-weighted decibels

L_{eq} = equivalent sound level



**Table 2.14-5 Long-Term 24-Hour Noise Monitoring Results
at 2953 Calle Frontera, San Clemente, California**

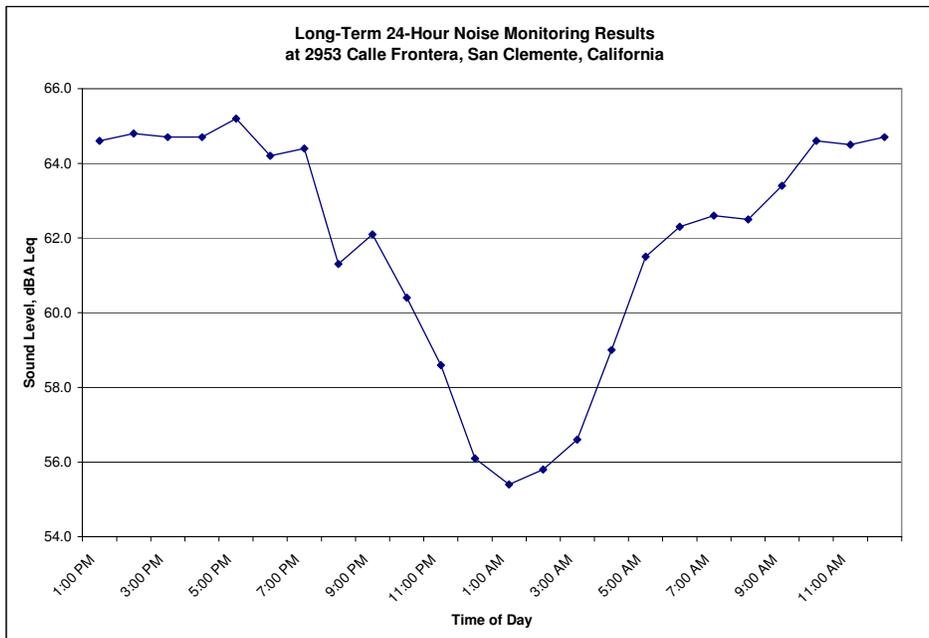
Hour	Start Time	Date	Noise Level (dBA L _{eq})
1	1:00 p.m.	9/29/09	64.6
2	2:00 p.m.	9/29/09	64.8
3	3:00 p.m.	9/29/09	64.7
4	4:00 p.m.	9/29/09	64.7
5	5:00 p.m.	9/29/09	65.2
6	6:00 p.m.	9/29/09	64.2
7	7:00 p.m.	9/29/09	64.4
8	8:00 p.m.	9/29/09	61.3
9	9:00 p.m.	9/29/09	62.1
10	10:00 p.m.	9/29/09	60.4
11	11:00 p.m.	9/29/09	58.6
12	12:00 a.m.	9/30/09	56.1
13	1:00 a.m.	9/30/09	55.4
14	2:00 a.m.	9/30/09	55.8
15	3:00 a.m.	9/30/09	56.6
16	4:00 a.m.	9/30/09	59.0
17	5:00 a.m.	9/30/09	61.5
18	6:00 a.m.	9/30/09	62.3
19	7:00 a.m.	9/30/09	62.6
20	8:00 a.m.	9/30/09	62.5
21	9:00 a.m.	9/30/09	63.4
22	10:00 a.m.	9/30/09	64.6
23	11:00 a.m.	9/30/09	64.5
24	12:00 p.m.	9/30/09	64.7

Source: *Noise Study Report*, LSA Associates, Inc., September 2010.

Bold denotes the peak traffic noise hour.

dBA = A-weighted decibels

L_{eq} = equivalent sound level



**Table 2.14-6 Long-Term 24-Hour Noise Monitoring Results
at 34431 Calle Portola, Dana Point, California**

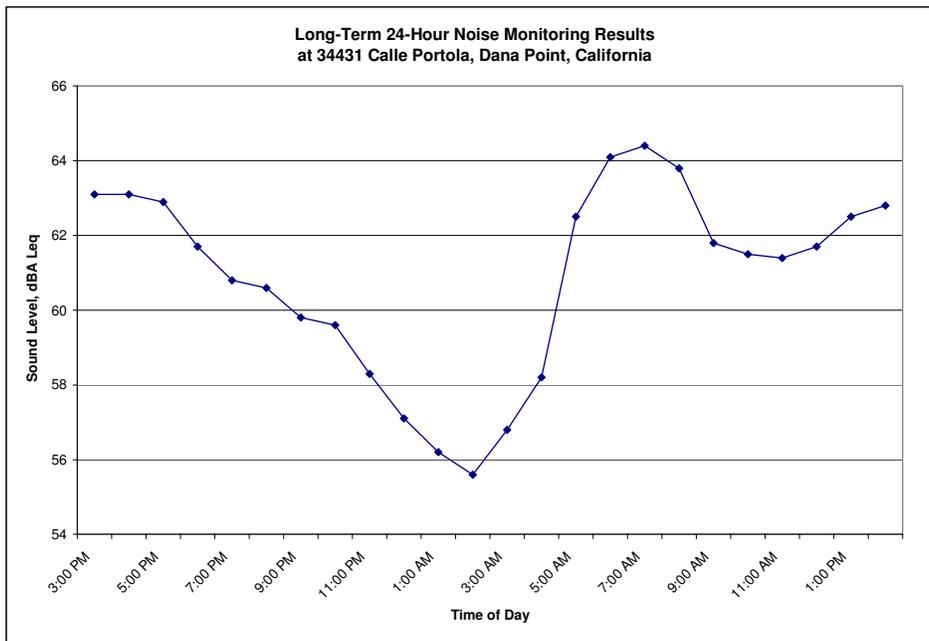
Hour	Start Time	Date	Noise Level (dBA L _{eq})
1	3:00 p.m.	9/30/09	63.1
2	4:00 p.m.	9/30/09	63.1
3	5:00 p.m.	9/30/09	62.9
4	6:00 p.m.	9/30/09	61.7
5	7:00 p.m.	9/30/09	60.8
6	8:00 p.m.	9/30/09	60.6
7	9:00 p.m.	9/30/09	59.8
8	10:00 p.m.	9/30/09	59.6
9	11:00 p.m.	9/30/09	58.3
10	12:00 a.m.	10/1/09	57.1
11	1:00 a.m.	10/1/09	56.2
12	2:00 a.m.	10/1/09	55.6
13	3:00 a.m.	10/1/09	56.8
14	4:00 a.m.	10/1/09	58.2
15	5:00 a.m.	10/1/09	62.5
16	6:00 a.m.	10/1/09	64.1
17	7:00 a.m.	10/1/09	64.4
18	8:00 a.m.	10/1/09	63.8
19	9:00 a.m.	10/1/09	61.8
20	10:00 a.m.	10/1/09	61.5
21	11:00 a.m.	10/1/09	61.4
22	12:00 p.m.	10/1/09	61.7
23	1:00 p.m.	10/1/09	62.5
24	2:00 p.m.	10/1/09	62.8

Source: *Noise Study Report*, LSA Associates, Inc., September 2010.

Bold denotes peak traffic noise hour.

dBA = A-weighted decibels

L_{eq} = equivalent sound level



**Table 2.14-7 Long-Term 24-Hour Noise Monitoring Results
at 33681 Paseo Del Puerto, San Juan Capistrano, California**

Hour	Start Time	Date	Noise Level (dBA L _{eq})
1	3:00 p.m.	9/30/09	61.4
2	4:00 p.m.	9/30/09	61.2
3	5:00 p.m.	9/30/09	61.4
4	6:00 p.m.	9/30/09	60.1
5	7:00 p.m.	9/30/09	58.8
6	8:00 p.m.	9/30/09	57.6
7	9:00 p.m.	9/30/09	57.6
8	10:00 p.m.	9/30/09	57.7
9	11:00 p.m.	9/30/09	55.8
10	12:00 a.m.	10/1/09	54.5
11	1:00 a.m.	10/1/09	54.7
12	2:00 a.m.	10/1/09	53.6
13	3:00 a.m.	10/1/09	55.2
14	4:00 a.m.	10/1/09	56.6
15	5:00 a.m.	10/1/09	59.8
16	6:00 a.m.	10/1/09	61.8
17	7:00 a.m.	10/1/09	62.2
18	8:00 a.m.	10/1/09	59.7
19	9:00 a.m.	10/1/09	59.9
20	10:00 a.m.	10/1/09	60.0
21	11:00 a.m.	10/1/09	60.6
22	12:00 p.m.	10/1/09	59.9
23	1:00 p.m.	10/1/09	60.2
24	2:00 p.m.	10/1/09	60.0

Source: *Noise Study Report*, LSA Associates, Inc., September 2010.

Bold denotes the peak traffic noise hour.

dBA = A-weighted decibels

L_{eq} = equivalent sound level

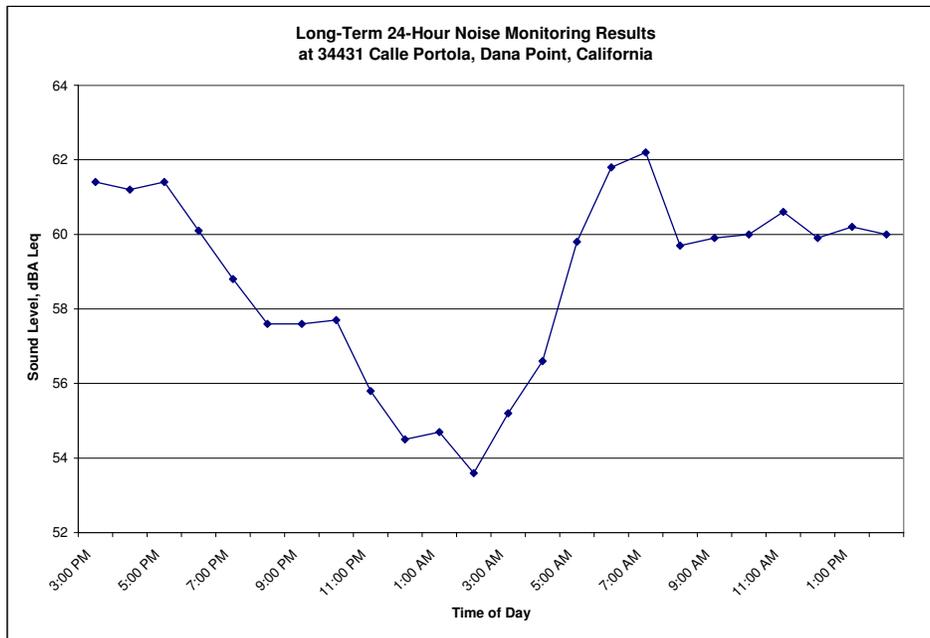


Table 2.14-8 Interior/Exterior Noise Monitoring Results

Monitor No.	Exterior (dBA L _{eq})	Interior (dBA L _{eq})	Exterior-to-Interior Noise Level Reduction	Land Use Description
1	67.6	43.4	24.2	189 Avenida La Cuesta; Ole Hanson Elementary School; located on the east side of I-5 south of Avenida Pico.
2	65.0	50.7	14.3	2001 Calle Frontera; St. Andrew's By-the-Sea United Methodist Church; located on the east side of I-5 north of Avenida Pico.
3	58.1	39.2	18.9	2651 Calle Frontera; Pacific Coast Church; located on the east side of I-5 south of Avenida Vista Hermosa.
4	59.1	38.2	20.9	34322 Calle Naranja; Kingdom Hall of Jehovah's Witnesses; located on the east side of I-5 between Camino Las Ramblas and Camino De Estrella.

Source: *Noise Study Report*, LSA Associates, Inc., September 2010.

dBA = A-weighted decibels

L_{eq} = equivalent sound level

I-5 = Interstate 5

Table 2.14-9 Existing Traffic Noise Levels, dBA L_{eq}

Receiver No.	Location	Type of Land Use	No. of Units Represented	Noise Abatement Category	Measured Noise Level	Modeled Existing Noise Level ¹
R-1	Avenida La Cuesta	Residential	2	B(67)	N/A	71.6 ²
R-2	Avenida La Cuesta	Residential	3	B(67)	N/A	58.7
R-3	Avenida La Cuesta	School	1	B(67)	N/A	58.0
R-4	Avenida La Cuesta	School	1	B(67)	N/A	66.8
R-5	Avenida La Cuesta	School	1	B(67)	N/A	71.7
R-6	Avenida La Cuesta	School	1	B(67)	N/A	71.4
R-7	Avenida La Cuesta	School	1	B(67)	N/A	62.2
R-8	Avenida La Cuesta	School	1	B(67)	N/A	67.6
R-9/M-4	Avenida Pico	School	1	B(67)	58.9	61.5
R-10	Avenida Pico	School	1	B(67)	N/A	64.1
R-11	Avenida La Cuesta	Residential	1	B(67)	N/A	61.3
R-12	Avenida La Cuesta	Residential	1	B(67)	N/A	60.2
R-13	Avenida Sierra	Residential	2	B(67)	N/A	61.3
R-14/M-5	Calle Campo	Residential	1	B(67)	55.3	60.7
R-15	La Placentia	Residential	2	B(67)	N/A	62.2
R-16	Via Pico Plaza	Hotel	1	B(67)	N/A	49.0
R-17/M-7	Via Pico Plaza	Restaurant	1	C(72)	62.7	66.3
R-18	Calle Campo	Residential	3	B(67)	N/A	58.7
R-19	La Placentia	Residential	2	B(67)	N/A	59.0
R-20/M-8	Calle Frontera	Church	1	B(67)	59.2	62.4
R-21	Via Concha	Residential	2	B(67)	N/A	60.1
R-22	Via Concha	Residential	2	B(67)	N/A	60.3
R-23	Via Concha	Residential	2	B(67)	N/A	60.5
R-24	Via Concha	Residential	2	B(67)	N/A	56.4
R-25	Avenida Fuentes	Residential	2	B(67)	N/A	55.3
R-26	Avenida Fuentes	Residential	2	B(67)	N/A	59.5
R-27	Avenida Fuentes	Residential	2	B(67)	N/A	60.4
R-28	Avenida Fuentes	Residential	2	B(67)	N/A	60.7
R-29	Avenida Fuentes	Residential	2	B(67)	N/A	60.7
R-30	Avenida Fuentes	Residential	2	B(67)	N/A	61.3
R-31	Avenida Fuentes	Residential	2	B(67)	N/A	58.0
R-32	Avenida Fuentes	Residential	2	B(67)	N/A	59.4
R-33	Avenida Fuentes	Residential	1	B(67)	N/A	57.1
R-34	Avenida Fuentes	Residential	2	B(67)	N/A	56.9
R-35	Avenida Fuentes	Residential	2	B(67)	N/A	56.1
R-36	Avenida Fuentes	Residential	2	B(67)	N/A	55.3
R-37	Via Concha	Residential	1	B(67)	N/A	59.7
R-38	Avenida Fuentes	Residential	2	B(67)	N/A	60.9
R-39	Avenida Fuentes	Residential	2	B(67)	N/A	61.3
R-40	Avenida Fuentes	Residential	2	B(67)	N/A	56.2
R-41	Avenida Fuentes	Residential	2	B(67)	N/A	49.4
R-42	Avenida Fuentes	Residential	2	B(67)	N/A	49.3
R-43	Avenida Fuentes	Residential	2	B(67)	N/A	47.8
R-44	Avenida Fuentes	Residential	2	B(67)	N/A	48.1
R-45	Avenida Fuentes	Residential	2	B(67)	N/A	53.3
R-46	Avenida Fuentes	Residential	2	B(67)	N/A	54.1
R-47	Calle Lobina	Church	1	B(67)	N/A	62.6
R-48/M-12	Calle Lobina	Residential	2	B(67)	57.3	60.8
R-49	Calle Lobina	Residential	2	B(67)	N/A	59.1
R-50	Calle Lobina	Residential	2	B(67)	N/A	58.7
R-51	Calle Lobina	Residential	2	B(67)	N/A	59.8
R-52	Calle Lobina	Residential	2	B(67)	N/A	61.7
R-53	Calle Lobina	Residential	2	B(67)	N/A	60.1

Table 2.14-9 Existing Traffic Noise Levels, dBA L_{eq}

Receiver No.	Location	Type of Land Use	No. of Units Represented	Noise Abatement Category	Measured Noise Level	Modeled Existing Noise Level ¹
R-54	Calle Lobina	Residential	2	B(67)	N/A	62.2
R-55	Calle Lobina	Residential	2	B(67)	N/A	63.7
R-56	Calle Lobina	Residential	2	B(67)	N/A	61.1
R-57	Calle Lobina	Residential	2	B(67)	N/A	61.5
R-58	Calle Lobina	Residential	2	B(67)	N/A	61.1
R-59	Calle Lobina	Residential	2	B(67)	N/A	62.0
R-60	Avenue Oliva	Residential	1	B(67)	N/A	59.8
R-61	Avenue Oliva	Residential	1	B(67)	N/A	59.9
R-62	Avenue Oliva	Residential	2	B(67)	N/A	59.7
R-63	Avenue Oliva	Residential	1	B(67)	N/A	59.2
R-64	Avenue Oliva	Residential	1	B(67)	N/A	58.8
R-65	Avenue Oliva	Residential	1	B(67)	N/A	59.2
R-66	Avenue Oliva	Residential	1	B(67)	N/A	59.9
R-67	Via Barracuda	Residential	2	B(67)	N/A	63.0
R-68	Via Barracuda	Residential	2	B(67)	N/A	63.8
R-69	Via Barracuda	Residential	2	B(67)	N/A	63.7
R-70	Via Barracuda	Residential	2	B(67)	N/A	63.0
R-71	Via Barracuda	Residential	2	B(67)	N/A	63.5
R-72	Via Barracuda	Residential	2	B(67)	N/A	59.6
R-73	Via Barracuda	Residential	2	B(67)	N/A	58.9
R-74	Via Barracuda	Residential	2	B(67)	N/A	59.5
R-75	Via Barracuda	Residential	2	B(67)	N/A	62.3
R-76	Via Barracuda	Residential	2	B(67)	N/A	57.1
R-77	Via Barracuda	Residential	2	B(67)	N/A	56.6
R-78	Via Barracuda	Residential	2	B(67)	N/A	60.1
R-79	Via Barracuda	Residential	2	B(67)	N/A	59.8
R-80	Via Barracuda	Residential	2	B(67)	N/A	56.8
R-81	Via Barracuda	Residential	2	B(67)	N/A	56.4
R-82	Via Ballena	Residential	1	B(67)	N/A	54.1
R-83	Via Ballena	Residential	1	B(67)	N/A	57.4
R-84	Via Ballena	Residential	2	B(67)	N/A	58.0
R-85/M-18	Via Ballena	Residential	2	B(67)	54.0	56.6
R-86	Via Ballena	Residential	2	B(67)	N/A	52.5
R-87	Via Ballena	Residential	2	B(67)	N/A	50.1
R-88	Via Ballena	Residential	2	B(67)	N/A	46.0
R-89	Via Ballena	Residential	1	B(67)	N/A	53.6
R-90	Via Ballena	Residential	2	B(67)	N/A	51.6
R-91	Via Ballena	Residential	2	B(67)	N/A	49.6
R-92	Via Ballena	Residential	1	B(67)	N/A	51.7
R-93	Calle Frontera	Residential	2	B(67)	N/A	63.2
R-94	Calle Frontera	Residential	3	B(67)	N/A	62.0
R-95/M-14	Calle Frontera	Residential	3	B(67)	58.4	61.4
R-96	Calle Frontera	Residential	3	B(67)	N/A	62.8
R-97	Calle Frontera	Residential	3	B(67)	N/A	59.9
R-98	Calle Frontera	Residential	3	B(67)	N/A	62.8
R-99	Calle Frontera	Residential	3	B(67)	N/A	66.3
R-100/M-15	Calle Frontera	Residential	3	B(67)	64.0	66.8
R-101	Calle Frontera	Residential	3	B(67)	N/A	64.6
R-102	Calle Frontera	Residential	1	B(67)	N/A	65.0
R-103	Calle Frontera	Residential	1	B(67)	N/A	60.8
R-104	Calle Juarez	Residential	3	B(67)	N/A	62.6
R-105	Calle Juarez	Residential	2	B(67)	N/A	69.9
R-106/M-16	Calle Juarez	Residential	3	B(67)	67.2	69.2

Table 2.14-9 Existing Traffic Noise Levels, dBA L_{eq}

Receiver No.	Location	Type of Land Use	No. of Units Represented	Noise Abatement Category	Measured Noise Level	Modeled Existing Noise Level ¹
R-107	Calle Juarez	Residential	1	B(67)	N/A	69.9
R-108	Calle Juarez	Residential	3	B(67)	N/A	70.9
R-109	Calle Juarez	Residential	3	B(67)	N/A	69.1
R-110	Calle Juarez	Residential	3	B(67)	N/A	69.0
R-111	Calle Juarez	Residential	2	B(67)	N/A	67.4
R-112	Calle Juarez	Residential	1	B(67)	N/A	52.4
R-113	Calle Juarez	Residential	1	B(67)	N/A	64.6
R-114/M-17	Calle Juarez	Residential	2	B(67)	64.7	67.6
R-115	Calle Juarez	Residential	1	B(67)	N/A	70.1
R-116	Calle Juarez	Residential	1	B(67)	N/A	67.1
R-117	Calle Frontera	Residential	2	B(67)	N/A	42.6
R-118	Calle Frontera	Residential	3	B(67)	N/A	49.2
R-119	Calle Frontera	Residential	2	B(67)	N/A	46.6
R-120	Calle Frontera	Residential	2	B(67)	N/A	56.7
R-121	Calle Frontera	Residential	3	B(67)	N/A	52.0
R-122	Calle Frontera	Residential	3	B(67)	N/A	51.3
R-123	Calle Frontera	Residential	2	B(67)	N/A	53.4
R-124	Calle Frontera	Residential	2	B(67)	N/A	53.3
R-125	Calle Frontera	Residential	2	B(67)	N/A	54.1
R-126	Calle Frontera	Residential	3	B(67)	N/A	53.8
R-127	Calle Frontera	Residential	2	B(67)	N/A	53.3
R-128	Calle Juarez	Residential	2	B(67)	N/A	52.1
R-129	Calle Juarez	Residential	1	B(67)	N/A	49.7
R-130	Calle Juarez	Residential	3	B(67)	N/A	48.2
R-131	Calle Juarez	Residential	3	B(67)	N/A	47.2
R-132	Calle Juarez	Residential	2	B(67)	N/A	45.4
R-133	Via Montezuma	Residential	1	B(67)	N/A	47.3
R-134	Via Montezuma	Residential	2	B(67)	N/A	47.8
R-135	Via Montezuma	Residential	1	B(67)	N/A	49.7
R-136	Via Montezuma	Residential	1	B(67)	N/A	49.5
R-137	Via Montezuma	Residential	2	B(67)	N/A	50.0
R-138/M-19	Via Montezuma	Residential	3	B(67)	49.9	52.0
R-139	Via Montezuma	Residential	3	B(67)	N/A	52.6
R-140	Via Montezuma	Residential	3	B(67)	N/A	50.7
R-141	Calle Vista Torito	Residential	1	B(67)	N/A	48.5
R-142	Calle Vista Torito	Residential	1	B(67)	N/A	48.4
R-143	Via Montezuma	Residential	1	B(67)	N/A	45.7
R-144	Via Montezuma	Residential	3	B(67)	N/A	46.2
R-145	Via Montezuma	Residential	3	B(67)	N/A	49.7
R-146	Via Montezuma	Residential	3	B(67)	N/A	46.8
R-147	Via Montezuma	Residential	3	B(67)	N/A	46.7
R-148	Via Montezuma	Residential	2	B(67)	N/A	46.5
R-149	Calle Vista Torito	Residential	2	B(67)	N/A	51.3
R-150	Calle Vista Torito	Residential	1	B(67)	N/A	49.5
R-151	Calle Vista Torito	Residential	1	B(67)	N/A	49.3
R-152	Calle Vista Torito	Residential	2	B(67)	N/A	48.4
R-153	Calle Vista Torito	Residential	1	B(67)	N/A	52.0
R-154	Calle Vista Torito	Residential	1	B(67)	N/A	48.7
R-155	Calle Vista Torito	Residential	1	B(67)	N/A	52.1
R-156	Calle Vista Torito	Residential	1	B(67)	N/A	48.3
R-157	Calle Vista Torito	Residential	1	B(67)	N/A	61.5
R-158	Avenida Vaquero	Residential	1	B(67)	N/A	63.8
R-159	Calle Vicente	Residential	1	B(67)	N/A	62.2

Table 2.14-9 Existing Traffic Noise Levels, dBA L_{eq}

Receiver No.	Location	Type of Land Use	No. of Units Represented	Noise Abatement Category	Measured Noise Level	Modeled Existing Noise Level ¹
R-160	Calle Campana	Residential	1	B(67)	N/A	63.3
R-161	Calle Campana	Residential	1	B(67)	N/A	58.0
R-162/M-22	Calle Canasta	Residential	1	B(67)	60.6	63.3
R-163	Calle Canasta	Residential	1	B(67)	N/A	64.9
R-164	Avenida Vaquero	Residential	1	B(67)	N/A	62.9
R-165	Calle Vicente	Residential	1	B(67)	N/A	61.6
R-166	Calle Campana	Residential	1	B(67)	N/A	59.7
R-167	Calle Canasta	Residential	1	B(67)	N/A	55.9
R-168	Calle Canasta	Residential	1	B(67)	N/A	53.0
R-169	Avenida Vaquero	Residential	2	B(67)	N/A	61.6
R-170	Calle Vicente	Residential	1	B(67)	N/A	61.2
R-171	Calle Campana	Residential	1	B(67)	N/A	55.5
R-172	Calle Canasta	Residential	1	B(67)	N/A	55.9
R-173	Calle Canasta	Residential	1	B(67)	N/A	53.0
R-174	Calle Canasta	Residential	1	B(67)	N/A	51.0
R-175	Calle Campana	Residential	1	B(67)	N/A	53.8
R-176	Camino De Los Mares	Hotel	1	B(67)	N/A	68.1
R-177	Avenida Vaquero	Residential	1	B(67)	N/A	58.7
R-178	Avenida Vaquero	Residential	1	B(67)	N/A	55.0
R-179/M-24	Avenida Vaquero	Residential	2	B(67)	55.9	57.8
R-180	Avenida Vaquero	Residential	2	B(67)	N/A	56.7
R-181	Calle Grande Vista	Residential	1	B(67)	N/A	55.8
R-182	Calle Grande Vista	Residential	3	B(67)	N/A	59.8
R-183	Calle Grande Vista	Residential	3	B(67)	N/A	62.0
R-184	Calle Grande Vista	Residential	3	B(67)	N/A	63.0
R-185	Calle Grande Vista	Residential	3	B(67)	N/A	63.5
R-186	Calle Grande Vista	Residential	3	B(67)	N/A	63.6
R-187/M-25	Calle Grande Vista	Residential	3	B(67)	62.4	64.0
R-188	Calle Grande Vista	Residential	3	B(67)	N/A	64.6
R-189	Calle Grande Vista	Residential	3	B(67)	N/A	64.5
R-190	Calle Grande Vista	Residential	1	B(67)	N/A	63.8
R-191	Calle Grande Vista	Residential	1	B(67)	N/A	62.8
R-192	Calle Grande Vista	Residential	1	B(67)	N/A	60.7
R-193	Calle Grande Vista	Residential	2	B(67)	N/A	54.0
R-194	Calle Grande Vista	Residential	2	B(67)	N/A	59.3
R-195	Calle Grande Vista	Residential	2	B(67)	N/A	60.3
R-196	Calle Grande Vista	Residential	3	B(67)	N/A	61.5
R-197	Calle Grande Vista	Residential	3	B(67)	N/A	61.9
R-198	Calle Grande Vista	Residential	2	B(67)	N/A	58.3
R-199	Calle Grande Vista	Residential	2	B(67)	N/A	56.0
R-200	Calle Grande Vista	Residential	2	B(67)	N/A	54.6
R-201	Calle Grande Vista	Residential	2	B(67)	N/A	64.8
R-202	Calle Grande Vista	Residential	2	B(67)	N/A	65.0
R-203	Calle Grande Vista	Residential	2	B(67)	N/A	63.8
R-204	Calle Grande Vista	Residential	2	B(67)	N/A	63.2
R-205/M-26	Calle Grande Vista	Residential	2	B(67)	53.8	55.3
R-206	Calle Grande Vista	Residential	3	B(67)	N/A	56.7
R-207	Calle Grande Vista	Residential	2	B(67)	N/A	55.3
R-208	Paseo Flamenco	Residential	2	B(67)	N/A	53.9
R-209	Paseo Flamenco	Residential	3	B(67)	N/A	54.3
R-210	Paseo Flamenco	Residential	2	B(67)	N/A	54.0
R-211	Paseo Flamenco	Residential	2	B(67)	N/A	54.8
R-212	Paseo Flamenco	Residential	3	B(67)	N/A	57.8

Table 2.14-9 Existing Traffic Noise Levels, dBA L_{eq}

Receiver No.	Location	Type of Land Use	No. of Units Represented	Noise Abatement Category	Measured Noise Level	Modeled Existing Noise Level ¹
R-213	Paseo Flamenco	Residential	2	B(67)	N/A	59.7
R-214	Paseo Flamenco	Residential	2	B(67)	N/A	59.8
R-215/M-27	Paseo Flamenco	Residential	2	B(67)	54.7	57.1
R-216	Paseo Flamenco	Residential	1	B(67)	N/A	43.7
R-217	Paseo Flamenco	Residential	2	B(67)	N/A	51.2
R-218	Paseo Flamenco	Residential	2	B(67)	N/A	52.3
R-219	Paseo Flamenco	Residential	2	B(67)	N/A	48.8
R-220	Paseo Flamenco	Residential	2	B(67)	N/A	53.6
R-221	Paseo Flamenco	Residential	2	B(67)	N/A	54.0
R-222	Paseo Flamenco	Residential	1	B(67)	N/A	52.1
R-223	Calle Grande Vista	Residential	3	B(67)	N/A	46.9
R-224	Calle Grande Vista	Residential	2	B(67)	N/A	46.4
R-225	Calle Grande Vista	Residential	3	B(67)	N/A	43.3
R-226	Calle Grande Vista	Residential	2	B(67)	N/A	50.5
R-227	Paseo Flamenco	Residential	2	B(67)	N/A	39.3
R-228	Paseo Flamenco	Residential	4	B(67)	N/A	37.0
R-229	Paseo Flamenco	Residential	3	B(67)	N/A	40.8
R-230	Paseo Flamenco	Residential	3	B(67)	N/A	46.4
R-231/M-28	Calle Portola	Residential	1	B(67)	63.5	68.7
R-232	Calle Portola	Residential	1	B(67)	N/A	69.9
R-233	Calle Portola	Residential	1	B(67)	N/A	64.3
R-234/M-26	Calle Portola	Residential	1	B(67)	53.8	66.7
R-235	Calle Portola	Residential	1	B(67)	N/A	60.8
R-236/M-30	Calle Portola	Residential	1	B(67)	65.6	69.2
R-237/M-31	Calle Portola	Residential	1	B(67)	61.6	62.9
R-238	Calle Portola	Residential	1	B(67)	N/A	63.6
R-239/M-32	Calle Portola	Residential	1	B(67)	57.6	61.3
R-240	Calle Portola	Residential	1	B(67)	N/A	63.7
R-241	Calle Portola	Residential	2	B(67)	N/A	63.7
R-242	Calle Portola	Residential	3	B(67)	N/A	63.6
R-243	Calle Portola	Residential	3	B(67)	N/A	66.7
R-244	Calle Portola	Residential	3	B(67)	N/A	69.1
R-245	Calle Portola	Residential	3	B(67)	N/A	73.3
R-246/M-33	Calle Portola	Residential	2	B(67)	59.9	64.8
R-247	Calle Portola	Residential	2	B(67)	N/A	64.1
R-248	Calle Portola	Residential	1	B(67)	N/A	60.8
R-249/M-35	Calle Portola	Residential	2	B(67)	61.8	63.2
R-250	Calle Portola	Residential	2	B(67)	N/A	61.8
R-251	Calle Portola	Residential	2	B(67)	N/A	61.0
R-252	Calle Portola	Residential	2	B(67)	N/A	61.1
R-253	Calle Portola	Residential	2	B(67)	N/A	61.8
R-254	Calle Portola	Residential	2	B(67)	N/A	68.7
R-255	Calle Portola	Residential	3	B(67)	N/A	55.8
R-256	Calle Portola	Residential	3	B(67)	N/A	58.0
R-257	Calle Portola	Residential	3	B(67)	N/A	56.0
R-258	Calle Portola	Residential	3	B(67)	N/A	57.1
R-259	Calle Portola	Residential	3	B(67)	N/A	56.4
R-260	Calle Portola	Residential	3	B(67)	N/A	55.1
R-261	Calle Portola	Residential	2	B(67)	N/A	57.8
R-262	Calle Portola	Residential	3	B(67)	N/A	58.5
R-263	Calle Portola	Residential	3	B(67)	N/A	60.4
R-264	Calle Portola	Residential	3	B(67)	N/A	60.5
R-265/M-34	Calle Portola	Residential	3	B(67)	56.1	59.3

Table 2.14-9 Existing Traffic Noise Levels, dBA L_{eq}

Receiver No.	Location	Type of Land Use	No. of Units Represented	Noise Abatement Category	Measured Noise Level	Modeled Existing Noise Level ¹
R-266	Calle Portola	Residential	3	B(67)	N/A	56.1
R-267	Calle Portola	Residential	3	B(67)	N/A	57.3
R-268	Calle Portola	Residential	2	B(67)	N/A	57.6
R-269	Calle Portola	Residential	2	B(67)	N/A	58.4
R-270	Calle Portola	Park	1	B(67)	N/A	60.2
R-271	Calle Naranja	Church	1	B(67)	N/A	59.4
R-272	Calle Velez	Residential	1	B(67)	N/A	56.8
R-273/M-36	Calle Velez	Residential	2	B(67)	54.4	56.9
R-274	Calle Velez	Residential	2	B(67)	N/A	56.3
R-275	Calle Velez	Residential	1	B(67)	N/A	53.9
R-276/M-37	Calle Velez	Residential	2	B(67)	51.4	54.0
R-277	Calle Velez	Residential	3	B(67)	N/A	55.8
R-278	Calle Velez	Residential	1	B(67)	N/A	59.1
R-279/M-38	Via California	Residential	1	B(67)	69.1	71.1
R-280	Calle Velez	Residential	2	B(67)	N/A	55.2
R-281	Calle Velez	Residential	2	B(67)	N/A	56.2
R-282	Calle Velez	Residential	2	B(67)	N/A	55.8
R-283	Calle Velez	Residential	1	B(67)	N/A	55.1
R-284	Calle Velez	Residential	3	B(67)	N/A	54.0
R-285	Calle Velez	Residential	3	B(67)	N/A	54.2
R-286	Calle Velez	Residential	1	B(67)	N/A	58.3
R-287	Via California	Residential	1	B(67)	N/A	69.2
R-288	Calle Velez	Residential	2	B(67)	N/A	54.2
R-289	Calle Velez	Residential	2	B(67)	N/A	55.1
R-290	Calle Velez	Residential	1	B(67)	N/A	53.8
R-291	Camino De Estrella	Residential	2	B(67)	N/A	58.4
R-292	Avenida Las Palmas	Residential	1	B(67)	N/A	56.0
R-293	Avenida Las Palmas	Residential	2	B(67)	N/A	63.4
R-294/M-39	Avenida Las Palmas	Residential	3	B(67)	54.4	56.4
R-295	Avenida Las Palmas	Residential	3	B(67)	N/A	57.3
R-296	Avenida Las Palmas	Residential	2	B(67)	N/A	58.9
R-297	Avenida Las Palmas	Residential	1	B(67)	N/A	59.1
R-298	Avenida Las Palmas	Residential	3	B(67)	N/A	57.3
R-299	Avenida Las Palmas	Residential	3	B(67)	N/A	55.4
R-300	Avenida Las Palmas	Residential	3	B(67)	N/A	57.2
R-301/M-40	Avenida Las Palmas	Residential	2	B(67)	51.8	54.0
R-302	Avenida Las Palmas	Residential	1	B(67)	N/A	52.9
R-303	Avenida Las Palmas	Residential	2	B(67)	N/A	52.9
R-304	Calle Juanita	Residential	2	B(67)	N/A	55.7
R-305/M-41	Calle Juanita	Residential	1	B(67)	54.3	56.0
R-306	Calle Juanita	Residential	1	B(67)	N/A	55.1
R-307	Calle Juanita	Residential	1	B(67)	N/A	57.0
R-308	Calle Juanita	Residential	3	B(67)	N/A	60.6
R-309	Calle Ultima	Residential	3	B(67)	N/A	59.1
R-310	Calle Ultima	Residential	3	B(67)	N/A	59.9
R-311/M-42	Calle Ultima	Residential	3	B(67)	53.0	54.8
R-312	Calle Ultima	Residential	3	B(67)	N/A	58.6
R-313	Calle Ultima	Residential	3	B(67)	N/A	59.5
R-314	Calle Ultima	Residential	1	B(67)	N/A	60.3
R-315	Calle Lago	Residential	2	B(67)	N/A	58.7
R-316	Calle Ultima	Residential	1	B(67)	N/A	60.7
R-317	Via Lopez	Residential	2	B(67)	N/A	51.1
R-318	Via Lopez	Residential	2	B(67)	N/A	47.9

Table 2.14-9 Existing Traffic Noise Levels, dBA L_{eq}

Receiver No.	Location	Type of Land Use	No. of Units Represented	Noise Abatement Category	Measured Noise Level	Modeled Existing Noise Level ¹
R-319	Via Lopez	Residential	3	B(67)	N/A	47.3
R-320/M-44	Via Lopez	Residential	3	B(67)	44.8	46.9
R-321	Via Lopez	Residential	3	B(67)	N/A	48.6
R-322	Via Lopez	Residential	1	B(67)	N/A	52.6
R-323	Via California	Residential	1	B(67)	N/A	72.1
R-324	Camino De Estrella	Residential	2	B(67)	N/A	56.6
R-325	Avenida Las Palmas	Residential	1	B(67)	N/A	54.0
R-326	Avenida Las Palmas	Residential	2	B(67)	N/A	54.2
R-327	Avenida Las Palmas	Residential	2	B(67)	N/A	51.7
R-328	Avenida Las Palmas	Residential	3	B(67)	N/A	52.6
R-329	Calle Rosita	Residential	1	B(67)	N/A	50.3
R-330	Calle Juanita	Residential	1	B(67)	N/A	55.0
R-331	Vuelta Loma	Residential	2	B(67)	N/A	52.9
R-332	Vuelta Loma	Residential	2	B(67)	N/A	51.5
R-333	Vuelta Loma	Residential	3	B(67)	N/A	50.1
R-334	Vuelta Loma	Residential	3	B(67)	N/A	50.4
R-335	Vuelta Loma	Residential	2	B(67)	N/A	53.9
R-336	Vuelta Loma	Residential	2	B(67)	N/A	55.2
R-337	Calle Lago	Residential	1	B(67)	N/A	59.0
R-338	Via Lopez	Residential	1	B(67)	N/A	47.5
R-339	Via Lopez	Residential	1	B(67)	N/A	48.1
R-340	Via California	Residential	2	B(67)	N/A	64.2
R-341	Calle Rosita	Residential	2	B(67)	N/A	48.2
R-342	Calle Juanita	Residential	2	B(67)	N/A	49.1
R-343	Calle Juanita	Residential	2	B(67)	N/A	51.3
R-344	Via Lopez	Residential	1	B(67)	N/A	47.4
R-345	Via California	Residential	2	B(67)	N/A	59.7
R-346	Via California	Residential	2	B(67)	N/A	58.6
R-347	Via California	Residential	2	B(67)	N/A	63.1
R-348	Via California	Recreational	1	B(67)	N/A	63.0
R-349	Via California	Residential	3	B(67)	N/A	66.2
R-350	Via California	Residential	2	B(67)	N/A	52.6
R-351	Via California	Residential	2	B(67)	N/A	63.5
R-352	Via California	Residential	2	B(67)	N/A	51.6
R-353	Via California	Residential	2	B(67)	N/A	63.4
R-354	Via California	Residential	3	B(67)	N/A	64.7
R-355	Via California	Recreational	1	B(67)	N/A	62.6
R-356	Via California	Residential	2	B(67)	N/A	52.0
R-357	Via California	Recreational	2	B(67)	N/A	63.0
R-358	Via California	Recreational	1	B(67)	N/A	58.7
R-359	Camino De Vista	Residential	1	B(67)	N/A	68.6
R-360	Camino De Vista	Residential	1	B(67)	N/A	68.7
R-361	Camino De Vista	Residential	1	B(67)	N/A	66.7
R-362	Camino De Vista	Residential	1	B(67)	N/A	65.3
R-363	Camino De Vista	Residential	1	B(67)	N/A	61.0
R-364	Camino De Vista	Residential	2	B(67)	N/A	61.9
R-365	Camino De Vista	Residential	2	B(67)	N/A	68.4
R-366	Camino De Vista	Residential	2	B(67)	N/A	66.9
R-367/M-46	Camino De Vista	Residential	1	B(67)	71.0	72.7
R-368	Camino De Vista	Residential	2	B(67)	N/A	69.9
R-369	Camino De Vista	Residential	1	B(67)	N/A	71.6
R-370	Camino De Vista	Residential	2	B(67)	N/A	71.9
R-371	Camino De Vista	Residential	2	B(67)	N/A	74.2

Table 2.14-9 Existing Traffic Noise Levels, dBA L_{eq}

Receiver No.	Location	Type of Land Use	No. of Units Represented	Noise Abatement Category	Measured Noise Level	Modeled Existing Noise Level ¹
R-372	Camino De Vista	Residential	2	B(67)	N/A	73.5
R-373	Camino De Vista	Residential	2	B(67)	N/A	74.0
R-374	Camino De Vista	Residential	2	B(67)	N/A	58.6
R-375	Camino De Vista	Residential	2	B(67)	N/A	55.1
R-376	Camino De Vista	Residential	1	B(67)	N/A	57.5
R-377	Camino De Vista	Residential	2	B(67)	N/A	64.0
R-378	Camino De Vista	Residential	2	B(67)	N/A	57.2
R-379	Camino De Vista	Residential	2	B(67)	N/A	60.7
R-380	Camino De Vista	Residential	2	B(67)	N/A	63.3
R-381	Camino De Vista	Residential	2	B(67)	N/A	66.7
R-382	Via Canon	Residential	1	B(67)	N/A	60.5
R-383/M-45	Via Canon	Residential	1	B(67)	62.5	64.7
R-384	Via Canon	Residential	1	B(67)	N/A	62.6
R-385	Via Canon	Residential	1	B(67)	N/A	60.3
R-386	Via Canon	Residential	1	B(67)	N/A	60.0
R-387	Via Corona	Residential	2	B(67)	N/A	56.9
R-388	Via Corona	Residential	2	B(67)	N/A	56.7
R-389/M-48	Via Corona	Residential	2	B(67)	50.0	56.5
R-390	Via Corona	Residential	2	B(67)	N/A	56.1
R-391	Via Corona	Residential	2	B(67)	N/A	56.0
R-392	Via Corona	Residential	2	B(67)	N/A	56.5
R-393	Via Corona	Residential	2	B(67)	N/A	56.2
R-394	Via Corona	Residential	2	B(67)	N/A	55.9
R-395	Via Corona	Residential	2	B(67)	N/A	55.3
R-396	Paseo del Puerto	Residential	2	B(67)	N/A	63.8
R-397/M-47	Paseo del Puerto	Residential	3	B(67)	60.5	62.7
R-398	Paseo del Puerto	Residential	4	B(67)	N/A	63.7
R-399	Paseo del Puerto	Residential	2	B(67)	N/A	62.5
R-400	Paseo del Puerto	Residential	1	B(67)	N/A	56.7
R-401	Paseo del Puerto	Residential	3	B(67)	N/A	59.1
R-402	Paseo del Puerto	Residential	4	B(67)	N/A	62.9
R-403	Doheny Park Road	Residential	1	B(67)	N/A	56.5
R-404	Doheny Park Road	Residential	1	B(67)	N/A	54.8
R-405	Doheny Park Road	Residential	2	B(67)	N/A	57.9
R-406	Doheny Park Road	Residential	1	B(67)	N/A	57.6
R-407	Doheny Park Road	Residential	1	B(67)	N/A	57.5
R-408	Doheny Park Road	Residential	1	B(67)	N/A	60.5
R-409	Doheny Park Road	Residential	1	B(67)	N/A	62.9
R-410	Doheny Park Road	Residential	1	B(67)	N/A	57.3
R-411	Doheny Park Road	Residential	1	B(67)	N/A	57.7
R-412	Doheny Park Road	Residential	2	B(67)	N/A	56.5
R-413	Doheny Park Road	Residential	2	B(67)	N/A	57.8
R-414	Doheny Park Road	Residential	1	B(67)	N/A	59.6
R-415/M-50	Doheny Park Road	Residential	1	B(67)	53.8	56.5
R-416/M-51	Valle Road	Residential	1	B(67)	67.2	69.1
R-417	Valle Road	Residential	1	B(67)	N/A	79.5
R-418	Paseo Camponilla	Residential	1	B(67)	N/A	64.8
R-419/M-52	Paseo Camponilla	Residential	1	B(67)	62.7	64.5
R-420/M-53	Valle Road	Residential	2	B(67)	74.8	76.9
R-421	Valle Road	Residential	1	B(67)	N/A	75.1
R-422	Valle Road	Residential	1	B(67)	N/A	72.8
R-423	Valle Road	Residential	2	B(67)	N/A	72.8
R-424	Valle Road	Residential	1	B(67)	N/A	72.0

Table 2.14-9 Existing Traffic Noise Levels, dBA L_{eq}

Receiver No.	Location	Type of Land Use	No. of Units Represented	Noise Abatement Category	Measured Noise Level	Modeled Existing Noise Level ¹
R-425	Valle Road	Residential	1	B(67)	N/A	71.3
R-426	Valle Road	Residential	2	B(67)	N/A	69.3
R-427	Valle Road	Residential	1	B(67)	N/A	65.3
R-428	Valle Road	Residential	1	B(67)	N/A	70.2
R-429	Valle Road	Residential	2	B(67)	N/A	68.0
R-430/M-54	Valle Road	Residential	1	B(67)	64.7	67.6
R-431	Valle Road	Residential	1	B(67)	N/A	67.0
R-432	Valle Road	Residential	1	B(67)	N/A	66.9
R-433	Valle Road	Residential	1	B(67)	N/A	65.7
R-434	Valle Road	Residential	1	B(67)	N/A	65.2
R-435	Valle Road	Residential	1	B(67)	N/A	63.5
R-436	Valle Road	Residential	1	B(67)	N/A	64.6
R-437	Valle Road	Residential	1	B(67)	N/A	59.3
R-438	Valle Road	Residential	1	B(67)	N/A	65.3
R-439	Valle Road	Residential	2	B(67)	N/A	67.8
R-440	Valle Road	Residential	2	B(67)	N/A	69.1
R-441	Valle Road	Residential	2	B(67)	N/A	69.1
R-442	Valle Road	Residential	2	B(67)	N/A	70.1
R-443	Valle Road	Residential	2	B(67)	N/A	71.1
R-444	Valle Road	Residential	3	B(67)	N/A	69.1
R-445	Valle Road	Residential	1	B(67)	N/A	67.7
R-446	Valle Road	Residential	1	B(67)	N/A	67.3
R-447	Valle Road	Residential	1	B(67)	N/A	64.6
R-448	Valle Road	Residential	4	B(67)	N/A	58.6
R-449	Valle Road	Residential	4	B(67)	N/A	57.0
R-450	Valle Road	Residential	4	B(67)	N/A	57.4
R-451	Valle Road	Residential	4	B(67)	N/A	58.2
R-452	Valle Road	Residential	4	B(67)	N/A	57.5
R-453	Valle Road	Residential	2	B(67)	N/A	58.7
R-454	Valle Road	Residential	2	B(67)	N/A	61.1
R-455	Valle Road	Residential	1	B(67)	N/A	63.0
R-456	Valle Road	Residential	1	B(67)	N/A	61.7
R-457	Valle Road	Residential	2	B(67)	N/A	67.4
R-458	Valle Road	Residential	2	B(67)	N/A	69.8
R-459	Valle Road	Residential	2	B(67)	N/A	68.5
R-460	Valle Road	Residential	2	B(67)	N/A	60.5

Source: *Noise Study Report*, LSA Associates, Inc., September 2010.

¹ Existing noise levels were calculated using the worst-case traffic volumes along the I-5 mainline and HOV lanes.

² Numbers in **bold** represent noise levels that approach or exceed the NAC.

dBA = A-weighted decibel

I-5 = Interstate 5

L_{eq} = equivalent sound level

N/A = Not Available

NAC = Noise Abatement Criteria

2.14.3.1 Temporary Impacts

Build Alternative 4 with Design Option A (Preferred Alternative)

Groundborne Vibration Impacts

Vibration generated by construction equipment can result in varying degrees of ground vibration, depending on the equipment. The operation of construction equipment causes ground vibrations that spread through the ground and diminish in strength with distance. Buildings situated on soil near the active construction area respond to these vibrations, which range from imperceptible to low rumbling sounds with perceptible vibrations and slight damage at the highest vibration levels. Typically, construction-related vibrations do not reach vibration levels that would result in damage to nearby structures. However, old and fragile structures would require special consideration to avoid damage.

The *Caltrans Transportation- and Construction-Induced Vibration Guidance Manual* (Department, June 2004) shows that the vibration damage threshold for continuous/frequent intermittent sources is 0.25 peak particle velocity (PPV) (inches per second [in/sec]) for historic and old buildings, 0.3 PPV (in/sec) for old residential structures, and 0.5 PPV (in/sec) for new residential structures. The same manual shows the vibration annoyance potential criteria to be barely perceptible at 0.01 PPV (in/sec) and distinctly perceptible at 0.04 PPV (in/sec). Both of these thresholds were used to evaluate short-term, construction-related groundborne vibration.

The proposed project may require the use of pile drivers for the Avenida Pico interchange and the bridge at the Camino Capistrano on-ramp undercrossing. CIDH piling will be used for the retaining wall on the southbound edge of shoulder near Camino Capistrano. Other heavy-tracked construction equipment may be required for project construction. The FTA, in its *Transit Noise and Vibration Assessment* (FTA, May 2006), shows that a typical-impact pile driver would generate approximately 0.644 PPV (in/sec) when measured at 25 ft. It also shows that typical heavy-tracked construction equipment would generate approximately 0.003 to 0.089 PPV (in/sec) when measured at 25 ft.

St. Andrew's By-the-Sea United Methodist Church and the historic "Ranch-style" single-gabled adobe are the closest buildings of concern for potential pile-driving activity. The church is located approximately 480 ft from the Avenida Pico interchange. The adobe is located approximately 270 ft from the bridge at the Camino Capistrano on-ramp undercrossing and the retaining wall on the southbound edge of shoulder. At these distances, the church and adobe would be subject to a vibration level of 0.0231 PPV (in/sec) and 0.0276 PPV (in/sec), respectively. The vibration level experienced at the church and adobe would exceed the barely perceptible level of 0.01 PPV (in/sec) but

would be below the distinctly perceptible level of 0.04 PPV (in/sec). In addition, these vibration levels would be much lower than the 0.5 PPV (in/sec) and 0.25 PPV (in/sec) thresholds of damage for new and historic buildings, respectively, and would not have the potential to damage these buildings. Other construction equipment and activities would generate vibration levels much lower than those of pile driving and would therefore result in lower vibration levels at adjacent receiver locations, many of which are relatively new residential buildings and commercial structures. Therefore, no substantial groundborne vibration levels or direct or indirect impacts from pile driving would occur.

Construction Noise Impacts

Two types of short-term noise impacts would occur during project construction. The first type would be from construction crew commutes and the transport of construction equipment and materials to the project site and would incrementally raise noise levels on access roads leading to the site. The pieces of heavy equipment for grading and construction activities would be moved on site, would remain for the duration of each construction phase, and would not add to the daily traffic volume in the project vicinity. A high single-event noise exposure potential at a maximum level of 87 dBA L_{max} from trucks passing at 50 ft will exist; however, the projected construction traffic will be minimal when compared to existing traffic volumes on I-5 and other affected streets, and the associated long-term noise level change will not be perceptible. Therefore, in the short term, construction-related worker commutes and equipment transport noise impacts would be less than substantial.

The second type of short-term noise impact is related to noise generated during roadway construction. Construction is conducted in discrete steps, each of which has its own mix of equipment and consequently its own noise characteristics. These various sequential phases would change the character of the noise generated and the noise levels along the project alignment as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by work phase. Table 2.14-10 lists typical construction equipment noise levels (L_{max}) recommended for noise impact assessments based on a distance of 50 ft between the equipment and a noise receiver.

Table 2.14-10 Typical Construction Equipment Noise Levels

Type of Equipment	Range of Maximum Sound Levels (dBA L _{max} at 50 ft)	Suggested Maximum Sound Levels for Analysis (dBA L _{max} at 50 ft)
Pile drivers	81–96	93
Rock drills	83–99	96
Jackhammers	75–85	82
Pneumatic tools	78–88	85
Pumps	74–84	80
Scrapers	83–91	87
Haul trucks	83–94	88
Cranes	79–86	82
Portable generators	71–87	80
Rollers	75–82	80
Dozers	77–90	85
Tractors	77–82	80
Front-end loaders	77–90	86
Hydraulic backhoe	81–90	86
Hydraulic excavators	81–90	86
Graders	79–89	86
Air compressors	76–89	86
Trucks	81–87	86

Source: *Noise Control for Buildings and Manufacturing Plants*, Bolt, Beranek & Newman, 1987.

dBA = A-weighted decibels

ft = feet

L_{max} = maximum instantaneous noise level

Typical noise levels at 50 ft from an active construction area range up to 91 dBA L_{max} during the noisiest construction phases. The site preparation phase, which includes grading and paving, tends to generate the highest noise levels because the noisiest construction equipment is earthmoving equipment. Earthmoving equipment includes excavating machinery such as backfillers, bulldozers, and front loaders. Earthmoving and compacting equipment includes compactors, scrapers, and graders. Typical operating cycles for these types of construction equipment may involve one to two minutes of full-power operation followed by three to four minutes at lower power settings.

Construction of the proposed project is expected to require the use of earthmovers, bulldozers, water trucks, and pickup trucks. Noise associated with the use of construction equipment is estimated between 79 and 89 dBA L_{max} at a distance of 50 ft from the active construction area for the grading phase. As seen in Table 2.14-10, the maximum noise level generated by each scraper is assumed to be approximately 87 dBA L_{max} at

50 ft from the scraper in operation. Each bulldozer would generate approximately 85 dBA L_{max} at 50 ft. The maximum noise level generated by water trucks and pickup trucks is approximately 86 dBA L_{max} at 50 ft from these vehicles. Each doubling of the sound source with equal strength increases the noise level by 3 dBA. Each piece of construction equipment operates as an individual point source. The worst-case composite noise level at the nearest residence during this phase of construction would be 91 dBA L_{max} at a distance of 50 ft from an active construction area.

In addition to the standard construction equipment, the project may require the use of pile drivers. As shown in Table 2.14-10, pile driving generates noise levels of approximately 93 dBA L_{max} at 50 ft. If pile driving is conducted concurrently with site preparation, the construction site could potentially generate noise levels of 95 dBA L_{max} at a distance of 50 ft.

The closest sensitive receiver locations would be located within 50 ft of the project construction areas. Therefore, these receivers may be subject to short-term noise reaching 95 dBA L_{max} or higher generated by construction activities along the project alignment. Compliance with the construction hours specified in the City of Dana Point, San Clemente, and San Juan Capistrano Municipal Codes and the County Code would be required. To minimize direct and indirect construction noise impacts on sensitive land uses adjacent to the project site, construction noise is regulated by the Department's Standard Specifications in Section 14-8.02, "Noise Control," and also by Standard Special Provision S5-310. The noise level from the contractor's operations between the hours of 9:00 p.m. and 6:00 a.m. shall not exceed 86 dBA $L_{eq}(h)$ at a distance of 50 ft. This requirement in no way relieves the contractor from responsibility for complying with local ordinances regulating noise levels. The contractor will use an alternative warning method instead of a sound signal unless a sound signal is required by safety laws. In addition, the contractor will equip all internal combustion engines with the manufacturer-recommended mufflers and will not operate any internal combustion engine on the job site without the appropriate muffler.

2.14.3.2 Permanent Impacts

Build Alternative 4 – Design Option A (Preferred Alternative)

Groundborne Vibration Impacts

Because the rubber tires and suspension systems of trucks and other on-road vehicles provide vibration isolation, it is unusual for on-road vehicles to cause groundborne noise or vibration problems. When on-road vehicles cause effects such as rattling of windows, the source is almost always airborne noise. Groundborne vibrations are mostly associated

with passenger vehicles and trucks traveling on poor roadway conditions such as potholes, bumps, expansion joints, or other discontinuities in the road surface. Smoothing the bump or filling the pothole will usually solve the problem. As the proposed project will use new asphalt pavement, there will be no potholes, bumps, expansion joints, or other discontinuities in the road surface that would generate groundborne vibration or direct or indirect noise impacts from vehicular traffic traveling on I-5.

Traffic Noise Impacts

Potential long term noise associated with project operations would be solely from traffic noise. Traffic noise impacts occur when either of the following occurs: (1) the traffic noise level at a sensitive receiver location is predicted to “approach or exceed” the NAC, or (2) the predicted traffic noise level is substantially higher than the corresponding modeled existing noise level at the sensitive receiver location analyzed. When traffic noise impacts occur, noise abatement measures must be considered.

The predicted future worst-case traffic noise levels for Build Alternatives [2 and 4 with Design Options A and B](#) at the representative sensitive receiver locations within the project area were determined with existing walls, with existing walls to be replaced, and with no new modeled barriers using the worst-case traffic volumes for the I-5 mainline and HOV lanes. The traffic conditions are assumed to be LOS D and E. Highway on- and off-ramps were modeled using either the worst-case traffic volume or the projected p.m. peak traffic volume, whichever is less. The projected p.m. peak traffic volumes were obtained from the traffic study prepared by Austin-Foust Associates, Inc. (May 2010). Local roadway cross streets were modeled using the projected p.m. peak traffic volumes because these traffic volumes would be lower than the worst-case traffic conditions. Tables 2.14-11 and 2.14-12 show the existing and future worst-case traffic level results for [Build Alternatives 2 and 4 with Design Options A and B](#). Of the 460 modeled receiver locations, 75 receivers under Alternative 2 and 78 receivers under Alternative 4 would approach or exceed the 67 dBA L_{eq} NAC under Activity Category B. [The information in Tables 2.14-11 and 2.14-12 were compared to assess differences in future noise due to the two design options. Only Receivers R-9 and R-10 located within the area of the two design options showed any difference. This difference was higher noise for Design Option B, although even this increase does not show any traffic noise impact. Therefore, only the results of Design Option B \(Table 2.14-12\) are carried forward for the remainder of this section although Design Option A was selected as the preferred Design Option for Alternative 4 \(Preferred Alternative\). The results of the analysis for Design Option B also apply to Design Option A. In addition, to compare the future traffic conditions between Design Option A and Design Option B, the future traffic noise levels](#)

for Alternatives 2 and 4 were compared in Tables 2.14-11 and 2.14-12. It is shown that there is no difference in future noise between Alternatives 2 and 4. The difference between Alternatives 2 and 4 is approximately 0.1 or 0.2 dBA for the majority of receivers and up to 0.5 dBA for a few cases.

The difference between Alternatives 2 and 4 is that Alternative 4 results in three more receivers being directly impacted compared to Alternative 2. These receivers are: R-187 (65.8 dBA for Alternative 2; 66.0 dBA for Alternative 4), R-201 (65.9 dBA for Alternative 2; 66.2 dBA for Alternative 4), and R-434 (65.9 dBA for Alternative 2; 66.3 dBA for Alternative 4). Practically, all three receivers are impacted in all three alternatives. Since Tables 2.14-11 and 2.14-12 demonstrate that there are no differences between the two alternatives, only the results for Alternative 4 are carried forward for the remainder of the noise study. Alternative 4 was selected as the preferred alternative.

Table 2.14-11 Projected Traffic Noise Levels (with Design Option A), dBA L_{eq}

Rec. No.	Location	Type of Land Use	Noise Abatement Category	Modeled Existing Noise Level	Future No Build Noise Level	Alternative 2	Change from Existing Level	Alternative 4 (Preferred Alternative)	Change from Existing Level
R-1	Avenida La Cuesta	Residential	B(67)	71.6 ¹	71.6	72.0	0.4	72.1	0.5
R-2	Avenida La Cuesta	Residential	B(67)	58.7	58.7	58.9	0.2	59.2	0.5
R-3	Avenida La Cuesta	School	B(67)	58.0	58.0	58.3	0.3	58.5	0.5
R-4	Avenida La Cuesta	School	B(67)	66.8	66.8	67.2	0.4	67.2	0.4
R-5	Avenida La Cuesta	School	B(67)	71.7	71.7	71.8	0.1	71.8	0.1
R-6	Avenida La Cuesta	School	B(67)	71.4	71.4	71.6	0.2	71.6	0.2
R-7	Avenida La Cuesta	School	B(67)	62.2	62.2	63.0	0.8	63.0	0.8
R-8	Avenida La Cuesta	School	B(67)	67.6	67.6	68.5	0.9	68.5	0.9
R-9	Avenida Pico	School	B(67)	61.5	61.5	61.1	-0.4	61.1	-0.4
R-10	Avenida Pico	School	B(67)	64.1	64.2	63.3	-0.8	63.4	-0.7
R-11	Avenida La Cuesta	Residential	B(67)	61.3	61.3	61.3	0.0	61.9	0.6
R-12	Avenida La Cuesta	Residential	B(67)	60.2	60.2	60.3	0.1	60.8	0.6
R-13	Avenida Sierra	Residential	B(67)	61.3	61.3	61.4	0.1	61.9	0.6
R-14	Calle Campo	Residential	B(67)	60.7	60.7	61.0	0.3	61.3	0.6
R-15	La Placentia	Residential	B(67)	62.2	62.2	63.1	0.9	63.1	0.9
R-16	Via Pico Plaza	Hotel	B(67)	49.0	49.0	50.0	1.0	50.0	1.0
R-17	Via Pico Plaza	Restaurant	C(72)	66.3	66.3	66.5	0.2	66.5	0.2
R-18	Calle Campo	Residential	B(67)	58.7	58.7	58.9	0.2	59.3	0.6
R-19	La Placentia	Residential	B(67)	59.0	59.0	60.2	1.2	60.2	1.2
R-20	Calle Frontera	Church	B(67)	62.4	62.4	63.5	1.1	63.5	1.1
R-21	Via Concha	Residential	B(67)	60.1	60.1	61.8	1.7	61.8	1.7
R-22	Via Concha	Residential	B(67)	60.3	60.3	61.8	1.5	61.8	1.5
R-23	Via Concha	Residential	B(67)	60.5	60.5	61.8	1.3	61.8	1.3
R-24	Via Concha	Residential	B(67)	56.4	56.4	58.5	2.1	58.5	2.1
R-25	Avenida Fuentes	Residential	B(67)	55.3	55.3	56.0	0.7	56.0	0.7
R-26	Avenida Fuentes	Residential	B(67)	59.5	59.5	60.7	1.2	60.6	1.1
R-27	Avenida Fuentes	Residential	B(67)	60.4	60.4	61.4	1.0	61.4	1.0
R-28	Avenida Fuentes	Residential	B(67)	60.7	60.7	61.7	1.0	61.6	0.9
R-29	Avenida Fuentes	Residential	B(67)	60.7	60.7	61.5	0.8	61.4	0.7
R-30	Avenida Fuentes	Residential	B(67)	61.3	61.3	61.7	0.4	61.6	0.3
R-31	Avenida Fuentes	Residential	B(67)	58.0	58.0	56.7	-1.3	56.6	-1.4

Table 2.14-11 Projected Traffic Noise Levels (with Design Option A), dBA L_{eq}

Rec. No.	Location	Type of Land Use	Noise Abatement Category	Modeled Existing Noise Level	Future No Build Noise Level	Alternative 2	Change from Existing Level	Alternative 4 (Preferred Alternative)	Change from Existing Level
R-32	Avenida Fuentes	Residential	B(67)	59.4	59.4	57.9	-1.5	58.0	-1.4
R-33	Avenida Fuentes	Residential	B(67)	57.1	57.1	56.2	-0.9	56.2	-0.9
R-34	Avenida Fuentes	Residential	B(67)	56.9	56.9	56.1	-0.8	56.0	-0.9
R-35	Avenida Fuentes	Residential	B(67)	56.1	56.1	55.4	-0.7	55.4	-0.7
R-36	Avenida Fuentes	Residential	B(67)	55.3	55.3	54.7	-0.6	54.7	-0.6
R-37	Via Concha	Residential	B(67)	59.7	59.7	62.0	2.3	62.0	2.3
R-38	Avenida Fuentes	Residential	B(67)	60.9	60.9	61.2	0.3	61.2	0.3
R-39	Avenida Fuentes	Residential	B(67)	61.3	61.3	61.5	0.2	61.5	0.2
R-40	Avenida Fuentes	Residential	B(67)	56.2	56.2	56.0	-0.2	56.0	-0.2
R-41	Avenida Fuentes	Residential	B(67)	49.4	49.4	48.4	-1.0	48.4	-1.0
R-42	Avenida Fuentes	Residential	B(67)	49.3	49.4	48.1	-1.2	48.1	-1.2
R-43	Avenida Fuentes	Residential	B(67)	47.8	47.8	47.3	-0.5	47.3	-0.5
R-44	Avenida Fuentes	Residential	B(67)	48.1	48.1	47.6	-0.5	47.6	-0.5
R-45	Avenida Fuentes	Residential	B(67)	53.3	53.3	51.9	-1.4	52.1	-1.2
R-46	Avenida Fuentes	Residential	B(67)	54.1	54.1	52.5	-1.6	52.8	-1.3
R-47	Calle Lobina	Church	B(67)	62.6	62.8	63.0	0.4	63.0	0.4
R-48	Calle Lobina	Residential	B(67)	60.8	60.9	60.8	0.0	60.8	0.0
R-49	Calle Lobina	Residential	B(67)	59.1	59.3	59.3	0.2	59.2	0.1
R-50	Calle Lobina	Residential	B(67)	58.7	59.0	59.0	0.3	58.9	0.2
R-51	Calle Lobina	Residential	B(67)	59.8	60.3	60.3	0.5	60.2	0.4
R-52	Calle Lobina	Residential	B(67)	61.7	61.8	61.4	-0.3	61.5	-0.2
R-53	Calle Lobina	Residential	B(67)	60.1	60.5	60.2	0.1	60.3	0.2
R-54	Calle Lobina	Residential	B(67)	62.2	63.1	62.9	0.7	62.7	0.5
R-55	Calle Lobina	Residential	B(67)	63.7	64.7	64.5	0.8	64.6	0.9
R-56	Calle Lobina	Residential	B(67)	61.1	61.4	60.7	-0.4	60.8	-0.3
R-57	Calle Lobina	Residential	B(67)	61.5	62.0	61.6	0.1	61.7	0.2
R-58	Calle Lobina	Residential	B(67)	61.1	61.6	60.9	-0.2	60.8	-0.3
R-59	Calle Lobina	Residential	B(67)	62.0	62.8	62.3	0.3	62.1	0.1
R-60	Avenue Oliva	Residential	B(67)	59.8	59.9	59.5	-0.3	59.5	-0.3
R-61	Avenue Oliva	Residential	B(67)	59.9	59.9	59.5	-0.4	59.6	-0.3
R-62	Avenue Oliva	Residential	B(67)	59.7	59.8	59.5	-0.2	59.5	-0.2

Table 2.14-11 Projected Traffic Noise Levels (with Design Option A), dBA L_{eq}

Rec. No.	Location	Type of Land Use	Noise Abatement Category	Modeled Existing Noise Level	Future No Build Noise Level	Alternative 2	Change from Existing Level	Alternative 4 (Preferred Alternative)	Change from Existing Level
R-63	Avenue Oliva	Residential	B(67)	59.2	59.3	59.0	-0.2	59.0	-0.2
R-64	Avenue Oliva	Residential	B(67)	58.8	58.9	58.6	-0.2	58.6	-0.2
R-65	Avenue Oliva	Residential	B(67)	59.2	59.3	59.0	-0.2	58.9	-0.3
R-66	Avenue Oliva	Residential	B(67)	59.9	60.0	59.6	-0.3	59.6	-0.3
R-67	Via Barracuda	Residential	B(67)	63.0	63.2	63.5	0.5	63.5	0.5
R-68	Via Barracuda	Residential	B(67)	63.8	63.9	64.4	0.6	64.3	0.5
R-69	Via Barracuda	Residential	B(67)	63.7	63.7	64.4	0.7	64.3	0.6
R-70	Via Barracuda	Residential	B(67)	63.0	63.0	63.8	0.8	63.8	0.8
R-71	Via Barracuda	Residential	B(67)	63.5	63.5	64.4	0.9	64.3	0.8
R-72	Via Barracuda	Residential	B(67)	59.6	59.9	60.6	1.0	60.5	0.9
R-73	Via Barracuda	Residential	B(67)	58.9	59.2	59.5	0.6	59.4	0.5
R-74	Via Barracuda	Residential	B(67)	59.5	59.7	60.3	0.8	60.2	0.7
R-75	Via Barracuda	Residential	B(67)	62.3	62.4	63.3	1.0	63.2	0.9
R-76	Via Barracuda	Residential	B(67)	57.1	57.3	57.8	0.7	57.7	0.6
R-77	Via Barracuda	Residential	B(67)	56.6	56.8	57.2	0.6	57.2	0.6
R-78	Via Barracuda	Residential	B(67)	60.1	60.6	60.9	0.8	60.9	0.8
R-79	Via Barracuda	Residential	B(67)	59.8	60.0	60.4	0.6	60.5	0.7
R-80	Via Barracuda	Residential	B(67)	56.8	57.1	57.6	0.8	57.5	0.7
R-81	Via Barracuda	Residential	B(67)	56.4	56.7	57.3	0.9	57.2	0.8
R-82	Via Ballena	Residential	B(67)	54.1	54.2	54.3	0.2	54.8	0.7
R-83	Via Ballena	Residential	B(67)	57.4	57.4	57.7	0.3	57.9	0.5
R-84	Via Ballena	Residential	B(67)	58.0	58.0	58.6	0.6	58.6	0.6
R-85	Via Ballena	Residential	B(67)	56.6	56.6	56.9	0.3	57.0	0.4
R-86	Via Ballena	Residential	B(67)	52.5	52.5	53.5	1.0	53.5	1.0
R-87	Via Ballena	Residential	B(67)	50.1	50.1	51.6	1.5	51.6	1.5
R-88	Via Ballena	Residential	B(67)	46.0	46.0	46.7	0.7	46.6	0.6
R-89	Via Ballena	Residential	B(67)	53.6	53.6	54.1	0.5	54.1	0.5
R-90	Via Ballena	Residential	B(67)	51.6	51.6	52.0	0.4	52.0	0.4
R-91	Via Ballena	Residential	B(67)	49.6	49.6	50.2	0.6	50.2	0.6
R-92	Via Ballena	Residential	B(67)	51.7	51.7	52.3	0.6	52.4	0.7
R-93	Calle Frontera	Residential	B(67)	63.2	63.2	63.9	0.7	63.9	0.7

Table 2.14-11 Projected Traffic Noise Levels (with Design Option A), dBA L_{eq}

Rec. No.	Location	Type of Land Use	Noise Abatement Category	Modeled Existing Noise Level	Future No Build Noise Level	Alternative 2	Change from Existing Level	Alternative 4 (Preferred Alternative)	Change from Existing Level
R-94	Calle Frontera	Residential	B(67)	62.0	62.0	62.9	0.9	63.1	1.1
R-95	Calle Frontera	Residential	B(67)	61.4	61.4	62.7	1.3	62.7	1.3
R-96	Calle Frontera	Residential	B(67)	62.8	62.8	64.3	1.5	64.4	1.6
R-97	Calle Frontera	Residential	B(67)	59.9	59.9	61.4	1.5	61.4	1.5
R-98	Calle Frontera	Residential	B(67)	62.8	62.8	64.5	1.7	64.5	1.7
R-99	Calle Frontera	Residential	B(67)	66.3	66.3	68.0	1.7	68.1	1.8
R-100	Calle Frontera	Residential	B(67)	66.8	66.8	68.4	1.6	68.4	1.6
R-101	Calle Frontera	Residential	B(67)	64.6	64.6	65.8	1.2	65.9	1.3
R-102	Calle Frontera	Residential	B(67)	65.0	65.0	66.3	1.3	66.3	1.3
R-103	Calle Frontera	Residential	B(67)	60.8	60.8	62.1	1.3	62.0	1.2
R-104	Calle Juarez	Residential	B(67)	62.6	62.6	63.8	1.2	63.7	1.1
R-105	Calle Juarez	Residential	B(67)	69.9	69.9	71.8	1.9	71.6	1.7
R-106	Calle Juarez	Residential	B(67)	69.2	69.2	70.7	1.5	70.0	0.8
R-107	Calle Juarez	Residential	B(67)	69.9	69.9	71.7	1.8	71.3	1.4
R-108	Calle Juarez	Residential	B(67)	70.9	70.9	72.8	1.9	72.7	1.8
R-109	Calle Juarez	Residential	B(67)	69.1	69.1	70.9	1.8	70.2	1.1
R-110	Calle Juarez	Residential	B(67)	69.0	69.0	70.7	1.7	70.2	1.2
R-111	Calle Juarez	Residential	B(67)	67.4	67.4	68.6	1.2	68.1	0.7
R-112	Calle Juarez	Residential	B(67)	52.4	52.4	54.3	1.9	54.0	1.6
R-113	Calle Juarez	Residential	B(67)	64.6	64.6	64.9	0.3	64.2	-0.4
R-114	Calle Juarez	Residential	B(67)	67.6	67.6	69.5	1.9	69.3	1.7
R-115	Calle Juarez	Residential	B(67)	70.1	70.1	71.2	1.1	71.1	1.0
R-116	Calle Juarez	Residential	B(67)	67.1	67.1	68.3	1.2	68.3	1.2
R-117	Calle Frontera	Residential	B(67)	42.6	42.8	43.6	1.0	43.7	1.1
R-118	Calle Frontera	Residential	B(67)	49.2	49.3	50.0	0.8	50.0	0.8
R-119	Calle Frontera	Residential	B(67)	46.6	46.7	47.6	1.0	47.7	1.1
R-120	Calle Frontera	Residential	B(67)	56.7	56.8	57.3	0.6	57.4	0.7
R-121	Calle Frontera	Residential	B(67)	52.0	52.0	52.9	0.9	52.9	0.9
R-122	Calle Frontera	Residential	B(67)	51.3	51.3	52.5	1.2	52.5	1.2
R-123	Calle Frontera	Residential	B(67)	53.4	53.4	54.6	1.2	54.7	1.3
R-124	Calle Frontera	Residential	B(67)	53.3	53.3	54.5	1.2	54.5	1.2
R-125	Calle Frontera	Residential	B(67)	54.1	54.1	55.4	1.3	55.3	1.2

Table 2.14-11 Projected Traffic Noise Levels (with Design Option A), dBA L_{eq}

Rec. No.	Location	Type of Land Use	Noise Abatement Category	Modeled Existing Noise Level	Future No Build Noise Level	Alternative 2	Change from Existing Level	Alternative 4 (Preferred Alternative)	Change from Existing Level
R-126	Calle Frontera	Residential	B(67)	53.8	53.8	55.1	1.3	55.0	1.2
R-127	Calle Frontera	Residential	B(67)	53.3	53.3	54.6	1.3	54.5	1.2
R-128	Calle Juarez	Residential	B(67)	52.1	52.1	53.8	1.7	53.6	1.5
R-129	Calle Juarez	Residential	B(67)	49.7	49.7	50.8	1.1	50.7	1.0
R-130	Calle Juarez	Residential	B(67)	48.2	48.2	49.9	1.7	49.7	1.5
R-131	Calle Juarez	Residential	B(67)	47.2	47.2	49.5	2.3	49.4	2.2
R-132	Calle Juarez	Residential	B(67)	45.4	45.4	47.3	1.9	47.1	1.7
R-133	Via Montezuma	Residential	B(67)	47.3	47.3	47.8	0.5	47.8	0.5
R-134	Via Montezuma	Residential	B(67)	47.8	47.8	48.0	0.2	48.1	0.3
R-135	Via Montezuma	Residential	B(67)	49.7	49.8	49.9	0.2	50.1	0.4
R-136	Via Montezuma	Residential	B(67)	49.5	49.6	49.7	0.2	50.0	0.5
R-137	Via Montezuma	Residential	B(67)	50.0	50.0	50.7	0.7	50.8	0.8
R-138	Via Montezuma	Residential	B(67)	52.0	52.0	53.4	1.4	53.3	1.3
R-139	Via Montezuma	Residential	B(67)	52.6	52.6	54.8	2.2	54.9	2.3
R-140	Via Montezuma	Residential	B(67)	50.7	50.7	51.7	1.0	52.4	1.7
R-141	Calle Vista Torito	Residential	B(67)	48.5	48.5	49.6	1.1	51.0	2.5
R-142	Calle Vista Torito	Residential	B(67)	48.4	48.4	49.6	1.2	49.8	1.4
R-143	Via Montezuma	Residential	B(67)	45.7	45.8	45.9	0.2	46.1	0.4
R-144	Via Montezuma	Residential	B(67)	46.2	46.2	46.6	0.4	46.8	0.6
R-145	Via Montezuma	Residential	B(67)	49.7	49.7	50.4	0.7	50.5	0.8
R-146	Via Montezuma	Residential	B(67)	46.8	46.8	48.0	1.2	48.1	1.3
R-147	Via Montezuma	Residential	B(67)	46.7	46.7	47.7	1.0	48.2	1.5
R-148	Via Montezuma	Residential	B(67)	46.5	46.5	46.9	0.4	48.1	1.6
R-149	Calle Vista Torito	Residential	B(67)	51.3	51.3	51.8	0.5	53.2	1.9
R-150	Calle Vista Torito	Residential	B(67)	49.5	49.5	50.1	0.6	51.0	1.5
R-151	Calle Vista Torito	Residential	B(67)	49.3	49.3	49.9	0.6	50.7	1.4
R-152	Calle Vista Torito	Residential	B(67)	48.4	48.4	49.3	0.9	49.7	1.3
R-153	Calle Vista Torito	Residential	B(67)	52.0	52.0	52.4	0.4	53.8	1.8
R-154	Calle Vista Torito	Residential	B(67)	48.7	48.7	49.3	0.6	49.9	1.2
R-155	Calle Vista Torito	Residential	B(67)	52.1	52.1	52.3	0.2	53.4	1.3
R-156	Calle Vista Torito	Residential	B(67)	48.3	48.3	49.1	0.8	49.6	1.3
R-157	Calle Vista Torito	Residential	B(67)	61.5	61.5	63.4	1.9	63.0	1.5

Table 2.14-11 Projected Traffic Noise Levels (with Design Option A), dBA L_{eq}

Rec. No.	Location	Type of Land Use	Noise Abatement Category	Modeled Existing Noise Level	Future No Build Noise Level	Alternative 2	Change from Existing Level	Alternative 4 (Preferred Alternative)	Change from Existing Level
R-158	Avenida Vaquero	Residential	B(67)	63.8	63.8	64.9	1.1	64.9	1.1
R-159	Calle Vicente	Residential	B(67)	62.2	62.2	64.2	2.0	64.3	2.1
R-160	Calle Campana	Residential	B(67)	63.3	63.3	65.5	2.2	65.5	2.2
R-161	Calle Campana	Residential	B(67)	58.0	58.0	59.9	1.9	59.8	1.8
R-162	Calle Canasta	Residential	B(67)	63.3	63.3	65.2	1.9	65.4	2.1
R-163	Calle Canasta	Residential	B(67)	64.9	64.9	67.3	2.4	67.3	2.4
R-164	Avenida Vaquero	Residential	B(67)	62.9	63.0	64.1	1.2	64.3	1.4
R-165	Calle Vicente	Residential	B(67)	61.6	61.6	63.4	1.8	63.5	1.9
R-166	Calle Campana	Residential	B(67)	59.7	59.7	62.0	2.3	62.1	2.4
R-167	Calle Canasta	Residential	B(67)	55.9	55.9	58.5	2.6	57.8	1.9
R-168	Calle Canasta	Residential	B(67)	53.0	53.0	54.3	1.3	54.6	1.6
R-169	Avenida Vaquero	Residential	B(67)	61.6	61.7	63.1	1.5	63.2	1.6
R-170	Calle Vicente	Residential	B(67)	61.2	61.2	62.9	1.7	63.0	1.8
R-171	Calle Campana	Residential	B(67)	55.5	55.5	57.5	2.0	57.5	2.0
R-172	Calle Canasta	Residential	B(67)	55.9	55.9	57.8	1.9	57.7	1.8
R-173	Calle Canasta	Residential	B(67)	53.0	53.0	54.9	1.9	54.7	1.7
R-174	Calle Canasta	Residential	B(67)	51.0	51.0	52.3	1.3	52.5	1.5
R-175	Calle Campana	Residential	B(67)	53.8	53.8	54.7	0.9	54.7	0.9
R-176	Camino De Los Mares	Hotel	B(67)	68.1	68.1	67.4	-0.7	67.6	-0.5
R-177	Avenida Vaquero	Residential	B(67)	58.7	58.7	60.1	1.4	60.3	1.6
R-178	Avenida Vaquero	Residential	B(67)	55.0	55.0	56.7	1.7	56.8	1.8
R-179	Avenida Vaquero	Residential	B(67)	57.8	57.8	59.3	1.5	59.5	1.7
R-180	Avenida Vaquero	Residential	B(67)	56.7	56.7	58.2	1.5	58.5	1.8
R-181	Calle Grande Vista	Residential	B(67)	55.8	55.8	57.3	1.5	57.6	1.8
R-182	Calle Grande Vista	Residential	B(67)	59.8	59.8	61.5	1.7	61.9	2.1
R-183	Calle Grande Vista	Residential	B(67)	62.0	62.0	63.6	1.6	63.8	1.8
R-184	Calle Grande Vista	Residential	B(67)	63.0	63.0	64.8	1.8	64.9	1.9
R-185	Calle Grande Vista	Residential	B(67)	63.5	63.5	65.2	1.7	65.2	1.7
R-186	Calle Grande Vista	Residential	B(67)	63.6	63.6	65.5	1.9	65.6	2.0
R-187	Calle Grande Vista	Residential	B(67)	64.0	64.0	65.8	1.8	66.0	2.0
R-188	Calle Grande Vista	Residential	B(67)	64.6	64.6	66.3	1.7	66.3	1.7
R-189	Calle Grande Vista	Residential	B(67)	64.5	64.5	66.1	1.6	66.1	1.6

Table 2.14-11 Projected Traffic Noise Levels (with Design Option A), dBA L_{eq}

Rec. No.	Location	Type of Land Use	Noise Abatement Category	Modeled Existing Noise Level	Future No Build Noise Level	Alternative 2	Change from Existing Level	Alternative 4 (Preferred Alternative)	Change from Existing Level
R-190	Calle Grande Vista	Residential	B(67)	63.8	63.8	65.1	1.3	65.3	1.5
R-191	Calle Grande Vista	Residential	B(67)	62.8	62.8	64.1	1.3	64.2	1.4
R-192	Calle Grande Vista	Residential	B(67)	60.7	60.7	61.8	1.1	61.9	1.2
R-193	Calle Grande Vista	Residential	B(67)	54.0	54.0	55.5	1.5	55.8	1.8
R-194	Calle Grande Vista	Residential	B(67)	59.3	59.3	61.0	1.7	61.4	2.1
R-195	Calle Grande Vista	Residential	B(67)	60.3	60.3	61.9	1.6	62.3	2.0
R-196	Calle Grande Vista	Residential	B(67)	61.5	61.5	62.9	1.4	63.3	1.8
R-197	Calle Grande Vista	Residential	B(67)	61.9	61.9	63.3	1.4	63.6	1.7
R-198	Calle Grande Vista	Residential	B(67)	58.3	58.3	59.7	1.4	60.0	1.7
R-199	Calle Grande Vista	Residential	B(67)	56.0	56.0	57.4	1.4	57.7	1.7
R-200	Calle Grande Vista	Residential	B(67)	54.6	54.6	55.9	1.3	56.1	1.5
R-201	Calle Grande Vista	Residential	B(67)	64.8	64.8	65.9	1.1	66.2	1.4
R-202	Calle Grande Vista	Residential	B(67)	65.0	65.0	66.3	1.3	66.3	1.3
R-203	Calle Grande Vista	Residential	B(67)	63.8	63.8	65.1	1.3	65.1	1.3
R-204	Calle Grande Vista	Residential	B(67)	63.2	63.2	64.5	1.3	64.5	1.3
R-205	Calle Grande Vista	Residential	B(67)	55.3	55.3	56.4	1.1	56.6	1.3
R-206	Calle Grande Vista	Residential	B(67)	56.7	56.7	57.1	0.4	57.1	0.4
R-207	Calle Grande Vista	Residential	B(67)	55.3	55.3	55.6	0.3	55.6	0.3
R-208	Paseo Flamenco	Residential	B(67)	53.9	53.9	55.1	1.2	55.2	1.3
R-209	Paseo Flamenco	Residential	B(67)	54.3	54.3	55.6	1.3	55.6	1.3
R-210	Paseo Flamenco	Residential	B(67)	54.0	54.0	55.1	1.1	55.0	1.0
R-211	Paseo Flamenco	Residential	B(67)	54.8	54.8	55.9	1.1	55.9	1.1
R-212	Paseo Flamenco	Residential	B(67)	57.8	57.8	58.1	0.3	57.8	0.0
R-213	Paseo Flamenco	Residential	B(67)	59.7	59.7	59.1	-0.6	58.2	-1.5
R-214	Paseo Flamenco	Residential	B(67)	59.8	59.8	59.8	0.0	59.0	-0.8
R-215	Paseo Flamenco	Residential	B(67)	57.1	57.1	57.6	0.5	57.3	0.2
R-216	Paseo Flamenco	Residential	B(67)	43.7	43.7	45.4	1.7	44.9	1.2
R-217	Paseo Flamenco	Residential	B(67)	51.2	51.2	51.9	0.7	52.0	0.8
R-218	Paseo Flamenco	Residential	B(67)	52.3	52.3	53.3	1.0	53.4	1.1
R-219	Paseo Flamenco	Residential	B(67)	48.8	48.8	49.7	0.9	50.0	1.2
R-220	Paseo Flamenco	Residential	B(67)	53.6	53.6	54.0	0.4	54.1	0.5
R-221	Paseo Flamenco	Residential	B(67)	54.0	54.0	54.6	0.6	54.6	0.6

Table 2.14-11 Projected Traffic Noise Levels (with Design Option A), dBA L_{eq}

Rec. No.	Location	Type of Land Use	Noise Abatement Category	Modeled Existing Noise Level	Future No Build Noise Level	Alternative 2	Change from Existing Level	Alternative 4 (Preferred Alternative)	Change from Existing Level
R-222	Paseo Flamenco	Residential	B(67)	52.1	52.1	52.6	0.5	52.7	0.6
R-223	Calle Grande Vista	Residential	B(67)	46.9	46.9	48.0	1.1	48.0	1.1
R-224	Calle Grande Vista	Residential	B(67)	46.4	46.4	47.5	1.1	47.5	1.1
R-225	Calle Grande Vista	Residential	B(67)	43.3	43.3	44.6	1.3	44.7	1.4
R-226	Calle Grande Vista	Residential	B(67)	50.5	50.5	51.6	1.1	51.7	1.2
R-227	Paseo Flamenco	Residential	B(67)	39.3	39.3	40.5	1.2	40.6	1.3
R-228	Paseo Flamenco	Residential	B(67)	37.0	37.0	38.1	1.1	38.2	1.2
R-229	Paseo Flamenco	Residential	B(67)	40.8	40.8	42.0	1.2	42.1	1.3
R-230	Paseo Flamenco	Residential	B(67)	46.4	46.4	46.8	0.4	47.4	1.0
R-231	Calle Portola	Residential	B(67)	68.7	68.8	68.6	-0.1	69.2	0.5
R-232	Calle Portola	Residential	B(67)	69.9	70.0	70.3	0.4	70.8	0.9
R-233	Calle Portola	Residential	B(67)	64.3	64.4	64.8	0.5	65.2	0.9
R-234	Calle Portola	Residential	B(67)	66.7	66.7	67.2	0.5	67.4	0.7
R-235	Calle Portola	Residential	B(67)	60.8	60.9	61.3	0.5	61.8	1.0
R-236	Calle Portola	Residential	B(67)	69.2	69.2	69.5	0.3	70.1	0.9
R-237	Calle Portola	Residential	B(67)	62.9	62.9	63.4	0.5	63.5	0.6
R-238	Calle Portola	Residential	B(67)	63.6	63.6	64.1	0.5	64.2	0.6
R-239	Calle Portola	Residential	B(67)	61.3	61.3	61.8	0.5	62.0	0.7
R-240	Calle Portola	Residential	B(67)	63.7	63.7	64.0	0.3	64.2	0.5
R-241	Calle Portola	Residential	B(67)	63.7	63.7	64.0	0.3	64.3	0.6
R-242	Calle Portola	Residential	B(67)	63.6	63.6	64.0	0.4	64.5	0.9
R-243	Calle Portola	Residential	B(67)	66.7	66.7	66.7	0.0	67.3	0.6
R-244	Calle Portola	Residential	B(67)	69.1	69.1	68.9	-0.2	69.5	0.4
R-245	Calle Portola	Residential	B(67)	73.3	73.3	73.0	-0.3	73.3	0.0
R-246	Calle Portola	Residential	B(67)	64.8	64.8	65.2	0.4	65.2	0.4
R-247	Calle Portola	Residential	B(67)	64.1	64.1	64.3	0.2	64.4	0.3
R-248	Calle Portola	Residential	B(67)	60.8	60.8	61.4	0.6	61.4	0.6
R-249	Calle Portola	Residential	B(67)	63.2	63.2	63.8	0.6	63.7	0.5
R-250	Calle Portola	Residential	B(67)	61.8	61.8	62.3	0.5	62.3	0.5
R-251	Calle Portola	Residential	B(67)	61.0	61.0	61.4	0.4	61.4	0.4
R-252	Calle Portola	Residential	B(67)	61.1	61.1	61.5	0.4	61.6	0.5
R-253	Calle Portola	Residential	B(67)	61.8	61.8	62.6	0.8	62.4	0.6

Table 2.14-11 Projected Traffic Noise Levels (with Design Option A), dBA L_{eq}

Rec. No.	Location	Type of Land Use	Noise Abatement Category	Modeled Existing Noise Level	Future No Build Noise Level	Alternative 2	Change from Existing Level	Alternative 4 (Preferred Alternative)	Change from Existing Level
R-254	Calle Portola	Residential	B(67)	68.7	68.8	68.5	-0.2	68.9	0.2
R-255	Calle Portola	Residential	B(67)	55.8	55.9	55.8	0.0	56.0	0.2
R-256	Calle Portola	Residential	B(67)	58.0	58.1	58.2	0.2	58.4	0.4
R-257	Calle Portola	Residential	B(67)	56.0	56.0	56.6	0.6	56.5	0.5
R-258	Calle Portola	Residential	B(67)	57.1	57.1	57.7	0.6	57.6	0.5
R-259	Calle Portola	Residential	B(67)	56.4	56.5	57.0	0.6	56.9	0.5
R-260	Calle Portola	Residential	B(67)	55.1	55.1	55.6	0.5	55.6	0.5
R-261	Calle Portola	Residential	B(67)	57.8	57.8	58.3	0.5	58.4	0.6
R-262	Calle Portola	Residential	B(67)	58.5	58.6	59.1	0.6	59.0	0.5
R-263	Calle Portola	Residential	B(67)	60.4	60.4	60.6	0.2	60.6	0.2
R-264	Calle Portola	Residential	B(67)	60.5	60.5	61.2	0.7	61.2	0.7
R-265	Calle Portola	Residential	B(67)	59.3	59.3	60.1	0.8	60.2	0.9
R-266	Calle Portola	Residential	B(67)	56.1	56.1	57.3	1.2	57.5	1.4
R-267	Calle Portola	Residential	B(67)	57.3	57.3	59.2	1.9	59.5	2.2
R-268	Calle Portola	Residential	B(67)	57.6	57.6	59.0	1.4	59.1	1.5
R-269	Calle Portola	Residential	B(67)	58.4	58.4	58.7	0.3	58.3	-0.1
R-270	Calle Portola	Park	B(67)	60.2	60.2	60.0	-0.2	59.9	-0.3
R-271	Calle Naranja	Church	B(67)	59.4	59.4	59.4	0.0	59.4	0.0
R-272	Calle Velez	Residential	B(67)	56.8	56.8	57.3	0.5	57.3	0.5
R-273	Calle Velez	Residential	B(67)	56.9	56.9	57.3	0.4	57.2	0.3
R-274	Calle Velez	Residential	B(67)	56.3	56.3	57.0	0.7	56.9	0.6
R-275	Calle Velez	Residential	B(67)	53.9	53.9	54.5	0.6	54.5	0.6
R-276	Calle Velez	Residential	B(67)	54.0	54.0	54.5	0.5	54.5	0.5
R-277	Calle Velez	Residential	B(67)	55.8	55.8	56.2	0.4	56.2	0.4
R-278	Calle Velez	Residential	B(67)	59.1	59.1	59.3	0.2	59.3	0.2
R-279	Via California	Residential	B(67)	71.1	71.1	71.1	0.0	71.0	-0.1
R-280	Calle Velez	Residential	B(67)	55.2	55.3	55.1	-0.1	55.0	-0.2
R-281	Calle Velez	Residential	B(67)	56.2	56.2	57.0	0.8	56.9	0.7
R-282	Calle Velez	Residential	B(67)	55.8	55.8	56.3	0.5	56.2	0.4
R-283	Calle Velez	Residential	B(67)	55.1	55.1	54.7	-0.4	54.7	-0.4
R-284	Calle Velez	Residential	B(67)	54.0	54.1	54.6	0.6	54.6	0.6
R-285	Calle Velez	Residential	B(67)	54.2	54.2	54.9	0.7	54.8	0.6

Table 2.14-11 Projected Traffic Noise Levels (with Design Option A), dBA L_{eq}

Rec. No.	Location	Type of Land Use	Noise Abatement Category	Modeled Existing Noise Level	Future No Build Noise Level	Alternative 2	Change from Existing Level	Alternative 4 (Preferred Alternative)	Change from Existing Level
R-286	Calle Velez	Residential	B(67)	58.3	58.3	58.5	0.2	58.4	0.1
R-287	Via California	Residential	B(67)	69.2	69.2	68.3	-0.9	68.3	-0.9
R-288	Calle Velez	Residential	B(67)	54.2	54.2	54.8	0.6	54.7	0.5
R-289	Calle Velez	Residential	B(67)	55.1	55.1	55.8	0.7	55.7	0.6
R-290	Calle Velez	Residential	B(67)	53.8	53.8	54.3	0.5	54.3	0.5
R-291	Camino De Estrella	Residential	B(67)	58.4	58.5	59.4	1.0	59.2	0.8
R-292	Avenida Las Palmas	Residential	B(67)	56.0	56.1	56.5	0.5	54.2	-1.8
R-293	Avenida Las Palmas	Residential	B(67)	63.4	63.4	64.3	0.9	63.8	0.4
R-294	Avenida Las Palmas	Residential	B(67)	56.4	56.4	57.1	0.7	56.7	0.3
R-295	Avenida Las Palmas	Residential	B(67)	57.3	57.3	57.9	0.6	57.7	0.4
R-296	Avenida Las Palmas	Residential	B(67)	58.9	58.9	59.4	0.5	59.3	0.4
R-297	Avenida Las Palmas	Residential	B(67)	59.1	59.1	59.7	0.6	59.5	0.4
R-298	Avenida Las Palmas	Residential	B(67)	57.3	57.4	57.9	0.6	57.7	0.4
R-299	Avenida Las Palmas	Residential	B(67)	55.4	55.4	55.7	0.3	55.7	0.3
R-300	Avenida Las Palmas	Residential	B(67)	57.2	57.2	56.8	-0.4	56.9	-0.3
R-301	Avenida Las Palmas	Residential	B(67)	54.0	54.0	54.2	0.2	54.2	0.2
R-302	Avenida Las Palmas	Residential	B(67)	52.9	52.9	53.1	0.2	53.2	0.3
R-303	Avenida Las Palmas	Residential	B(67)	52.9	52.9	53.1	0.2	53.1	0.2
R-304	Calle Juanita	Residential	B(67)	55.7	55.7	56.1	0.4	56.2	0.5
R-305	Calle Juanita	Residential	B(67)	56.0	56.0	56.4	0.4	56.4	0.4
R-306	Calle Juanita	Residential	B(67)	55.1	55.1	55.4	0.3	55.5	0.4
R-307	Calle Juanita	Residential	B(67)	57.0	57.0	57.4	0.4	57.4	0.4
R-308	Calle Juanita	Residential	B(67)	60.6	60.6	60.9	0.3	60.9	0.3
R-309	Calle Ultima	Residential	B(67)	59.1	59.1	59.2	0.1	59.3	0.2
R-310	Calle Ultima	Residential	B(67)	59.9	59.9	60.0	0.1	60.1	0.2
R-311	Calle Ultima	Residential	B(67)	54.8	54.8	55.1	0.3	55.3	0.5
R-312	Calle Ultima	Residential	B(67)	58.6	58.6	58.9	0.3	59.0	0.4
R-313	Calle Ultima	Residential	B(67)	59.5	59.5	60.1	0.6	60.2	0.7
R-314	Calle Ultima	Residential	B(67)	60.3	60.3	60.9	0.6	61.0	0.7
R-315	Calle Lago	Residential	B(67)	58.7	58.7	59.2	0.5	59.3	0.6
R-316	Calle Ultima	Residential	B(67)	60.7	60.7	61.2	0.5	61.3	0.6
R-317	Via Lopez	Residential	B(67)	51.1	51.1	51.4	0.3	51.5	0.4

Table 2.14-11 Projected Traffic Noise Levels (with Design Option A), dBA L_{eq}

Rec. No.	Location	Type of Land Use	Noise Abatement Category	Modeled Existing Noise Level	Future No Build Noise Level	Alternative 2	Change from Existing Level	Alternative 4 (Preferred Alternative)	Change from Existing Level
R-318	Via Lopez	Residential	B(67)	47.9	47.9	48.4	0.5	48.4	0.5
R-319	Via Lopez	Residential	B(67)	47.3	47.3	47.7	0.4	47.7	0.4
R-320	Via Lopez	Residential	B(67)	46.9	47.0	47.2	0.3	47.2	0.3
R-321	Via Lopez	Residential	B(67)	48.6	48.6	48.9	0.3	49.0	0.4
R-322	Via Lopez	Residential	B(67)	52.6	52.6	52.8	0.2	52.9	0.3
R-323	Via California	Residential	B(67)	72.1	72.1	72.6	0.5	72.8	0.7
R-324	Camino De Estrella	Residential	B(67)	56.6	56.7	57.6	1.0	57.4	0.8
R-325	Avenida Las Palmas	Residential	B(67)	54.0	54.0	54.4	0.4	53.0	-1.0
R-326	Avenida Las Palmas	Residential	B(67)	54.2	54.2	54.6	0.4	54.5	0.3
R-327	Avenida Las Palmas	Residential	B(67)	51.7	51.7	52.0	0.3	52.0	0.3
R-328	Avenida Las Palmas	Residential	B(67)	52.6	52.6	52.7	0.1	52.8	0.2
R-329	Calle Rosita	Residential	B(67)	50.3	50.3	50.4	0.1	50.5	0.2
R-330	Calle Juanita	Residential	B(67)	55.0	55.0	55.0	0.0	55.2	0.2
R-331	Vuelta Loma	Residential	B(67)	52.9	52.9	53.1	0.2	53.2	0.3
R-332	Vuelta Loma	Residential	B(67)	51.5	51.5	51.6	0.1	51.7	0.2
R-333	Vuelta Loma	Residential	B(67)	50.1	50.1	50.4	0.3	50.5	0.4
R-334	Vuelta Loma	Residential	B(67)	50.4	50.4	50.4	0.0	50.4	0.0
R-335	Vuelta Loma	Residential	B(67)	53.9	53.9	54.0	0.1	54.0	0.1
R-336	Vuelta Loma	Residential	B(67)	55.2	55.2	55.3	0.1	55.4	0.2
R-337	Calle Lago	Residential	B(67)	59.0	59.0	59.3	0.3	59.5	0.5
R-338	Via Lopez	Residential	B(67)	47.5	47.5	48.0	0.5	48.0	0.5
R-339	Via Lopez	Residential	B(67)	48.1	48.1	48.2	0.1	48.3	0.2
R-340	Via California	Residential	B(67)	64.2	64.2	64.5	0.3	64.7	0.5
R-341	Calle Rosita	Residential	B(67)	48.2	48.2	48.3	0.1	48.4	0.2
R-342	Calle Juanita	Residential	B(67)	49.1	49.1	49.3	0.2	49.4	0.3
R-343	Calle Juanita	Residential	B(67)	51.3	51.3	51.3	0.0	51.4	0.1
R-344	Via Lopez	Residential	B(67)	47.4	47.4	47.5	0.1	47.5	0.1
R-345	Via California	Residential	B(67)	59.7	59.8	59.6	-0.1	59.9	0.2
R-346	Via California	Residential	B(67)	58.6	58.7	58.4	-0.2	58.4	-0.2
R-347	Via California	Residential	B(67)	63.1	63.2	63.4	0.3	63.6	0.5
R-348	Via California	Recreational	B(67)	63.0	63.1	62.9	-0.1	63.2	0.2
R-349	Via California	Residential	B(67)	66.2	66.3	66.1	-0.1	66.3	0.1

Table 2.14-11 Projected Traffic Noise Levels (with Design Option A), dBA L_{eq}

Rec. No.	Location	Type of Land Use	Noise Abatement Category	Modeled Existing Noise Level	Future No Build Noise Level	Alternative 2	Change from Existing Level	Alternative 4 (Preferred Alternative)	Change from Existing Level
R-350	Via California	Residential	B(67)	52.6	52.9	52.3	-0.3	52.3	-0.3
R-351	Via California	Residential	B(67)	63.5	63.6	63.6	0.1	63.7	0.2
R-352	Via California	Residential	B(67)	51.6	52.2	51.5	-0.1	51.5	-0.1
R-353	Via California	Residential	B(67)	63.4	63.5	63.4	0.0	63.6	0.2
R-354	Via California	Residential	B(67)	64.7	65.1	64.9	0.2	64.9	0.2
R-355	Via California	Recreational	B(67)	62.6	63.5	63.4	0.8	63.3	0.7
R-356	Via California	Residential	B(67)	52.0	52.9	52.2	0.2	52.1	0.1
R-357	Via California	Recreational	B(67)	63.0	63.2	63.0	0.0	63.3	0.3
R-358	Via California	Recreational	B(67)	58.7	59.5	59.1	0.4	59.2	0.5
R-359	Camino De Vista	Residential	B(67)	68.6	69.4	69.5	0.9	69.5	0.9
R-360	Camino De Vista	Residential	B(67)	68.7	69.5	69.7	1.0	69.7	1.0
R-361	Camino De Vista	Residential	B(67)	66.7	67.2	68.0	1.3	68.1	1.4
R-362	Camino De Vista	Residential	B(67)	65.3	66.0	66.1	0.8	66.4	1.1
R-363	Camino De Vista	Residential	B(67)	61.0	61.1	62.0	1.0	61.9	0.9
R-364	Camino De Vista	Residential	B(67)	61.9	62.3	62.9	1.0	62.9	1.0
R-365	Camino De Vista	Residential	B(67)	68.4	68.4	69.0	0.6	69.2	0.8
R-366	Camino De Vista	Residential	B(67)	66.9	66.9	67.7	0.8	67.7	0.8
R-367	Camino De Vista	Residential	B(67)	72.7	72.7	73.2	0.5	73.4	0.7
R-368	Camino De Vista	Residential	B(67)	69.9	69.9	70.7	0.8	70.8	0.9
R-369	Camino De Vista	Residential	B(67)	71.6	71.6	71.9	0.3	72.2	0.6
R-370	Camino De Vista	Residential	B(67)	71.9	71.9	72.0	0.1	72.3	0.4
R-371	Camino De Vista	Residential	B(67)	74.2	74.2	74.6	0.4	74.7	0.5
R-372	Camino De Vista	Residential	B(67)	73.5	73.5	74.1	0.6	74.1	0.6
R-373	Camino De Vista	Residential	B(67)	74.0	74.0	74.9	0.9	75.0 ²	1.0
R-374	Camino De Vista	Residential	B(67)	58.6	58.7	59.1	0.5	59.3	0.7
R-375	Camino De Vista	Residential	B(67)	55.1	55.2	56.3	1.2	56.9	1.8
R-376	Camino De Vista	Residential	B(67)	57.5	57.6	57.9	0.4	58.0	0.5
R-377	Camino De Vista	Residential	B(67)	64.0	64.0	64.2	0.2	64.3	0.3
R-378	Camino De Vista	Residential	B(67)	57.2	57.2	58.5	1.3	59.2	2.0
R-379	Camino De Vista	Residential	B(67)	60.7	60.7	61.0	0.3	61.7	1.0
R-380	Camino De Vista	Residential	B(67)	63.3	63.3	63.6	0.3	64.1	0.8
R-381	Camino De Vista	Residential	B(67)	66.7	66.7	67.6	0.9	67.8	1.1

Table 2.14-11 Projected Traffic Noise Levels (with Design Option A), dBA L_{eq}

Rec. No.	Location	Type of Land Use	Noise Abatement Category	Modeled Existing Noise Level	Future No Build Noise Level	Alternative 2	Change from Existing Level	Alternative 4 (Preferred Alternative)	Change from Existing Level
R-382	Via Canon	Residential	B(67)	60.5	60.5	60.7	0.2	60.6	0.1
R-383	Via Canon	Residential	B(67)	64.7	64.7	65.1	0.4	65.1	0.4
R-384	Via Canon	Residential	B(67)	62.6	62.6	62.8	0.2	62.9	0.3
R-385	Via Canon	Residential	B(67)	60.3	60.5	60.6	0.3	60.6	0.3
R-386	Via Canon	Residential	B(67)	60.0	60.1	60.1	0.1	60.0	0.0
R-387	Via Corona	Residential	B(67)	56.9	57.5	57.7	0.8	57.3	0.4
R-388	Via Corona	Residential	B(67)	56.7	57.3	57.6	0.9	57.2	0.5
R-389	Via Corona	Residential	B(67)	56.5	57.1	57.3	0.8	57.0	0.5
R-390	Via Corona	Residential	B(67)	56.1	56.5	56.8	0.7	56.5	0.4
R-391	Via Corona	Residential	B(67)	56.0	56.4	56.7	0.7	56.4	0.4
R-392	Via Corona	Residential	B(67)	56.5	57.0	57.5	1.0	57.2	0.7
R-393	Via Corona	Residential	B(67)	56.2	56.7	57.0	0.8	56.7	0.5
R-394	Via Corona	Residential	B(67)	55.9	56.3	56.5	0.6	56.1	0.2
R-395	Via Corona	Residential	B(67)	55.3	55.7	56.0	0.7	55.7	0.4
R-396	Paseo del Puerto	Residential	B(67)	63.8	63.8	64.3	0.5	64.5	0.7
R-397	Paseo del Puerto	Residential	B(67)	62.7	62.7	63.1	0.4	63.3	0.6
R-398	Paseo del Puerto	Residential	B(67)	63.7	63.7	63.9	0.2	64.1	0.4
R-399	Paseo del Puerto	Residential	B(67)	62.5	62.5	62.9	0.4	63.0	0.5
R-400	Paseo del Puerto	Residential	B(67)	56.7	56.7	57.4	0.7	57.7	1.0
R-401	Paseo del Puerto	Residential	B(67)	59.1	59.1	59.7	0.6	60.2	1.1
R-402	Paseo del Puerto	Residential	B(67)	62.9	62.9	63.3	0.4	64.1	1.2
R-403	Doheny Park Road	Residential	B(67)	56.5	56.5	56.9	0.4	56.3	-0.2
R-404	Doheny Park Road	Residential	B(67)	54.8	54.8	55.4	0.6	55.1	0.3
R-405	Doheny Park Road	Residential	B(67)	57.9	57.9	58.4	0.5	57.9	0.0
R-406	Doheny Park Road	Residential	B(67)	57.6	57.6	58.2	0.6	57.4	-0.2
R-407	Doheny Park Road	Residential	B(67)	57.5	57.5	58.7	1.2	57.8	0.3
R-408	Doheny Park Road	Residential	B(67)	60.5	60.5	61.6	1.1	60.1	-0.4
R-409	Doheny Park Road	Residential	B(67)	62.9	62.9	64.2	1.3	62.5	-0.4
R-410	Doheny Park Road	Residential	B(67)	57.3	57.3	58.3	1.0	57.0	-0.3
R-411	Doheny Park Road	Residential	B(67)	57.7	57.7	58.7	1.0	57.8	0.1
R-412	Doheny Park Road	Residential	B(67)	56.5	56.5	58.1	1.6	56.7	0.2
R-413	Doheny Park Road	Residential	B(67)	57.8	57.8	59.1	1.3	57.8	0.0

Table 2.14-11 Projected Traffic Noise Levels (with Design Option A), dBA L_{eq}

Rec. No.	Location	Type of Land Use	Noise Abatement Category	Modeled Existing Noise Level	Future No Build Noise Level	Alternative 2	Change from Existing Level	Alternative 4 (Preferred Alternative)	Change from Existing Level
R-414	Doheny Park Road	Residential	B(67)	59.6	59.6	61.1	1.5	59.6	0.0
R-415	Doheny Park Road	Residential	B(67)	56.5	56.5	57.6	1.1	57.0	0.5
R-416	Valle Road	Residential	B(67)	69.1	69.2	69.1	0.0	69.6	0.5
R-417	Valle Road	Residential	B(67)	79.5²	79.5²	80.3²	0.8	80.6²	1.1
R-418	Paseo Camponilla	Residential	B(67)	64.8	64.8	64.6	-0.2	64.9	0.1
R-419	Paseo Camponilla	Residential	B(67)	64.5	64.5	64.3	-0.2	64.6	0.1
R-420	Valle Road	Residential	B(67)	76.9²	76.9²	77.1²	0.2	77.3²	0.4
R-421	Valle Road	Residential	B(67)	75.1²	75.2²	75.4²	0.3	75.4²	0.3
R-422	Valle Road	Residential	B(67)	72.8	72.8	72.9	0.1	73.3	0.5
R-423	Valle Road	Residential	B(67)	72.8	72.8	72.7	-0.1	72.8	0.0
R-424	Valle Road	Residential	B(67)	72.0	72.0	72.1	0.1	72.5	0.5
R-425	Valle Road	Residential	B(67)	71.3	71.3	71.3	0.0	71.4	0.1
R-426	Valle Road	Residential	B(67)	69.3	69.4	69.4	0.1	69.7	0.4
R-427	Valle Road	Residential	B(67)	65.3	65.4	65.3	0.0	65.5	0.2
R-428	Valle Road	Residential	B(67)	70.2	70.2	70.1	-0.1	70.2	0.0
R-429	Valle Road	Residential	B(67)	68.0	68.2	68.4	0.4	68.9	0.9
R-430	Valle Road	Residential	B(67)	67.6	67.8	68.0	0.4	68.3	0.7
R-431	Valle Road	Residential	B(67)	67.0	67.2	67.2	0.2	67.5	0.5
R-432	Valle Road	Residential	B(67)	66.9	67.0	67.4	0.5	67.9	1.0
R-433	Valle Road	Residential	B(67)	65.7	65.8	66.3	0.6	66.7	1.0
R-434	Valle Road	Residential	B(67)	65.2	65.4	65.9	0.7	66.3	1.1
R-435	Valle Road	Residential	B(67)	63.5	63.6	64.3	0.8	64.7	1.2
R-436	Valle Road	Residential	B(67)	64.6	64.8	65.2	0.6	65.5	0.9
R-437	Valle Road	Residential	B(67)	59.3	59.5	59.8	0.5	60.0	0.7
R-438	Valle Road	Residential	B(67)	65.3	65.3	65.5	0.2	65.7	0.4
R-439	Valle Road	Residential	B(67)	67.8	67.8	68.0	0.2	68.1	0.3
R-440	Valle Road	Residential	B(67)	69.1	69.2	69.2	0.1	69.2	0.1
R-441	Valle Road	Residential	B(67)	69.1	69.2	69.3	0.2	69.3	0.2
R-442	Valle Road	Residential	B(67)	70.1	70.2	70.2	0.1	70.2	0.1
R-443	Valle Road	Residential	B(67)	71.1	71.2	70.9	-0.2	70.9	-0.2
R-444	Valle Road	Residential	B(67)	69.1	69.2	68.9	-0.2	68.9	-0.2
R-445	Valle Road	Residential	B(67)	67.7	67.8	67.9	0.2	67.9	0.2

Table 2.14-11 Projected Traffic Noise Levels (with Design Option A), dBA L_{eq}

Rec. No.	Location	Type of Land Use	Noise Abatement Category	Modeled Existing Noise Level	Future No Build Noise Level	Alternative 2	Change from Existing Level	Alternative 4 (Preferred Alternative)	Change from Existing Level
R-446	Valle Road	Residential	B(67)	67.3	67.4	67.4	0.1	67.4	0.1
R-447	Valle Road	Residential	B(67)	64.6	64.7	64.8	0.2	64.9	0.3
R-448	Valle Road	Residential	B(67)	58.6	58.6	57.6	-1.0	57.8	-0.8
R-449	Valle Road	Residential	B(67)	57.0	57.1	56.4	-0.6	56.5	-0.5
R-450	Valle Road	Residential	B(67)	57.4	57.4	56.6	-0.8	56.8	-0.6
R-451	Valle Road	Residential	B(67)	58.2	58.2	56.8	-1.4	56.9	-1.3
R-452	Valle Road	Residential	B(67)	57.5	57.5	56.8	-0.7	56.9	-0.6
R-453	Valle Road	Residential	B(67)	58.7	58.8	57.6	-1.1	57.7	-1.0
R-454	Valle Road	Residential	B(67)	61.1	61.2	59.3	-1.8	59.4	-1.7
R-455	Valle Road	Residential	B(67)	63.0	63.0	63.1	0.1	63.3	0.3
R-456	Valle Road	Residential	B(67)	61.7	61.8	61.9	0.2	62.1	0.4
R-457	Valle Road	Residential	B(67)	67.4	67.4	67.4	0.0	67.4	0.0
R-458	Valle Road	Residential	B(67)	69.8	69.8	69.1	-0.7	69.1	-0.7
R-459	Valle Road	Residential	B(67)	68.5	68.5	67.3	-1.2	67.3	-1.2
R-460	Valle Road	Residential	B(67)	60.5	60.5	59.8	-0.7	59.9	-0.6

Source: *Noise Study Report*, LSA Associates, Inc., September 2010.

¹ Numbers in **bold** represent noise levels that approach or exceed the NAC.

² These receivers would experience a severe traffic noise impact of 75 dBA L_{eq} or higher.

dBA = A-weighted decibels

L_{eq} = equivalent sound level

NAC = Noise Abatement Criteria

Rec. = Receiver

Table 2.14-12 Projected Traffic Noise Levels (with Design Option B), dBA L_{eq}

Rec. No.	Location	Type of Land Use	Noise Abatement Category	Modeled Existing Noise Level	Future No Build Noise Level	Alternative 2	Change from Existing Level	Alternative 4 (Preferred Alternative)	Change from Existing Level
R-1	Avenida La Cuesta	Residential	B(67)	71.6 ¹	71.6	72.0	0.4	72.1	0.5
R-2	Avenida La Cuesta	Residential	B(67)	58.7	58.7	59.0	0.3	59.2	0.5
R-3	Avenida La Cuesta	School	B(67)	58.0	58.0	58.3	0.3	58.5	0.5
R-4	Avenida La Cuesta	School	B(67)	66.8	66.8	67.2	0.4	67.2	0.4
R-5	Avenida La Cuesta	School	B(67)	71.7	71.7	71.8	0.1	71.8	0.1
R-6	Avenida La Cuesta	School	B(67)	71.4	71.4	71.6	0.2	71.6	0.2
R-7	Avenida La Cuesta	School	B(67)	62.2	62.2	63.1	0.9	63.1	0.9
R-8	Avenida La Cuesta	School	B(67)	67.6	67.6	68.6	1.0	68.6	1.0
R-9	Avenida Pico	School	B(67)	61.5	61.5	62.6	1.1	62.6	1.1
R-10	Avenida Pico	School	B(67)	64.1	64.2	64.3	0.2	64.2	0.1
R-11	Avenida La Cuesta	Residential	B(67)	61.3	61.3	61.3	0.0	61.9	0.6
R-12	Avenida La Cuesta	Residential	B(67)	60.2	60.2	60.3	0.1	60.8	0.6
R-13	Avenida Sierra	Residential	B(67)	61.3	61.3	61.4	0.1	61.9	0.6
R-14	Calle Campo	Residential	B(67)	60.7	60.7	61.0	0.3	61.3	0.6
R-15	La Placentia	Residential	B(67)	62.2	62.2	63.1	0.9	63.1	0.9
R-16	Via Pico Plaza	Hotel	B(67)	49.0	49.0	50.1	1.1	50.1	1.1
R-17	Via Pico Plaza	Restaurant	C(72)	66.3	66.3	66.5	0.2	66.5	0.2
R-18	Calle Campo	Residential	B(67)	58.7	58.7	58.9	0.2	59.3	0.6
R-19	La Placentia	Residential	B(67)	59.0	59.0	60.2	1.2	60.2	1.2
R-20	Calle Frontera	Church	B(67)	62.4	62.4	63.6	1.2	63.6	1.2
R-21	Via Concha	Residential	B(67)	60.1	60.1	62.0	1.9	62.0	1.9
R-22	Via Concha	Residential	B(67)	60.3	60.3	62.0	1.7	62.0	1.7
R-23	Via Concha	Residential	B(67)	60.5	60.5	62.0	1.5	62.0	1.5
R-24	Via Concha	Residential	B(67)	56.4	56.4	58.8	2.4	58.8	2.4
R-25	Avenida Fuentes	Residential	B(67)	55.3	55.3	56.2	0.9	56.2	0.9
R-26	Avenida Fuentes	Residential	B(67)	59.5	59.5	60.9	1.4	60.9	1.4
R-27	Avenida Fuentes	Residential	B(67)	60.4	60.4	61.6	1.2	61.6	1.2
R-28	Avenida Fuentes	Residential	B(67)	60.7	60.7	61.9	1.2	61.9	1.2
R-29	Avenida Fuentes	Residential	B(67)	60.7	60.7	61.7	1.0	61.6	0.9
R-30	Avenida Fuentes	Residential	B(67)	61.3	61.3	61.8	0.5	61.8	0.5
R-31	Avenida Fuentes	Residential	B(67)	58.0	58.0	56.8	-1.2	56.8	-1.2

Table 2.14-12 Projected Traffic Noise Levels (with Design Option B), dBA L_{eq}

Rec. No.	Location	Type of Land Use	Noise Abatement Category	Modeled Existing Noise Level	Future No Build Noise Level	Alternative 2	Change from Existing Level	Alternative 4 (Preferred Alternative)	Change from Existing Level
R-32	Avenida Fuentes	Residential	B(67)	59.4	59.4	58.0	-1.4	58.1	-1.3
R-33	Avenida Fuentes	Residential	B(67)	57.1	57.1	56.3	-0.8	56.3	-0.8
R-34	Avenida Fuentes	Residential	B(67)	56.9	56.9	56.1	-0.8	56.1	-0.8
R-35	Avenida Fuentes	Residential	B(67)	56.1	56.1	55.5	-0.6	55.5	-0.6
R-36	Avenida Fuentes	Residential	B(67)	55.3	55.3	54.7	-0.6	54.8	-0.5
R-37	Via Concha	Residential	B(67)	59.7	59.7	62.2	2.5	62.2	2.5
R-38	Avenida Fuentes	Residential	B(67)	60.9	60.9	61.3	0.4	61.4	0.5
R-39	Avenida Fuentes	Residential	B(67)	61.3	61.3	61.6	0.3	61.6	0.3
R-40	Avenida Fuentes	Residential	B(67)	56.2	56.2	56.1	-0.1	56.2	0.0
R-41	Avenida Fuentes	Residential	B(67)	49.4	49.4	48.6	-0.8	48.6	-0.8
R-42	Avenida Fuentes	Residential	B(67)	49.3	49.4	48.2	-1.1	48.2	-1.1
R-43	Avenida Fuentes	Residential	B(67)	47.8	47.8	47.4	-0.4	47.4	-0.4
R-44	Avenida Fuentes	Residential	B(67)	48.1	48.1	47.6	-0.5	47.7	-0.4
R-45	Avenida Fuentes	Residential	B(67)	53.3	53.3	51.9	-1.4	52.2	-1.1
R-46	Avenida Fuentes	Residential	B(67)	54.1	54.1	52.6	-1.5	52.8	-1.3
R-47	Calle Lobina	Church	B(67)	62.6	62.8	63.1	0.5	63.1	0.5
R-48	Calle Lobina	Residential	B(67)	60.8	60.9	60.9	0.1	60.9	0.1
R-49	Calle Lobina	Residential	B(67)	59.1	59.3	59.4	0.3	59.3	0.2
R-50	Calle Lobina	Residential	B(67)	58.7	59.0	59.1	0.4	59.0	0.3
R-51	Calle Lobina	Residential	B(67)	59.8	60.3	60.4	0.6	60.4	0.6
R-52	Calle Lobina	Residential	B(67)	61.7	61.8	61.5	-0.2	61.5	-0.2
R-53	Calle Lobina	Residential	B(67)	60.1	60.5	60.4	0.3	60.3	0.2
R-54	Calle Lobina	Residential	B(67)	62.2	63.1	63.0	0.8	62.7	0.5
R-55	Calle Lobina	Residential	B(67)	63.7	64.7	64.7	1.0	64.6	0.9
R-56	Calle Lobina	Residential	B(67)	61.1	61.4	60.8	-0.3	60.9	-0.2
R-57	Calle Lobina	Residential	B(67)	61.5	62.0	61.7	0.2	61.8	0.3
R-58	Calle Lobina	Residential	B(67)	61.1	61.6	61.0	-0.1	60.8	-0.3
R-59	Calle Lobina	Residential	B(67)	62.0	62.8	62.5	0.5	62.2	0.2
R-60	Avenue Oliva	Residential	B(67)	59.8	59.9	59.5	-0.3	59.6	-0.2
R-61	Avenue Oliva	Residential	B(67)	59.9	59.9	59.6	-0.3	59.7	-0.2
R-62	Avenue Oliva	Residential	B(67)	59.7	59.8	59.5	-0.2	59.6	-0.1

Table 2.14-12 Projected Traffic Noise Levels (with Design Option B), dBA L_{eq}

Rec. No.	Location	Type of Land Use	Noise Abatement Category	Modeled Existing Noise Level	Future No Build Noise Level	Alternative 2	Change from Existing Level	Alternative 4 (Preferred Alternative)	Change from Existing Level
R-63	Avenue Oliva	Residential	B(67)	59.2	59.3	59.1	-0.1	59.1	-0.1
R-64	Avenue Oliva	Residential	B(67)	58.8	58.9	58.6	-0.2	58.7	-0.1
R-65	Avenue Oliva	Residential	B(67)	59.2	59.3	59.0	-0.2	59.0	-0.2
R-66	Avenue Oliva	Residential	B(67)	59.9	60.0	59.7	-0.2	59.7	-0.2
R-67	Via Barracuda	Residential	B(67)	63.0	63.2	63.5	0.5	63.5	0.5
R-68	Via Barracuda	Residential	B(67)	63.8	63.9	64.4	0.6	64.3	0.5
R-69	Via Barracuda	Residential	B(67)	63.7	63.7	64.4	0.7	64.3	0.6
R-70	Via Barracuda	Residential	B(67)	63.0	63.0	63.8	0.8	63.8	0.8
R-71	Via Barracuda	Residential	B(67)	63.5	63.5	64.4	0.9	64.3	0.8
R-72	Via Barracuda	Residential	B(67)	59.6	59.9	60.6	1.0	60.5	0.9
R-73	Via Barracuda	Residential	B(67)	58.9	59.2	59.5	0.6	59.4	0.5
R-74	Via Barracuda	Residential	B(67)	59.5	59.7	60.3	0.8	60.2	0.7
R-75	Via Barracuda	Residential	B(67)	62.3	62.4	63.3	1.0	63.2	0.9
R-76	Via Barracuda	Residential	B(67)	57.1	57.3	57.8	0.7	57.7	0.6
R-77	Via Barracuda	Residential	B(67)	56.6	56.8	57.2	0.6	57.2	0.6
R-78	Via Barracuda	Residential	B(67)	60.1	60.6	60.9	0.8	60.9	0.8
R-79	Via Barracuda	Residential	B(67)	59.8	60.0	60.4	0.6	60.5	0.7
R-80	Via Barracuda	Residential	B(67)	56.8	57.1	57.6	0.8	57.5	0.7
R-81	Via Barracuda	Residential	B(67)	56.4	56.7	57.3	0.9	57.2	0.8
R-82	Via Ballena	Residential	B(67)	54.1	54.2	54.3	0.2	54.8	0.7
R-83	Via Ballena	Residential	B(67)	57.4	57.4	57.7	0.3	57.9	0.5
R-84	Via Ballena	Residential	B(67)	58.0	58.0	58.6	0.6	58.6	0.6
R-85	Via Ballena	Residential	B(67)	56.6	56.6	56.9	0.3	57.0	0.4
R-86	Via Ballena	Residential	B(67)	52.5	52.5	53.5	1.0	53.5	1.0
R-87	Via Ballena	Residential	B(67)	50.1	50.1	51.6	1.5	51.6	1.5
R-88	Via Ballena	Residential	B(67)	46.0	46.0	46.7	0.7	46.6	0.6
R-89	Via Ballena	Residential	B(67)	53.6	53.6	54.1	0.5	54.1	0.5
R-90	Via Ballena	Residential	B(67)	51.6	51.6	52.0	0.4	52.0	0.4
R-91	Via Ballena	Residential	B(67)	49.6	49.6	50.2	0.6	50.2	0.6
R-92	Via Ballena	Residential	B(67)	51.7	51.7	52.3	0.6	52.4	0.7
R-93	Calle Frontera	Residential	B(67)	63.2	63.2	63.9	0.7	63.9	0.7

Table 2.14-12 Projected Traffic Noise Levels (with Design Option B), dBA L_{eq}

Rec. No.	Location	Type of Land Use	Noise Abatement Category	Modeled Existing Noise Level	Future No Build Noise Level	Alternative 2	Change from Existing Level	Alternative 4 (Preferred Alternative)	Change from Existing Level
R-94	Calle Frontera	Residential	B(67)	62.0	62.0	62.9	0.9	63.1	1.1
R-95	Calle Frontera	Residential	B(67)	61.4	61.4	62.7	1.3	62.7	1.3
R-96	Calle Frontera	Residential	B(67)	62.8	62.8	64.3	1.5	64.4	1.6
R-97	Calle Frontera	Residential	B(67)	59.9	59.9	61.4	1.5	61.4	1.5
R-98	Calle Frontera	Residential	B(67)	62.8	62.8	64.5	1.7	64.5	1.7
R-99	Calle Frontera	Residential	B(67)	66.3	66.3	68.0	1.7	68.1	1.8
R-100	Calle Frontera	Residential	B(67)	66.8	66.8	68.4	1.6	68.4	1.6
R-101	Calle Frontera	Residential	B(67)	64.6	64.6	65.8	1.2	65.9	1.3
R-117	Calle Frontera	Residential	B(67)	42.6	42.8	43.6	1.0	43.7	1.1
R-118	Calle Frontera	Residential	B(67)	49.2	49.3	50.0	0.8	50.0	0.8
R-119	Calle Frontera	Residential	B(67)	46.6	46.7	47.6	1.0	47.7	1.1
R-120	Calle Frontera	Residential	B(67)	56.7	56.8	57.3	0.6	57.4	0.7
R-121	Calle Frontera	Residential	B(67)	52.0	52.0	52.9	0.9	52.9	0.9
R-122	Calle Frontera	Residential	B(67)	51.3	51.3	52.5	1.2	52.5	1.2
R-123	Calle Frontera	Residential	B(67)	53.4	53.4	54.6	1.2	54.7	1.3
R-124	Calle Frontera	Residential	B(67)	53.3	53.3	54.5	1.2	54.5	1.2
R-125	Calle Frontera	Residential	B(67)	54.1	54.1	55.4	1.3	55.3	1.2
R-126	Calle Frontera	Residential	B(67)	53.8	53.8	55.1	1.3	55.0	1.2
R-133	Via Montezuma	Residential	B(67)	47.3	47.3	47.8	0.5	47.8	0.5
R-134	Via Montezuma	Residential	B(67)	47.8	47.8	48.0	0.2	48.1	0.3
R-135	Via Montezuma	Residential	B(67)	49.7	49.8	49.9	0.2	50.1	0.4
R-136	Via Montezuma	Residential	B(67)	49.5	49.6	49.7	0.2	50.0	0.5
R-137	Via Montezuma	Residential	B(67)	50.0	50.0	50.7	0.7	50.8	0.8
R-138	Via Montezuma	Residential	B(67)	52.0	52.0	53.4	1.4	53.3	1.3
R-139	Via Montezuma	Residential	B(67)	52.6	52.6	54.8	2.2	54.9	2.3
R-140	Via Montezuma	Residential	B(67)	50.7	50.7	51.7	1.0	52.4	1.7
R-141	Calle Vista Torito	Residential	B(67)	48.5	48.5	49.6	1.1	51.0	2.5
R-142	Calle Vista Torito	Residential	B(67)	48.4	48.4	49.6	1.2	49.8	1.4
R-143	Via Montezuma	Residential	B(67)	45.7	45.8	45.9	0.2	46.1	0.4
R-144	Via Montezuma	Residential	B(67)	46.2	46.2	46.6	0.4	46.8	0.6
R-145	Via Montezuma	Residential	B(67)	49.7	49.7	50.4	0.7	50.5	0.8
R-146	Via Montezuma	Residential	B(67)	46.8	46.8	48.0	1.2	48.1	1.3

Table 2.14-12 Projected Traffic Noise Levels (with Design Option B), dBA L_{eq}

Rec. No.	Location	Type of Land Use	Noise Abatement Category	Modeled Existing Noise Level	Future No Build Noise Level	Alternative 2	Change from Existing Level	Alternative 4 (Preferred Alternative)	Change from Existing Level
R-147	Via Montezuma	Residential	B(67)	46.7	46.7	47.7	1.0	48.2	1.5
R-148	Via Montezuma	Residential	B(67)	46.5	46.5	46.9	0.4	48.1	1.6
R-149	Calle Vista Torito	Residential	B(67)	51.3	51.3	51.8	0.5	53.2	1.9
R-150	Calle Vista Torito	Residential	B(67)	49.5	49.5	50.1	0.6	51.0	1.5
R-151	Calle Vista Torito	Residential	B(67)	49.3	49.3	49.9	0.6	50.7	1.4
R-153	Calle Vista Torito	Residential	B(67)	52.0	52.0	52.4	0.4	53.8	1.8
R-155	Calle Vista Torito	Residential	B(67)	52.1	52.1	52.3	0.2	53.4	1.3

Source: *Noise Study Report*, LSA Associates, Inc., September 2010.

¹ Numbers in **bold** represent noise levels that approach or exceed the NAC.

dBA = A-weighted decibels

L_{eq} = equivalent sound level

NAC = Noise Abatement Criteria

Rec. = Receiver

No receivers would experience a substantial increase over their corresponding modeled existing noise levels. The following receiver locations would be or would continue to be exposed to noise levels that approach or exceed the 67 dBA L_{eq} NAC under Activity Category B for Build Alternative [4](#) under Design Option [B](#). [The receivers listed below also apply to Design Option A.](#)

- **Receiver R-1:** This receiver location represents existing residences along Avenida La Cuesta on the east side of I-5 south of Avenida Pico. One sound barrier was modeled along the residential property line to shield this residence.
- **Receivers R-4–R-6 and R-8:** These receiver locations represent an existing outdoor active sitting area along Avenida La Cuesta on the east side of I-5 south of Avenida Pico, at the Ole Hanson Elementary School. Currently, there is no existing wall that shields this outdoor activity area. One sound barrier was modeled along the school property line to shield the activity area.
- **Receivers R-99, R-100, R-102, 105–R-111, and R-114–R-116:** These receiver locations represent existing residences along Calle Frontera and Calle Juarez on the east side of I-5 between Avenida Pico and Avenida Vaquero. Three existing 6 ft high walls (EW Nos. 8, 10, and 11) along the residential property lines partially shield these residences. One sound barrier was modeled along the residential property line (the same location as the existing wall) to shield these residences.
- **Receiver R-163:** This receiver location represents an existing residence along Calle Canasta on the east side of I-5 north of Avenida Vaquero. One sound barrier was modeled along the residential property line to shield this residence.
- **Receiver R-176:** This receiver location represents an existing outdoor swimming pool along Camino De Los Mares on the east side of I-5 between Avenida Vaquero and Camino De Estrella. An existing 6 ft high wall (EW No. 14) along the property line shields the swimming pool. One sound barrier was modeled along the property line (the same location as the existing wall) to shield the swimming pool.
- **Receivers R-188, R-189, R-202, R-187, and R-201:** These receiver locations represent existing residences along Calle Grand Vista on the west side of I-5 between Avenida Vaquero and Camino De Estrella. An existing 10–16 ft high wall (EW No. 15) along the edge of the shoulder and an existing 6–16 ft high wall (EW No. 16) along the edge of the shoulder currently shield these residences. One sound barrier was modeled along the edge of the shoulder to shield these residences.
- **Receivers R-231, R-232, R-234, R-236, R-243–R-245, and R-254:** These receiver locations represent existing residences along Calle Portola on the east side of I-5 north of Camino De Estrella. An existing 4–7 ft high wall (EW No. 17) along the

existing ROW shields these residences. One sound barrier was modeled along the existing ROW to shield these residences.

- **Receivers R-279 and R-287:** These receiver locations represent existing residences along Via California on the east side of I-5 north of Via California. One sound barrier was modeled along the residential property line to shield these residences.
- **Receiver R-323:** This receiver location represents an existing residence along Via California on the west side of I-5 north of Via California. One sound barrier was modeled along the existing ROW to shield this residence.
- **Receiver R-349:** This receiver location represents an existing residence along Via California on the east side of I-5 north of Via California. An existing 5–13 ft high wall (EW No. 24) along the existing State ROW shields these residences. One sound barrier was modeled along the existing State ROW (the same location as the existing wall) to shield this residence.
- **Receivers R-359–R-362, R-365–R-373, and R-381:** These receiver locations represent existing residences along Camino De Vista on the east side of I-5 north of PCH. An existing 14 ft high wall (EW No. 25) along the edge of the shoulder shields these residences. Two sound barrier locations were evaluated separately to shield these residences and compare the effectiveness of the barriers. The first sound barrier was evaluated along the edge of the shoulder and the second sound barrier was evaluated along the residential property line.
- **Receiver R-416:** This receiver location represents an existing residence along Valle Road on the east side of I-5 between PCH and San Juan Creek Road. An existing 6 ft high wall (EW No. 31) along the residential property line shields this residence. One sound barrier was modeled along the residential property line (the same location as the existing wall) to shield this residence.
- **Receiver R-417:** This receiver location represents an existing residence along Valle Road on the east side of I-5 between PCH and San Juan Creek Road. One sound barrier was modeled along the residential property line to shield this residence.
- **Receivers R-420–R-426 and R-428:** These receiver locations represent existing residences along Valle Road on the east side of I-5 south of San Juan Creek Road. An existing 14 ft high wall (EW No. 33) along the edge of the shoulder partially shields these residences. Two sound barrier locations were evaluated separately to shield these residences and to compare the effectiveness of the barriers. The first sound barrier was evaluated along the edge of the shoulder, and the second sound barrier was evaluated along the residential property line.
- **Receivers R-429–R-433 and R-434:** These receiver locations represent existing residences along Valle Road on the east side of I-5 south of San Juan Creek Road. An

existing 14 ft high wall (EW No. 33) along the edge of the shoulder shields these residences. Two sound barrier locations were evaluated separately to shield these residences and to compare the effectiveness of the barriers. The first sound barrier was evaluated along the edge of the shoulder and the second sound barrier was evaluated along the residential property line.

- **Receivers R-439–R-446:** These receiver locations represent existing residences along Valle Road on the east side of I-5 south of San Juan Creek Road. An existing 14 ft high wall (EW No. 33) along the edge of the shoulder partially shields these residences. Two sound barrier locations were evaluated separately to shield these residences and to compare the effectiveness of the barriers. The first sound barrier was evaluated along the edge of the shoulder and the second sound barrier was evaluated along the residential property line.
- **Receivers R-457–R-459:** These receiver locations represent existing residences along Valle Road on the east side of I-5 south of San Juan Creek Road. Two sound barrier locations were evaluated separately to shield these residences and to compare the effectiveness of the barriers. The first sound barrier was evaluated along the edge of the shoulder and the second sound barrier was evaluated along the residential property line.

Of the 460 modeled receivers, four receivers (Receivers R-373, R-417, R-420, and R-421) under **Build** Alternative 4 would experience a severe traffic noise impact of 75 dBA L_{eq} or higher. Unusual and extraordinary abatement measures such as feasible sound barriers (reducing noise levels by 5 dBA or more) that have an estimated construction cost exceeding the total reasonable allowance or interior abatement should be considered. Unusual and extraordinary abatement measures are subject to approval by the Department. If interior noise abatement is recommended by the Department, an interior noise analysis will be conducted during the design phase to determine whether interior noise abatement is feasible.

Interior Noise Impacts

Five locations were evaluated for potential future interior noise impacts associated with project operations. Potential future interior noise impacts were evaluated for Ole Hanson Elementary School, St. Andrew's By-the-Sea United Methodist Church, Pacific Coast Church, Kingdom Hall Jehovah's Witnesses, and Faith Lutheran Church. Figure 2.14-1 shows the location of the classroom building and four churches. Table 2.14-13 shows the results of the simultaneous interior and exterior noise level measurements, the calculated exterior-to-interior attenuation, the predicted future worst-case noise levels, and the calculated future interior noise levels. Also, Table 2.14-13 shows that the predicted future

interior noise levels for all five locations would not approach or exceed the 52 dBA L_{eq} NAC under Build Alternative 4. Therefore, noise abatement measures would not be required.

Noise Abatement Consideration

Noise abatement measures such as sound barriers were considered to shield noise-sensitive receivers along I-5 from south of Avenida Pico to south of San Juan Creek Road, where sensitive receivers exist and would continue to be exposed to traffic noise levels approaching or exceeding the NAC. All properties requiring abatement consideration are within Activity Category B (67 dBA L_{eq} NAC). The bold numbers in Tables 2.14-11 and 2.14-12, provided earlier, show impacted receiver locations that approach or exceed the NAC under future worst-case with project traffic conditions. At each location, six sound barrier heights were analyzed: 6, 8, 10, 12, 14, and 16 ft. Sound barriers with a height of 16 ft were not analyzed if the barrier would be located within 15 ft of the nearest travel lane (see the Department HDM, January 2007).

Table 2.14-13 Interior Noise Analysis

Monitor No.	Location	Measured Noise Levels (dBA L _{eq})		Measured Exterior-to-Interior Attenuation (dBA)	Alternative 4 (dBA L _{eq})	
		Exterior	Interior		Exterior	Interior
1	Ole Hanson Elementary School	67.6	43.4	24.2	70.4	46.2
2	St. Andrew's By-the-Sea United Methodist Church	65.0	50.7	14.3	63.5	49.2
3	Pacific Coast Church	58.1	39.2	18.9	63.0	44.1
4	Kingdom Hall of Jehovah's Witnesses	59.1	38.2	20.9	59.4	38.5
5	Faith Lutheran Church ¹	59.1	38.2	20.9 ¹	59.6	38.7

Source: *Noise Study Report*, LSA Associates, Inc., September 2010.

¹ Simultaneous interior and exterior noise level measurements were not conducted due to construction activities at the church. The building attenuation for Faith Lutheran Church was assumed to be similar to the building attenuation for the Kingdom Hall of Jehovah's Witnesses because the construction of these two buildings is similar and they are in close proximity to each other.

dBA = A-weighted decibels

L_{eq} = equivalent sound level

The following sound barriers were analyzed to shield the sensitive receiver locations that would be exposed to traffic noise levels approaching or exceeding the 67 dBA L_{eq} NAC for Build Alternative [4 with Design Option A](#):

- **SB No. 4-1:** 245 ft long barrier located on the east side of I-5 south of Avenida Pico [was](#) analyzed along the residential property line to shield Receiver R-1.
- **SB No. 4-2:** 627 ft long barrier located on the east side of I-5 south of Avenida Pico [was](#) analyzed along the school property line to shield Receivers R-4–R-6 and R-8.
- **SB No. 4-4:** 2,226 ft long barrier located on the east side of I-5 between Avenida Vista Hermosa and Avenida Vaquero [was](#) analyzed along the residential property line to shield Receivers R-99, R-100, R-102, R-105–R-111, and R-114–R-116.
- **SB No. 4-7:** 90 ft long barrier located on the east side of I-5 between Avenida Vaquero and Camino De Estrella [was](#) analyzed along the residential property line to shield Receiver R-163.
- **SB No. 4-8:** 180 ft long barrier located on the east side of I-5 between Avenida Vaquero and Camino De Estrella [was](#) analyzed along the residential property line to shield Receiver R-176.
- **SB No. 4-9:** 1,681 ft long barrier located on the west side of I-5 between Avenida Vaquero and Camino De Estrella [was](#) analyzed along the edge of the shoulder line to shield Receivers R-188, R-189, R-202, R-187, and R-202.
- **SB No. 4-11:** 1,233 ft long barrier located on the east side of I-5 between Camino De Estrella and Via California [was](#) analyzed along the existing ROW line to shield Receivers R-231, R-232, R-234, R-236, R-243–R-245, and R-254.
- **SB No. 4-14:** 170 ft long barrier located on the east side of I-5 between Camino De Estrella and Via California [was](#) analyzed along the existing ROW line to shield Receivers R-279 and R-287.
- **SB No. 4-15:** 278 ft long barrier located on the west side of I-5 between Camino De Estrella and Via California [was](#) analyzed along the existing ROW line to shield Receiver R-323.
- **SB No. 4-16:** 1,082 ft long barrier located on the east side of I-5 just north of PCH [was](#) analyzed along the residential property line to shield Receivers R-359–R-362, R-365–R-373, and R-381.
- **SB No. 4-17:** 894 ft long barrier located on the east side of I-5 just north of PCH [was](#) analyzed along the northbound on-ramp edge of the shoulder line to shield Receivers R-359–R-362, R-365–R-373, and R-381.

- **SB No. 4-19:** 164 ft long barrier located on the east side of I-5 between PCH and San Juan Creek Road was analyzed along the residential property line to shield Receiver R-416.
- **SB No. 4-20:** 144 ft long barrier located on the east side of I-5 between PCH and San Juan Creek Road was analyzed along the residential property line to shield Receiver R-417.
- **SB No. 4-21:** 890 ft long barrier located on the east side of I-5 between PCH and San Juan Creek Road was analyzed along the edge of the shoulder line to shield Receivers R-420–R-426, R-428–R-433, R-434, R-439–R-446, and R-457–R-459.
- **SB No. 4-22:** 487 ft long barrier located on the east side of I-5 between PCH and San Juan Creek Road was analyzed along the residential property line to shield Receivers R-420–R-426 and R-428.
- **SB No. 4-23:** 428 ft long barrier located on the east side of I-5 between PCH and San Juan Creek Road was analyzed along the residential property line to shield Receivers R-429–R-434.
- **SB No. 4-24:** 793 ft long barrier located on the east side of I-5 between PCH and San Juan Creek Road was analyzed along the residential property line to shield Receivers R-439–R-446.
- **SB No. 4-25:** 295 ft long barrier located on the east side of I-5 between PCH and San Juan Creek Road was analyzed along the residential property line to shield Receivers R-457–R-459.
- **SB No. 4-27:** 235 ft long barrier located on the east side of I-5 just south of Via California was analyzed along the existing ROW line to shield Receiver R-349.

The results of the sound barrier modeling for barriers in Design Option B are shown in Table 2.14-14 for Alternative 4. The sound barriers listed also apply to Design Option A. The results of the sound barrier modeling with additional sound barrier locations evaluated are shown in Table 2.14-15 for Build Alternative 4. The locations of the modeled barriers for Build Alternative 4 are shown on Figure 2.14-2.

Parallel Barriers

Parallel barrier effects occur when sound barriers are located on both sides of the roadway, reflecting traffic noise back and forth across the roadway multiple times and building up a reverberant sound field between them. This reverberation increases noise levels at nearby receivers on both sides of the roadway compared to what would exist without the opposite-side barrier. In addition, noise increases generated by reflection would have the potential to degrade the performance of modeled sound barriers (i.e.,

parallel barrier degradation). To avoid a reduction in the performance of parallel reflective barriers, the width-to-height ratio of the roadway section to the barriers should be at least 10:1. The Department studies (Hendriks 1991; Hendriks and Hecker 1989) concluded that the noise increase over a single barrier from a parallel barrier configuration of 10:1 or more would be imperceptible. The minimum parallel barrier ratio along I-5 would be 12.5:1. Therefore, no indirect significant barrier degradation would occur due to parallel barriers along I-5.

Sound Barrier Feasibility

A minimum reduction of 5 dBA must be achieved at an impacted receiver for the noise abatement measure to be considered feasible. The feasibility criterion is not necessarily a noise abatement design goal. Greater noise reductions are encouraged if they can be reasonably achieved. Feasibility may also be restricted by the following factors: (1) topography, (2) access requirement for driveways, (3) the presence of local cross streets, (4) underground utilities, (5) other noise sources in the area, and (6) safety considerations.

A total of 21 sound barriers for **Build** Alternative 4 were evaluated in areas adjacent to the impacted residences. Of the 21 sound barriers analyzed for **Build** Alternative 4, 18 sound barriers were capable of reducing noise levels by 5 dBA or more, as required to be considered feasible. Table 2.14-16 shows the feasible sound barriers for **Build** Alternative 4 along with their height, approximate length, receiver locations shielded, number of benefited residences, beginning and ending stations, and beginning and ending barrier top elevations. Three sound barriers (SB Nos. 4-17, 4-19, and 4-21) under Build Alternative 4 were determined to be not feasible because they would not reduce noise levels by 5 dBA or more.

Table 2.14-14 Predicted Noise Levels and Insertion Loss (dBA) for **Build Alternative 4**

SB No.	EW No.	Rec. No.	Modeled Existing Noise Level	Alternative 4	With Barrier H = 6 ft		With Barrier H = 8 ft		With Barrier H = 10 ft		With Barrier H = 12 ft		With Barrier H = 14 ft		With Barrier H = 16 ft	
					<u>L_{eq}</u>	<u>I.L.¹</u>	<u>L_{eq}</u>	<u>I.L.</u>	<u>L_{eq}</u>	<u>I.L.</u>	<u>L_{eq}</u>	<u>I.L.</u>	<u>L_{eq}</u>	<u>I.L.</u>	<u>L_{eq}</u>	<u>I.L.</u>
4-1b ² (PL)		R-1	71.6³	72.1	<u>65.9⁴</u>	<u>6.2</u>	<u>62.9</u>	<u>9.2</u>	<u>60.7</u>	<u>11.4</u>	<u>59.6</u>	<u>12.5</u>	<u>59.0</u>	<u>13.1</u>	<u>58.2</u>	<u>13.9</u>
		R-2	58.7	59.2	-- ⁵	--	--	--	--	--	--	--	--	--	--	--
		R-3	58.0	58.5	--	--	--	--	--	--	--	--	--	--	--	--
4-2b ² (PL)		R-4	66.8	67.2	<u>61.0</u>	<u>6.2</u>	<u>59.6</u>	<u>7.6</u>	<u>58.5</u>	<u>8.7</u>	<u>57.7</u>	<u>9.5</u>	<u>57.0</u>	<u>10.2</u>	<u>56.5</u>	<u>10.7</u>
		R-5	71.7	71.8	<u>62.8</u>	<u>9.0</u>	<u>60.3</u>	<u>11.5</u>	<u>58.2</u>	<u>13.6</u>	<u>57.2</u>	<u>14.6</u>	<u>55.8</u>	<u>16.0</u>	<u>54.8</u>	<u>17.0</u>
		R-6	71.4	71.6	<u>65.0</u>	<u>6.6</u>	<u>61.4</u>	<u>10.2</u>	<u>58.8</u>	<u>12.8</u>	<u>57.2</u>	<u>14.4</u>	<u>55.7</u>	<u>15.9</u>	<u>54.8</u>	<u>16.8</u>
		R-7	62.2	63.0	59.5	3.5	58.3	4.7	57.5	5.5	56.8	6.2	56.1	6.9	55.5	7.5
		R-8	67.6	68.5	<u>61.5</u>	<u>7.0</u>	<u>59.5</u>	<u>9.0</u>	<u>58.2</u>	<u>10.3</u>	<u>57.1</u>	<u>11.4</u>	<u>56.1</u>	<u>12.4</u>	<u>55.3</u>	<u>13.2</u>
		R-9	61.5	61.1	--	--	--	--	--	--	--	--	--	--	--	--
		R-10	64.1	63.4	--	--	--	--	--	--	--	--	--	--	--	--
		R-11	61.3	61.9	--	--	--	--	--	--	--	--	--	--	--	--
		R-12	60.2	60.8	--	--	--	--	--	--	--	--	--	--	--	--
		R-13	61.3	61.9	--	--	--	--	--	--	--	--	--	--	--	--
		R-14	60.7	61.3	--	--	--	--	--	--	--	--	--	--	--	--
		R-15	62.2	63.1	--	--	--	--	--	--	--	--	--	--	--	--
	R-16	49.0	50.0	--	--	--	--	--	--	--	--	--	--	--	--	
	R-17	66.3	66.5	--	--	--	--	--	--	--	--	--	--	--	--	
	R-18	58.7	59.3	--	--	--	--	--	--	--	--	--	--	--	--	
	R-19	59.0	60.2	--	--	--	--	--	--	--	--	--	--	--	--	
	R-20	62.4	63.5	--	--	--	--	--	--	--	--	--	--	--	--	
	R-21	60.1	61.8	--	--	--	--	--	--	--	--	--	--	--	--	
	R-22	60.3	61.8	--	--	--	--	--	--	--	--	--	--	--	--	
	R-23	60.5	61.8	--	--	--	--	--	--	--	--	--	--	--	--	
	R-24	56.4	58.5	--	--	--	--	--	--	--	--	--	--	--	--	
	R-25	55.3	56.0	--	--	--	--	--	--	--	--	--	--	--	--	
	R-26	59.5	60.6	--	--	--	--	--	--	--	--	--	--	--	--	
	R-27	60.4	61.4	--	--	--	--	--	--	--	--	--	--	--	--	
	R-28	60.7	61.6	--	--	--	--	--	--	--	--	--	--	--	--	
	R-29	60.7	61.4	--	--	--	--	--	--	--	--	--	--	--	--	
	R-30	61.3	61.6	--	--	--	--	--	--	--	--	--	--	--	--	
	1	R-31	58.0	56.6	--	--	--	--	--	--	--	--	--	--	--	--
		R-32	59.4	58.0	--	--	--	--	--	--	--	--	--	--	--	--

Table 2.14-14 Predicted Noise Levels and Insertion Loss (dBA) for Build Alternative 4

SB No.	EW No.	Rec. No.	Modeled Existing Noise Level	Alternative 4	With Barrier H = 6 ft		With Barrier H = 8 ft		With Barrier H = 10 ft		With Barrier H = 12 ft		With Barrier H = 14 ft		With Barrier H = 16 ft	
					L _{eq}	I.L. ¹	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.
	2	R-33	57.1	56.2	--	--	--	--	--	--	--	--	--	--	--	--
		R-34	56.9	56.0	--	--	--	--	--	--	--	--	--	--	--	--
		R-35	56.1	55.4	--	--	--	--	--	--	--	--	--	--	--	--
		R-36	55.3	54.7	--	--	--	--	--	--	--	--	--	--	--	--
		R-37	59.7	62.0	--	--	--	--	--	--	--	--	--	--	--	--
		R-38	60.9	61.2	--	--	--	--	--	--	--	--	--	--	--	--
		R-39	61.3	61.5	--	--	--	--	--	--	--	--	--	--	--	--
		R-40	56.2	56.0	--	--	--	--	--	--	--	--	--	--	--	--
		R-41	49.4	48.4	--	--	--	--	--	--	--	--	--	--	--	--
		R-42	49.3	48.1	--	--	--	--	--	--	--	--	--	--	--	--
	3	R-43	47.8	47.3	--	--	--	--	--	--	--	--	--	--	--	--
		R-44	48.1	47.6	--	--	--	--	--	--	--	--	--	--	--	--
		R-45	53.3	52.1	--	--	--	--	--	--	--	--	--	--	--	--
		R-46	54.1	52.8	--	--	--	--	--	--	--	--	--	--	--	--
		R-47	62.6	63.0	--	--	--	--	--	--	--	--	--	--	--	--
	5	R-48	60.8	60.8	--	--	--	--	--	--	--	--	--	--	--	--
		R-49	59.1	59.2	--	--	--	--	--	--	--	--	--	--	--	--
		R-50	58.7	58.9	--	--	--	--	--	--	--	--	--	--	--	--
		R-51	59.8	60.2	--	--	--	--	--	--	--	--	--	--	--	--
		R-52	61.7	61.5	--	--	--	--	--	--	--	--	--	--	--	--
		R-53	60.1	60.3	--	--	--	--	--	--	--	--	--	--	--	--
		R-54	62.2	62.7	--	--	--	--	--	--	--	--	--	--	--	--
		R-55	63.7	64.6	--	--	--	--	--	--	--	--	--	--	--	--
		R-56	61.1	60.8	--	--	--	--	--	--	--	--	--	--	--	--
		R-57	61.5	61.7	--	--	--	--	--	--	--	--	--	--	--	--
		R-58	61.1	60.8	--	--	--	--	--	--	--	--	--	--	--	--
	R-59	62.0	62.1	--	--	--	--	--	--	--	--	--	--	--	--	
	4	R-60	59.8	59.5	--	--	--	--	--	--	--	--	--	--	--	--
		R-61	59.9	59.6	--	--	--	--	--	--	--	--	--	--	--	--
		R-62	59.7	59.5	--	--	--	--	--	--	--	--	--	--	--	--
		R-63	59.2	59.0	--	--	--	--	--	--	--	--	--	--	--	--
		R-64	58.8	58.6	--	--	--	--	--	--	--	--	--	--	--	--
		R-65	59.2	58.9	--	--	--	--	--	--	--	--	--	--	--	--

Table 2.14-14 Predicted Noise Levels and Insertion Loss (dBA) for Build Alternative 4

SB No.	EW No.	Rec. No.	Modeled Existing Noise Level	Alternative 4	With Barrier H = 6 ft		With Barrier H = 8 ft		With Barrier H = 10 ft		With Barrier H = 12 ft		With Barrier H = 14 ft		With Barrier H = 16 ft	
					L _{eq}	I.L. ¹	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.
	4	R-66	59.9	59.6	--	--	--	--	--	--	--	--	--	--	--	--
	6	R-67	63.0	63.5	--	--	--	--	--	--	--	--	--	--	--	--
		R-68	63.8	64.3	--	--	--	--	--	--	--	--	--	--	--	--
		R-69	63.7	64.3	--	--	--	--	--	--	--	--	--	--	--	--
		R-70	63.0	63.8	--	--	--	--	--	--	--	--	--	--	--	--
		R-71	63.5	64.3	--	--	--	--	--	--	--	--	--	--	--	--
		R-72	59.6	60.5	--	--	--	--	--	--	--	--	--	--	--	--
		R-73	58.9	59.4	--	--	--	--	--	--	--	--	--	--	--	--
		R-74	59.5	60.2	--	--	--	--	--	--	--	--	--	--	--	--
		R-75	62.3	63.2	--	--	--	--	--	--	--	--	--	--	--	--
		R-76	57.1	57.7	--	--	--	--	--	--	--	--	--	--	--	--
		R-77	56.6	57.2	--	--	--	--	--	--	--	--	--	--	--	--
		R-78	60.1	60.9	--	--	--	--	--	--	--	--	--	--	--	--
		R-79	59.8	60.5	--	--	--	--	--	--	--	--	--	--	--	--
		R-80	56.8	57.5	--	--	--	--	--	--	--	--	--	--	--	--
		R-81	56.4	57.2	--	--	--	--	--	--	--	--	--	--	--	--
		R-82	54.1	54.8	--	--	--	--	--	--	--	--	--	--	--	--
	R-83	57.4	57.9	--	--	--	--	--	--	--	--	--	--	--	--	
	R-84	58.0	58.6	--	--	--	--	--	--	--	--	--	--	--	--	
	R-85	56.6	57.0	--	--	--	--	--	--	--	--	--	--	--	--	
	R-86	52.5	53.5	--	--	--	--	--	--	--	--	--	--	--	--	
	R-87	50.1	51.6	--	--	--	--	--	--	--	--	--	--	--	--	
	R-88	46.0	46.6	--	--	--	--	--	--	--	--	--	--	--	--	
	R-89	53.6	54.1	--	--	--	--	--	--	--	--	--	--	--	--	
	R-90	51.6	52.0	--	--	--	--	--	--	--	--	--	--	--	--	
	R-91	49.6	50.2	--	--	--	--	--	--	--	--	--	--	--	--	
	R-92	51.7	52.4	--	--	--	--	--	--	--	--	--	--	--	--	
	8	R-93	63.2	63.9	--	--	--	--	--	--	--	--	--	--	--	--
		R-94	62.0	63.1	--	--	--	--	--	--	--	--	--	--	--	--
		R-95	61.4	62.7	--	--	--	--	--	--	--	--	--	--	--	--
		R-96	62.8	64.4	--	--	--	--	--	--	--	--	--	--	--	--
		R-97	59.9	61.4	--	--	--	--	--	--	--	--	--	--	--	--

Table 2.14-14 Predicted Noise Levels and Insertion Loss (dBA) for Build Alternative 4

SB No.	EW No.	Rec. No.	Modeled Existing Noise Level	Alternative 4	With Barrier H = 6 ft		With Barrier H = 8 ft		With Barrier H = 10 ft		With Barrier H = 12 ft		With Barrier H = 14 ft		With Barrier H = 16 ft	
					L _{eq} ⁶	I.L. ¹	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.
4-4 (PL)	8	R-98	62.8	64.5	-- ⁶	--	64.5	0.0	64.5	0.0	64.5	0.0	64.5	0.0	64.5	0.0
		R-99	66.3	68.1	--	--	64.0	4.1	61.8	6.3	59.8	8.3	58.4	9.7	57.6	10.5
		R-100	66.8	68.4	--	--	64.1	4.3	61.8	6.6	59.9	8.5	58.6	9.8	57.9	10.5
		R-101	64.6	65.9	--	--	62.6	3.3	60.6	5.3	59.0	6.9	57.8	8.1	57.1	8.8
		R-102	65.0	66.3	--	--	63.6	2.7	61.4	4.9	60.0	6.3	58.7	7.6	58.1	8.2
		R-103	60.8	62.0	--	--	60.4	1.6	59.6	2.4	59.0	3.0	58.4	3.6	57.8	4.2
	R-104	62.6	63.7	--	--	59.4	4.3	57.3	6.4	55.4	8.3	54.6	9.1	53.8	9.9	
	R-105	69.9	71.6	71.6	0.0	71.6	0.0	71.6	0.0	71.4	0.2	68.7	2.9	63.2	8.4	
	R-106	69.2	70.0	67.4	2.6	62.3	7.7	59.5	10.5	58.0	12.0	56.3	13.7	55.1	14.9	
	R-107	69.9	71.3	70.8	0.5	64.2	7.1	60.8	10.5	58.1	13.2	56.4	14.9	55.2	16.1	
	R-108	70.9	72.7	72.7	0.0	72.7	0.0	72.7	0.0	72.7	0.0	72.7	0.0	70.4	2.3	
	R-109	69.1	70.2	68.1	2.1	63.0	7.2	60.6	9.6	58.7	11.5	57.3	12.9	56.3	13.9	
	R-110	69.0	70.2	60.7	9.5	58.2	12.0	56.2	14.0	54.8	15.4	54.1	16.1	53.4	16.8	
	R-111	67.4	68.1	59.4	8.7	58.1	10.0	57.0	11.1	56.0	12.1	55.2	12.9	54.4	13.7	
	R-112	52.4	54.0	53.8	0.2	54.0	0.0	53.6	0.4	53.1	0.9	52.7	1.3	52.3	1.7	
	R-113	64.6	64.2	57.8	6.4	57.5	6.7	56.4	7.8	55.6	8.6	54.7	9.5	54.0	10.2	
11	R-114	67.6	69.3	--	--	67.2	2.1	66.0	3.3	64.9	4.4	64.2	5.1	63.6	5.7	
R-115	70.1	71.1	64.3	6.8	63.3	7.8	62.4	8.7	61.6	9.5	61.0	10.1	60.4	10.7		
R-116	67.1	68.3	62.5	5.8	61.5	6.8	60.7	7.6	60.1	8.2	59.6	8.7	59.1	9.2		
R-117	42.6	43.7	--	--	--	--	--	--	--	--	--	--	--	--		
R-118	49.2	50.0	--	--	--	--	--	--	--	--	--	--	--	--		
R-119	46.6	47.7	--	--	--	--	--	--	--	--	--	--	--	--		
R-120	56.7	57.4	--	--	--	--	--	--	--	--	--	--	--	--		
R-121	52.0	52.9	--	--	--	--	--	--	--	--	--	--	--	--		
4-4 (PL)	R-122	51.3	52.5	52.4	0.1	52.4	0.1	52.4	0.1	52.4	0.1	52.4	0.1	52.3	0.2	
	R-123	53.4	54.7	54.3	0.4	54.4	0.3	54.5	0.2	54.4	0.3	54.3	0.4	54.2	0.5	
	R-124	53.3	54.5	54.2	0.3	54.2	0.3	54.1	0.4	54.0	0.5	53.6	0.9	53.5	1.0	
	R-125	54.1	55.3	54.6	0.7	54.7	0.6	54.6	0.7	54.5	0.8	54.3	1.0	54.0	1.3	
	R-126	53.8	55.0	53.9	1.1	54.3	0.7	54.1	0.9	53.8	1.2	53.6	1.4	53.0	2.0	
	R-127	53.3	54.5	53.8	0.7	53.7	0.8	53.6	0.9	53.6	0.9	53.3	1.2	53.2	1.3	
	R-128	52.1	53.6	52.2	1.4	51.7	1.9	51.4	2.2	51.4	2.2	51.4	2.2	51.4	2.2	
	R-129	49.7	50.7	50.7	0.0	50.7	0.0	50.7	0.0	50.6	0.1	50.5	0.2	50.2	0.5	
	R-130	48.2	49.7	49.7	0.0	49.7	0.0	49.6	0.1	49.3	0.4	49.0	0.7	48.7	1.0	

Table 2.14-14 Predicted Noise Levels and Insertion Loss (dBA) for Build Alternative 4

SB No.	EW No.	Rec. No.	Modeled Existing Noise Level	Alternative 4	With Barrier H = 6 ft		With Barrier H = 8 ft		With Barrier H = 10 ft		With Barrier H = 12 ft		With Barrier H = 14 ft		With Barrier H = 16 ft	
					L _{eq}	I.L. ¹	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.
4-4 (PL)		R-131	47.2	49.4	49.3	0.1	49.1	0.3	48.9	0.5	48.6	0.8	48.1	1.3	47.8	1.6
		R-132	45.4	47.1	--	--	--	--	--	--	--	--	--	--	--	--
		R-133	47.3	47.8	--	--	--	--	--	--	--	--	--	--	--	--
		R-134	47.8	48.1	--	--	--	--	--	--	--	--	--	--	--	--
		R-135	49.7	50.1	--	--	--	--	--	--	--	--	--	--	--	--
		R-136	49.5	50.0	--	--	--	--	--	--	--	--	--	--	--	--
		R-137	50.0	50.8	--	--	--	--	--	--	--	--	--	--	--	--
		R-138	52.0	53.3	--	--	--	--	--	--	--	--	--	--	--	--
		R-139	52.6	54.9	--	--	--	--	--	--	--	--	--	--	--	--
		R-140	50.7	52.4	--	--	--	--	--	--	--	--	--	--	--	--
		R-141	48.5	51.0	--	--	--	--	--	--	--	--	--	--	--	--
		R-142	48.4	49.8	--	--	--	--	--	--	--	--	--	--	--	--
		R-143	45.7	46.1	--	--	--	--	--	--	--	--	--	--	--	--
		R-144	46.2	46.8	--	--	--	--	--	--	--	--	--	--	--	--
		R-145	49.7	50.5	--	--	--	--	--	--	--	--	--	--	--	--
		R-146	46.8	48.1	--	--	--	--	--	--	--	--	--	--	--	--
		R-147	46.7	48.2	--	--	--	--	--	--	--	--	--	--	--	--
		R-148	46.5	48.1	--	--	--	--	--	--	--	--	--	--	--	--
	R-149	51.3	53.2	--	--	--	--	--	--	--	--	--	--	--	--	
	R-150	49.5	51.0	--	--	--	--	--	--	--	--	--	--	--	--	
	R-151	49.3	50.7	--	--	--	--	--	--	--	--	--	--	--	--	
	R-152	48.4	49.7	--	--	--	--	--	--	--	--	--	--	--	--	
	R-153	52.0	53.8	--	--	--	--	--	--	--	--	--	--	--	--	
	R-154	48.7	49.9	--	--	--	--	--	--	--	--	--	--	--	--	
	R-155	52.1	53.4	--	--	--	--	--	--	--	--	--	--	--	--	
	R-156	48.3	49.6	--	--	--	--	--	--	--	--	--	--	--	--	
	R-157	61.5	63.0	--	--	--	--	--	--	--	--	--	--	--	--	
	R-158	63.8	64.9	--	--	--	--	--	--	--	--	--	--	--	--	
	12	R-159	62.2	64.3	--	--	--	--	--	--	--	--	--	--	--	
		R-160	63.3	65.5	--	--	--	--	--	--	--	--	--	--	--	
	13	R-161	58.0	59.8	--	--	--	--	--	--	--	--	--	--	--	
		R-162	63.3	65.4	--	--	--	--	--	--	--	--	--	--	--	
4-7 (PL)		R-163	64.9	67.3	<u>57.2</u>	<u>10.1</u>	<u>54.2</u>	<u>13.1</u>	<u>51.9</u>	<u>15.4</u>	<u>51.4</u>	<u>15.9</u>	<u>49.9</u>	<u>17.4</u>	<u>48.8</u>	<u>18.5</u>

Table 2.14-14 Predicted Noise Levels and Insertion Loss (dBA) for Build Alternative 4

SB No.	EW No.	Rec. No.	Modeled Existing Noise Level	Alternative 4	With Barrier H = 6 ft		With Barrier H = 8 ft		With Barrier H = 10 ft		With Barrier H = 12 ft		With Barrier H = 14 ft		With Barrier H = 16 ft	
					L _{eq}	I.L. ¹	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.
		R-164	62.9	64.3	--	--	--	--	--	--	--	--	--	--	--	--
		R-165	61.6	63.5	--	--	--	--	--	--	--	--	--	--	--	--
		R-166	59.7	62.1	--	--	--	--	--	--	--	--	--	--	--	--
		R-167	55.9	57.8	--	--	--	--	--	--	--	--	--	--	--	--
		R-168	53.0	54.6	--	--	--	--	--	--	--	--	--	--	--	--
		R-169	61.6	63.2	--	--	--	--	--	--	--	--	--	--	--	--
		R-170	61.2	63.0	--	--	--	--	--	--	--	--	--	--	--	--
		R-171	55.5	57.5	--	--	--	--	--	--	--	--	--	--	--	--
		R-172	55.9	57.7	--	--	--	--	--	--	--	--	--	--	--	--
		R-173	53.0	54.7	--	--	--	--	--	--	--	--	--	--	--	--
		R-174	51.0	52.5	--	--	--	--	--	--	--	--	--	--	--	--
		R-175	53.8	54.7	--	--	--	--	--	--	--	--	--	--	--	--
4-8 (PL)	14	R-176	68.1	67.6	--	--	64.5	3.1	<u>62.3</u>	<u>5.3</u>	<u>60.8</u>	<u>6.8</u>	59.7	7.9	<u>59.2</u>	8.4
4-9 (ES)		R-177	58.7	60.3	58.8	1.5	58.5	1.8	58.1	2.2	57.8	2.5	57.7	2.6	NP ⁷	NP
		R-178	55.0	56.8	54.8	2.0	54.4	2.4	53.7	3.1	53.2	3.6	52.9	3.9	NP	NP
		R-179	57.8	59.5	56.5	3.0	55.7	3.8	54.8	4.7	<u>54.1</u>	<u>5.4</u>	<u>53.8</u>	<u>5.7</u>	NP	NP
		R-180	56.7	58.5	56.8	1.7	56.4	2.1	56.0	2.5	55.6	2.9	55.5	3.0	NP	NP
		R-181	55.8	57.6	55.9	1.7	55.4	2.2	54.7	2.9	54.2	3.4	54.0	3.6	NP	NP
		R-182	59.8	61.9	59.7	2.2	58.8	3.1	58.3	3.6	57.9	4.0	57.2	4.7	NP	NP
		R-183	62.0	63.8	61.5	2.3	60.5	3.3	59.7	4.1	59.2	4.6	<u>58.5</u>	<u>5.3</u>	NP	NP
		R-184	63.0	64.9	62.0	2.9	60.9	4.0	60.0	4.9	<u>59.5</u>	<u>5.4</u>	<u>58.6</u>	<u>6.3</u>	NP	NP
		R-185	63.5	65.2	63.3	1.9	61.5	3.7	60.5	4.7	<u>59.6</u>	<u>5.6</u>	<u>58.7</u>	<u>6.5</u>	NP	NP
		R-186	63.6	65.6	62.4	3.2	61.3	4.3	60.2	5.4	<u>59.6</u>	<u>6.0</u>	<u>58.6</u>	<u>7.0</u>	NP	NP
		R-187	64.0	66.0	62.2	3.8	61.1	4.9	<u>60.0</u>	<u>6.0</u>	<u>59.5</u>	<u>6.5</u>	57.9	8.1	NP	NP
		R-188	64.6	66.3	63.6	2.7	61.9	4.4	<u>60.5</u>	<u>5.8</u>	<u>59.9</u>	<u>6.4</u>	<u>58.8</u>	<u>7.5</u>	NP	NP
		R-189	64.5	66.1	63.5	2.6	61.8	4.3	<u>60.4</u>	<u>5.7</u>	<u>59.8</u>	<u>6.3</u>	<u>58.7</u>	<u>7.4</u>	NP	NP
		15	R-190	63.8	65.3	61.7	3.6	60.4	4.9	<u>59.8</u>	<u>5.5</u>	<u>59.0</u>	<u>6.3</u>	<u>58.1</u>	<u>7.2</u>	NP
R-191	62.8		64.2	60.6	3.6	59.4	4.8	<u>58.9</u>	<u>5.3</u>	<u>57.9</u>	<u>6.3</u>	<u>57.3</u>	<u>6.9</u>	NP	NP	
R-192	60.7		61.9	58.5	3.4	57.3	4.6	<u>56.8</u>	<u>5.1</u>	<u>56.5</u>	<u>5.4</u>	<u>55.3</u>	<u>6.6</u>	NP	NP	
R-193	54.0		55.8	54.9	0.9	54.5	1.3	54.3	1.5	54.1	1.7	53.7	2.1	NP	NP	
R-194	59.3		61.4	60.0	1.4	58.8	2.6	58.0	3.4	57.5	3.9	56.8	4.6	NP	NP	
R-195	60.3		62.3	60.8	1.5	59.5	2.8	58.7	3.6	58.0	4.3	57.4	4.9	NP	NP	
R-196	61.5		63.3	62.1	1.2	60.9	2.4	59.6	3.7	58.7	4.6	<u>57.8</u>	<u>5.5</u>	NP	NP	

Table 2.14-14 Predicted Noise Levels and Insertion Loss (dBA) for Build Alternative 4

SB No.	EW No.	Rec. No.	Modeled Existing Noise Level	Alternative 4	With Barrier H = 6 ft		With Barrier H = 8 ft		With Barrier H = 10 ft		With Barrier H = 12 ft		With Barrier H = 14 ft		With Barrier H = 16 ft	
					L _{eq}	I.L. ¹	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.
4-9 (ES)		R-197	61.9	63.6	62.3	1.3	61.2	2.4	59.7	3.9	58.8	4.8	<u>57.8</u>	<u>5.8</u>	NP	NP
		R-198	58.3	60.0	58.5	1.5	57.5	2.5	56.9	3.1	56.6	3.4	56.0	4.0	NP	NP
		R-199	56.0	57.7	56.4	1.3	55.7	2.0	55.1	2.6	54.8	2.9	54.3	3.4	NP	NP
		R-200	54.6	56.1	54.6	1.5	54.1	2.0	53.6	2.5	53.4	2.7	52.9	3.2	NP	NP
		R-201	64.8	66.2	65.2	1.0	64.4	1.8	63.1	3.1	62.4	3.8	61.5	4.7	NP	NP
		R-202	65.0	66.3	65.0	1.3	63.6	2.7	62.6	3.7	61.8	4.5	<u>61.3</u>	<u>5.0</u>	NP	NP
		R-203	63.8	65.1	63.2	1.9	62.1	3.0	61.3	3.8	61.0	4.1	60.3	4.8	NP	NP
		R-204	63.2	64.5	62.4	2.1	61.5	3.0	60.9	3.6	60.6	3.9	60.0	4.5	NP	NP
		R-205	55.3	56.6	56.6	0.0	56.6	0.0	56.6	0.0	56.6	0.0	56.6	0.0	NP	NP
		R-206	56.7	57.1	56.0	1.1	55.7	1.4	55.7	1.4	55.6	1.5	55.4	1.7	NP	NP
		R-207	55.3	55.6	54.9	0.7	54.8	0.8	54.7	0.9	54.7	0.9	54.5	1.1	NP	NP
		R-208	53.9	55.2	--	--	--	--	--	--	--	--	--	--	--	--
	16	R-209	54.3	55.6	--	--	--	--	--	--	--	--	--	--	--	--
		R-210	54.0	55.0	--	--	--	--	--	--	--	--	--	--	--	--
		R-211	54.8	55.9	--	--	--	--	--	--	--	--	--	--	--	--
		R-212	57.8	57.8	--	--	--	--	--	--	--	--	--	--	--	--
		R-213	59.7	58.2	--	--	--	--	--	--	--	--	--	--	--	--
		R-214	59.8	59.0	--	--	--	--	--	--	--	--	--	--	--	--
		R-215	57.1	57.3	--	--	--	--	--	--	--	--	--	--	--	--
		R-216	43.7	44.9	--	--	--	--	--	--	--	--	--	--	--	--
		R-217	51.2	52.0	--	--	--	--	--	--	--	--	--	--	--	--
		R-218	52.3	53.4	--	--	--	--	--	--	--	--	--	--	--	--
		R-219	48.8	50.0	--	--	--	--	--	--	--	--	--	--	--	
		R-220	53.6	54.1	--	--	--	--	--	--	--	--	--	--	--	
		R-221	54.0	54.6	--	--	--	--	--	--	--	--	--	--	--	
		R-222	52.1	52.7	--	--	--	--	--	--	--	--	--	--	--	
		R-223	46.9	48.0	--	--	--	--	--	--	--	--	--	--	--	
		R-224	46.4	47.5	--	--	--	--	--	--	--	--	--	--	--	
		R-225	43.3	44.7	--	--	--	--	--	--	--	--	--	--	--	
		R-226	50.5	51.7	--	--	--	--	--	--	--	--	--	--	--	
		R-227	39.3	40.6	--	--	--	--	--	--	--	--	--	--	--	
		R-228	37.0	38.2	--	--	--	--	--	--	--	--	--	--	--	
		R-229	40.8	42.1	--	--	--	--	--	--	--	--	--	--	--	

Table 2.14-14 Predicted Noise Levels and Insertion Loss (dBA) for Build Alternative 4

SB No.	EW No.	Rec. No.	Modeled Existing Noise Level	Alternative 4	With Barrier H = 6 ft		With Barrier H = 8 ft		With Barrier H = 10 ft		With Barrier H = 12 ft		With Barrier H = 14 ft		With Barrier H = 16 ft	
					L _{eq}	I.L. ¹	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.
		R-230	46.4	47.4	--	--	--	--	--	--	--	--	--	--	--	--
4-11 (RW)	17	R-231	68.7	69.2	66.6	2.6	68.1	1.1	67.3	1.9	66.9	2.3	65.8	3.4	65.6	3.6
		R-232	69.9	70.8	68.6	2.2	67.7	3.1	<u>65.5</u>	<u>5.3</u>	<u>64.3</u>	<u>6.5</u>	<u>62.9</u>	<u>7.9</u>	<u>61.9</u>	<u>8.9</u>
		R-233	64.3	65.2	64.9	0.3	63.0	2.2	61.0	4.2	<u>59.8</u>	<u>5.4</u>	<u>59.0</u>	<u>6.2</u>	<u>58.3</u>	<u>6.9</u>
		R-234	66.7	67.4	63.2	4.2	63.0	4.4	<u>61.2</u>	<u>6.2</u>	<u>59.7</u>	<u>7.7</u>	<u>58.7</u>	<u>8.7</u>	<u>58.0</u>	<u>9.4</u>
		R-235	60.8	61.8	59.2	2.6	57.3	4.5	<u>56.3</u>	<u>5.5</u>	<u>55.1</u>	<u>6.7</u>	<u>53.9</u>	<u>7.9</u>	<u>53.2</u>	<u>8.6</u>
		R-236	69.2	70.1	<u>63.5</u>	<u>6.6</u>	<u>60.3</u>	<u>9.8</u>	<u>58.5</u>	<u>11.6</u>	<u>56.7</u>	<u>13.4</u>	<u>55.6</u>	<u>14.5</u>	<u>54.9</u>	<u>15.2</u>
		R-237	62.9	63.5	60.1	3.4	61.8	1.7	60.5	3.0	59.4	4.1	58.4	<u>5.1</u>	57.7	<u>5.8</u>
		R-238	63.6	64.2	61.2	3.0	62.3	1.9	60.8	3.4	59.8	4.4	<u>58.9</u>	<u>5.3</u>	<u>58.0</u>	<u>6.2</u>
		R-239	61.3	62.0	61.9	0.1	60.7	1.3	59.1	2.9	58.0	4.0	<u>56.9</u>	<u>5.1</u>	<u>56.0</u>	<u>6.0</u>
		R-240	63.7	64.2	64.0	0.2	62.9	1.3	60.9	3.3	59.8	4.4	<u>58.5</u>	<u>5.7</u>	<u>57.7</u>	<u>6.5</u>
		R-241	63.7	64.3	61.2	3.1	61.7	2.6	60.3	4.0	<u>58.9</u>	<u>5.4</u>	<u>58.0</u>	<u>6.3</u>	<u>57.5</u>	<u>6.8</u>
		R-242	63.6	64.5	61.3	3.2	61.7	2.8	61.3	3.2	60.7	3.8	60.2	4.3	59.6	4.9
		R-243	66.7	67.3	62.9	4.4	62.5	4.8	<u>61.9</u>	<u>5.4</u>	<u>61.3</u>	<u>6.0</u>	<u>60.4</u>	<u>6.9</u>	<u>60.0</u>	<u>7.3</u>
		R-244	69.1	69.5	<u>63.9</u>	<u>5.6</u>	<u>63.0</u>	<u>6.5</u>	<u>62.3</u>	<u>7.2</u>	<u>61.4</u>	<u>8.1</u>	<u>60.9</u>	<u>8.6</u>	<u>60.2</u>	<u>9.3</u>
R-245	73.3	73.3	68.3	<u>5.0</u>	<u>65.7</u>	<u>7.6</u>	<u>63.8</u>	<u>9.5</u>	<u>62.4</u>	<u>10.9</u>	<u>61.9</u>	<u>11.4</u>	<u>61.3</u>	<u>12.0</u>		
19	R-246	64.8	65.2	63.5	1.7	63.3	1.9	63.2	2.0	63.1	2.1	63.0	2.2	63.0	2.2	
	R-247	64.1	64.4	--	--	--	--	--	--	--	--	--	--	--	--	
20	R-248	60.8	61.4	--	--	--	--	--	--	--	--	--	--	--	--	
	R-249	63.2	63.7	--	--	--	--	--	--	--	--	--	--	--	--	
	R-250	61.8	62.3	--	--	--	--	--	--	--	--	--	--	--	--	
	R-251	61.0	61.4	--	--	--	--	--	--	--	--	--	--	--	--	
	R-252	61.1	61.6	--	--	--	--	--	--	--	--	--	--	--	--	
	R-253	61.8	62.4	--	--	--	--	--	--	--	--	--	--	--	--	
4-11 (RW)	R-254	68.7	68.9	66.1	2.8	<u>63.5</u>	<u>5.4</u>	<u>62.1</u>	<u>6.8</u>	<u>60.9</u>	<u>8.0</u>	<u>60.1</u>	<u>8.8</u>	<u>59.4</u>	<u>9.5</u>	
	R-255	55.8	56.0	55.7	0.3	55.2	0.8	54.7	1.3	54.2	1.8	53.8	2.2	53.5	2.5	
	R-256	58.0	58.4	57.9	0.5	57.5	0.9	57.2	1.2	56.9	1.5	56.7	1.7	56.5	1.9	
	R-257	56.0	56.5	55.7	0.8	55.7	0.8	55.6	0.9	55.5	1.0	55.3	1.2	55.1	1.4	
	R-258	57.1	57.6	56.6	1.0	56.6	1.0	56.6	1.0	56.4	1.2	56.3	1.3	56.2	1.4	
	R-259	56.4	56.9	55.8	1.1	55.9	1.0	55.8	1.1	55.7	1.2	55.6	1.3	55.5	1.4	
	R-260	55.1	55.6	54.6	1.0	54.6	1.0	54.6	1.0	54.5	1.1	54.4	1.2	54.3	1.3	
	R-261	57.8	58.4	57.7	0.7	57.6	0.8	57.6	0.8	57.5	0.9	57.5	0.9	57.4	1.0	
R-262	58.5	59.0	--	--	--	--	--	--	--	--	--	--	--	--		

Table 2.14-14 Predicted Noise Levels and Insertion Loss (dBA) for Build Alternative 4

SB No.	EW No.	Rec. No.	Modeled Existing Noise Level	Alternative 4	With Barrier H = 6 ft		With Barrier H = 8 ft		With Barrier H = 10 ft		With Barrier H = 12 ft		With Barrier H = 14 ft		With Barrier H = 16 ft	
					L _{eq}	I.L. ¹	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.
		R-263	60.4	60.6	--	--	--	--	--	--	--	--	--	--	--	--
		R-264	60.5	61.2	--	--	--	--	--	--	--	--	--	--	--	--
		R-265	59.3	60.2	--	--	--	--	--	--	--	--	--	--	--	--
		R-266	56.1	57.5	--	--	--	--	--	--	--	--	--	--	--	--
		R-267	57.3	59.5	--	--	--	--	--	--	--	--	--	--	--	--
		R-268	57.6	59.1	--	--	--	--	--	--	--	--	--	--	--	--
		R-269	58.4	58.3	--	--	--	--	--	--	--	--	--	--	--	--
	22	R-270	60.2	59.9	--	--	--	--	--	--	--	--	--	--	--	--
		R-271	59.4	59.4	--	--	--	--	--	--	--	--	--	--	--	--
		R-272	56.8	57.3	--	--	--	--	--	--	--	--	--	--	--	--
		R-273	56.9	57.2	--	--	--	--	--	--	--	--	--	--	--	--
		R-274	56.3	56.9	--	--	--	--	--	--	--	--	--	--	--	--
		R-275	53.9	54.5	--	--	--	--	--	--	--	--	--	--	--	--
		R-276	54.0	54.5	--	--	--	--	--	--	--	--	--	--	--	--
		R-277	55.8	56.2	--	--	--	--	--	--	--	--	--	--	--	--
		R-278	59.1	59.3	--	--	--	--	--	--	--	--	--	--	--	--
4-14 (RW)			R-279	71.1	71.0	69.1	1.9	67.0	4.0	<u>64.8</u>	<u>6.2</u>	<u>63.8</u>	<u>7.2</u>	<u>63.3</u>	<u>7.7</u>	<u>62.9</u>
		R-280	55.2	55.0	--	--	--	--	--	--	--	--	--	--	--	--
		R-281	56.2	56.9	--	--	--	--	--	--	--	--	--	--	--	--
		R-282	55.8	56.2	--	--	--	--	--	--	--	--	--	--	--	--
		R-283	55.1	54.7	--	--	--	--	--	--	--	--	--	--	--	--
		R-284	54.0	54.6	--	--	--	--	--	--	--	--	--	--	--	--
		R-285	54.2	54.8	--	--	--	--	--	--	--	--	--	--	--	--
		R-286	58.3	58.4	--	--	--	--	--	--	--	--	--	--	--	--
4-14 (RW)		R-287	69.2	68.3	66.1	2.2	64.7	3.6	64.3	4.0	64.0	4.3	63.8	4.5	63.7	4.6
		R-288	54.2	54.7	--	--	--	--	--	--	--	--	--	--	--	--
		R-289	55.1	55.7	--	--	--	--	--	--	--	--	--	--	--	--
		R-290	53.8	54.3	--	--	--	--	--	--	--	--	--	--	--	--
		R-291	58.4	59.2	--	--	--	--	--	--	--	--	--	--	--	--
		R-292	56.0	54.2	--	--	--	--	--	--	--	--	--	--	--	--
		R-293	63.4	63.8	--	--	--	--	--	--	--	--	--	--	--	--
	18	R-294	56.4	56.7	--	--	--	--	--	--	--	--	--	--	--	--
		R-295	57.3	57.7	--	--	--	--	--	--	--	--	--	--	--	--

Table 2.14-14 Predicted Noise Levels and Insertion Loss (dBA) for Build Alternative 4

SB No.	EW No.	Rec. No.	Modeled Existing Noise Level	Alternative 4	With Barrier H = 6 ft		With Barrier H = 8 ft		With Barrier H = 10 ft		With Barrier H = 12 ft		With Barrier H = 14 ft		With Barrier H = 16 ft	
					L _{eq}	I.L. ¹	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.
	18	R-296	58.9	59.3	--	--	--	--	--	--	--	--	--	--	--	--
		R-297	59.1	59.5	--	--	--	--	--	--	--	--	--	--	--	--
		R-298	57.3	57.7	--	--	--	--	--	--	--	--	--	--	--	--
		R-299	55.4	55.7	--	--	--	--	--	--	--	--	--	--	--	--
		R-300	57.2	56.9	--	--	--	--	--	--	--	--	--	--	--	--
		R-301	54.0	54.2	--	--	--	--	--	--	--	--	--	--	--	--
		R-302	52.9	53.2	--	--	--	--	--	--	--	--	--	--	--	--
		R-303	52.9	53.1	--	--	--	--	--	--	--	--	--	--	--	--
		R-304	55.7	56.2	--	--	--	--	--	--	--	--	--	--	--	--
		R-305	56.0	56.4	--	--	--	--	--	--	--	--	--	--	--	--
		R-306	55.1	55.5	--	--	--	--	--	--	--	--	--	--	--	--
		R-307	57.0	57.4	--	--	--	--	--	--	--	--	--	--	--	--
		R-308	60.6	60.9	--	--	--	--	--	--	--	--	--	--	--	--
		R-309	59.1	59.3	--	--	--	--	--	--	--	--	--	--	--	--
	R-310	59.9	60.1	--	--	--	--	--	--	--	--	--	--	--	--	
	R-311	54.8	55.3	--	--	--	--	--	--	--	--	--	--	--	--	
	23	R-312	58.6	59.0	--	--	--	--	--	--	--	--	--	--	--	--
		R-313	59.5	60.2	--	--	--	--	--	--	--	--	--	--	--	--
		R-314	60.3	61.0	--	--	--	--	--	--	--	--	--	--	--	--
		R-315	58.7	59.3	--	--	--	--	--	--	--	--	--	--	--	--
		R-316	60.7	61.3	--	--	--	--	--	--	--	--	--	--	--	--
		R-317	51.1	51.5	--	--	--	--	--	--	--	--	--	--	--	--
		R-318	47.9	48.4	--	--	--	--	--	--	--	--	--	--	--	--
		R-319	47.3	47.7	--	--	--	--	--	--	--	--	--	--	--	--
		R-320	46.9	47.2	--	--	--	--	--	--	--	--	--	--	--	--
		R-321	48.6	49.0	--	--	--	--	--	--	--	--	--	--	--	--
		R-322	52.6	52.9	--	--	--	--	--	--	--	--	--	--	--	--
4-15 (RW)		R-323	72.1	72.8	<u>64.4</u>	<u>8.4</u>	<u>61.5</u>	<u>11.3</u>	<u>59.4</u>	<u>13.4</u>	<u>58.1</u>	<u>14.7</u>	<u>56.8</u>	<u>16.0</u>	<u>56.1</u>	<u>16.7</u>
		R-324	56.6	57.4	--	--	--	--	--	--	--	--	--	--	--	--
		R-325	54.0	53.0	--	--	--	--	--	--	--	--	--	--	--	--
		R-326	54.2	54.5	--	--	--	--	--	--	--	--	--	--	--	--
		R-327	51.7	52.0	--	--	--	--	--	--	--	--	--	--	--	--
		R-328	52.6	52.8	--	--	--	--	--	--	--	--	--	--	--	--

Table 2.14-14 Predicted Noise Levels and Insertion Loss (dBA) for Build Alternative 4

SB No.	EW No.	Rec. No.	Modeled Existing Noise Level	Alternative 4	With Barrier H = 6 ft		With Barrier H = 8 ft		With Barrier H = 10 ft		With Barrier H = 12 ft		With Barrier H = 14 ft		With Barrier H = 16 ft	
					L _{eq}	I.L. ¹	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.
		R-329	50.3	50.5	--	--	--	--	--	--	--	--	--	--	--	--
		R-330	55.0	55.2	--	--	--	--	--	--	--	--	--	--	--	--
		R-331	52.9	53.2	--	--	--	--	--	--	--	--	--	--	--	--
		R-332	51.5	51.7	--	--	--	--	--	--	--	--	--	--	--	--
		R-333	50.1	50.5	--	--	--	--	--	--	--	--	--	--	--	--
		R-334	50.4	50.4	--	--	--	--	--	--	--	--	--	--	--	--
		R-335	53.9	54.0	--	--	--	--	--	--	--	--	--	--	--	--
		R-336	55.2	55.4	--	--	--	--	--	--	--	--	--	--	--	--
		R-337	59.0	59.5	--	--	--	--	--	--	--	--	--	--	--	--
		R-338	47.5	48.0	--	--	--	--	--	--	--	--	--	--	--	--
		R-339	48.1	48.3	--	--	--	--	--	--	--	--	--	--	--	--
4-15 (RW)		R-340	64.2	64.7	<u>59.6</u>	<u>5.1</u>	<u>58.7</u>	<u>6.0</u>	<u>57.9</u>	<u>6.8</u>	<u>57.2</u>	<u>7.5</u>	<u>56.6</u>	<u>8.1</u>	<u>56.0</u>	<u>8.7</u>
		R-341	48.2	48.4	--	--	--	--	--	--	--	--	--	--	--	--
		R-342	49.1	49.4	--	--	--	--	--	--	--	--	--	--	--	--
		R-343	51.3	51.4	--	--	--	--	--	--	--	--	--	--	--	--
		R-344	47.4	47.5	--	--	--	--	--	--	--	--	--	--	--	--
4-15 (RW)		R-345	59.7	59.9	58.0	1.9	57.4	2.5	56.9	3.0	56.4	3.5	56.0	3.9	55.7	4.2
		R-346	58.6	58.4	58.4	0.0	58.4	0.0	58.4	0.0	58.3	0.1	58.1	0.3	58.0	0.4
		R-347	63.1	63.6	63.5	0.1	63.5	0.1	63.5	0.1	63.4	0.2	63.1	0.5	62.6	1.0
		R-348	63.0	63.2	63.1	0.1	62.9	0.3	62.2	1.0	61.3	1.9	59.9	3.3	58.5	4.7
	24	R-349	66.2	66.3	66.2	0.1	65.8	0.5	64.9	1.4	63.4	2.9	<u>60.0</u>	<u>6.3</u>	<u>58.5</u>	<u>7.8</u>
		R-350	52.6	52.3	52.3	0.0	52.3	0.0	52.3	0.0	52.3	0.0	52.3	0.0	52.3	0.0
		R-351	63.5	63.7	63.6	0.1	63.6	0.1	63.6	0.1	63.5	0.2	63.1	0.6	62.8	0.9
		R-352	51.6	51.5	51.5	0.0	51.5	0.0	51.5	0.0	51.4	0.1	51.4	0.1	51.4	0.1
		R-353	63.4	63.6	63.6	0.0	63.6	0.0	63.5	0.1	63.5	0.1	63.3	0.3	63.1	0.5
		R-354	64.7	64.9	64.9	0.0	64.9	0.0	64.8	0.1	64.7	0.2	64.6	0.3	64.3	0.6
		R-355	62.6	63.3	63.3	0.0	63.3	0.0	63.3	0.0	63.3	0.0	63.3	0.0	63.3	0.0
		R-356	52.0	52.1	52.1	0.0	52.1	0.0	52.1	0.0	52.1	0.0	52.1	0.0	52.1	0.0
		R-357	63.0	63.3	63.2	0.1	63.2	0.1	63.2	0.1	63.1	0.2	63.0	0.3	62.9	0.4
		R-358	58.7	59.2	59.1	0.1	59.0	0.2	58.8	0.4	58.4	0.8	58.1	1.1	58.0	1.2
		R-359	68.6	69.5	<u>63.6</u>	<u>5.9</u>	<u>60.7</u>	<u>8.8</u>	<u>58.7</u>	<u>10.8</u>	<u>57.0</u>	<u>12.5</u>	<u>55.7</u>	<u>13.8</u>	<u>55.1</u>	<u>14.4</u>
4-16 (PL)		R-360	68.7	69.7	<u>63.9</u>	<u>5.8</u>	<u>60.7</u>	<u>9.0</u>	<u>59.0</u>	<u>10.7</u>	<u>57.2</u>	<u>12.5</u>	<u>56.1</u>	<u>13.6</u>	<u>55.6</u>	<u>14.1</u>
		R-361	66.7	68.1	64.7	3.4	<u>61.0</u>	<u>7.1</u>	<u>59.3</u>	<u>8.8</u>	<u>57.7</u>	<u>10.4</u>	<u>56.8</u>	<u>11.3</u>	<u>56.6</u>	<u>11.5</u>

Table 2.14-14 Predicted Noise Levels and Insertion Loss (dBA) for Build Alternative 4

SB No.	EW No.	Rec. No.	Modeled Existing Noise Level	Alternative 4	With Barrier H = 6 ft		With Barrier H = 8 ft		With Barrier H = 10 ft		With Barrier H = 12 ft		With Barrier H = 14 ft		With Barrier H = 16 ft	
					<u>L_{eq}</u>	<u>I.L.¹</u>	<u>L_{eq}</u>	<u>I.L.</u>	<u>L_{eq}</u>	<u>I.L.</u>	<u>L_{eq}</u>	<u>I.L.</u>	<u>L_{eq}</u>	<u>I.L.</u>	<u>L_{eq}</u>	<u>I.L.</u>
4-16 (PL)		R-362	65.3	66.4	63.5	2.9	<u>59.0</u>	<u>7.4</u>	<u>56.9</u>	<u>9.5</u>	<u>56.1</u>	<u>10.3</u>	<u>56.1</u>	<u>10.3</u>	<u>56.0</u>	<u>10.4</u>
	25	R-363	61.0	61.9	61.9	0.0	<u>58.0</u>	3.9	<u>57.0</u>	4.9	<u>55.4</u>	<u>6.5</u>	<u>55.8</u>	<u>6.1</u>	<u>56.2</u>	<u>5.7</u>
	25	R-364	61.9	62.9	60.7	2.2	<u>59.4</u>	3.5	<u>56.0</u>	<u>6.9</u>	<u>55.6</u>	<u>7.3</u>	<u>56.0</u>	<u>6.9</u>	<u>55.6</u>	<u>7.3</u>
	25 & 26	R-365	68.4	69.2	69.1	0.1	67.3	1.9	66.9	2.3	65.8	3.4	<u>63.2</u>	<u>6.0</u>	<u>61.6</u>	<u>7.6</u>
		R-366	66.9	67.7	67.7	0.0	<u>62.4</u>	<u>5.3</u>	<u>60.8</u>	<u>6.9</u>	<u>59.2</u>	<u>8.5</u>	<u>57.9</u>	<u>9.8</u>	<u>56.7</u>	<u>11.0</u>
	26	R-367	72.7	73.4	73.4	0.0	72.4	1.0	68.5	4.9	<u>63.8</u>	<u>9.6</u>	<u>61.5</u>	<u>11.9</u>	<u>59.8</u>	<u>13.6</u>
		R-368	69.9	70.8	69.0	1.8	<u>63.5</u>	<u>7.3</u>	<u>61.1</u>	<u>9.7</u>	<u>59.4</u>	<u>11.4</u>	<u>58.1</u>	<u>12.7</u>	<u>56.8</u>	<u>14.0</u>
		R-369	71.6	72.2	<u>65.6</u>	6.6	<u>62.5</u>	9.7	<u>60.7</u>	<u>11.5</u>	<u>58.6</u>	<u>13.6</u>	<u>58.2</u>	<u>14.0</u>	<u>57.2</u>	<u>15.0</u>
		R-370	71.9	72.3	66.7	5.6	<u>64.4</u>	<u>7.9</u>	<u>62.1</u>	<u>10.2</u>	<u>60.8</u>	<u>11.5</u>	<u>59.9</u>	<u>12.4</u>	<u>58.8</u>	<u>13.5</u>
		R-371	74.2	74.7	66.9	7.8	<u>64.1</u>	<u>10.6</u>	<u>61.9</u>	<u>12.8</u>	<u>60.7</u>	<u>14.0</u>	<u>59.3</u>	<u>15.4</u>	<u>58.1</u>	<u>16.6</u>
		R-372	73.5	74.1	71.8	2.3	66.6	7.5	<u>63.8</u>	<u>10.3</u>	<u>61.8</u>	<u>12.3</u>	<u>60.3</u>	<u>13.8</u>	<u>59.0</u>	<u>15.1</u>
		R-373	74.0	75.0	75.0	0.0	73.3	1.7	66.9	8.1	<u>64.1</u>	<u>10.9</u>	<u>62.2</u>	<u>12.8</u>	<u>60.6</u>	<u>14.4</u>
		R-374	58.6	59.3	58.4	0.9	<u>57.9</u>	1.4	<u>57.8</u>	1.5	<u>57.7</u>	1.6	<u>57.5</u>	1.8	<u>57.5</u>	1.8
		R-375	55.1	56.9	56.9	0.0	<u>56.9</u>	0.0	<u>56.9</u>	0.0	<u>56.9</u>	0.0	<u>56.9</u>	0.0	<u>56.9</u>	0.0
		R-376	57.5	58.0	<u>57.7</u>	0.3	<u>57.6</u>	0.4	<u>56.4</u>	1.6	<u>56.1</u>	1.9	<u>56.0</u>	2.0	<u>55.8</u>	2.2
		R-377	64.0	64.3	62.2	2.1	<u>59.5</u>	4.8	<u>58.6</u>	<u>5.7</u>	<u>57.8</u>	<u>6.5</u>	<u>57.3</u>	<u>7.0</u>	<u>56.9</u>	<u>7.4</u>
		R-378	57.2	59.2	59.2	0.0	<u>59.2</u>	0.0	<u>59.2</u>	0.0	<u>59.2</u>	0.0	<u>59.2</u>	0.0	<u>59.2</u>	0.0
		R-379	60.7	61.7	59.6	2.1	<u>59.3</u>	2.4	<u>59.2</u>	2.5	<u>59.1</u>	2.6	<u>59.1</u>	2.6	<u>59.0</u>	2.7
	R-380	63.3	64.1	61.1	3.0	<u>60.6</u>	3.5	<u>60.3</u>	3.8	<u>60.2</u>	3.9	<u>60.1</u>	4.0	<u>60.0</u>	4.1	
	R-381	66.7	67.8	65.8	2.0	<u>63.4</u>	4.4	<u>62.3</u>	<u>5.5</u>	<u>61.7</u>	<u>6.1</u>	<u>61.2</u>	<u>6.6</u>	<u>60.8</u>	<u>7.0</u>	
	R-382	60.5	60.6	--	--	--	--	--	--	--	--	--	--	--	--	
	R-383	64.7	65.1	--	--	--	--	--	--	--	--	--	--	--	--	
	R-384	62.6	62.9	--	--	--	--	--	--	--	--	--	--	--	--	
	R-385	60.3	60.6	--	--	--	--	--	--	--	--	--	--	--	--	
	R-386	60.0	60.0	--	--	--	--	--	--	--	--	--	--	--	--	
	R-387	56.9	57.3	--	--	--	--	--	--	--	--	--	--	--	--	
	R-388	56.7	57.2	--	--	--	--	--	--	--	--	--	--	--	--	
	R-389	56.5	57.0	--	--	--	--	--	--	--	--	--	--	--	--	
	R-390	56.1	56.5	--	--	--	--	--	--	--	--	--	--	--	--	
	R-391	56.0	56.4	--	--	--	--	--	--	--	--	--	--	--	--	
	R-392	56.5	57.2	--	--	--	--	--	--	--	--	--	--	--	--	
	R-393	56.2	56.7	--	--	--	--	--	--	--	--	--	--	--	--	
	R-394	55.9	56.1	--	--	--	--	--	--	--	--	--	--	--	--	

Table 2.14-14 Predicted Noise Levels and Insertion Loss (dBA) for Build Alternative 4

SB No.	EW No.	Rec. No.	Modeled Existing Noise Level	Alternative 4	With Barrier H = 6 ft		With Barrier H = 8 ft		With Barrier H = 10 ft		With Barrier H = 12 ft		With Barrier H = 14 ft		With Barrier H = 16 ft	
					L _{eq}	I.L. ¹	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.
		R-395	55.3	55.7	--	--	--	--	--	--	--	--	--	--	--	--
	29	R-396	63.8	64.5	--	--	--	--	--	--	--	--	--	--	--	--
	29	R-397	62.7	63.3	--	--	--	--	--	--	--	--	--	--	--	--
		R-398	63.7	64.1	--	--	--	--	--	--	--	--	--	--	--	--
		R-399	62.5	63.0	--	--	--	--	--	--	--	--	--	--	--	--
	30	R-400	56.7	57.7	--	--	--	--	--	--	--	--	--	--	--	--
		R-401	59.1	60.2	--	--	--	--	--	--	--	--	--	--	--	--
		R-402	62.9	64.1	--	--	--	--	--	--	--	--	--	--	--	--
	27	R-403	56.5	56.3	--	--	--	--	--	--	--	--	--	--	--	--
		R-404	54.8	55.1	--	--	--	--	--	--	--	--	--	--	--	--
		R-405	57.9	57.9	--	--	--	--	--	--	--	--	--	--	--	--
	28	R-406	57.6	57.4	--	--	--	--	--	--	--	--	--	--	--	--
		R-407	57.5	57.8	--	--	--	--	--	--	--	--	--	--	--	--
		R-408	60.5	60.1	--	--	--	--	--	--	--	--	--	--	--	--
	27	R-409	62.9	62.5	--	--	--	--	--	--	--	--	--	--	--	--
		R-410	57.3	57.0	--	--	--	--	--	--	--	--	--	--	--	--
		R-411	57.7	57.8	--	--	--	--	--	--	--	--	--	--	--	--
		R-412	56.5	56.7	--	--	--	--	--	--	--	--	--	--	--	--
	28	R-413	57.8	57.8	--	--	--	--	--	--	--	--	--	--	--	--
		R-414	59.6	59.6	--	--	--	--	--	--	--	--	--	--	--	--
		R-415	56.5	57.0	--	--	--	--	--	--	--	--	--	--	--	--
4-19 (PL)	31	R-416	69.1	69.6	66.0	3.6	67.8	1.8	67.0	2.6	66.0	3.6	65.5	4.1	65.2	4.4
4-20 (PL)		R-417	79.5	80.6	72.6	8.0	71.2	9.4	70.0	10.6	69.5	11.1	68.8	11.8	68.3	12.3
	32	R-418	64.8	64.9	--	--	--	--	--	--	--	--	--	--	--	--
		R-419	64.5	64.6	--	--	--	--	--	--	--	--	--	--	--	--
4-22 (PL)		R-420	76.9	77.3	68.5	8.8	66.2	11.1	64.4	12.9	63.6	13.7	62.7	14.6	61.7	15.6
		R-421	75.1	75.4	67.5	7.9	65.6	9.8	64.5	10.9	63.3	12.1	62.9	12.5	62.2	13.2
		R-422	72.8	73.3	66.3	7.0	64.1	9.2	62.7	10.6	61.5	11.8	60.8	12.5	60.0	13.3
		R-423	72.8	72.8	68.6	4.2	65.7	7.1	64.3	8.5	63.5	9.3	62.8	10.0	62.6	10.2
		R-424	72.0	72.5	69.9	2.6	65.3	7.2	63.1	9.4	61.6	10.9	60.6	11.9	59.9	12.6
		R-425	71.3	71.4	67.1	4.3	64.9	6.5	63.8	7.6	63.2	8.2	62.6	8.8	62.3	9.1
		R-426	69.3	69.7	65.7	4.0	63.1	6.6	61.7	8.0	60.7	9.0	59.8	9.9	59.2	10.5
		R-427	65.3	65.5	64.0	1.5	63.0	2.5	62.0	3.5	61.2	4.3	60.6	4.9	60.1	5.4

Table 2.14-14 Predicted Noise Levels and Insertion Loss (dBA) for Build Alternative 4

SB No.	EW No.	Rec. No.	Modeled Existing Noise Level	Alternative 4	With Barrier H = 6 ft		With Barrier H = 8 ft		With Barrier H = 10 ft		With Barrier H = 12 ft		With Barrier H = 14 ft		With Barrier H = 16 ft	
					<u>L_{eq}</u>	<u>I.L.¹</u>	<u>L_{eq}</u>	<u>I.L.</u>	<u>L_{eq}</u>	<u>I.L.</u>	<u>L_{eq}</u>	<u>I.L.</u>	<u>L_{eq}</u>	<u>I.L.</u>	<u>L_{eq}</u>	<u>I.L.</u>
4-22 (PL)		R-428	70.2	70.2	66.7	3.5	<u>64.7</u>	<u>5.5</u>	<u>63.7</u>	<u>6.5</u>	<u>63.1</u>	<u>7.1</u>	<u>62.7</u>	<u>7.5</u>	<u>62.4</u>	<u>7.8</u>
4-23 (PL)	33	R-429	68.0	68.9	65.7	3.2	<u>64.7</u>	<u>4.2</u>	<u>64.2</u>	<u>4.7</u>	<u>63.8</u>	<u>5.1</u>	<u>63.6</u>	<u>5.3</u>	<u>63.5</u>	<u>5.4</u>
		R-430	67.6	68.3	65.3	3.0	<u>61.3</u>	<u>7.0</u>	<u>59.5</u>	<u>8.8</u>	<u>58.5</u>	<u>9.8</u>	<u>57.7</u>	<u>10.6</u>	<u>57.0</u>	<u>11.3</u>
		R-431	67.0	67.5	66.9	0.6	62.6	4.9	<u>61.3</u>	<u>6.2</u>	<u>60.4</u>	<u>7.1</u>	<u>59.6</u>	<u>7.9</u>	<u>59.0</u>	<u>8.5</u>
		R-432	66.9	67.9	67.8	0.1	67.8	0.1	66.7	1.2	66.6	1.3	66.6	1.3	66.5	1.4
		R-433	65.7	66.7	66.4	0.3	65.3	1.4	64.6	2.1	64.4	2.3	64.3	2.4	64.3	2.4
		R-434	65.2	66.3	65.4	0.9	63.2	3.1	62.1	4.2	61.7	4.6	61.5	4.8	<u>61.3</u>	<u>5.0</u>
		R-435	63.5	64.7	64.7	0.0	64.7	0.0	64.5	0.2	64.4	0.3	64.3	0.4	64.3	0.4
		R-436	64.6	65.5	65.0	0.5	63.8	1.7	62.8	2.7	62.6	2.9	62.5	3.0	62.4	3.1
		R-437	59.3	60.0	59.9	0.1	59.6	0.4	56.7	3.3	56.3	3.7	56.3	3.7	56.3	3.7
		R-438	65.3	65.7	63.8	1.9	63.7	2.0	63.5	2.2	63.4	2.3	63.3	2.4	63.3	2.4
4-24 (PL)	33	R-439	67.8	68.1	63.8	4.3	<u>62.8</u>	<u>5.3</u>	<u>62.1</u>	<u>6.0</u>	<u>62.0</u>	<u>6.1</u>	<u>61.7</u>	<u>6.4</u>	<u>61.6</u>	<u>6.5</u>
		R-440	69.1	69.2	<u>63.1</u>	<u>6.1</u>	<u>60.1</u>	<u>9.1</u>	<u>58.5</u>	<u>10.7</u>	<u>57.2</u>	<u>12.0</u>	<u>56.6</u>	<u>12.6</u>	<u>56.1</u>	<u>13.1</u>
		R-441	69.1	69.3	<u>61.4</u>	<u>7.9</u>	<u>59.5</u>	<u>9.8</u>	<u>58.2</u>	<u>11.1</u>	<u>57.1</u>	<u>12.2</u>	<u>56.5</u>	<u>12.8</u>	<u>55.6</u>	<u>13.7</u>
		R-442	70.1	70.2	<u>62.6</u>	<u>7.6</u>	<u>60.7</u>	<u>9.5</u>	<u>59.4</u>	<u>10.8</u>	<u>57.9</u>	<u>12.3</u>	<u>57.1</u>	<u>13.1</u>	<u>56.4</u>	<u>13.8</u>
		R-443	71.1	70.9	<u>62.8</u>	<u>8.1</u>	<u>60.5</u>	<u>10.4</u>	<u>58.8</u>	<u>12.1</u>	<u>57.6</u>	<u>13.3</u>	<u>56.4</u>	<u>14.5</u>	<u>55.6</u>	<u>15.3</u>
		R-444	69.1	68.9	<u>60.3</u>	<u>8.6</u>	<u>58.5</u>	<u>10.4</u>	<u>57.1</u>	<u>11.8</u>	<u>55.9</u>	<u>13.0</u>	<u>55.2</u>	<u>13.7</u>	<u>54.3</u>	<u>14.6</u>
		R-445	67.7	67.9	<u>60.8</u>	<u>7.1</u>	<u>58.4</u>	<u>9.5</u>	<u>56.8</u>	<u>11.1</u>	<u>55.7</u>	<u>12.2</u>	<u>54.8</u>	<u>13.1</u>	<u>53.9</u>	<u>14.0</u>
		R-446	67.3	67.4	<u>60.6</u>	<u>6.8</u>	<u>58.4</u>	<u>9.0</u>	<u>57.0</u>	<u>10.4</u>	<u>55.8</u>	<u>11.6</u>	<u>54.8</u>	<u>12.6</u>	<u>53.9</u>	<u>13.5</u>
		R-447	64.6	64.9	64.0	0.9	64.0	0.9	63.9	1.0	63.9	1.0	63.8	1.1	63.8	1.1
		R-448	58.6	57.8	57.4	0.4	57.2	0.6	56.9	0.9	56.8	1.0	56.7	1.1	56.5	1.3
	R-449	57.0	56.5	55.4	1.1	54.8	1.7	54.5	2.0	54.2	2.3	54.0	2.5	53.8	2.7	
	R-450	57.4	56.8	55.5	1.3	54.8	2.0	54.3	2.5	54.0	2.8	53.9	2.9	53.7	3.1	
	R-451	58.2	56.9	55.6	1.3	54.9	2.0	54.4	2.5	54.1	2.8	53.8	3.1	53.5	3.4	
	R-452	57.5	56.9	55.4	1.5	54.8	2.1	54.2	2.7	53.8	3.1	53.4	3.5	53.0	3.9	
	R-453	58.7	57.7	55.8	1.9	55.4	2.3	55.1	2.6	54.8	2.9	54.7	3.0	54.5	3.2	
	R-454	61.1	59.4	56.8	2.6	56.4	3.0	55.9	3.5	55.5	3.9	55.2	4.2	55.0	4.4	
	R-455	63.0	63.3	62.8	0.5	62.8	0.5	62.8	0.5	62.8	0.5	62.7	0.6	62.7	0.6	
	R-456	61.7	62.1	61.9	0.2	61.9	0.2	61.8	0.3	61.8	0.3	61.8	0.3	61.8	0.3	

Table 2.14-14 Predicted Noise Levels and Insertion Loss (dBA) for Build Alternative 4

SB No.	EW No.	Rec. No.	Modeled Existing Noise Level	Alternative 4	With Barrier H = 6 ft		With Barrier H = 8 ft		With Barrier H = 10 ft		With Barrier H = 12 ft		With Barrier H = 14 ft		With Barrier H = 16 ft	
					<u>L_{eq}</u>	<u>I.L.</u> ¹	<u>L_{eq}</u>	<u>I.L.</u>	<u>L_{eq}</u>	<u>I.L.</u>	<u>L_{eq}</u>	<u>I.L.</u>	<u>L_{eq}</u>	<u>I.L.</u>	<u>L_{eq}</u>	<u>I.L.</u>
4-25 (PL)		R-457	67.4	67.4	62.6	4.8	<u>62.4</u>	<u>5.0</u>	<u>62.2</u>	<u>5.2</u>	<u>62.2</u>	<u>5.2</u>	<u>62.1</u>	<u>5.3</u>	<u>62.1</u>	<u>5.3</u>
		R-458	69.8	69.1	62.8	6.3	<u>62.1</u>	<u>7.0</u>	<u>61.7</u>	<u>7.4</u>	<u>61.5</u>	<u>7.6</u>	<u>61.2</u>	<u>7.9</u>	<u>61.1</u>	<u>8.0</u>
		R-459	68.5	67.3	<u>59.3</u>	<u>8.0</u>	<u>57.9</u>	<u>9.4</u>	<u>57.0</u>	<u>10.3</u>	<u>56.2</u>	<u>11.1</u>	<u>55.6</u>	<u>11.7</u>	<u>55.0</u>	<u>12.3</u>
		R-460	60.5	59.9	59.3	0.6	59.3	0.6	59.2	0.7	59.2	0.7	59.2	0.7	59.2	0.7

Source: *Noise Study Report*, LSA Associates, Inc., September 2010.

¹ I.L.: Insertion Loss.

² Sound barriers with Design Option B. The sound barrier modeling results for Design Option B apply to Design Option A. as well.

³ Numbers in **bold** represent noise levels that approach or exceed the NAC.

⁴ Underlined noise levels have been attenuated by at least 5 dBA (i.e., feasible barrier height).

⁵ No barrier was analyzed at this location because the modeled receiver would not approach or exceed the NAC.

⁶ The shaded area represents the existing wall height.

⁷ NP = Not Permitted. Sound barriers within 15 ft of the nearest travel lane should not exceed 14 ft in height.

dBA = A-weighted decibels

ES = edge of shoulder barrier

EW = existing wall

ft = feet

H = height

L_{eq} = equivalent sound level

NAC = Noise Abatement Criteria

PL = property barrier

Rec. = receiver

RW = right-of-way barrier

SB = sound barrier

Table 2.14-15 Predicted Noise Levels and Insertion Loss (dBA) for **Build Alternative **4** (Additional)¹**

SB No.	EW No.	Rec. No.	Modeled Existing Noise Level	Alternative 4	With Barrier H = 6 ft		With Barrier H = 8 ft		With Barrier H = 10 ft		With Barrier H = 12 ft		With Barrier H = 14 ft		With Barrier H = 16 ft	
					L _{eq}	I.L. ²	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.
4-17 (ES)		R-359	68.6 ³	69.4	69.5	0.0	69.5	0.0	68.7	0.8	68.3	1.2	67.4	2.1	NP ⁴	NP
		R-360	68.7	69.6	69.7	0.0	69.6	0.1	69.2	0.5	68.6	1.1	67.9	1.8	NP	NP
		R-361	66.7	68.1	67.9	0.2	67.6	0.5	67.3	0.8	66.5	1.6	64.1	4.0	NP	NP
		R-362	65.3	66.4	66.0	0.4	65.7	0.7	64.3	2.1	63.4	3.0	62.8	3.6	NP	NP
	25	R-363	61.0	62.0	61.9	0.0	61.9	0.0	61.9	0.0	61.9	0.0	61.9	0.0	NP	NP
		R-364	61.9	63.1	62.7	0.2	62.7	0.2	62.6	0.3	62.5	0.4	62.5	0.4	NP	NP
	25 & 26	R-365	68.4	69.0	69.2	0.0	69.2	0.0	69.2	0.0	69.2	0.0	69.2	0.0	NP	NP
		R-366	66.9	67.7	67.7	0.0	67.7	0.0	67.7	0.0	67.7	0.0	67.7	0.0	NP	NP
	26	R-367	72.7	73.1	73.4	0.0	73.3	0.1	73.3	0.1	73.3	0.1	73.2	0.2	NP	NP
		R-368	69.9	70.7	70.8	0.0	70.8	0.0	70.7	0.1	70.7	0.1	70.7	0.1	NP	NP
		R-369	71.6	71.9	72.2	0.0	72.2	0.0	72.1	0.1	72.1	0.1	72.1	0.1	NP	NP
		R-370	71.9	72.0	72.3	0.0	72.2	0.1	72.2	0.1	72.2	0.1	72.2	0.1	NP	NP
		R-371	74.2	74.6	74.7	0.0	74.7	0.0	74.7	0.0	74.7	0.0	74.7	0.0	NP	NP
		R-372	73.5	74.1	74.1	0.0	74.1	0.0	74.1	0.0	74.0	0.1	74.0	0.1	NP	NP
		R-373	74.0	74.9	75.0	0.0	75.0	0.0	75.0	0.0	75.0	0.0	75.0	0.0	NP	NP
		R-374	58.6	59.2	59.3	0.0	59.3	0.0	59.3	0.0	59.3	0.0	59.3	0.0	NP	NP
		R-375	55.1	56.3	56.9	0.0	56.9	0.0	56.9	0.0	56.9	0.0	56.9	0.0	NP	NP
		R-376	57.5	58.0	58.0	0.0	58.0	0.0	57.9	0.1	57.9	0.1	57.9	0.1	NP	NP
	R-377	64.0	64.3	64.3	0.0	64.3	0.0	64.2	0.1	64.2	0.1	64.2	0.1	NP	NP	
	R-378	57.2	58.6	59.2	0.0	59.2	0.0	59.2	0.0	59.2	0.0	59.2	0.0	NP	NP	
	R-379	60.7	61.1	61.7	0.0	61.7	0.0	61.7	0.0	61.7	0.0	61.7	0.0	NP	NP	
	R-380	63.3	63.7	64.1	0.0	64.1	0.0	64.1	0.0	64.1	0.0	64.1	0.0	NP	NP	
	R-381	66.7	67.6	67.8	0.0	67.8	0.0	67.8	0.0	67.7	0.1	67.7	0.1	NP	NP	
4-21 (ES)		R-420	76.9	77.2	77.3	0.0	77.3	0.0	77.2	0.1	76.9	0.4	76.6	0.7	NP	NP
		R-421	75.1	75.4	75.4	0.0	75.4	0.0	75.4	0.0	75.3	0.1	75.2	0.2	NP	NP
		R-422	72.8	73.2	73.3	0.0	73.2	0.1	72.8	0.5	72.3	1.0	72.0	1.3	NP	NP
		R-423	72.8	73.0	72.8	0.0	72.8	0.0	72.7	0.1	72.6	0.2	72.6	0.2	NP	NP
		R-424	72.0	72.5	72.5	0.0	72.3	0.2	71.8	0.7	71.4	1.1	71.2	1.3	NP	NP

Table 2.14-15 Predicted Noise Levels and Insertion Loss (dBA) for **Build Alternative **4** (Additional)¹**

SB No.	EW No.	Rec. No.	Modeled Existing Noise Level	Alternative 4	With Barrier H = 6 ft		With Barrier H = 8 ft		With Barrier H = 10 ft		With Barrier H = 12 ft		With Barrier H = 14 ft		With Barrier H = 16 ft	
					L _{eq}	I.L. ²	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.
4-21 (ES)		R-425	71.3	71.6	71.4	0.0	71.4	0.0	71.4	0.0	71.4	0.0	71.3	0.1	NP	NP
		R-426	69.3	70.0	69.6	0.1	69.3	0.4	69.0	0.7	68.8	0.9	68.4	1.3	NP	NP
		R-427	65.3	65.5	65.5	0.0	65.3	0.2	65.2	0.3	65.1	0.4	65.0	0.5	NP	NP
		R-428	70.2	70.5	70.2	0.0	70.2	0.0	70.2	0.0	70.1	0.1	70.1	0.1	NP	NP
	33	R-429	68.0	69.0	67.2	1.7	67.0	1.9	66.8	2.1	66.4	2.5	66.2	2.7	NP	NP
	33	R-430	67.6	68.5	67.7	0.6	67.5	0.8	67.3	1.0	67.1	1.2	67.0	1.3	NP	NP
		R-431	67.0	67.6	66.8	0.7	66.6	0.9	66.4	1.1	66.3	1.2	66.2	1.3	NP	NP
		R-432	66.9	67.9	65.8	2.1	65.5	2.4	65.3	2.6	64.8	3.1	64.6	3.3	NP	NP
		R-433	65.7	66.8	65.0	1.7	64.8	1.9	64.6	2.1	64.3	2.4	64.1	2.6	NP	NP
		R-434	65.2	66.4	65.0	1.3	64.8	1.5	64.7	1.6	64.5	1.8	64.3	2.0	NP	NP
		R-435	63.5	64.9	61.8	2.9	61.5	3.2	61.3	3.4	60.5	4.2	60.1	4.6	NP	NP
		R-436	64.6	65.7	63.9	1.6	63.7	1.8	63.6	1.9	63.4	2.1	63.2	2.3	NP	NP
		R-437	59.3	60.2	59.2	0.8	59.2	0.8	59.2	0.8	59.1	0.9	59.0	1.0	NP	NP
		R-438	65.3	65.7	65.7	0.0	65.6	0.1	65.5	0.2	65.4	0.3	65.3	0.4	NP	NP
		R-439	67.8	68.0	68.1	0.0	68.0	0.1	68.0	0.1	67.9	0.2	67.8	0.3	NP	NP
		R-440	69.1	69.2	69.2	0.0	69.2	0.0	69.2	0.0	69.2	0.0	69.1	0.1	NP	NP
		R-441	69.1	69.3	69.3	0.0	69.3	0.0	69.3	0.0	69.2	0.1	69.1	0.2	NP	NP
		R-442	70.1	70.2	70.2	0.0	70.2	0.0	70.2	0.0	70.1	0.1	69.9	0.3	NP	NP
	R-443	71.1	71.0	71.0	0.0	71.0	0.1	71.0	0.1	70.7	0.3	70.0	1.0	NP	NP	
	R-444	69.1	68.9	68.9	0.0	68.9	0.0	68.6	0.3	68.1	0.8	66.7	2.2	NP	NP	
	R-445	67.7	67.9	67.9	0.0	67.7	0.2	67.5	0.4	66.7	1.2	64.8	3.1	NP	NP	
	R-446	67.3	67.4	67.4	0.0	67.2	0.2	66.9	0.5	65.7	1.7	64.6	2.8	NP	NP	
	33	R-447	64.6	64.9	64.9	0.0	64.7	0.2	64.6	0.3	64.6	0.3	64.4	0.5	NP	NP
		R-448	58.6	57.8	57.7	0.1	57.6	0.2	57.5	0.3	57.4	0.4	57.1	0.7	NP	NP
		R-449	57.0	56.6	56.5	0.0	56.4	0.1	56.3	0.2	56.2	0.3	55.9	0.6	NP	NP
		R-450	57.4	56.8	56.7	0.1	56.7	0.1	56.5	0.3	56.4	0.4	56.1	0.7	NP	NP
	R-451	58.2	57.0	56.9	0.0	56.9	0.0	56.8	0.1	56.6	0.3	56.2	0.7	NP	NP	
	R-452	57.5	57.0	56.9	0.0	56.9	0.0	56.8	0.1	56.5	0.4	55.9	1.0	NP	NP	
R-453	58.7	57.8	57.6	0.1	57.5	0.2	57.2	0.5	56.9	0.8	56.6	1.1	NP	NP		
R-454	61.1	59.5	59.4	0.0	59.3	0.1	58.7	0.7	58.0	1.4	57.6	1.8	NP	NP		
R-455	63.0	63.3	63.2	0.1	63.0	0.3	62.9	0.4	62.7	0.6	62.4	0.9	NP	NP		
R-456	61.7	62.2	61.8	0.3	61.6	0.5	61.4	0.7	61.1	1.0	60.9	1.2	NP	NP		

Table 2.14-15 Predicted Noise Levels and Insertion Loss (dBA) for **Build Alternative **4** (Additional)¹**

SB No.	EW No.	Rec. No.	Modeled Existing Noise Level	Alternative 4	With Barrier H = 6 ft		With Barrier H = 8 ft		With Barrier H = 10 ft		With Barrier H = 12 ft		With Barrier H = 14 ft		With Barrier H = 16 ft	
					L _{eq}	I.L. ²	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.	L _{eq}	I.L.
4-21 (ES)		R-457	67.4	67.4	67.4	0.0	67.4	0.0	67.4	0.0	67.4	0.0	67.4	0.0	NP	NP
		R-458	69.8	69.1	69.1	0.0	69.1	0.0	69.1	0.0	69.1	0.0	69.1	0.0	NP	NP
		R-459	68.5	67.3	67.3	0.0	67.3	0.0	67.3	0.0	67.3	0.0	67.3	0.0	NP	NP
		R-460	60.5	59.9	59.9	0.0	59.9	0.0	59.9	0.0	59.9	0.0	59.7	0.2	NP	NP

Source: *Noise Study Report*, LSA Associates, Inc., September 2010.

¹ Sounds barriers with Design Option B and additional sound barrier locations were evaluated separately to compare the effectiveness of the barriers. [The sound barrier modeling results for Design Option B apply to Design Option A as well.](#)

² I.L.: Insertion Loss.

³ Numbers in **bold** represent noise levels that approach or exceed the NAC.

⁴ NP = Not Permitted. Sound barriers within 15 ft of the nearest travel lane should not exceed 14 ft in height.

dBA = A-weighted decibels

ES = edge of shoulder barrier

EW = existing wall

ft = feet

H = height

L_{eq} = equivalent sound level

NAC = Noise Abatement Criteria

Rec. = receiver

SB = sound barrier

Table 2.14-16 Feasible Sound barriers for Build Alternative 4

SB NO.	HEIG HT (FT)	APPROXIM ATE LENGTH (FT)	RECEIVER LOCATIONS SHIELDED	NUMBER OF BENEFITED RESIDENCE S ¹	STATION NUMBER		BEGIN AND END TOP OF BARRIER ELEVATION (FT)	
					BEGIN	END	BEGIN	END
4-1B (PL)	6	245	R-1	2	165+18	167+20	253.5	245.4
	8	245	R-1	2			255.5	247.4
	10	245	R-1	2			257.5	249.4
	12	245	R-1	2			259.5	251.4
	14	245	R-1	2			261.5	253.4
	16	245	R-1	2			263.5	255.4
4-2B (PL)	6	627	R-4 TO R-6, R-8	4	171+00	176+00	211.1	208.4
	8	627	R-4 TO R-6, R-8	4			213.1	210.4
	10	627	R-4 TO R-8	5			215.1	212.4
	12	627	R-4 TO R-8	5			217.1	214.4
	14	627	R-4 TO R-8	5			219.1	216.4
	16	627	R-4 TO R-8	5			221.1	218.4
4-4 (PL)	6	2,226	R-106, R-107, R-109 TO R-111, R-113, R-115, R-116	8	251+10	268+65	206.0	208.0
	8	2,226	R-99 TO R-101, R-104, R-106, R-107, R-109 TO R-111, R-113, R-115, R-116	15			208.0	210.0
	10	2,226	R-99 TO R-102, R-104, R-106, R-107, R-109 TO R-111, R-113, R-115, R-116	27			210.0	212.0
	12	2,226	R-99 TO R-102, R-104, R-106, R-107, R-109 TO R-111, R-113 TO R-116	28			212.0	214.0
	14	2,226	R-99 TO R-102, R-104 TO R-107, R-109 TO R- 111, R-113 TO R-116	30			214.0	216.0
	16	2,226	R-106, R-107, R-109 TO R-111, R-113, R-115, R-116	32			216.0	218.0
4-7 (PL)	6	90	R-163	1	286+20	286+80	204.0	204.0
	8	90	R-163	1			206.0	206.0
	10	90	R-163	1			208.0	208.0
	12	90	R-163	1			210.0	210.0
	14	90	R-163	1			212.0	212.0
	16	90	R-163	1			214.0	214.0

Table 2.14-16 Feasible Sound barriers for Build Alternative 4

SB NO.	HEIGHT (FT)	APPROXIMATE LENGTH (FT)	RECEIVER LOCATIONS SHIELDED	NUMBER OF BENEFITED RESIDENCE S ¹	STATION NUMBER		BEGIN AND END TOP OF BARRIER ELEVATION (FT)	
					BEGIN	END	BEGIN	END
4-8 (PL)	10	180	R-176	1	293+40	294+65	216.0	219.0
	12	180	R-176	1			218.0	221.0
	14	180	R-176	1			220.0	223.0
	16	180	R-176	1			222.0	225.0
4-9 (ES)	10	1,681	R-186 TO R-192	15	291+00	277+00	172.4	137.0
	12	1,681	R-179, R-184 TO R-192	23			174.4	139.0
	14	1,681	R-179, R-183 TO R-192, R-196, R-197, R-202	34			176.4	141.0
4-11 (RW)	6	1,233	R-236, R-244, R-245	7	317+75	327+00	246.0	222.0
	8	1,233	R-236, R-244, R-245, R-254	9			248.0	224.0
	10	1,233	R-232, R-234 TO R-236, R-243 TO R-245, R-254	15			250.0	226.0
	12	1,233	R-232 TO R-236, R-241, R-243 TO R-245, R-254	18			252.0	228.0
	14	1,233	R-232 TO R-241, R-243 TO R-245, R-254	22			254.0	230.0
	16	1,233	R-232 TO R-241, R-243 TO R-245, R-254	22			256.0	232.0
4-14 (RW)	10	170	R-279	1	361+50	362+25	240.5	236.0
	12	170	R-279	1			242.5	238.0
	14	170	R-279	1			244.5	240.0
	16	170	R-279	1			246.5	242.0
4-15 (RW)	6	278	R-323, R-340	3	360+80	363+25	233.0	236.5
	8	278	R-323, R-340	3			235.0	238.5
	10	278	R-323, R-340	3			237.0	240.5
	12	278	R-323, R-340	3			239.0	242.5
	14	278	R-323, R-340	3			241.0	244.5
	16	278	R-323, R-340	3			243.0	246.5
4-16 (PL)	6	1,082	R-359, R-360, R-369 TO R-371	7	366+85	376+50	186.0	180.0
	8	1,082	R-359 TO R-362, R-366, R-368 TO R-372	15			188.0	182.0
	10	1,082	R-359 TO R-362, R-364, R-366, R-368 TO R-373, R-377, R-381	23			190.0	184.0
	12	1,082	R-359 TO R-364, R-366 TO R-373, R-377, R-381	25			192.0	186.0
	14	1,082	R-359 TO R-373, R-377, R-381	27			194.0	188.0
	16	1,082	R-359 TO R-373, R-377, R-381	27			196.0	190.0

Table 2.14-16 Feasible Sound barriers for Build Alternative 4

SB NO.	HEIG HT (FT)	APPROXIM ATE LENGTH (FT)	RECEIVER LOCATIONS SHIELDED	NUMBER OF BENEFITED RESIDENCE S ¹	STATION NUMBER		BEGIN AND END TOP OF BARRIER ELEVATION (FT)	
					BEGIN	END	BEGIN	END
4-20 (PL)	6	144	R-417	1	436+12	437+12	258.0	258.0
	8	144	R-417	1			260.0	260.0
	10	144	R-417	1			262.0	262.0
	12	144	R-417	1			264.0	264.0
	14	144	R-417	1			266.0	266.0
	16	144	R-417	1			268.0	268.0
4-22 (PL)	6	487	R-420 TO R-422	4	450+10	452+50	128.0	126.0
	8	487	R-420 TO R-426, R-428	11			130.0	128.0
	10	487	R-420 TO R-426, R-428	11			132.0	130.0
	12	487	R-420 TO R-426, R-428	11			134.0	132.0
	14	487	R-420 TO R-426, R-428	11			136.0	134.0
	16	487	R-420 TO R-428, R-434	12			138.0	136.0
4-23 (PL)	8	428	R-430	1	452+50	454+93	91.0	96.0
	10	428	R-430, R-431	2			93.0	98.0
	12	428	R-429 TO R-431	4			95.0	100.0
	14	428	R-439 TO R-431	4			97.0	102.0
	16	428	R-439 TO R-431, R-434	4			99.0	104.0
4-24 (PL)	6	793	R-440 TO R-446	13	455+18	461+75	114.0	128.0
	8	793	R-439 TO R-446	15			116.0	130.0
	10	793	R-439 TO R-446	15			118.0	132.0
	12	793	R-439 TO R-446	15			120.0	134.0
	14	793	R-439 TO R-446	15			122.0	136.0
	16	793	R-439 TO R-446	15			124.0	138.0
4-25 (PL)	6	295	R-458, R-459	4	461+75	464+30	170.0	176.0
	8	295	R-457 TO R-459	6			172.0	178.0
	10	295	R-457 TO R-459	6			174.0	180.0
	12	295	R-457 TO R-459	6			176.0	182.0
	14	295	R-457 TO R-459	6			178.0	184.0
	16	295	R-457 TO R-459	6			180.0	186.0
4-27 (RW)	14	235	R-349	3	363+00	365+25	216.3	191.4
	16	235	R-349	3			218.3	193.4



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|----------------|--------------------|---|---------------------------------------|
| Existing ROW | Receiver Locations | Modeled Sound Barriers | Alternative 4 (Preferred Alternative) |
| Existing Walls | | Modeled Sound Barriers - Not Feasible | Option A at Pico |
| | | Existing Walls to be Removed and Replaced | Option B at Pico |
| | | | Grading Limit and Contours |

* Although Design Option A was selected as part of the preferred alternative, the soundbarrier modeling results for Design Option B apply to Design Option A.



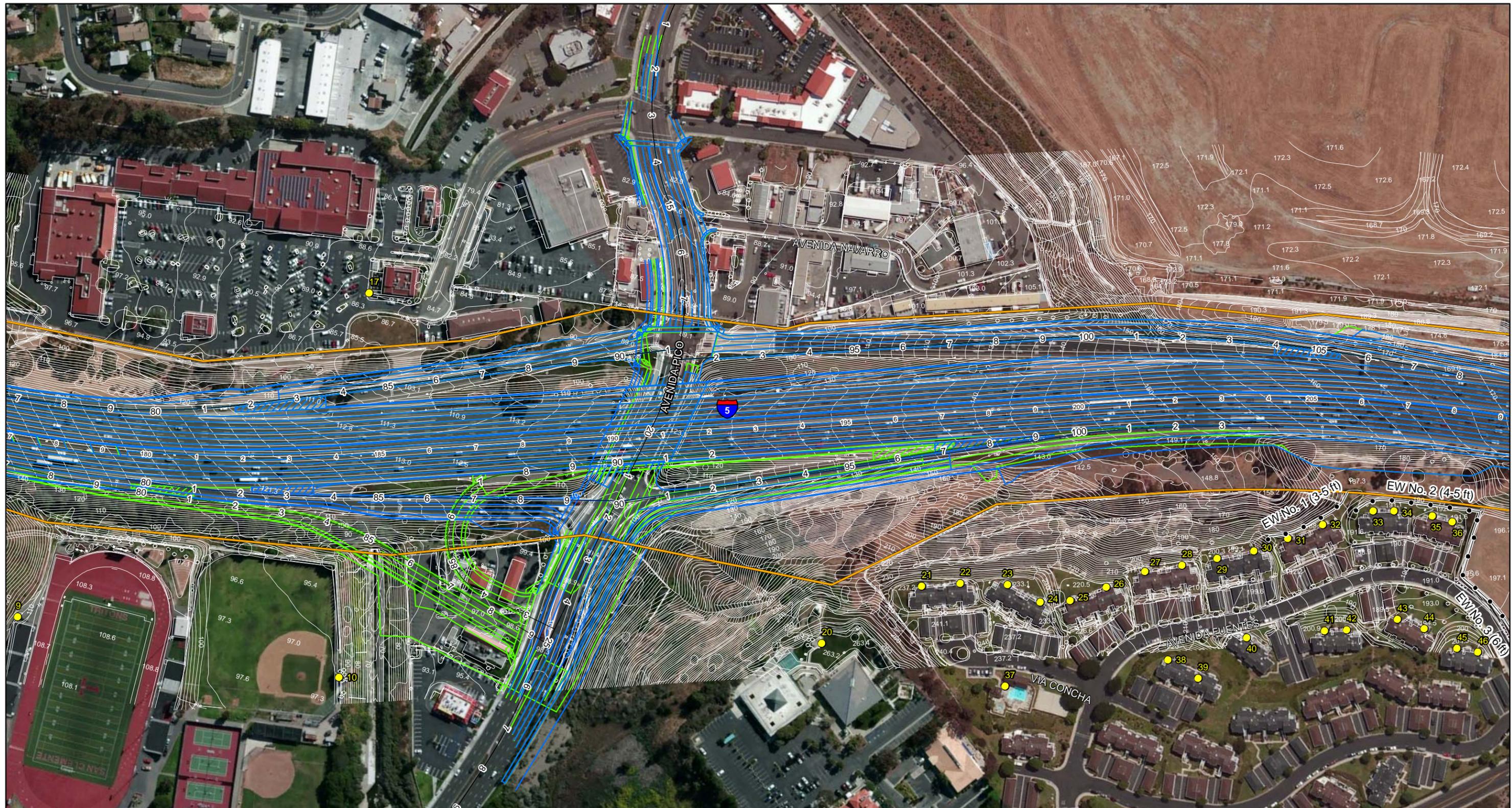
FIGURE 2.14-2

Sheet 1 of 12

I-5 HOV Lane Extension Project
Alternative 4 (Preferred Alternative)
Modeled Sound Barriers and Receiver Locations

12-ORA-5 PM 3.0/8.7
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| Existing ROW | Receiver Locations | Modeled Sound Barriers | Alternative 4 (Preferred Alternative) |
| Existing Walls | | Modeled Sound Barriers - Not Feasible | Option A at Pico |
| | | Existing Walls to be Removed and Replaced | Option B at Pico |
| | | | Grading Limit and Contours |

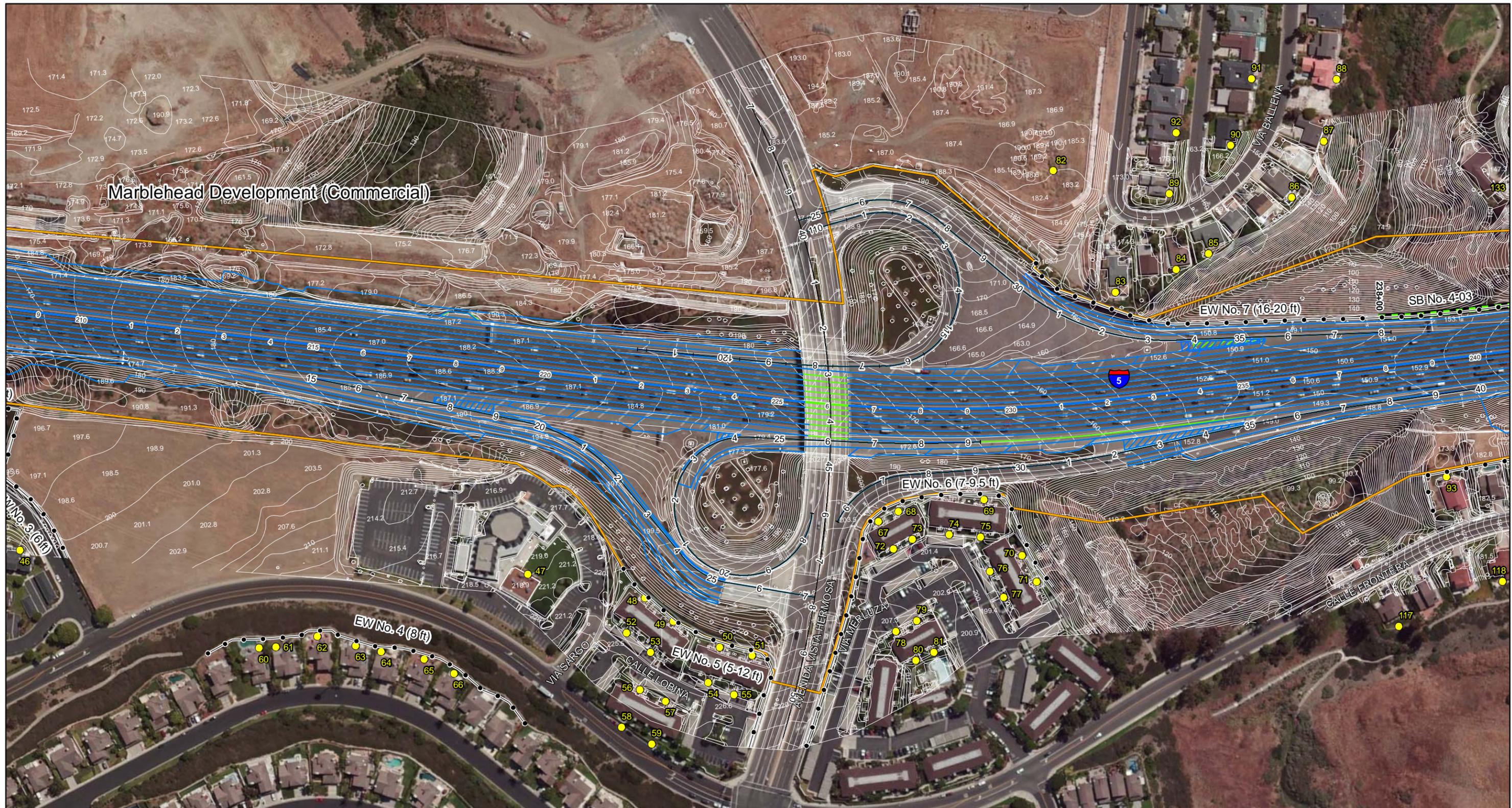
* Although Design Option A was selected as part of the preferred alternative, the soundbarrier modeling results for Design Option B apply to Design Option A.



FIGURE 2.14-2
Sheet 2 of 12

I-5 HOV Lane Extension Project
Alternative 4 (Preferred Alternative)
Modeled Sound Barriers and Receiver Locations
12-ORA-5 PM 3.0/8.7
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| Existing ROW | Receiver Locations | Modeled Sound Barriers | Alternative 4 (Preferred Alternative) |
| Existing Walls | | Modeled Sound Barriers - Not Feasible | Option A at Pico |
| | | Existing Walls to be Removed and Replaced | Option B at Pico |
| | | | Grading Limit and Contours |

* Although Design Option A was selected as part of the preferred alternative, the soundbarrier modeling results for Design Option B apply to Design Option A.



FIGURE 2.14-2

Sheet 3 of 12

I-5 HOV Lane Extension Project
 Alternative 4 (Preferred Alternative)
 Modeled Sound Barriers and Receiver Locations

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SOURCE: Bing Maps (2009); RBF (08/2009); RMC (08/2009)

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| Existing ROW | Receiver Locations | Modeled Sound Barriers | Alternative 4 (Preferred Alternative) |
| Existing Walls | | Modeled Sound Barriers - Not Feasible | Option A at Pico |
| | | Existing Walls to be Removed and Replaced | Option B at Pico |
| | | | Grading Limit and Contours |

* Although Design Option A was selected as part of the preferred alternative, the soundbarrier modeling results for Design Option B apply to Design Option A.



FIGURE 2.14-2

Sheet 4 of 12

I-5 HOV Lane Extension Project
 Alternative 4 (Preferred Alternative)
 Modeled Sound Barriers and Receiver Locations

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SOURCE: Bing Maps (2009); RBF (08/2009); RMC (08/2009)

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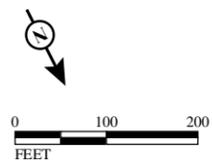
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| Existing ROW | Receiver Locations | Modeled Sound Barriers | Alternative 4 (Preferred Alternative) |
| Existing Walls | | Modeled Sound Barriers - Not Feasible | Option A at Pico |
| | | Existing Walls to be Removed and Replaced | Option B at Pico |
| | | | Grading Limit and Contours |

* Although Design Option A was selected as part of the preferred alternative, the soundbarrier modeling results for Design Option B apply to Design Option A.



FIGURE 2.14-2
Sheet 5 of 12

I-5 HOV Lane Extension Project
Alternative 4 (Preferred Alternative)
Modeled Sound Barriers and Receiver Locations
12-ORA-5 PM 3.0/8.7
EA# 0F9600



SOURCE: Bing Maps (2009); RBF (08/2009); RMC (08/2009)

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| Existing ROW | Receiver Locations | Modeled Sound Barriers | Alternative 4 (Preferred Alternative) |
| Existing Walls | | Modeled Sound Barriers - Not Feasible | Option A at Pico |
| | | Existing Walls to be Removed and Replaced | Option B at Pico |
| | | | Grading Limit and Contours |

* Although Design Option A was selected as part of the preferred alternative, the soundbarrier modeling results for Design Option B apply to Design Option A.



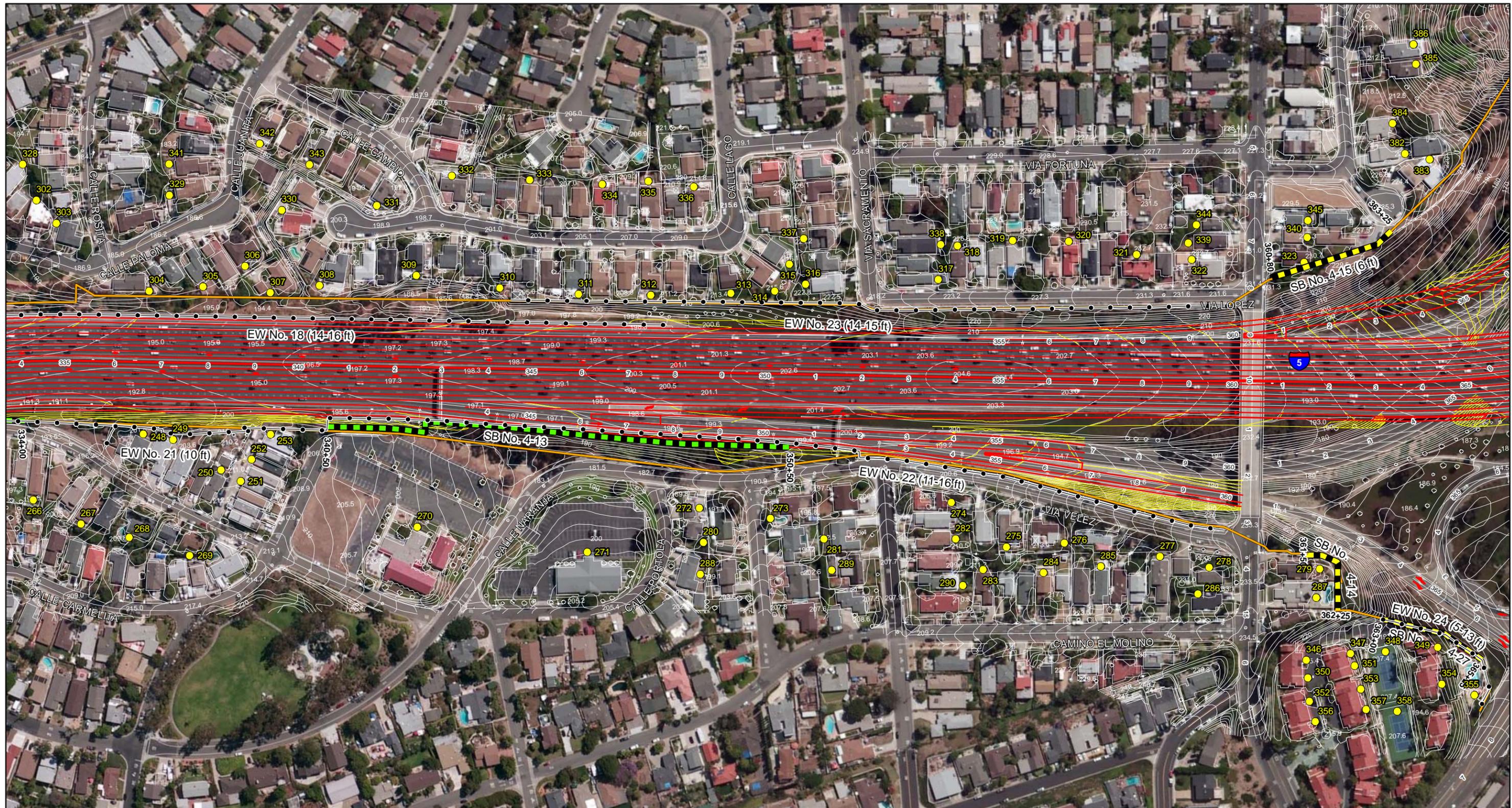
FIGURE 2.14-2

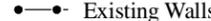
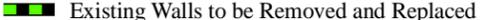
Sheet 6 of 12

I-5 HOV Lane Extension Project
Alternative 4 (Preferred Alternative)
Modeled Sound Barriers and Receiver Locations

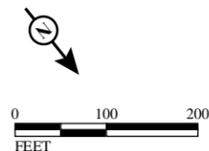
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|  Existing ROW |  Receiver Locations |  Modeled Sound Barriers |  Alternative 4 (Preferred Alternative) |
|  Existing Walls | |  Modeled Sound Barriers - Not Feasible |  Option A at Pico |
| | |  Existing Walls to be Removed and Replaced |  Option B at Pico |
| | | |  Grading Limit and Contours |

* Although Design Option A was selected as part of the preferred alternative, the soundbarrier modeling results for Design Option B apply to Design Option A.



SOURCE: Bing Maps (2009); RBF (08/2009); RMC (08/2009)

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FIGURE 2.14-2

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I-5 HOV Lane Extension Project
Alternative 4 (Preferred Alternative)

Modeled Sound Barriers and Receiver Locations

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| Existing ROW | Receiver Locations | Modeled Sound Barriers | Alternative 4 (Preferred Alternative) |
| Existing Walls | | Modeled Sound Barriers - Not Feasible | Option A at Pico |
| | | Existing Walls to be Removed and Replaced | Option B at Pico |
| | | | Grading Limit and Contours |

* Although Design Option A was selected as part of the preferred alternative, the soundbarrier modeling results for Design Option B apply to Design Option A.

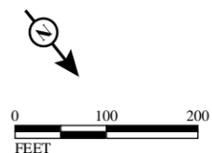


FIGURE 2.14-2

Sheet 8 of 12

I-5 HOV Lane Extension Project
Alternative 4 (Preferred Alternative)
Modeled Sound Barriers and Receiver Locations

12-ORA-5 PM 3.0/8.7
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SOURCE: Bing Maps (2009); RBF (08/2009); RMC (08/2009)

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| Existing ROW | Receiver Locations | Modeled Sound Barriers | Alternative 4 (Preferred Alternative) |
| Existing Walls | | Modeled Sound Barriers - Not Feasible | Option A at Pico |
| | | Existing Walls to be Removed and Replaced | Option B at Pico |
| | | | Grading Limit and Contours |

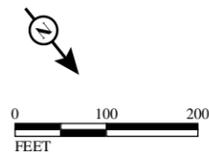
* Although Design Option A was selected as part of the preferred alternative, the soundbarrier modeling results for Design Option B apply to Design Option A.



FIGURE 2.14-2
Sheet 9 of 12

I-5 HOV Lane Extension Project
Alternative 4 (Preferred Alternative)
Modeled Sound Barriers and Receiver Locations

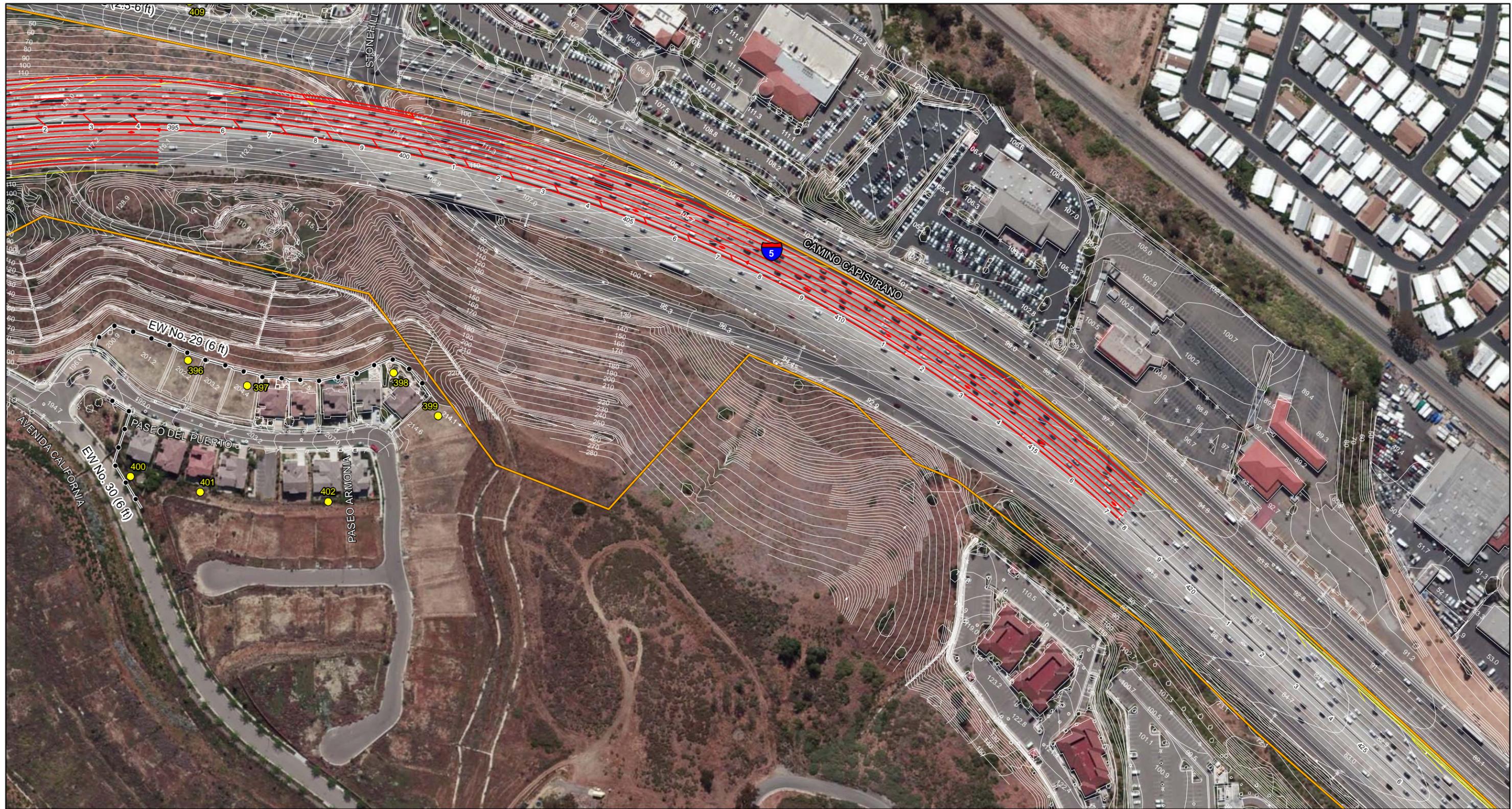
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SOURCE: Bing Maps (2009); RBF (08/2009); RMC (08/2009)

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| Existing ROW | Receiver Locations | Modeled Sound Barriers | Alternative 4 (Preferred Alternative) |
| Existing Walls | | Modeled Sound Barriers - Not Feasible | Option A at Pico |
| | | Existing Walls to be Removed and Replaced | Option B at Pico |
| | | | Grading Limit and Contours |

* Although Design Option A was selected as part of the preferred alternative, the soundbarrier modeling results for Design Option B apply to Design Option A.

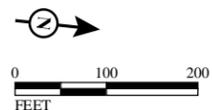


FIGURE 2.14-2

Sheet 10 of 12

I-5 HOV Lane Extension Project
Alternative 4 (Preferred Alternative)
Modeled Sound Barriers and Receiver Locations

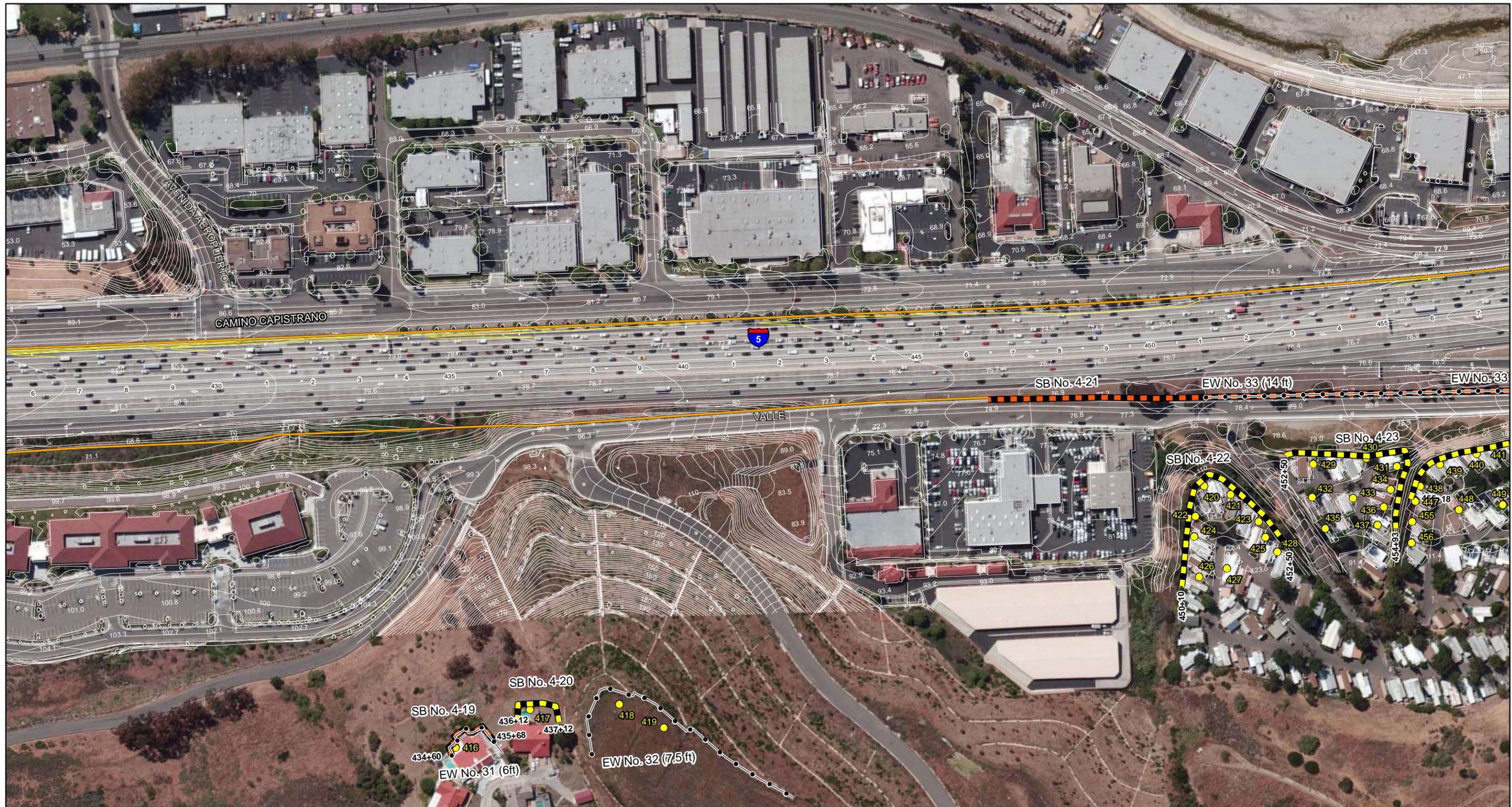
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SOURCE: Bing Maps (2009); RBF (08/2009); RMC (08/2009)

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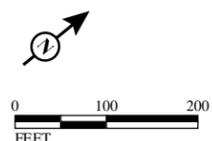
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| Existing ROW | Receiver Locations | Modeled Sound Barriers | Alternative 4 (Preferred Alternative) |
| Existing Walls | | Modeled Sound Barriers - Not Feasible | Option A at Pico |
| | | Existing Walls to be Removed and Replaced | Option B at Pico |
| | | | Grading Limit and Contours |

* Although Design Option A was selected as part of the preferred alternative, the soundbarrier modeling results for Design Option B apply to Design Option A.



SOURCE: Bing Maps (2009); RBF (08/2009); RMC (08/2009)

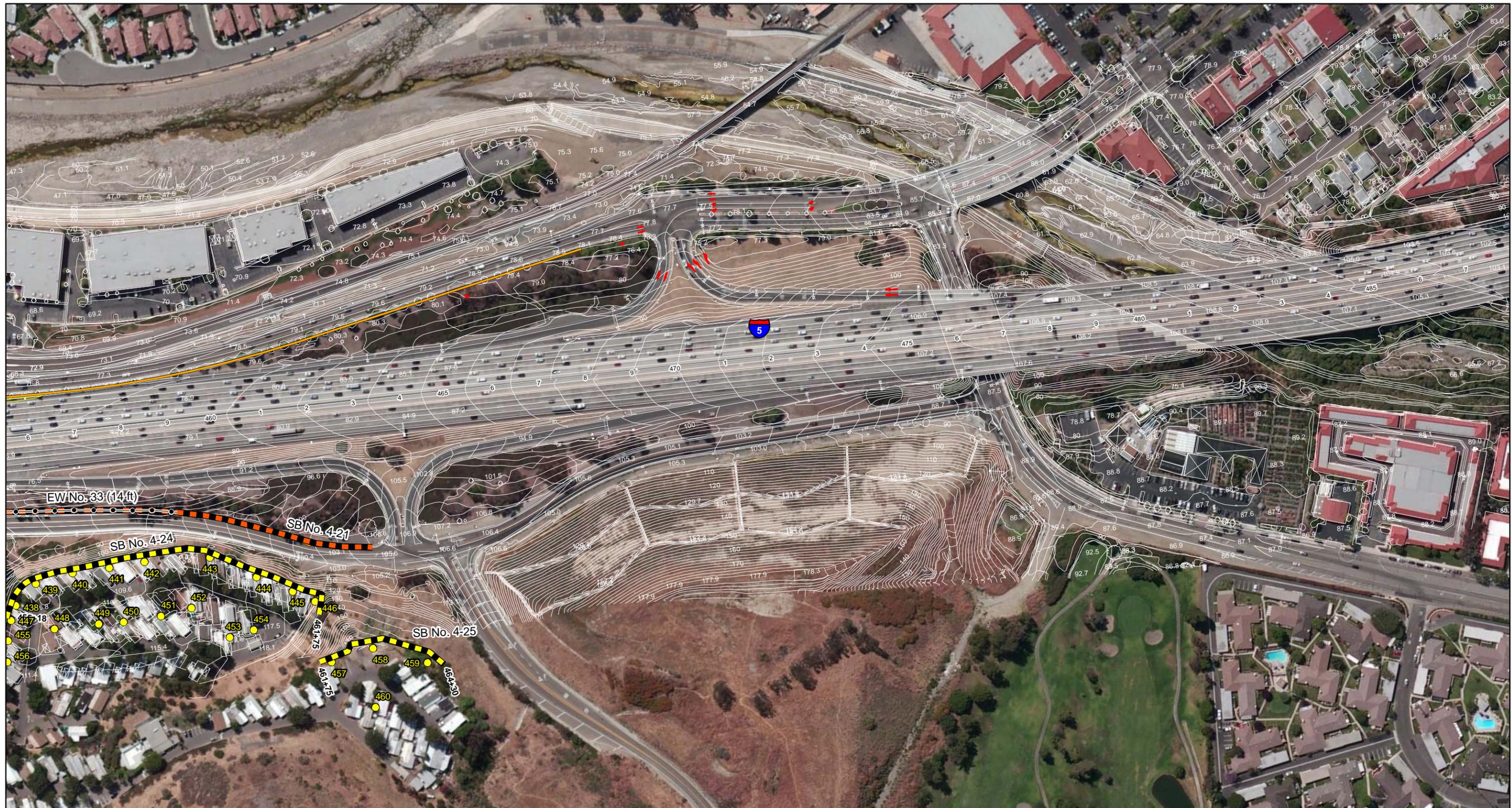
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FIGURE 2.14-2
Sheet 11 of 12

I-5 HOV Lane Extension Project
Alternative 4 (Preferred Alternative)
Modeled Sound Barriers and Receiver Locations
12-ORA-5 PM 3.0/8.7
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|----------------|--------------------|---|---------------------------------------|
| Existing ROW | Receiver Locations | Modeled Sound Barriers | Alternative 4 (Preferred Alternative) |
| Existing Walls | | Modeled Sound Barriers - Not Feasible | Option A at Pico |
| | | Existing Walls to be Removed and Replaced | Option B at Pico |
| | | | Grading Limit and Contours |

* Although Design Option A was selected as part of the preferred alternative, the soundbarrier modeling results for Design Option B apply to Design Option A.

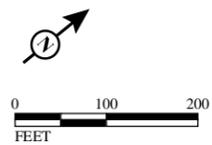


FIGURE 2.14-2

Sheet 12 of 12

I-5 HOV Lane Extension Project
Alternative 4 (Preferred Alternative)
Modeled Sound Barriers and Receiver Locations

12-ORA-5 PM 3.0/8.7
 EA# 0F9600



SOURCE: Bing Maps (2009); RBF (08/2009); RMC (08/2009)

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Build Alternative 4 would remove all or portions of many of the existing walls within the study area to accommodate the proposed roadway improvements. The existing walls would be removed as part of the proposed project, relocated outside of the widening proposed by the project, and replaced. The elevation of the top of the wall for all these existing walls should be at the same elevation or higher as the elevation of the top of the walls they replace. Below is a summary of the existing walls that would be removed and replaced for Build Alternative **4**.

- **Existing Wall No. 7:** A portion of this wall along the southbound side of I-5 would be removed from Station (STA) 238+00 to STA 241+00. The existing wall is also shown as SB No. 4-3 for the purpose of the reconstruction.
- **Existing Wall No. 9:** A portion of this wall along the southbound side of I-5 would be removed from STA 250+00 to STA 259+50. The existing wall is also shown as SB No. 4-5 for the purpose of the reconstruction.
- **Existing Wall No. 12:** The existing wall along the northbound side of I-5 from STA 276+00 to STA 280+50 would be removed. The existing wall is shown in a similar location as SB No. 4-6. In addition, it should be noted that a 14 to 16 ft high sound barrier identified in the *Supplemental Noise Barrier Scope Summary Report* (NBSSR), under Caltrans Expense Account No. UG9301, could be constructed prior to the construction of the I-5 HOV Lane Extension project.
- **Existing Wall No. 16:** The existing wall along the southbound side of I-5 from STA **297**+00 to STA 303+00 would be removed. The existing wall is shown in a similar location as SB No. 4-10.
- **Existing Wall No. 19:** A portion of the existing wall along the northbound side of I-5 from STA 327+00 to STA 334+00 would be removed. This existing wall is shown in a similar location as SB No. 4-12.
- **Existing Wall No. 22:** A portion of the existing wall along the northbound side of I-5 from STA 340+50 to STA **350**+**50** for **Build** Alternative 4 would be removed. This existing wall is shown in a similar location as SB No. 4-13. It should be noted that a portion of this wall from STA 340+50 to STA 342+75 shall be relocated to the top of the slope along the existing State ROW at the request of the Department District 12.
- **Existing Wall No. 26:** The existing wall along the northbound side of I-5 from STA 369+50 to STA 375+00 would be removed. This existing wall is shown in a similar location as SB No. 4-18.

Sound Barrier Reasonableness

A preliminary reasonableness determination of providing noise abatement for the exteriors of residential areas in Activity Category B (which includes residential areas)

begins with a \$31,000 base allowance per benefited residence. The \$31,000 base allowance is adjusted using the following five factors in order to determine the total reasonable allowance per residence:

1. Absolute noise level
2. Design year increase over existing noise levels
3. Achievable noise reduction
4. New highway construction or pre-1978 residences
5. Total reasonable allowance vs. project cost

Worksheet A of the Protocol was used to determine the total allowance for the barrier per benefited residence. Appendix H of the NSR includes the worksheets for the modeled barriers.

Worksheet B of the Protocol was used to determine: (1) the total allowance for the modeled barriers, and (2) whether the total allowance for the sound barriers exceeded 50 percent of the total cost of the project. Since the total allowance was less than 50 percent of the total project cost, no further modifications were required. Appendix H of the NSR includes Worksheet B from the Protocol for the modeled barriers.

The reasonableness of a sound barrier was determined by comparing the estimated cost of the project against the total reasonable allowance. The total reasonable allowance was determined based on the number of benefited residences multiplied by the reasonable allowance per residence. The estimated sound barrier construction cost was provided by RMC, Inc. (June 2010). The sound barrier cost includes materials for masonry blocks, concrete barrier 16-inch CIDH piles, minor additions of concrete, and ROW. The cost estimate breakdown for each sound barrier is provided in Appendix A of the NADR. If the estimated sound barrier construction cost exceeded the total reasonable allowance, the sound barrier was determined to be not reasonable. However, if the estimated sound barrier construction cost was within the total reasonable allowance, the sound barrier was determined to be reasonable.

Table 2.14-17 lists the feasible sound barriers for Build Alternative 4 with Design Option B¹ along with their height, approximate length, noise attenuation range, number of benefited residences, reasonable allowance per residence, total reasonable allowance, and estimated construction cost, as well as whether the sound barrier is reasonable. SB Nos. 4-11, 4-15, and 4-16 were determined to be reasonable when ROW cost is included. The

¹ The sound barrier modeling results for Design Option B apply to Design Option A as well.

remaining sound barriers listed in Table 2.14-17 were determined to be not reasonable, except for SB Nos. 4-1b (six ft high only), 4-7 (six to 14 ft high only), and 4-16 (for eight ft high wall). There is a possibility that if ROW is donated then soundwalls could become reasonable. Residents for these walls were surveyed to determine whether they are willing to donate ROW to allow for construction of the soundwall.

Unusual and extraordinary abatement measures will be considered for Receiver R-373 under Build Alternative 4 because it would experience a severe direct traffic noise impact of 75 dBA L_{eq} or higher. However, this receiver is shielded by a feasible and reasonable sound barrier. If, during final design, SB No. 4-16 is found to exceed the total reasonable allowance or is not approved during the sound barrier survey process, unusual and extraordinary abatement measures will be considered. Also, Receivers R-417, R-420, and R-421 under Build Alternative 4 would experience a severe traffic noise impact of 75 dBA L_{eq} or higher. Unusual and extraordinary abatement measures such as feasible sound barriers (reducing noise levels by 5 dBA or more) that have an estimated construction cost exceeding the total reasonable allowance or interior noise abatement should be considered. In addition, other measures, including but not limited to, double-paned windows, may be used. Unusual and extraordinary abatement measures are subject to approval by the Department.

Nonacoustical Factors Relating to Feasibility

Factors not relating to acoustics that must be considered during the construction of sound barriers include: safety, maintenance, security, geotechnical considerations, and utility relocations. Additional factors to consider include the opinions of affected residents and input from the public and public agencies. Social, economic, legal, and technological factors also must be addressed. The factors not relating to acoustics for SB Nos. 4-1, 4-7, 4-11, 4-15, and 4-16 are addressed below:

- **Safety:** None of the sound barriers would affect sight distance for vehicular or pedestrian traffic. SB Nos. 4-11 and 4-15 would be located on the State ROW/private property line at each location, and SB Nos. 4-1, 4-7 and 4-16 would be located outside the State ROW, along private property lines. All sound barriers would

Table 2.14-17 Summary of Abatement Information

SB No.	Height (ft)	Approximate Length (ft)	Receivers Shielded	Number of Benefited Residences ¹	Reasonable Allowance Per Residence	Total Reasonable Allowance	Estimated Total Sound Barrier Construction Cost With RW Donated	Reasonable? With RW Donated	Estimated Total Sound Barrier Construction Cost Without RW Donated	Reasonable? Without RW Donated
4-1b (PL)	6	245	R-1	2	\$47,000	\$94,000	\$92,000	Yes	\$130,760	No
	8	245	R-1	2	\$49,000	\$98,000	\$105,000	No	\$143,760	No
	10	245	R-1	2	\$49,000	\$98,000	\$119,000	No	\$157,760	No
	12	245	R-1	2	\$51,000	\$102,000	\$134,000	No	\$172,760	No
	14	245	R-1	2	\$51,000	\$102,000	\$150,000	No	\$188,760	No
4-2b (PL)	6	627	R-4-R-6, R-8	4	\$49,000	\$196,000	\$422,000	No	\$1,068,200	No
	8	627	R-4-R-6, R-8	4	\$49,000	\$196,000	\$455,000	No	\$1,101,200	No
	10	627	R-4-R-8	5	\$51,000	\$255,000	\$490,000	No	\$1,136,200	No
	12	627	R-4-R-8	5	\$51,000	\$255,000	\$529,000	No	\$1,175,200	No
	14	627	R-4-R-8	5	\$51,000	\$255,000	\$569,000	No	\$1,215,200	No
	16	627	R-4-R-8	5	\$51,000	\$255,000	\$617,000	No	\$1,263,200	No
4-4 (PL)	6	2,226	R-106, R-107, R-109-R-111, R-113, R-115, R-116	8	\$39,000	\$312,000	\$941,000	No	\$1,771,280	No
	8	2,226	R-99-R-101, R-104, R-106, R-107, R-109-R-111, R-113, R-115, R-116	15	\$41,000	\$615,000	\$1,057,000	No	\$1,887,280	No
	10	2,226	R-99-R-102, R-104, R-106, R-107, R-109-R-111, R-113, R-115, R-116	27	\$41,000	\$1,107,000	\$1,181,000	No	\$2,011,280	No
	12	2,226	R-99-R-102, R-104, R-106, R-107, R-109-R-111, R-113-R-116	28	\$41,000	\$1,148,000	\$1,321,000	No	\$2,151,280	No
	14	2,226	R-99-R-102, R-104-R-107, R-109-R-111, R-113-R-116	30	\$41,000	\$1,230,000	\$1,462,000	No	\$2,292,280	No
	16	2,226	R-106, R-107, R-109-R-111, R-113, R-115, R-116	32	\$41,000	\$1,312,000	\$1,633,000	No	\$2,463,280	No
4-7 (PL)	6	90	R-163	1	\$47,000	\$47,000	\$25,000	Yes	\$77,440	No
	8	90	R-163	1	\$49,000	\$49,000	\$29,000	Yes	\$81,440	No
	10	90	R-163	1	\$49,000	\$49,000	\$34,000	Yes	\$86,440	No

Table 2.14-17 Summary of Abatement Information

SB No.	Height (ft)	Approximate Length (ft)	Receivers Shielded	Number of Benefited Residences ¹	Reasonable Allowance Per Residence	Total Reasonable Allowance	Estimated Total Sound Barrier Construction Cost With RW Donated	Reasonable? With RW Donated	Estimated Total Sound Barrier Construction Cost Without RW Donated	Reasonable? Without RW Donated
	12	90	R-163	1	\$49,000	\$49,000	\$40,000	Yes	\$92,440	No
	14	90	R-163	1	\$49,000	\$49,000	\$46,000	Yes	\$98,440	No
	16	90	R-163	1	\$49,000	\$49,000	\$53,000	No	\$105,440	No
4-8 (PL)	10	176	R-176	1	\$43,000	\$43,000	\$167,000	No	\$286,040	No
	12	176	R-176	1	\$45,000	\$45,000	\$178,000	No	\$297,040	No
	14	176	R-176	1	\$45,000	\$45,000	\$190,000	No	\$309,040	No
	16	176	R-176	1	\$45,000	\$45,000	\$203,000	No	\$322,040	No
4-9 (ES)	10	1,681	R-186–R-192	15	\$33,000	\$495,000	\$948,000	No	\$948,000	No
	12	1,681	R-179, R-184–R-192	23	\$35,000	\$805,000	\$1,072,000	No	\$1,072,000	No
	14	1,681	R-179, R-183–R-192, R-196, R-197, R-202	34	\$35,000	\$1,190,000	\$1,203,000	No	\$1,203,000	No
4-11 (RW)	6	1,233	R-236, R-244, R-245	7	\$45,000	\$315,000	\$491,000	No	\$558,680	No
	8	1,233	R-236, R-244, R-245, R-254	9	\$47,000	\$423,000	\$548,000	No	\$615,680	No
	10	1,233	R-232, R-234–R-236, R-243–R-245, R-254	15	\$49,000	\$735,000	\$600,000	Yes	\$667,680	Yes
	12	1,233	R-232–R-236, R-241, R-243–R-245, R-254	18	\$49,000	\$882,000	\$656,000	Yes	\$723,680	Yes
	14	1,233	R-232–R-241, R-243–R-245, R-254	22	\$49,000	\$1,078,000	\$716,000	Yes	\$783,680	Yes
4-14 (RW)	10	170	R-279	1	\$47,000	\$47,000	\$65,000	No	\$103,280	No
	12	170	R-279	1	\$47,000	\$47,000	\$76,000	No	\$114,280	No
	14	170	R-279	1	\$47,000	\$47,000	\$86,000	No	\$124,280	No
	16	170	R-279	1	\$47,000	\$47,000	\$100,000	No	\$138,280	No
	4-15 (RW)	6	235	R-323, R-340	3	\$47,000	\$141,000	\$65,000	Yes	\$74,360
8		235	R-323, R-340	3	\$49,000	\$147,000	\$77,000	Yes	\$86,360	Yes
10		235	R-323, R-340	3	\$51,000	\$153,000	\$90,000	Yes	\$99,360	Yes
12		235	R-323, R-340	3	\$51,000	\$153,000	\$105,000	Yes	\$114,360	Yes
14		235	R-323, R-340	3	\$51,000	\$153,000	\$120,000	Yes	\$129,360	Yes

Table 2.14-17 Summary of Abatement Information

SB No.	Height (ft)	Approximate Length (ft)	Receivers Shielded	Number of Benefited Residences ¹	Reasonable Allowance Per Residence	Total Reasonable Allowance	Estimated Total Sound Barrier Construction Cost With RW Donated	Reasonable? With RW Donated	Estimated Total Sound Barrier Construction Cost Without RW Donated	Reasonable? Without RW Donated
	16	235	R-323, R-340	3	\$51,000	\$153,000	\$138,000	Yes	\$147,360	Yes
4-16 (PL)	6	1,082	R-359, R-360, R-369–R-371	7	\$47,000	\$329,000	\$548,000	No	\$858,000	No
	8	1,082	R-359–R-362, R-366, R-368–R-372	15	\$49,000	\$735,000	\$603,000	Yes	\$913,000	No
	10	1,082	R-359–R-362, R-364, R-366, R-368–R-373, R-377, R-381	23	\$51,000	\$1,173,000	\$664,000	Yes	\$974,000	Yes
4-16 (PL)	12	1,082	R-359–R-364, R-366–R-373, R-377, R-381	25	\$51,000	\$1,275,000	\$732,000	Yes	\$1,042,000	Yes
	14	1,082	R-359–R-373, R-377, R-381	27	\$51,000	\$1,377,000	\$801,000	Yes	\$1,111,000	Yes
	16	1,082	R-359–R-373, R-377, R-381	27	\$51,000	\$1,377,000	\$884,000	Yes	\$1,194,000	Yes
4-20 (PL)	6	144	R-417	1	\$41,000	\$41,000	\$50,000	No	\$99,160	No
	8	144	R-417	1	\$43,000	\$43,000	\$57,000	No	\$106,160	No
	10	144	R-417	1	\$43,000	\$43,000	\$65,000	No	\$114,160	No
	12	144	R-417	1	\$43,000	\$43,000	\$74,000	No	\$123,160	No
	14	144	R-417	1	\$43,000	\$43,000	\$83,000	No	\$132,160	No
	16	144	R-417	1	\$45,000	\$45,000	\$94,000	No	\$143,160	No
4-22 (PL)	6	487	R-420–R-422	4	\$49,000	\$196,000	\$1,576,000	No	\$1,576,000	No
	8	487	R-420–R-426, R-428	11	\$51,000	\$561,000	\$1,601,000	No	\$1,601,000	No
	10	487	R-420–R-426, R-428	11	\$53,000	\$583,000	\$1,628,000	No	\$1,628,000	No
	12	487	R-420–R-426, R-428	11	\$53,000	\$583,000	\$1,659,000	No	\$1,659,000	No
	14	487	R-420–R-426, R-428	11	\$53,000	\$583,000	\$1,690,000	No	\$1,690,000	No
	16	487	R-420–R-428, R-434	12	\$53,000	\$636,000	\$1,727,000	No	\$1,727,000	No
4-23 (PL)	8	428	R-430	1	\$45,000	\$45,000	\$777,000	No	\$777,000	No
	10	428	R-430, R-431	2	\$45,000	\$90,000	\$795,000	No	\$795,000	No
	12	428	R-429–R-431	4	\$47,000	\$188,000	\$814,000	No	\$814,000	No
	14	428	R-439–R-431	4	\$47,000	\$188,000	\$835,000	No	\$835,000	No
	16	428	R-439–R-431, R-434	4	\$47,000	\$188,000	\$854,000	No	\$854,000	No
4-24 (PL)	6	793	R-440–R-446	13	\$47,000	\$611,000	\$2,446,000	No	\$2,446,000	No
	8	793	R-439–R-446	15	\$49,000	\$735,000	\$2,487,000	No	\$2,487,000	No

Table 2.14-17 Summary of Abatement Information

SB No.	Height (ft)	Approximate Length (ft)	Receivers Shielded	Number of Benefited Residences ₁	Reasonable Allowance Per Residence	Total Reasonable Allowance	Estimated Total Sound Barrier Construction Cost With RW Donated	Reasonable? With RW Donated	Estimated Total Sound Barrier Construction Cost Without RW Donated	Reasonable? Without RW Donated
	10	793	R-439-R-446	15	\$51,000	\$765,000	\$2,531,000	No	\$2,531,000	No
	12	793	R-439-R-446	15	\$51,000	\$765,000	\$2,581,000	No	\$2,581,000	No
	14	793	R-439-R-446	15	\$51,000	\$765,000	\$2,631,000	No	\$2,631,000	No
	16	793	R-439-R-446	15	\$51,000	\$765,000	\$2,692,000	No	\$2,692,000	No
4-25 (PL)	6	295	R-458, R-459	4	\$45,000	\$180,000	\$737,000	No	\$737,000	No
	8	295	R-457-R-459	6	\$47,000	\$282,000	\$752,000	No	\$752,000	No
	10	295	R-457-R-459	6	\$47,000	\$282,000	\$769,000	No	\$769,000	No
	12	295	R-457-R-459	6	\$47,000	\$282,000	\$787,000	No	\$787,000	No
	14	295	R-457-R-459	6	\$47,000	\$282,000	\$806,000	No	\$806,000	No
	16	295	R-457-R-459	6	\$49,000	\$294,000	\$829,000	No	\$829,000	No
4-27 (RW)	14	235	R-349	3	\$45,000	\$135,000	\$230,000	No	\$245,960	No
	16	235	R-349	3	\$45,000	\$135,000	\$248,000	No	\$263,960	No

be outside the Clear Recovery Zone, which is the area beyond the travel lane that needs to be kept clear of potential fixed-object hazards.

- **Maintenance:** For SB Nos. [4-1](#), 4-11, and 4-15, no special maintenance considerations would be required. SB Nos. [4-1](#), [4-7](#), and 4-16 would be located along private property lines; therefore, 100 percent of the affected property owners must be in favor of the sound barriers in order for them to be constructed. In addition, the affected property owners must enter into contracts with the Department to accept aesthetic maintenance responsibility for their respective portions of the barrier upon completion. The Department would be responsible and provide an easement for ensuring structural integrity for the useful life of SB Nos. [4-1](#), [4-7](#), and 4-16.
- **Security:** The sound barriers would not create any potential security risks.
- **Drainage:** The sound barriers do not require a change to the existing flow patterns. Drainage system improvements are proposed to collect and convey flows from the project area, incorporating existing drainage systems as much as possible.
- **Geotechnical Considerations:** All sound barriers would be constructed at existing grade in native soil. Geotechnical investigations, including boreholes, would be required to determine the appropriate footings to support the sound barriers.
- **Utility Relocations:** The sound barriers would not require any utility relocations and would not conflict with any planned utilities. However, for SB No. 4-11, there is an existing Southern California Edison overhead line along the back of the properties that would need to be protected in place during construction of the sound barriers. Additionally, for SB No. 4-16, modifications to existing irrigation systems within private properties are anticipated.

On January 14, 2011, a soundwall survey letter was sent by mail to the residents potentially benefited by SB Nos. 4-1, 4-7, 4-11, 4-15 and 4-16. This survey requested each owner's opinion on whether or not they would prefer a soundwall, and for SB Nos. 4-1, 4-7 and 4-16, if they would be willing to donate their ROW in order to make the soundwall reasonable. Based on this public input and the study so far accomplished, the Department intends to incorporate noise abatement measures in the form of sound barriers shown in Table 2.14-18.

It should be noted that refinements were made to SB No. 4-9 since circulation of the Draft IS/EA. At the 14 ft height, the original construction cost for SB No. 4-9 was extremely close to meeting the reasonableness allowance. For this reason, the team revisited the approximate length of the wall to determine whether it could be slightly more refined, while still being feasible for the same number of benefited residences. At the conclusion of this analysis, it was found that the cost of SB No. 4-9 at the refined

length was under the reasonableness allowance and could be further considered. Therefore, on May 29, 2011, a soundwall survey was sent to the residents potentially benefited by SB No. 4-9.

As a result of response collected for these surveys, it was determined that SB Nos. 4-1, 4-7, 4-11, and 4-16 will not be built and SB Nos. 4-9 and 4-15 will be built.

The preliminary noise abatement decision presented in this report is based on preliminary project alignments and profiles, which may be subject to change during the design phase. As such, the physical characteristics of noise abatement described herein may also be subject to change. The final decision of noise abatement is made during final design. The public will be notified of the final location and height of noise abatement during final design.

<u>Table 2.14-18 Preliminary Decision On Noise Abatement Measures</u>				
<u>Alternative</u>	<u>SB No.</u>	<u>Height (ft)</u>	<u>Approximate Length (ft)</u>	<u>RW Donation Required?</u>
4	4-9 (ES)	14 ¹	1,649	No
	4-15 (RW)	6	235	No
		8	235	No
		10	235	No
		12	235	No
		14	235	No
		16	235	No

Source: LSA Associates, Inc., May 2011.

¹ As SB No. 4-9 was originally extremely close to meeting the reasonableness allowance, slight refinements to the length of the barrier were made and resulted in reasonableness.

dBA = A-weighted decibels

ES = edge-of-shoulder barrier

ft = feet/foot

PL = property line barrier

RW = right-of-way barrier

SB = sound barrier

2.14.4 Avoidance, Minimization, and/or Mitigation Measures

Measures N-1 and N-2 are required to minimize adverse construction noise impacts.

Measure N-3 and N-4 are required to minimize adverse operational noise impacts.

N-1 Construction activities shall be limited to the days and hours specified in the Municipal Codes of the Cities of San Clemente, Dana Point, and San Juan Capistrano as well as the County Code and Ordinances for the County of Orange.

- N-2** The control of noise from construction activities shall conform to the California Department of Transportation (Department) Standard Specifications, Section 14-8.02, “Noise Control,” and also by Standard Provision S5-310. The noise level from the Contractor’s operations, between the hours of 9:00 p.m. and 6:00 a.m., shall not exceed 86 dBA $L_{eq}(h)$ at a distance of 50 feet (ft). The contractor shall use an alternative warning method instead of a sound signal unless required by safety laws. In addition, the Contractor shall equip all internal combustion engines with a manufacturer-recommended muffler and shall not operate any internal combustion engine on the job site without the appropriate muffler.
- N-3** Prior to completion of PA/ED, the sound barriers that are determined to be reasonable and feasible shall be coordinated with the affected property owners. All benefited residents and property owners will be notified should a change in placement or removal of any soundwall occur during the design phase. Additionally, all affected residents/property owners will be notified of final soundwall locations prior to 100% PS&E approval.
- N-4** Unusual and extraordinary abatement measures, such as a feasible sound barrier that has an estimated construction cost exceeding the total reasonable allowance or interior noise abatement measures, will be considered for the residence represented by Receivers R-417, R-420, and R-421 under Build Alternative 4. Unusual and extraordinary abatement measures will also be considered at Receiver R-373, which would experience a severe traffic noise impact if, during final design, the sound barrier shielding this receiver is found to exceed the total reasonable allowance or is not approved during the sound barrier survey process. In addition, other measures including, but not limited to, double-paned windows, may be used. Unusual and extraordinary abatement measures would only be provided if the Department agrees to fund them. If interior noise abatement is recommended by the Department, an interior noise analysis will be conducted during the design phase to determine whether interior noise abatement is feasible. If interior noise abatement is feasible, such abatement measures will be offered to the affected property owners.