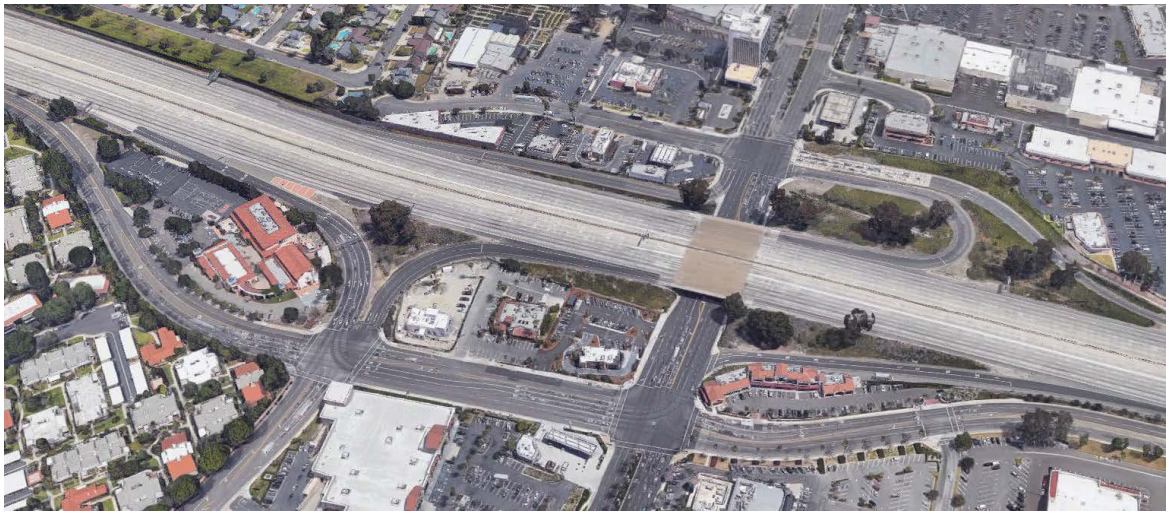


Supplemental Noise Study Report

Interstate 5 / El Toro Road Interchange Project

Cities of Lake Forest, Laguna Woods, and Laguna Hills

Orange County, California

12-ORA-5-PM 17.8 to 19.7

EA 120M980 / ID 1213000084

December 2025

Caltrans

For individuals with sensory disabilities, this document can be made available in Braille, in large print, on audiocassette, or on computer disk. To obtain a copy in one of these alternate formats, please call or write to California Department of Transportation, Attn: Smita Deshpande, Environmental Analysis – Generalist Branch, 1750 E. 4th Street, Santa Ana CA 92705; (657) 328-6151 Voice, or use the California Relay Service TTY number, [711].

Supplemental Noise Study Report

Interstate 5/El Toro Road Interchange Project

California Department of Transportation, District 12

Cities of Lake Forest, Laguna Woods, and Laguna Hills

Orange County, California

12-ORA-5 PM 17.8 to 19.7

EA 120M980 / ID 1213000084

December 2025

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I-5 El/Toro Road Interchange Project

Technical Studies Errata

July 2026

Cities of Lake Forest, Laguna Woods, and Laguna Hills, Orange County, California

12-ORA-5 PM 17.8/19.7

EA 12-0M980 EFIS 1213000084

Since the California Department of Transportation's (Caltrans) approval of the Project's technical studies, the Project description has been refined to reflect the elimination of Alternative 2 (Flyover with Roundabout) and to include a minor adjustment to the Project limits of disturbance to encompass the entirety of assessor's parcel number (APN) 621-221-04 to accommodate demolition of the existing building. These refinements do not introduce new Project components.

Additionally, traffic volumes in the original traffic analysis report prepared for the Project have been updated to reflect refined land use assumptions in the study area. These revisions are documented in the Traffic Operations Analysis Report (TOAR) dated May 2026, which supersedes the original TOAR dated July 2024. The revised traffic volumes represent an average change of approximately 5 percent, and do not materially affect the analysis presented in the previously approved studies.

This errata provides updated references to the Project description and Project maps as reflected in the environmental technical studies. Project Description refinements and Project Location, Project Vicinity, and Build Alternative Maps (Attachment A) are incorporated herein by reference and supersede the corresponding versions included in previously approved technical studies.

At the end of this errata is a complete list of environmental technical studies, along with an evaluation of whether the analysis, findings, or conclusions of those studies remain valid with these Project refinements and updated traffic volumes or whether additional documentation was prepared.

Project Description Refinements

The following refinements summarize updates to the Project Description reflected in the environmental technical studies.

Removal of Build Alternative 2 (Flyover with Roundabout):

The Project History section of the Project Description was updated to include the following:

> In March 2026, Build Alternative 2 (previously AA-5 in the FAAR) was removed from further analysis. Through continued coordination with Caltrans and local jurisdictions, it was determined that Build Alternative 2 did not meet Caltrans policy under PDPM Chapter 27, Article 3 and l the revised configuration was not supported by the local jurisdictions. As a result, Build Alternative 2 was determined to be non-viable and was eliminated from further consideration.

Build Alternative 2 has been removed throughout the Project Description, and any analysis related to Build Alternative 2 in the environmental technical studies is no longer applicable.

Project Location

The project location description was updated to indicate that proposed improvements are limited to El Toro Road, Paseo de Valencia, Avenida De La Carlota, and Bridger Road. References to Swartz Drive and Rockfield Boulevard were removed to reflect the elimination of Build Alternative 2.

Limits of Disturbance:

The limits of disturbance have been expanded to include the entirety of APN 621-221-04 to accommodate demolition of an existing structure. All Project figures depicting the limits of disturbance have been updated accordingly to reflect this refinement.

Regional Planning Document References:

References to regional transportation planning documents have been updated from the 2020 Connect SoCal RTP/SCS and 2023 FTIP to the 2024 Connect SoCal RTP/SCS and 2025 FTIP.

Right-of-way Requirements:

Estimated right-of-way needs for Build Alternative 1 have been refined based on updated design and parcel mapping. Parcel counts were also revised to reflect an updated accounting of larger parcels, consistent with the current Project Description, and do not represent a change in the underlying assessor's parcel numbers (APNs) affected. A parcel is defined as assessor's parcel numbers (APNs) having the same ownership and the same use. In addition, the APNs are contiguous to each other.

The refined right-of-way requirements for Build Alternative 1 and Design Variation 1a are summarized below:

Build Alternative 1

- Temporary construction easements: revised to nine parcels, totaling approximately 1.66 acres
- Partial fee acquisitions: revised to nine parcels, totaling approximately 2.65 acres
- Full fee acquisitions: revised to two parcels, totaling approximately 1.51 acres

Build Alternative 1a

- Temporary construction easements: nine parcels, totaling approximately 1.71 acres
- Partial fee acquisitions: nine parcels, totaling approximately 2.87 acres
- Full fee acquisitions: two parcels, totaling approximately 1.51 acres

References to the I-5 South County Improvement Project (Segment 3):

The I-5 South County Improvement Project (Segment 3) (EA 12-0K0234) has been completed; therefore, references to this project in the Project Description have been updated from future tense to past tense, to reflect existing conditions.

Landscaping

Landscaping elements previously described under Common Design Features have been relocated to the description of Build Alternative 1.

Environmental Technical Studies

The following section provides an evaluation of each environmental technical study in relation to the Project Description refinements and updated traffic volumes described above.

District Preliminary Geotechnical Report (Group Delta, July 2018)

The elimination of Build Alternative 2, the minor adjustment to the Limits of Disturbance (APN 621-221-04), updated traffic volumes in the TOAR, updates to the Project description, and other project refinements described above do not change any of the analysis, findings, or conclusions of the District Preliminary Geotechnical Report.

Geotechnical Review Memorandum of District Preliminary Geotechnical Report (Group Delta, October 2025)

The elimination of Build Alternative 2, the minor adjustment to the Limits of Disturbance (APN 621-221-04), updated traffic volumes in the TOAR, updates to the Project description, and other Project refinements described above do not change any of the analysis, findings, or conclusions of the Geotechnical Review Memorandum of District Preliminary Geotechnical Report.

Jurisdictional Delineation Report (LSA, April 2025)

The elimination of Build Alternative 2, the minor adjustment to the Limits of Disturbance (APN 621-221-04), updated traffic volumes in the TOAR, updates to the Project description, and other Project refinements described above do not change any of the analysis, findings, or conclusions of the Jurisdictional Delineation Report.

Location Hydraulic Study Form (Caltrans, May 2025)

The elimination of Build Alternative 2, the minor adjustment to the Limits of Disturbance (APN 621-221-04), updated traffic volumes in the TOAR, updates to the Project description, and other Project refinements described above do not change any of the analysis, findings, or conclusions of the Location Hydraulic Study Form.

Natural Environment Study – Minimal Impacts (LSA, April 2025)

The elimination of Build Alternative 2, the minor adjustment to the Limits of Disturbance (APN 621-221-04), updated traffic volumes in the TOAR, updates to the Project description, and other Project refinements described above do not change any of the analysis, findings, or conclusions of the Natural Environment Study – Minimal Impacts.

Initial Site Assessment (Caltrans, January 2025)

The elimination of Build Alternative 2, updated traffic volumes in the TOAR, updates to the Project description, and other Project refinements described above do not change any of the analysis, findings, or conclusions of the Initial Site Assessment (ISA).

In addition to these updates, a minor adjustment to the Project's limits of disturbance to encompass demolition of the existing JCPenney Auto Service/Firestone Building located at 24126 Laguna Hills Mall (APN 621-221-04) was required. The ISA identified APN 621-221-04 as a partial acquisition with a TCE and evaluated potential impacts associated with the site as a Recognized Environmental Condition (REC). The current refinement expands the limits of disturbance to include demolition of the entire building. Because the site conditions and potential impacts were previously evaluated, including potential exposure to hazardous building materials during demolition, this refinement does not alter the conclusions or recommendations of the Initial Site Assessment.

Structures Preliminary Geotechnical Report (Caltrans, February 2025)

The elimination of Build Alternative 2, the minor adjustment to the Limits of Disturbance (APN 621-221-04), updated traffic volumes in the TOAR, updates to the Project description, and other Project refinements described above do not change any of the analysis, findings, or conclusions of the Structures Preliminary Geotechnical Report.

Supplemental Air Quality Report (Caltrans, September 2025)

The elimination of Build Alternative 2, the minor adjustment to the Limits of Disturbance (APN 621-221-04), updates to the Project description, and other Project refinements described above do not change any of the analysis, findings, or conclusions of the Supplemental Air Quality Report (SAQR).

In addition, traffic data used in the approved technical studies has been updated to reflect refined land use assumptions within the study area. The resulting reduction in traffic volumes (approximately 5 percent on average) does not affect materially the analysis presented in the Supplemental Air Quality Report; therefore, the report remains valid. The updates to the traffic volumes do not change any of the analysis, findings, or conclusions of the SAQR.

On June 24, 2025, the Transportation Conformity Working Group (TCWG) reviewed the Project and determined it would not be a project of air quality concern (non-POAQC). Because there are no changes to the design of Build Alternative 1 or 1a, particularly with respect to lane configurations, the Project does not require additional review by the TCWG.

Supplemental Energy Analysis Report (Caltrans, October 2025)

The elimination of Build Alternative 2, the minor adjustment to the Limits of Disturbance (APN 621-221-04), updates to the Project description, and other Project refinements described above do not change any of the analysis, findings, or conclusions of the Supplemental Energy Analysis Report (SEAR).

Additionally, traffic data used in the approved technical studies has been updated to reflect refined land use assumptions within the study area. The resulting reduction in traffic volumes (approximately 5

percent on average) does not materially affect the analysis presented in the SEAR; therefore, the analysis, findings, and conclusions remain unchanged.

To reflect the updated construction energy consumption calculations, the following revisions have been made to the SEAR:

Updated Table 4.5

Substitute Table 4.5, *Total Construction Fuel and Electricity Consumption and Indirect Energy by Alternative and Year—Alternative 1*, with the following table:

Table 4.5 Total Construction Fuel and Electricity Consumption and Indirect Energy by Alternative and Year—Alternative 1

Alternative and Construction Year	Gasoline (gallons)	Diesel (gallons)	Electricity (kWh)	Indirect Energy (million BTU)
2029 Alternative 1	548	3,007	671	481
2030 Alternative 1	13,304	72,165	19,932	11,581
2031 Alternative 1	17,022	42,028	24,614	7,904
2032 Alternative 1	660	1,059	1,095	229
Total Alternative 1	**31,354**	**118,259**	**46,132**	**20,195**

Note: Refer to Appendix B for the CAL-CET 2021 output.

Appendix B Update

Appendix B, *Construction Energy Consumption (Build Alternative 1)*, has been updated to include annual total emissions and construction data from Cal-CET 2021. The additional appendix page is provided in Attachment B of this Errata.

The revised Table 4.5 and additional information added to Appendix B provide updated supporting documentation for the SEAR. The analysis, findings, and conclusions of the Supplemental Energy Analysis Report remain unchanged.

Supplemental Historic Property Survey Report (SHPSR) (Including Supplemental Archaeological Survey Report [SASR] and Supplemental Historical Resources Evaluation Report [SHRER]) (ICF, December 2025)

Project changes include the elimination of Build Alternative 2, a minor adjustment to the Limits of Disturbance (APN 621-221-04), updated traffic volumes in the TOAR, and updates to the Project description.

The Limits of Disturbance adjustment expands the area of direct impact (ADI) to encompass the entirety of parcel APN 621-221-04, to account for demolition of the existing JCPenney Auto Service/Firestone Building, with a proposed excavation depth of approximately 2.8 feet. As a result, the ADI has increased from 133.6 acres to 134.0 acres. The Project changes described above, including the expanded ADI, are located within the defined Supplemental Area of Potential Effects (SAPE) for the Project, and do not require the expansion or re-delineation of the SAPE.

The SHPSR, signed on December 3, 2025, evaluated the JCPenney Auto Service/Firestone Building located at 24126 Laguna Hills Mall (APN 621-221-04), as the building is located within the SAPE. The SHPSR was prepared in conjunction with, and supported by, the SASR and the SHRER, which are attached to the SHPSR. On December 9, 2025, the State Historic Preservation Officer concurred with the finding that the building is not eligible for listing in the National Register of Historic Places. Therefore, the JCPenney Auto Service/Firestone Building located at 24126 Laguna Hills Mall (APN 621-221-04) is not a historic property pursuant to Section 106 of the National Historic Preservation Act.

The Project changes described above do not introduce additional ground disturbance beyond previously evaluated areas, do not result in effects to known archaeological resources, and do not affect any historic properties because none exist within the SAPE. Therefore, the findings of the SHPSR, including the supporting conclusions of the SASR and SHRER, remain valid. The Project continues to result in No Historic Properties Affected.

Supplemental Noise Study Report (ICF, January 2026)

The elimination of Build Alternative 2, the minor adjustment to the Limits of Disturbance (APN 621-221-04), and updates to the Project description do not change any of the analysis, findings, or conclusions of the Supplemental Noise Study Report (SNSR).

In addition to these updates, traffic data used in the approved technical studies has been revised to reflect refined land use assumptions within the study area. The resulting change in traffic volumes (approximately 5 percent on average at study intersections and less on mainline segments) does not materially affect the noise analysis or its results.

The updates traffic volumes do not change any of the conclusions or recommendations of the SNSR; therefore, the report remains valid.

Supplemental Paleontological Identification Report/Paleontological Evaluation Report (Duke CRM, August 2025)

The elimination of Build Alternative 2, the minor adjustment to the Limits of Disturbance (APN 621-221-04), updated traffic volumes in the TOAR, and updates to the Project description do not change any of the analysis, findings, or conclusions of the Supplemental Paleontological Identification Report/Paleontological Evaluation Report.

Supplemental Water Quality Assessment Report (Caltrans, March 2025)

The elimination of Build Alternative 2, updated traffic volumes in the TOAR, and updates to the Project description do not change any of the analysis, findings, or conclusions of the Supplemental Water Quality Assessment Report (SWQAR).

In addition to these updates, a minor adjustment to the Project's limits of disturbance to encompass demolition of the existing JCPenney Auto Service/Firestone Building located at 24126 Laguna Hills Mall (APN 621-221-04) was required. The foundation of the JCPenney Auto Service/Firestone Building outside the Project footprint would not be disturbed; therefore, soils outside the Project footprint would not be affected.

The portion of the JCPenney Auto Service/Firestone Building within the Project footprint was accounted for in the disturbed soil area (DSA) evaluated in the SWQAR, and expansion of the disturbance limits does not alter the DSA analysis. The analysis of new impervious surface also remains unchanged, as the foundation of the JCPenney Auto Service/Firestone Building outside the Project limits would not be disturbed and was therefore not included in the evaluation of new impervious surface. Project features and standardized measures described in Section 4.3 of the SWQAR would be implemented to minimize temporary and permanent water quality impacts associated with construction activities, including demolition of the JCPenney Auto Service/Firestone Building. Therefore, the updates to the Project description do not change the analysis, findings, or conclusions of the SWQAR.

Vehicle Miles Travelled Assessment (Jacobs, May 2024)

The elimination of Build Alternative 2, the minor adjustment to the Limits of Disturbance (APN 621-221-04), and updates to the Project description do not change any of the analysis, findings, or conclusions of the Vehicle Miles Travelled (VMT) Assessment.

In addition to these updates, traffic volumes have been updated in the TOAR to reflect refined land use assumptions within the study area. The resulting reduction in traffic volumes (approximately 5 percent on average) does not materially affect the VMT analysis. Therefore, these updates do not result in any changes to the analysis, findings, or conclusions of the VMT Assessment.

Attachment A

Project Vicinity, Project Location, and Build Alternative Maps

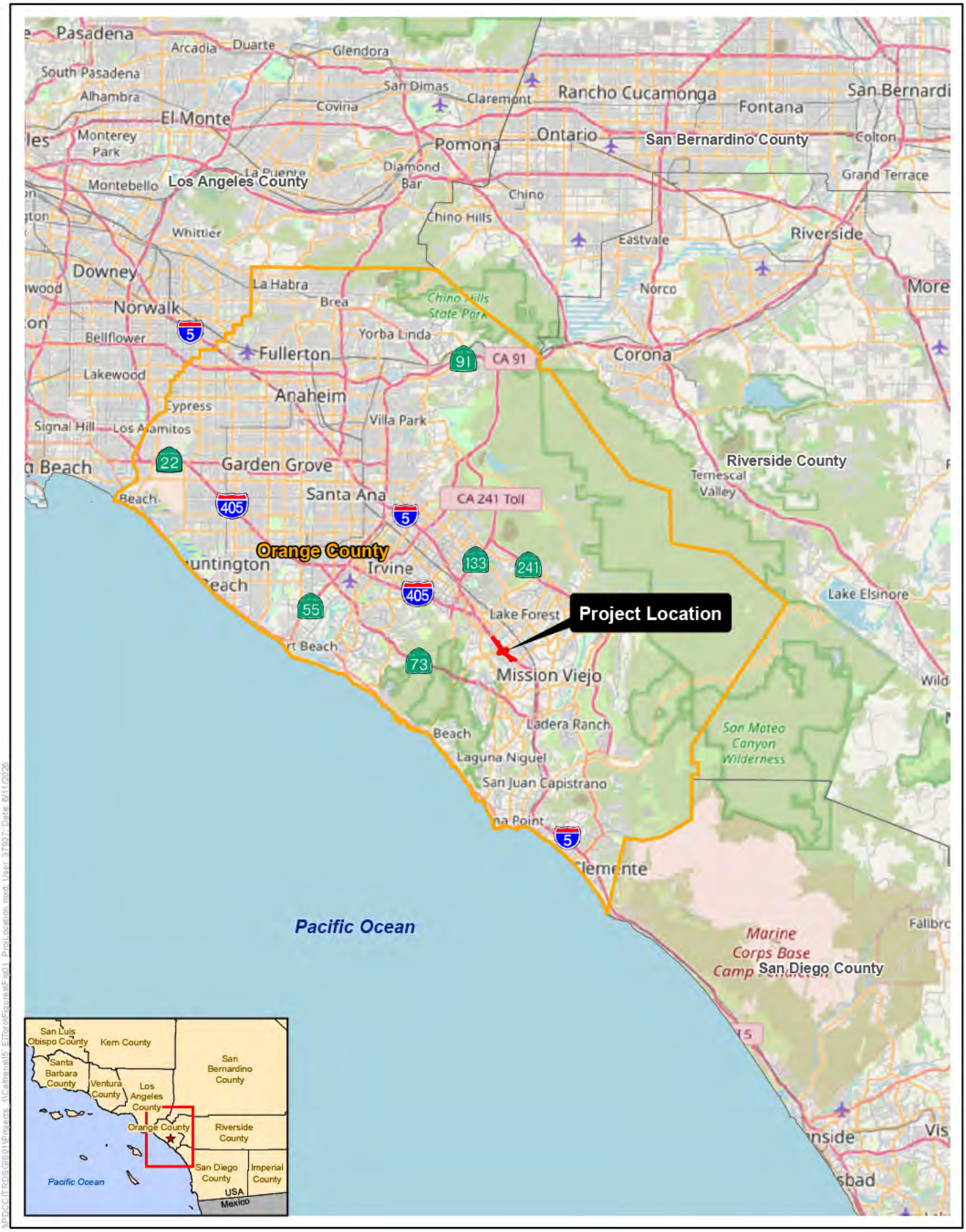
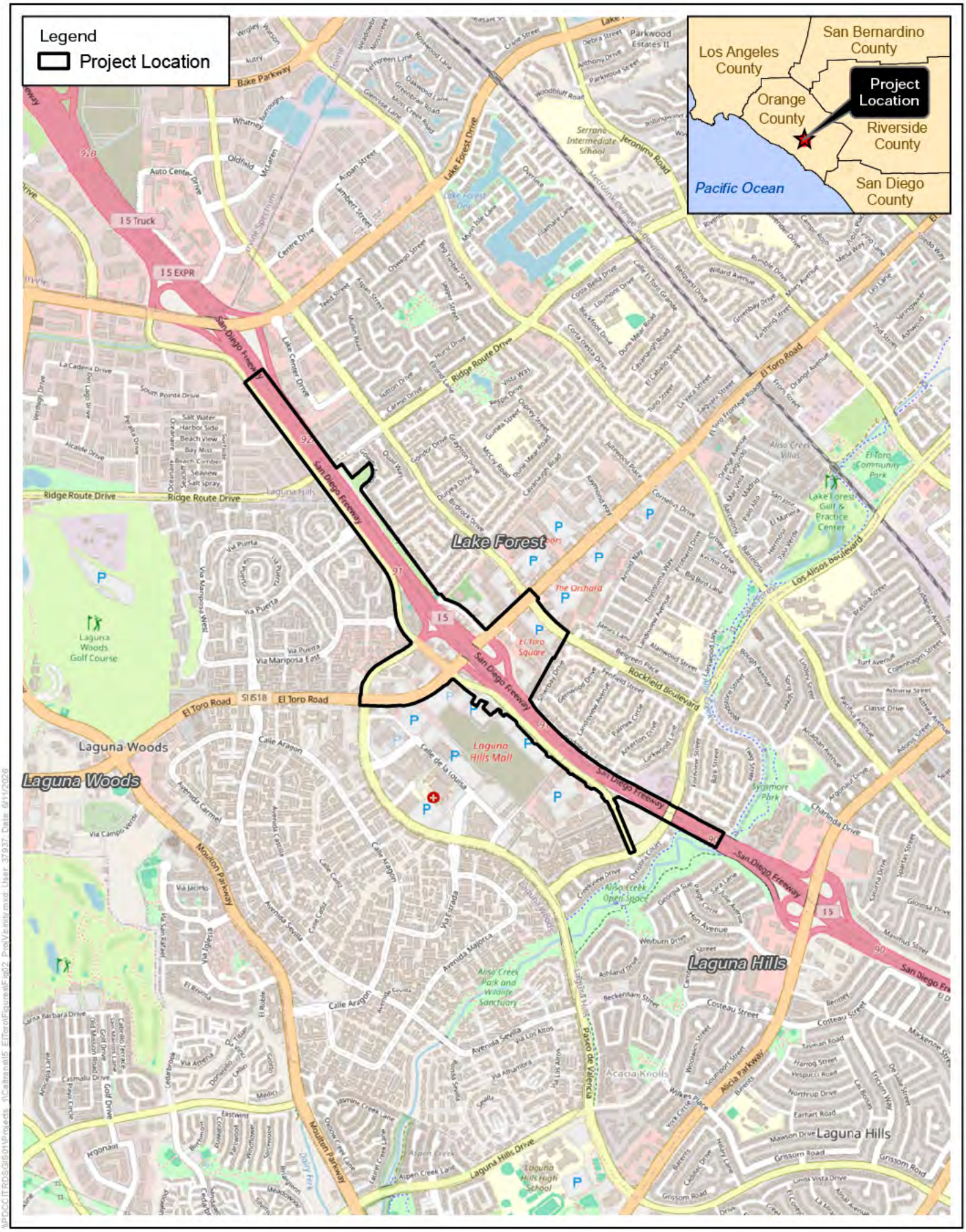


Figure 1

I-5 El Toro Road Interchange Project
Project Vicinity

12-ORA-5 PM 17.8/19.7
EA 0M980



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1:24,000

Figure 2

I-5 El Toro Road Interchange Project
Project Location

12-ORA-5 PM 17.8/19.7
EA 0M980





Legend

- Limits of Disturbance
- City Boundary
- Parcel Boudnary

Build Alternative 1

- Existing Right-of-Way
- Proposed Edge of Pavement
- Proposed Lane Striping/Marking
- Proposed Retaining Walls
- Proposed Right-of-Way
- Proposed Temporary Construction Easement

0 162.5 325 Feet
1:3,900

Figure 3, Sheet 1 of 4

I-5 El Toro Road Interchange Project
Build Alternative 1

12-ORA-5 PM 17.8/19.7
EA 0M980





Legend

- Limits of Disturbance
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0 162.5 325 Feet
1:3,900

Figure 3, Sheet 2 of 4

I-5 El Toro Road Interchange Project
Build Alternative 1

12-ORA-5 PM 17.8/19.7
EA 0M980





Legend

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1:3,900

Figure 3, Sheet 3 of 4

I-5 El Toro Road Interchange Project
Build Alternative 1

12-ORA-5 PM 17.8/19.7
EA 0M980





Legend

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0 162.5 325 Feet

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Figure 3, Sheet 4 of 4

I-5 El Toro Road Interchange Project
Build Alternative 1

12-ORA-5 PM 17.8/19.7
EA 0M980





Legend

- Limits of Disturbancne
- City Boundary
- Parcel Boudnary

Design Variation: Build Alternative 1a

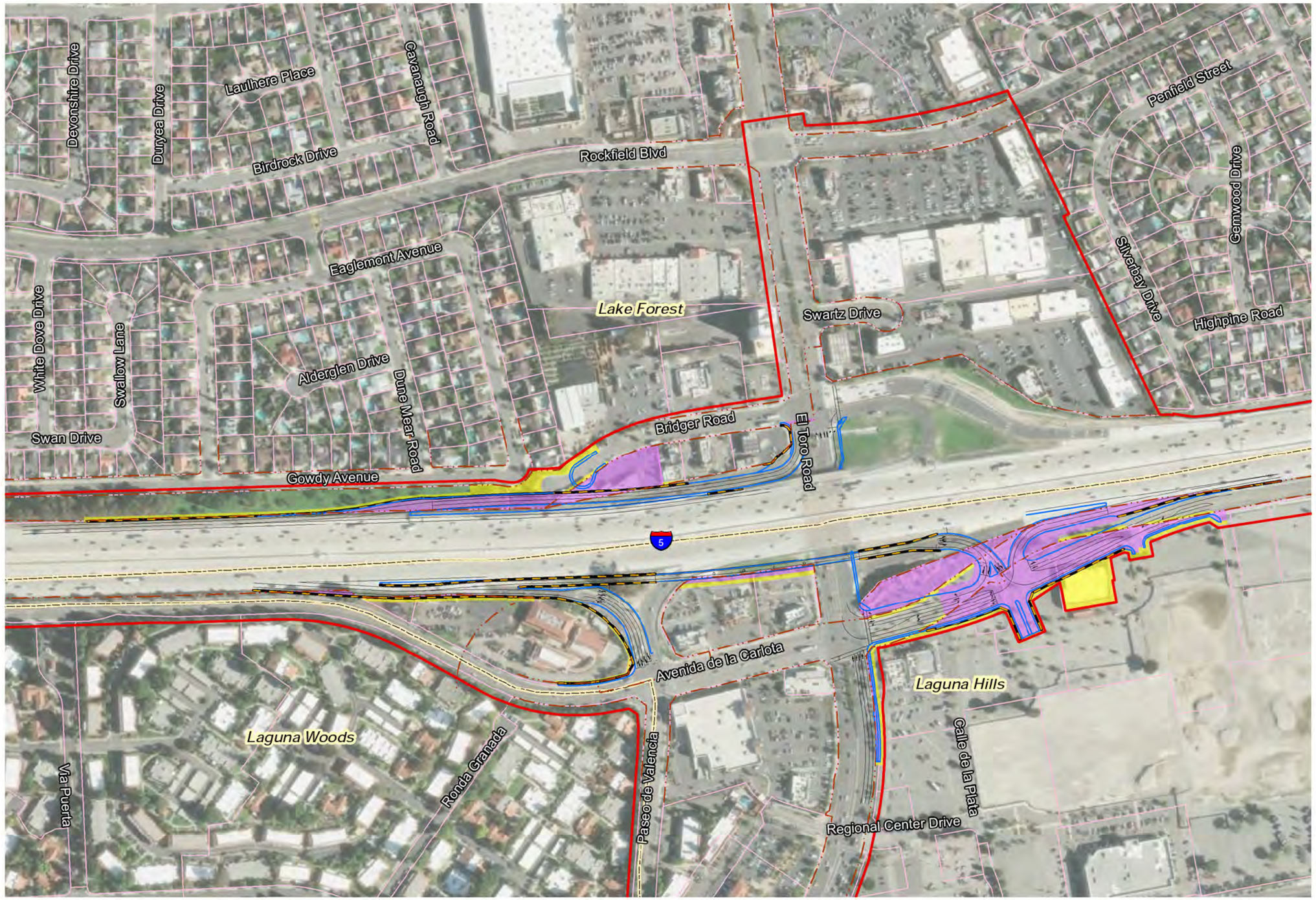
- Existing Right-of-Way
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- Proposed Retaining Walls
- Proposed Right-of-Way
- Proposed Temporary Construction Easement

0 162.5 325 Feet
1:3,900

Figure 4, Sheet 1 of 4

I-5/El Toro Road Interchange Project
Design Variation: Build Alternative 1a

12-ORA-5 PM 17.8/19.7
EA 0M980





Legend

- Limits of Disturbancne
- City Boundary
- Parcel Boudnary

Design Variation: Build Alternative 1a

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0 162.5 325 Feet
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Figure 4, Sheet 2 of 4

I-5/El Toro Road Interchange Project
Design Variation: Build Alternative 1a

12-ORA-5 PM 17.8/19.7
EA 0M980





Legend

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0 162.5 325 Feet
1:3,900

Figure 4, Sheet 3 of 4

I-5/El Toro Road Interchange Project
Design Variation: Build Alternative 1a

12-ORA-5 PM 17.8/19.7
EA 0M980





Legend

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0 162.5 325 Feet
1:3,900

Figure 4, Sheet 4 of 4

I-5/El Toro Road Interchange Project
Design Variation: Build Alternative 1a

12-ORA-5 PM 17.8/19.7
EA 0M980

Attachment B

Additional Appendix B Information: Construction Energy Consumption (Build Alternative 1)

Supplemental Energy Analysis Report

Appendix B

Summary by Year		Total Emissions and Consumption by Year (tons; metric tons CO_2e; gal fuel; kWh electricity)														
	Year	TOG	ROG	CO	NOx	PM10	PM2.5	CO2	CH4	N2O	BC	HFC	CO_2e	Diesel Fuel	Gasoline Fuel	Electricity
	2015	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0			
	2016	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0			
	2017	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0			
	2018	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0			
	2019	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0			
	2020	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0			
	2021	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0			
	2022	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0			
	2023	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0			
	2024	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0			
	2025	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0			
	2026	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0			
	2027	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0			
	2028	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0			
	2029	0.026	0.025	0.143	0.149	0.139	0.023	39	0.001	0.002	0.006	0.001	40	3.007	548	671.356
	2030	0.665	0.627	4.000	4.073	0.904	0.363	949	0.026	0.040	0.161	0.015	959	72.165	13.304	19,932.164
	2031	0.403	0.380	1.253	2.586	0.183	0.180	641	0.013	0.036	0.095	0.016	651	42.028	17.022	24,614.064
	2032	0.007	0.006	0.027	0.045	0.003	0.003	18	0.000	0.001	0.001	0.001	18	1.059	660	1,095.408
	2033	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0			
	2034	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0			
	2035	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0			
	2036	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0			
	2037	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0			
	2038	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0			
	2039	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0			
	2040	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0			
	2041	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0			
	2042	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0			
	2043	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0			
	2044	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0			
	2045	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0			
	2046	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0			
	2047	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0			
	2048	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0			
	2049	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0			
	2050	0.000	0.000	0.000	0.000	0.000	0.000	0	0.000	0.000	0.000	0.000	0			
Total		1.101	1.038	5.423	6.853	1.230	0.569	1647	0.039	0.080	0.263	0.032	1668	118.259	31.534	46,312.992
		Average Emissions and Consumption per Year (tons/year; metric tons CO_2e/year; gal fuel/year; kWh electricity/year)														
Summary		0.275	0.260	1.356	1.713	0.307	0.142	412	0.010	0.020	0.066	0.008	417	29.565	7.884	11,578.248

Summary

The California Department of Transportation (Caltrans), in partnership with the Orange County Transportation Authority (OCTA), proposes to modify and improve the existing Interstate 5 (I-5)/El Toro Road between post miles (PM) 17.8 and 19.7, located within the cities of Lake Forest, Laguna Woods, and Laguna Hills in Orange County, California. Caltrans, as assigned by the Federal Highway Administration (FHWA), is the Lead Agency under the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). The purpose of the I-5/El Toro Road Interchange Project (Project) is to improve traffic flow, optimize traffic signalization, improve traffic mobility at and through adjacent local street intersections, reduce freeway ramp queuing, and apply technology to help manage traffic demand.

There are four proposed alternatives (three Build Alternatives and one No-Build) for the Project, which are summarized below.

- Build Alternative 1 proposes an additional I-5 southbound off-ramp to independently serve El Toro Road to the east and to the west. A new bridge would be constructed to accommodate the new El Toro Road east off-ramp. The new El Toro Road east off-ramp bridge would cross over the existing southbound I-5 hook on-ramp and El Toro Road and connect to Avenida De La Carlota south of El Toro Road. A new southbound I-5 hook on-ramp would be provided along the realigned Avenida De La Carlota, south of El Toro Road. The existing southbound direct on-ramp from El Toro Road would be eliminated. A design option is proposed for Build Alternative 1 that includes all features described above in addition to an approximately 90-foot public street entering the Village of Laguna Hills development at the new southbound I-5/Avenida De La Carlota ramp terminal intersection south of El Toro Road. The addition of this public street would create a four-way intersection at the new southbound I-5 and Avenida De La Carlota ramp. The design variation is not expected to cause considerable differences in predicted traffic noise levels. Therefore, only a single design was considered for Build Alternative 1.
- Build Alternative 2 proposes a new flyover off-ramp from southbound I-5 to independently serve El Toro Road to the east, while utilizing the existing hook off-ramp alignment for El Toro to the west. The El Toro Road east exit lane would lead to a flyover off-ramp that connects to a new roundabout that would provide access to eastbound El Toro Road and Rockfield Boulevard.
- Build Alternative 3 proposes standalone Transportation System Management (TSM)/ Transportation Demand Management (TDM) improvements. TSM strategies increase the efficiency of existing facilities; they are actions that increase the number of vehicle trips a

facility can carry without increasing the number of through lanes. No physical or geometric improvements are proposed. Therefore, Build Alternative 3 is not categorized as a Type 1 Project, and a detailed noise analysis is not required or included in this Supplemental Noise Study Report.

- The No-Build Alternative proposes no action, where no construction or improvements would be made to the I-5/El Toro Road interchange apart from proposed projects that are under development or currently under construction. The No-Build Alternative would not address the issues and deficiencies within the Project limits.

Figure 1-1 and Figure 1-2 show the regional vicinity and project location, respectively.

Land uses in the Project area consist primarily of single-family and multi-family residential; a place of worship, a park, a playground and a basketball court (half-court); restaurants/bars; and retail. The noise study area was divided into 4 Noise Analysis Areas (NAAs), each one representing a quadrant of the I-5/El Toro Road interchange, to facilitate analysis and discussion. Each NAA is described and discussed in more detail in Chapter 6, *Existing Noise Environment*. As part of the traffic noise study, three long-term (LT) and 20 short-term (ST) noise measurements were taken at representative land uses along the Project alignment. All land uses were analyzed in this Supplemental Noise Study Report (SNSR) according to the 2020 Traffic Noise Analysis Protocol (Protocol) by predicting traffic noise levels using the FHWA Traffic Noise Model (TNM) version 2.5. Traffic counts were conducted during ST measurements for use in validating the TNM. As stated in the 2013 Technical Noise Supplement (TeNS), to account for deviations between the measured and modeled noise levels found during the model validation process, validation constants (K-factors) were included to adjust modeled noise levels to align with the measured noise level. Validation traffic volumes are presented in Table A-1 in Appendix A, and K-factors are presented in Table 6-6 of this report.

Existing and Design-Year No-Build and Build worst-hour noise levels for Build Alternatives 1 and 3 were modeled using the FHWA TNM, version 2.5, and are presented in Table B-1 and B-2 in Appendix B. Existing modeled worst noise hour levels were found to range from 45 A-weighted decibels (dBA), hourly equivalent sound level (L_{eq}[h]) to 80 dBA L_{eq}(h) at modeled land uses. Design-Year No-Build worst noise hour noise levels are predicted to range from 46 dBA Leq(h) to 81 dBA Leq(h), under Build Alternatives 1 and 2 at modeled land uses. Build worst noise hour noise levels are predicted to range from 53 dBA L_{eq}(h) to 81 dBA L_{eq}(h), under Build Alternatives 1 and 2 at modeled land uses.

Based upon the results of the traffic noise analysis, noise levels are predicted to approach or exceed the FHWA/Caltrans noise abatement criteria (NAC) for Activity Category B, C, D, and E

land uses at 61 of the 177 modeled receivers, representing 110 of the 322 total benefitted receptors, under Build Alternatives 1 and 2. Noise levels are also predicted to substantially increase (i.e., increase by 12 DBA or more when comparing the Design-Year Build and Existing noise levels) in the Design-Year Build condition compared to the existing condition for one receiver, M03.04, under Build Alternatives 1 and 2.

Pursuant to Caltrans and FHWA regulations and guidance, noise abatement is considered for land uses where traffic noise impacts are predicted. For receivers that were found to experience traffic noise levels that approach or exceed the NAC, noise abatement in the form of barriers was considered. Five barriers (summarized below in Table S-1) were analyzed along the Project alignment for Build Alternative 1 and Build Alternative 2, resulting in a total of ten analyzed barriers. Each analyzed barrier was found to be feasible (meeting the 5 dB insertion loss requirement) and meet the noise reduction design goal of 7 dBA. The range of barrier heights, lengths, and number of benefited receptors are presented in Section 7.2, *Preliminary Noise Abatement Analysis*. Additionally, reasonable allowance calculations are presented in Table 7-1 through Table 7-12 in Chapter 7.

Table S-1 summarizes the number, general location, and effectiveness of each noise barrier evaluated in each NAA for Build Alternatives 1 and 2. All analyzed noise barriers were found to be acoustically feasible and meet the design goal.

Table S-1: Noise Barrier Summary

NAA	Number of Receivers/Receptors Impacted	Noise Barrier ID	Location/Alternative	Effectiveness
1	1/1	NB32A1	Along the ROW at the southeast quadrant of the El Toro Road and Rockfield Boulevard intersection in Build Alternative 1	Feasible; Met 7 dBA noise reduction design goal
		NB32A2	Along the ROW at the southeast quadrant of the El Toro Road and Rockfield Boulevard intersection in Build Alternative 2	Feasible; Met 7 dBA noise reduction design goal
2	0/0	N/A	N/A	N/A
3	13/24	NB234A1	Along the NB on-ramp and mainline edge of shoulder in Build Alternative 1	Feasible; Met 7 dBA noise reduction design goal
		NB234A2	Along the NB on-ramp and mainline edge of shoulder in Build Alternative 2	Feasible; Met 7 dBA noise reduction design goal
		NB234A1 + NB244A1	Along the NB on-ramp and mainline edge of shoulder in Build Alternative 1	Feasible; Met 7 dBA noise reduction design goal
		NB234A2 + NB244A2	Along the NB on-ramp and mainline edge of shoulder in Build Alternative 2	Feasible; Met 7 dBA noise reduction design goal
		NB33A1	Along the ROW at the northeast quadrant of the El Toro Road and Rockfield Boulevard intersection in Build Alternative 1	Feasible; Met 7 dBA noise reduction design goal
		NB33A2	Along the ROW at the northeast quadrant of the El Toro Road and Rockfield Boulevard intersection in Build Alternative 2	Feasible; Met 7 dBA noise reduction design goal
4	47/85	NB235A1	Along the SB mainline edge of shoulder and off-ramp in Build Alternative 1	Feasible; Met 7 dBA noise reduction design goal
		NB235A2	Along the SB mainline edge of shoulder and off-ramp in Build Alternative 2	Feasible; Met 7 dBA noise reduction design goal
		NB229A1	Along the ROW at NB Avenida De La Carlota, north of Paseo De Valencia in Build Alternative 1	Feasible; Met 7 dBA noise reduction design goal
		NB229A2	Along the ROW at NB Avenida De La Carlota, north of Paseo De Valencia in Build Alternative 2	Feasible; Met 7 dBA noise reduction design goal

dBA = A-weighted decibels; NB – northbound; ROW = right of way; SB = southbound

The locations of all evaluated noise barriers are presented on Figure 5-1.

During construction of the proposed Project, noise from construction activities would intermittently dominate the noise environment in the immediate area. No adverse noise effects are anticipated because construction would be conducted in accordance with Section 14-8.02, Noise Control, of Caltrans' 2024 Standard Specifications (Caltrans 2024) as well as applicable local noise standards.

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List of Abbreviated Terms

Acronym	Definition
µPa	micro-Pascal
ABET	Accreditation Board for Engineering and Technology, Inc.
ANSI	American National Standard Institute
CAD	computer-aided design
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CNEL	Community Noise Equivalent Level
dB	decibel
dBA	A-weighted decibel
FHWA	Federal Highway Administration
Hz	Hertz
I-5	Interstate 5
L_{dn}	day-night level
L_{eq}	equivalent sound level
$L_{eq}[h]$	hourly equivalent sound level
L_{max}	maximum sound level
LOS	level of service
LT	long-term
L_{xx}	percentile-exceeded sound level
mph	miles per hour
NAA	noise analysis area
NAC	noise abatement criteria
NCP	noise control plan
NEPA	National Environmental Policy Act
OCTA	Orange County Transportation Authority
PM	post mile
Project	I-5/El Toro Road Interchange Project
Protocol	Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects
SLM	sound level meter
SPL	sound pressure level
ST	short-term
SNADR	Supplemental Noise Abatement Decision Report
SNSR	Supplemental Noise Study Report
TDM	Transportation Demand Management
TeNS	Technical Noise Supplement
TNM	Traffic Noise Model
TNM 2.5	FHWA Traffic Noise Model, version 2.5
TSM	Transportation System Management
TSMO	Transportation Systems Management and Operations

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Chapter 1 Introduction

The California Department of Transportation (Caltrans), in partnership with the Orange County Transportation Authority (OCTA), proposes to modify and improve the existing Interstate 5 (I-5)/El Toro Road interchange between post miles (PM) 17.8 and 19.7, located within the cities of Lake Forest, Laguna Woods, and Laguna Hills in Orange County, California. Caltrans, as assigned by the Federal Highway Administration (FHWA), is the Lead Agency under the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). The purpose of the I-5/El Toro Road Interchange Project (Project) is to improve traffic flow, optimize traffic signalization, improve traffic mobility at and through adjacent local street intersections, reduce freeway ramp queuing, and apply technology to help manage traffic demand. The proposed alternatives are: Build Alternative 1 (Southbound I-5 Hook Ramps), Build Alternative 2 (Flyover with Roundabout Near Rockfield Boulevard), Build Alternative 3 (TSM/TDM), and the No-Build Alternative. See Figure 1-1 and Figure 1-2 for the Project vicinity and location.

1.1 Purpose of the Supplemental Noise Study Report

The purpose of this Supplemental Noise Study Report (SNSR) is to evaluate noise impacts and abatement under the requirements of Title 23, Part 772, of the Code of Federal Regulations (CFR) (23 CFR 772), Procedures for Abatement of Highway Traffic Noise and Construction Noise. Procedures for preparing operational and construction noise studies and evaluating noise abatement considered for federal and federal-aid highway projects are included in 23 CFR 772. According to 23 CFR 772.3, all highway projects that are developed in conformance with this regulation are deemed to be in conformance with FHWA noise standards. Compliance with 23 CFR 772 provides compliance with the noise impact assessment requirements of NEPA.

The Caltrans *Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects* (Protocol) (Caltrans 2020a) provides Caltrans policy for implementing 23 CFR 772 in California. The Protocol outlines the requirements for preparing SNSRs. Noise impacts associated with the Project under CEQA are evaluated separately in the I-5/El Toro Road Interchange Project Supplemental Environmental Impact Report/ Environmental Assessment, which is currently in preparation at the time of this analysis.

1.2 Project Purpose and Need

1.2.1 Project Purpose

The purpose of the proposed Project is to:

- Improve traffic flow and traffic signal optimization
- Improve traffic mobility at and through adjacent local street intersections
- Reduce freeway ramp queuing
- Apply technology to help manage traffic demand.

1.2.2 Project Need

The need of the Project is due to the following conditions within the Project limits:

- Traffic delays due to the high traffic volumes
- Geometric deficiencies related to inadequate signal operations and intersection spacing
- Major delays due to traffic queueing at the intersections of the on- and off-ramps and local streets



Figure 1-1

I-5 El Toro Road Interchange Project
Project Vicinity

12-ORA-5 PM 17.8/19.7
EA 0M980

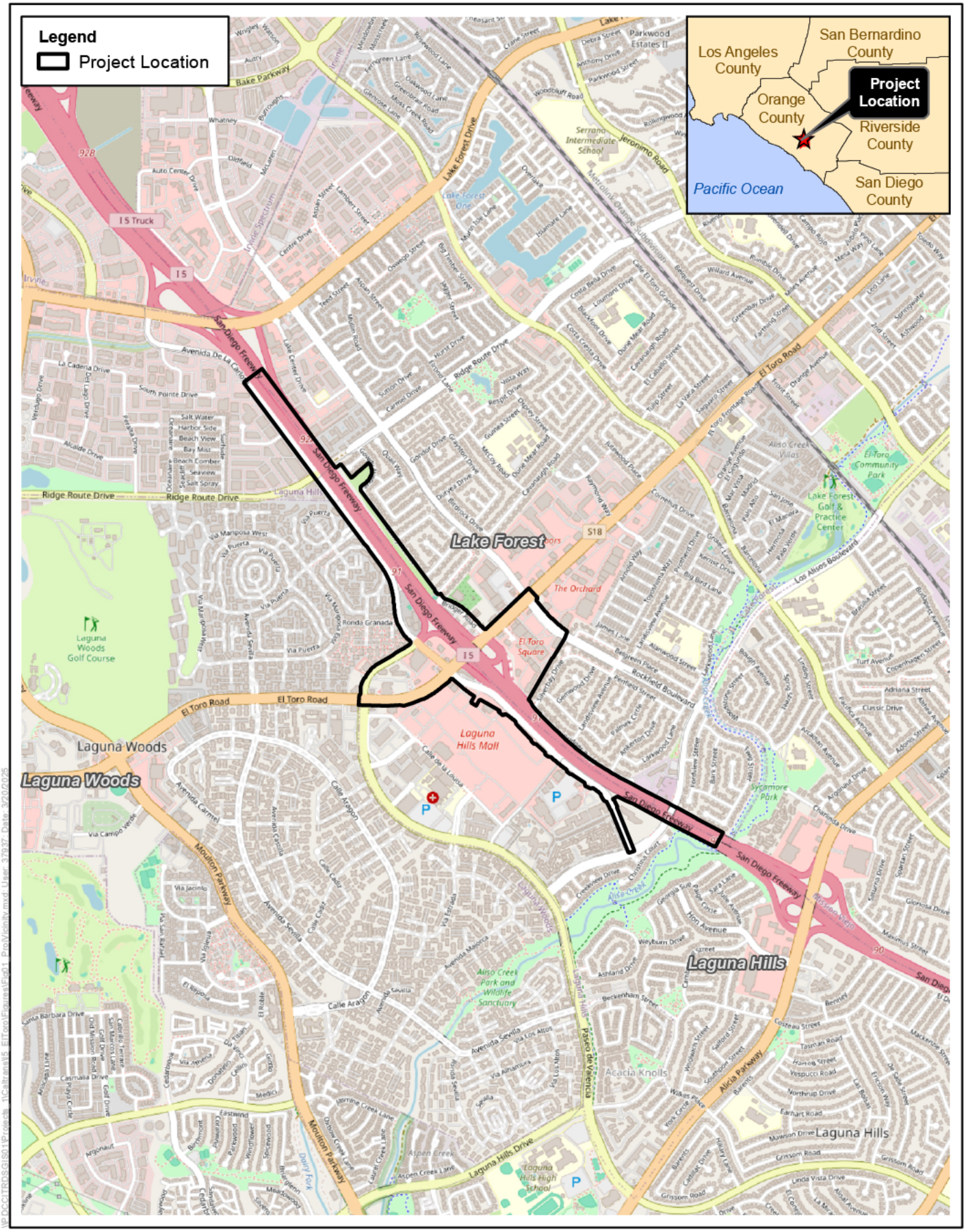


Figure 1-2

I-5 El Toro Road Interchange Project
Project Location

12-ORA-5 PM 17.8/19.7
EA 0M980

Chapter 2 Project Description

Caltrans, in partnership with OCTA, proposes to modify and improve the existing I-5/El Toro Road interchange between PM 17.8 and PM 19.7, located within the cities of Lake Forest, Laguna Woods, and Laguna Hills in Orange County, California. The Project would improve traffic flow, optimize traffic signalization, improve traffic mobility at and through adjacent local street intersections, reduce freeway ramp queuing, and apply technology to help manage traffic demand. There are four proposed alternatives for the Project: Build Alternative 1 (Southbound I-5 Hook Ramps), Build Alternative 2 (Flyover with Roundabout Near Rockfield Boulevard), Build Alternative 3 (TSM/TDM), and the No-Build Alternative (see Section 2.1 for more details).

The Project limits on I-5 extend from approximately 0.2 mile south of the Los Alisos Boulevard Overcrossing (PM 17.8) to approximately 0.2 mile south of the Lake Forest Drive Overcrossing (PM 19.7), a distance of approximately 1.9 miles. Project improvements are also proposed along El Toro Road, Paseo De Valencia, Avenida De La Carlota, Bridger Road, Swartz Drive, and Rockfield Boulevard. Project limits are shown on Figure 1-2, Project Location Map. Advanced signage for construction would extend from less than 0.2 mile south of Los Alisos Boulevard Overcrossing (PM 17.7) to 0.2 mile north of Bake Parkway (PM 21.0).

2.1 Project Alternatives

2.1.1 No-Build (No-Action) Alternative

The No-Build Alternative proposes no action, where no construction or improvements would be made to the I-5/El Toro Road interchange apart from proposed projects that are under development or currently under construction. The No-Build Alternative would not address the issues and deficiencies within the Project limits. This alternative, however, does not preclude the construction of future improvements.

2.1.2 Build Alternative 1 – Southbound I-5 Hook Ramps

Build Alternative 1 proposes an additional I-5 southbound off-ramp to independently serve El Toro Road to the east and to the west. This would be accomplished with a new two-lane southbound I-5 off-ramp to El Toro Road and would be split, with one lane assigned to El Toro Road west and one lane assigned to El Toro Road east. El Toro Road west would utilize the existing hook off-ramp alignment. A new bridge would be constructed to accommodate the new El Toro Road east off-ramp. The new El Toro Road east off-ramp bridge would cross over the existing southbound I-5 hook on-ramp and El Toro Road and connect to Avenida De La Carlota south of El Toro Road. A new southbound I-5 hook on-ramp would be provided along the

realigned Avenida De La Carlota, south of El Toro Road. The existing southbound direct on-ramp from El Toro Road would be eliminated, while the existing access provided by the southbound ramps, opposite Paseo De Valencia, would be maintained. The northbound I-5 on-ramp from westbound El Toro Road is a two-lane on-ramp. The Project would lengthen this ramp, merging with the northbound I-5 mainline approximately 0.15 mile north of the existing merge point. The northbound off-ramp would be in a similar configuration as today, with improvements made by the I-5 South County Improvement Project (Segment 3) (EA 12-0K0234). Transportation System Management (TSM)/Transportation Demand Management (TDM) elements would be included in Build Alternative 1. TSM/TDM improvements would include the deployment of technologies with focus on improving Transportation Systems Management and Operations (TSMO) at each of the intersections, along the I-5 and the critical arterials, as well as the region as a whole.

Build Alternative 1a – Design Variation

A design option is proposed for Build Alternative 1 that includes all features described above in addition to an approximately 90-foot public street entering the Village of Laguna Hills development at the new southbound I-5/Avenida De La Carlota ramp terminal intersection south of El Toro Road. The addition of this public street would create a four-way intersection at the new southbound I-5 and Avenida De La Carlota ramp. The design variation is not expected to cause considerable differences in predicted traffic noise levels. Therefore, only a single design was considered for Build Alternative 1.

2.1.3 Build Alternative 2 – Flyover with Roundabout Near Rockfield Boulevard

Build Alternative 2 proposes a new flyover off-ramp from southbound I-5 to independently serve El Toro Road to the east, while utilizing the existing hook off-ramp alignment for El Toro to the west. This would be accomplished with a 2-lane I-5 southbound offramp to El Toro Road that would be split with one lane assigned to El Toro Road west and the second lane assigned to El Toro Road east. The El Toro Road east exit lane would lead to a flyover off-ramp that connects to a new roundabout that would provide access to eastbound El Toro Road and Rockfield Boulevard. The existing southbound direct on-ramps from Avenida De La Carlota and El Toro Road would be maintained. The northbound I-5 on-ramp from westbound El Toro Road is a two-lane on-ramp. Similar to Build Alternative 1, under Build Alternative 2 this ramp would be extended and merge with the northbound I-5 mainline approximately 0.15 mile north of the current merge point. TSM/TDM elements would be included in Build Alternative 2.

2.1.4 Build Alternative 3 – TSM and TDM

Build Alternative 3 proposes standalone TSM/TDM improvements. TSM strategies increase the efficiency of existing facilities; they are actions that increase the number of vehicle trips a

facility can carry without increasing the number of through lanes. TDM focuses on regional means of reducing the number of vehicle trips and vehicle miles traveled as well as increasing vehicle occupancy. Build Alternative 3 only includes technology improvements, and no physical or geometric improvements are proposed. No ground disturbance would be required under Build Alternative 3. Since there are no substantial physical alterations proposed, Build Alternative 3 is not categorized as a Type 1 Project, and a detailed noise analysis is not required. Therefore, Build Alternative 3 is not addressed further in this SNSR.

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Chapter 3 Fundamentals of Traffic Noise

The following is a brief description of fundamental traffic noise concepts. For a detailed discussion, please refer to Caltrans' *Technical Noise Supplement* (TeNS) (Caltrans 2013), a technical supplement to the Protocol that is available on the Caltrans website (https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tens-sep2013-a11y.pdf).

3.1 Sound, Noise, and Acoustics

Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air) to a hearing organ, such as a human ear. Noise is defined as loud, unexpected, or annoying sound.

In the science of acoustics, the fundamental model consists of a sound (or noise) source, a receptor, and the propagation path between the two. The loudness of the noise source and the obstructions or atmospheric factors that affect the propagation path to the receptor determine the sound level and the characteristics of the noise perceived by the receptor. The field of acoustics deals primarily with the propagation and control of sound.

3.2 Frequency

Continuous sound can be described by frequency (pitch) and amplitude (loudness). A low-frequency sound is perceived as low in pitch. Frequency is expressed in terms of cycles per second, or Hertz (Hz) (e.g., a frequency of 250 cycles per second is referred to as 250 Hz). High frequencies are sometimes more conveniently expressed in kilohertz, or thousands of Hz. The audible frequency range for humans is generally between 20 Hz and 20,000 Hz.

3.3 Sound Pressure Levels and Decibels

The amplitude of pressure waves generated by a sound source determines the loudness of that source. Sound pressure amplitude is measured in micro-Pascals (µPa). One µPa is approximately one hundred billionth (0.00000000001) of normal atmospheric pressure. Sound pressure amplitudes for different kinds of noise environments can range from less than 100 to 100,000,000 µPa. Because of this huge range of values, sound is rarely expressed in terms of µPa. Instead, a logarithmic scale is used to describe sound pressure level (SPL) in terms of decibels (dB). The threshold of hearing for young people is about 0 dB, which corresponds to 20 µPa.

3.4 Addition of Decibels

Because decibels are logarithmic units, SPL cannot be added or subtracted through ordinary arithmetic. Under the decibel scale, a doubling of sound energy corresponds to a 3 dB increase. In other words, when two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dB higher than one source under the same conditions. For example, if one automobile produces an SPL of 70 dB when it passes an observer, two cars passing simultaneously would not produce 140 dB—rather, they would combine to produce 73 dB. Under the decibel scale, three sources of equal loudness together produce a sound level 5 dB louder than one source.

3.5 A-Weighted Decibels

The decibel scale alone does not adequately characterize how humans perceive noise. The dominant frequencies of a sound have a substantial effect on the human response to that sound. Although the intensity (energy per unit area) of the sound is a purely physical quantity, the loudness or human response is determined by the characteristics of the human ear.

Human hearing is limited in the range of audible frequencies as well as in the way it perceives the SPL in that range. In general, people are most sensitive to the frequency range of 1,000 to 8,000 Hz and perceive sounds within that range better than sounds of the same amplitude in higher or lower frequencies. To approximate the response of the human ear, sound levels of individual frequency bands are weighted, depending on the human sensitivity to those frequencies. Then, an "A-weighted" sound level (expressed in units of dBA) can be computed, based on this information.

The A-weighting network approximates the frequency response of the average young ear when listening to most ordinary sounds. When people make judgments of the relative loudness or annoyance of a sound, their judgments correlate well with the A-scale sound levels of those sounds. Other weighting networks have been devised to address high noise levels or other special problems (e.g., B-, C-, and D-scales), but these scales are rarely used in conjunction with highway traffic noise. Noise levels for traffic noise reports are typically reported in terms of dBA. Table 3-1 describes typical A-weighted noise levels for various noise sources.

Table 3-1. Typical A-Weighted Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	— 110 —	Rock band
Jet fly-over at 1,000 feet		
	— 100 —	
Gas lawn mower at 3 feet		
	— 90 —	
Diesel truck at 50 feet, 50 mph		Food blender at 3 feet
	— 80 —	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawn mower, 100 feet	— 70 —	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	— 60 —	
		Large business office
Quiet urban area, daytime	— 50 —	Dishwasher in next room
Quiet urban area, nighttime	— 40 —	Theater, large conference room (background)
Quiet suburban area, nighttime		
	— 30 —	Library
Quiet rural area, nighttime		Bedroom at night, concert hall (background)
	— 20 —	
		Broadcast/recording studio
	— 10 —	
Lowest threshold of human hearing	— 0 —	Lowest threshold of human hearing

Source: Caltrans 2013
mph = miles per hour

3.6 Human Response to Changes in Noise Levels

As discussed above, doubling sound energy results in a 3 dB increase in sound. However, given a sound level change measured with precise instrumentation, the subjective human perception of a doubling of loudness will usually be different from what is measured.

Under controlled conditions in an acoustical laboratory, the trained, healthy human ear is able to discern 1 dB changes in sound levels when exposed to steady, single-frequency ("pure-tone") signals in the mid-frequency (1,000–8,000 Hz) range. In typical noisy environments, changes in noise of 1 to 2 dB are generally not perceptible. However, it is widely accepted that people are able to begin to detect sound level increases of 3 dB in typical noisy environments. Further, a 5 dB increase is generally perceived as a distinctly noticeable increase, and a 10 dB increase is generally perceived as a doubling of loudness. Therefore, a doubling of sound energy (e.g., doubling the volume of traffic on a highway) that would result in a 3 dB increase in sound would generally be perceived as barely detectable.

3.7 Noise Descriptors

Noise in our daily environment fluctuates over time. Some fluctuations are minor, but some are substantial. Some noise levels occur in regular patterns, but others are random. Some noise levels fluctuate rapidly, but others change slowly. Some noise levels vary widely, but others are relatively constant. Various noise descriptors have been developed to describe time-varying noise levels. The following are the noise descriptors that are most commonly used in traffic noise analysis:

- **Equivalent Sound Level (L_{eq}):** L_{eq} represents an average of the sound energy occurring over a specified period. In effect, L_{eq} is the steady-state sound level containing the same acoustical energy as the time-varying sound that actually occurs during the same period. The 1-hour A-weighted equivalent sound level ($L_{eq}[h]$) is the energy average of A-weighted sound levels occurring during a 1-hour period and the basis for noise abatement criteria (NAC) used by Caltrans and FHWA.
- **Percentile-Exceeded Sound Level (L_{xx}):** L_{xx} represents the sound level exceeded for a given percentage of a specified period (e.g., L_{10} is the sound level exceeded 10 percent of the time, and L_{90} is the sound level exceeded 90 percent of the time).
- **Maximum Sound Level (L_{max}):** L_{max} is the highest instantaneous sound level measured during a specified period.
- **Day-Night Level (L_{dn}):** L_{dn} is the energy average of A-weighted sound levels occurring over a 24-hour period, with a 10 dB penalty applied to A-weighted sound levels occurring during nighttime hours between 10:00 p.m. and 7:00 a.m.
- **Community Noise Equivalent Level (CNEL):** Similar to L_{dn}, CNEL is the energy average of the A-weighted sound levels occurring over a 24-hour period, with a 10 dB penalty applied to A-weighted sound levels occurring during the nighttime hours between 10:00 p.m. and 7:00 a.m. and a 5 dB penalty applied to the A-weighted sound levels occurring during evening hours between 7:00 p.m. and 10:00 p.m.

3.8 Sound Propagation

When sound propagates over a distance, it changes in level and frequency content. The manner in which noise reduces with distance depends on the factors listed below.

3.8.1 Geometric Spreading

Sound from a localized source (i.e., a point source) propagates uniformly outward in a spherical pattern. The sound level attenuates (or decreases) at a rate of 6 dB for each doubling of distance

from a point source. Highways consist of several localized noise sources on a defined path and hence can be treated as a line source, which approximates the effect of several point sources. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source.

3.8.2 Ground Absorption

The propagation path of noise from a highway to a receptor is usually very close to the ground. Noise attenuation from ground absorption and reflective-wave canceling adds to the attenuation associated with geometric spreading. Traditionally, the excess attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is usually sufficiently accurate for distances of less than 200 feet. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receptor, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receptor, such as soft dirt, grass, or scattered bushes and trees), an excess ground-attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance.

3.8.3 Atmospheric Effects

Receptors located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels. Sound levels can increase at large distances (e.g., more than 500 feet) from highways because of atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors such as air temperature, humidity, and turbulence can also have significant effects.

3.8.4 Shielding by Natural or Human-Made Features

A large object or barrier in the path between a noise source and a receptor can substantially attenuate noise levels at the receptor. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Natural terrain features (e.g., hills and dense woods) and human-made features (e.g., buildings and walls) can substantially reduce noise levels. Walls are often constructed between a source and a receptor to reduce noise. A barrier that breaks the line of sight between a source and a receptor will typically result in at least 5 dB of noise reduction. Taller barriers provide increased noise reduction. Vegetation between the highway and receptor is rarely effective in reducing noise because it does not create a solid barrier.

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Chapter 4 Federal Regulations and State Policies

This report focuses on the requirements of 23 CFR 772, as discussed below.

4.1 Federal Regulations

4.1.1 23 CFR 772

23 CFR 772 provides procedures for preparing operational and construction noise studies and evaluating noise abatement considered for federal and Federal-aid highway projects. Under 23 CFR 772.7, projects are categorized as Type I, Type II, or Type III projects.

FHWA defines a Type I project as a proposed federal or federal-aid highway project for the construction of a highway on a new location or the physical alteration of an existing highway which significantly changes either the horizontal or vertical alignment of the highway. The following projects are also considered to be Type I projects:

- The addition of a through-traffic lane(s). This includes the addition of a through-traffic lane that functions as a high-occupancy vehicle lane, high-occupancy toll lane, bus lane, or truck climbing lane,
- The addition of an auxiliary lane, except for when the auxiliary lane is a turn lane,
- The addition or relocation of interchange lanes or ramps added to a quadrant to complete an existing partial interchange,
- Restriping existing pavement for the purpose of adding a through traffic lane or an auxiliary lane,
- The addition of a new or substantial alteration of a weigh station, rest stop, ride-share lot, or toll plaza.

If a project is determined to be a Type I project under this definition, the entire project area as defined in the environmental document is a Type I project.

A Type II project is a noise barrier retrofit project that involves no changes to highway capacity or alignment. A Type III project is a project that does not meet the classifications of a Type I or Type II project. Type III projects do not require a noise analysis.

Under 23 CFR 772.11, noise abatement must be considered for Type I projects if the project is predicted to result in a traffic noise impact. In such cases, 23 CFR 772 requires that the project sponsor "consider" noise abatement before adoption of the final NEPA document. This process

involves identification of noise abatement measures that are reasonable, feasible, and likely to be incorporated into the project, and of noise impacts for which no apparent solution is available.

Traffic noise impacts, as defined in 23 CFR 772.5, occur when the predicted noise level in the design-year approaches or exceeds the NAC specified in 23 CFR 772, or a predicted noise level substantially exceeds the existing noise level (a "substantial" noise increase). 23 CFR 772 does not specifically define the terms "substantial increase" or "approach"; these criteria are defined in the Protocol, as described below.

Table 4-1 summarizes NAC corresponding to various land use activity categories. Activity categories and related traffic noise impacts are determined based on the actual or permitted land use in a given area.

4.1.2 Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects

The Protocol specifies the policies, procedures, and practices to be used by agencies that sponsor new construction or reconstruction of federal or Federal-aid highway projects. The Protocol defines a noise increase as substantial when the predicted noise levels with project implementation exceed existing noise levels by 12 dBA or more. The Protocol also states that a sound level is considered to approach an NAC level when the sound level is within 1 dB of the NAC identified in 23 CFR 772 (e.g., 66 dBA is considered to approach the NAC of 67 dBA, but 65 dBA is not).

The Technical Noise Supplement to the Protocol provides detailed technical guidance for the evaluation of highway traffic noise. This includes field measurement methods, noise modeling methods, and report preparation guidance.

Table 4-1. Activity Categories and Noise Abatement Criteria (23 CFR 772)

Activity Category	Activity $L_{eq}[h]$[a]	Evaluation Location	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.
Bb	67	Exterior	Residential.
Cb	67	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A–D or F.

Activity Category	Activity $L_{eq}[h]$[a]	Evaluation Location	Description of Activities
F			Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G			Undeveloped lands that are not permitted.

[a.] The $L_{eq}(h)$ activity criteria values are for impact determination only and are not design standards for noise abatement measures. All values are A-weighted decibels (dBA).
[b.] Includes undeveloped lands permitted for this activity category.

4.2 State Regulations and Policies

4.2.1 California Environmental Quality Act (CEQA)

Noise analysis under the California Environmental Quality Act (CEQA) may be required regardless of whether or not the project is a Type I project. The CEQA noise analysis is completely independent of the 23 CFR 772 analysis done for NEPA. Under CEQA, the baseline noise level is compared to the build noise level. The assessment entails looking at the setting of the noise impact and then how large or perceptible any noise increase would be in the given area. Key considerations include: the uniqueness of the setting, the sensitive nature of the noise receptors, the magnitude of the noise increase, the number of residences affected, and the absolute noise level.

The significance of noise impacts under CEQA are addressed in the environmental document rather than the SNSR. Even though the SNSR (or noise technical memorandum) does not specifically evaluate the significance of noise impacts under CEQA, it must contain the technical information that is needed to make that determination in the environmental document.

4.2.2 Section 216 of the California Streets and Highways Code

Section 216 of the California Streets and Highways Code relates to the noise effects of a proposed freeway project on public and private elementary and secondary schools. Under this code, a noise impact occurs if, as a result of a proposed freeway project, noise levels exceed 52 dBA $L_{eq}(h)$ in the interior of public or private elementary or secondary classrooms, libraries, or multipurpose rooms or spaces. This requirement does not replace the "approach or exceed" NAC criterion for FHWA Activity Category D for classroom interiors, but it is a requirement that must be addressed in addition to the requirements of 23 CFR 772.

If a project results in a noise impact under this code, noise abatement must be provided to reduce classroom noise to a level that is at or below 52 dBA $L_{eq}(h)$. If the noise levels generated from freeway and roadway sources exceed 52 dBA $L_{eq}(h)$ prior to the construction of the proposed freeway project, then noise abatement must be provided to reduce the noise to the level that existed prior to construction of the project.

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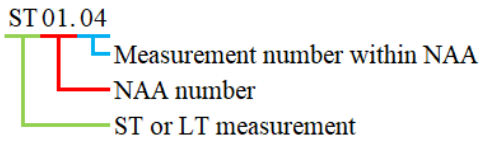
Chapter 5 Study Methods and Procedures

5.1 Methods for Identifying Land Uses and Selecting Noise Measurement and Modeling Receiver Locations

A field investigation was conducted to identify land uses that could be subject to traffic and construction noise impacts from the proposed Project. Land uses in the Project area were categorized by land use type, activity category (as defined in Table 4-1), and the extent of frequent human use. As directed by the Protocol, the focus was on outdoor locations with frequent human use that would benefit from a lowered noise level, although all developed land uses were considered in this analysis. Accordingly, this impact analysis focused on locations with defined outdoor activity areas, such as residences with backyards or patios, restaurants with outdoor seating areas, and hotels with swimming pools. The geometry of the Project area relative to nearby existing land uses was also identified.

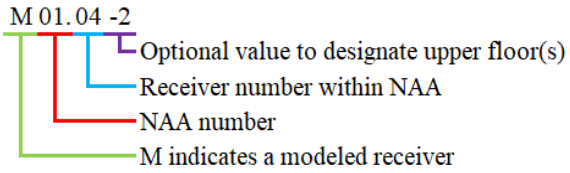
In addition, efforts to identify any undeveloped land in the Project vicinity with permits for construction of future developments were completed in November 2024. These efforts included contacting the Cities of Lake Forest, Laguna Woods, and Laguna Hills. More information on the planned and permitted development within the study area is provided in Section 6.2.

Because the overall noise study area is large, it was helpful to divide it into smaller areas for analysis and discussion. Therefore, the noise study area was divided into four Noise Analysis Areas (NAAs), one for each quadrant of the intersection. Each NAA is described and discussed in more detail in Chapter 6, *Existing Noise Environment*. Twenty short-term (ST) measurement sites were selected to represent the various land use categories and activities within the Project area. Three additional sites were also used to obtain long-term (LT) measurements to capture the diurnal traffic noise level patterns in the Project area. The measurement sites were each assigned a unique number according to their measurement type (ST or LT), NAA (01 through 04), and sequence from south to north within the NAA, for instance:



The ST measurements were used to validate the traffic noise modeling used in the study and were used as modeled receivers for the analysis of the worst noise hour under existing and Design-Year (No-Build and Build) conditions. Non-measurement locations were selected as additional modeled receivers to gain a more complete understanding of the noise environment in

the Project area. Modeled receivers were each assigned a unique number using a similar naming convention as was used for the measurement sites. Additionally, receivers modeled at two or more floor heights, for instance to model residential decks and balconies, an additional value is added to the receiver number to signify receivers modeled above the first floor (e.g., "-2" for second floor, "-3" for third floor). The naming convention for modeled receivers is as follows:



Where measurement sites were also used for noise modeling, the locations are assigned both a modeled receiver number and a measurement number (e.g., M01.18/ST01.03).

5.2 Field Measurement Procedures

A field noise study was conducted in accordance with the recommended procedures in the TeNS. The following is a summary of the procedures that were used to collect ST and LT sound level data.

5.2.1 Short-Term Measurements

The ST noise levels were measured across multiple days between December 3, 2024 and December 18, 2024. The noise measurement locations are shown on Figure 5-1 following section 5.2.1. All ST measurements were conducted in accordance with the TeNS (Caltrans 2013).

Land uses within the Project area consist of single-family and multi-family residences, a place of worship, a school, a park, a playground, a basketball court (half-court), retail, offices, restaurants with and without outdoor use areas, and parking lots. ST measurements were taken at 20 sites, as identified on Figure 5-1. All ST measurements representing residential land uses were conducted at areas of frequent human use or at the closest accessible location considered acoustically equivalent for traffic noise model validation purposes (refer to Section 6.3.3, *Traffic Noise Model Validation*).

Consecutive 10-minute measurements were obtained at all measurement locations. Each consecutive measurement at the same location is identified with a run number. For instance, ST01.01 Run 1 is followed by ST01.01 Run 2, and so on. Per TeNS guidance, at least two consecutive runs were measured at all locations. At any locations where the results of the first and second runs did not agree within +/- 2 dB, additional runs were measured until two different runs agreed within +/- 2 dB. A third consecutive run was required at ST01.02 to produce a pair

of runs that agreed within +/- 2 dB. The two runs that agreed most closely with each other were carried forward for use in the subsequent traffic noise model validation. The run that was the least consistent was discarded; however, for the purposes of transparency, all measurement runs are included on the field data sheets included in Appendix D. The results of the ST noise monitoring are provided in Table 6-2 in Chapter 6, *Existing Noise Environment*.

ST noise measurements were conducted using one Larson Davis model LxT sound level meter (SLM) and one Larson Davis model 831 SLM (serial numbers 0004005 and 0003786, respectively). The SLMs are classified as Type 1 instruments, as defined in American National Standard Institute (ANSI) specification S1.4-1984 and International Electrotechnical Commission publications 804 and 651. The meters were set to the "slow" time-response mode and the A-weighting filter network. The calibration of all SLMs was checked before and after the measurements using Larson Davis Model CAL200 (serial numbers 2916 and 6645) acoustical calibrators.

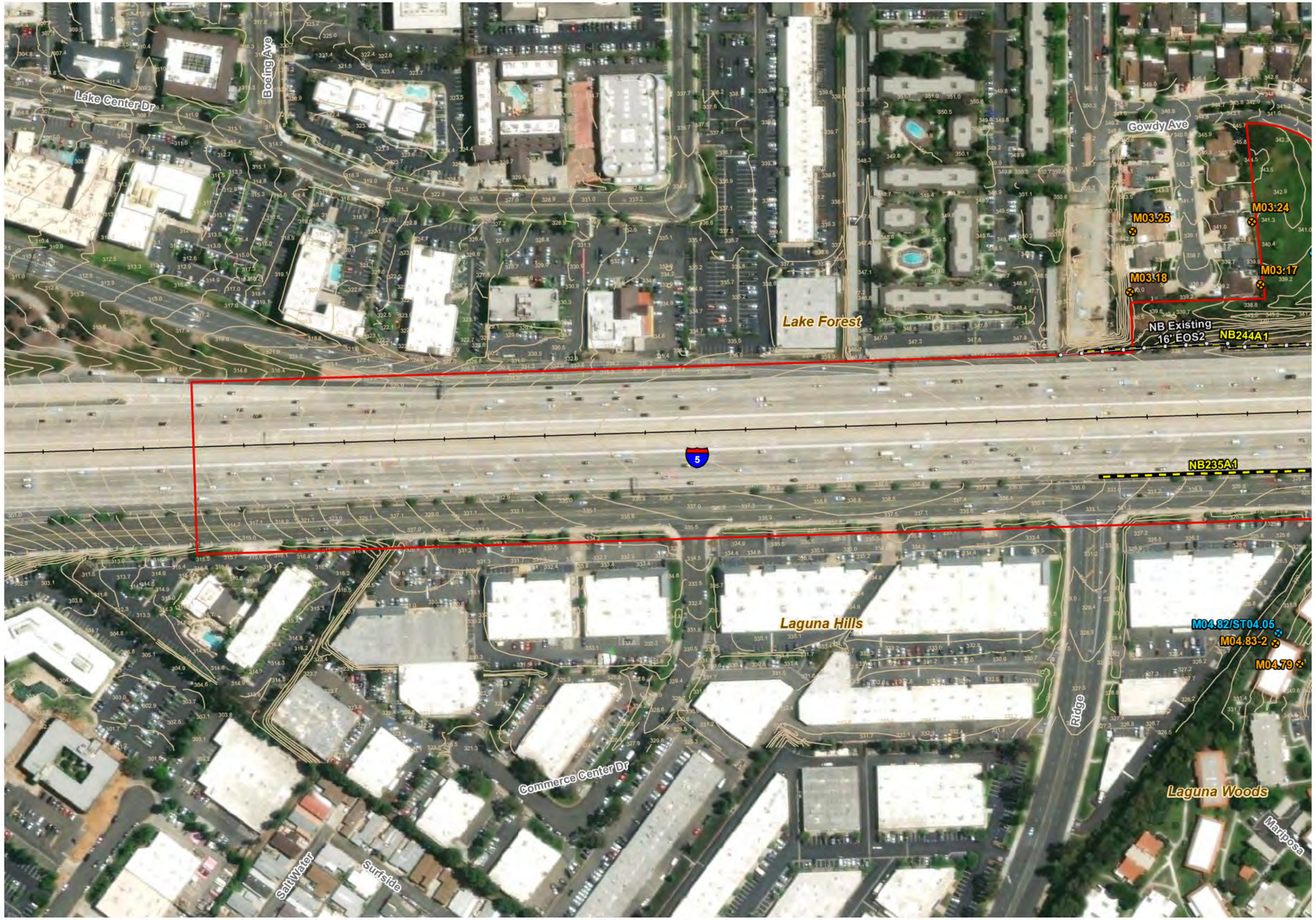
During ST measurements, a noise analyst attended the SLM at all times. The L_{eq} values collected during each measurement period (10 minutes) were automatically recorded with the digital integrating SLM and subsequently logged manually on the field data sheets for each measurement location. Dominant noise sources observed and other relevant measurement conditions were also identified and logged manually on the field data sheets. At all locations, traffic noise was the dominant contributor to the measured noise levels.

Temperature, wind speed, and humidity were recorded manually during the ST monitoring sessions using a Kestrel 3000 portable weather station. During ST measurements, wind speeds typically ranged from 0 to 4 miles per hour (mph). Temperatures ranged from 58 to 69 degrees Fahrenheit, with relative humidity typically in the range of 50 to 59 percent.

The relevant traffic data during each ST measurement were captured using video recordings. For all measurements, traffic on the I-5 mainline was videotaped. Additional videotaping was conducted for on-ramps, off-ramps, and local roadways that were observed to potentially contribute to the overall traffic noise levels at the ST measurement locations.

Traffic volumes during each measurement were subsequently counted and classified using the video recordings gathered in the field. Vehicles were classified as automobiles, medium-duty trucks (two axles), heavy-duty trucks (three or more axles), buses, or motorcycles. Individual vehicle speeds for each lane of I-5 were captured throughout each measurement, separating heavy-duty truck speeds from the other classifications, using Bushnell Speedster III and Bushnell Velocity Speed Gun radar guns. Vehicle speeds were averaged per lane for each measurement run. Vehicle speeds on local streets varied due to the stop-and-go nature of the signalized

intersections in the study area. For the purposes of noise modeling and validation, all vehicles on local streets were assumed to be traveling at the posted speed limit.





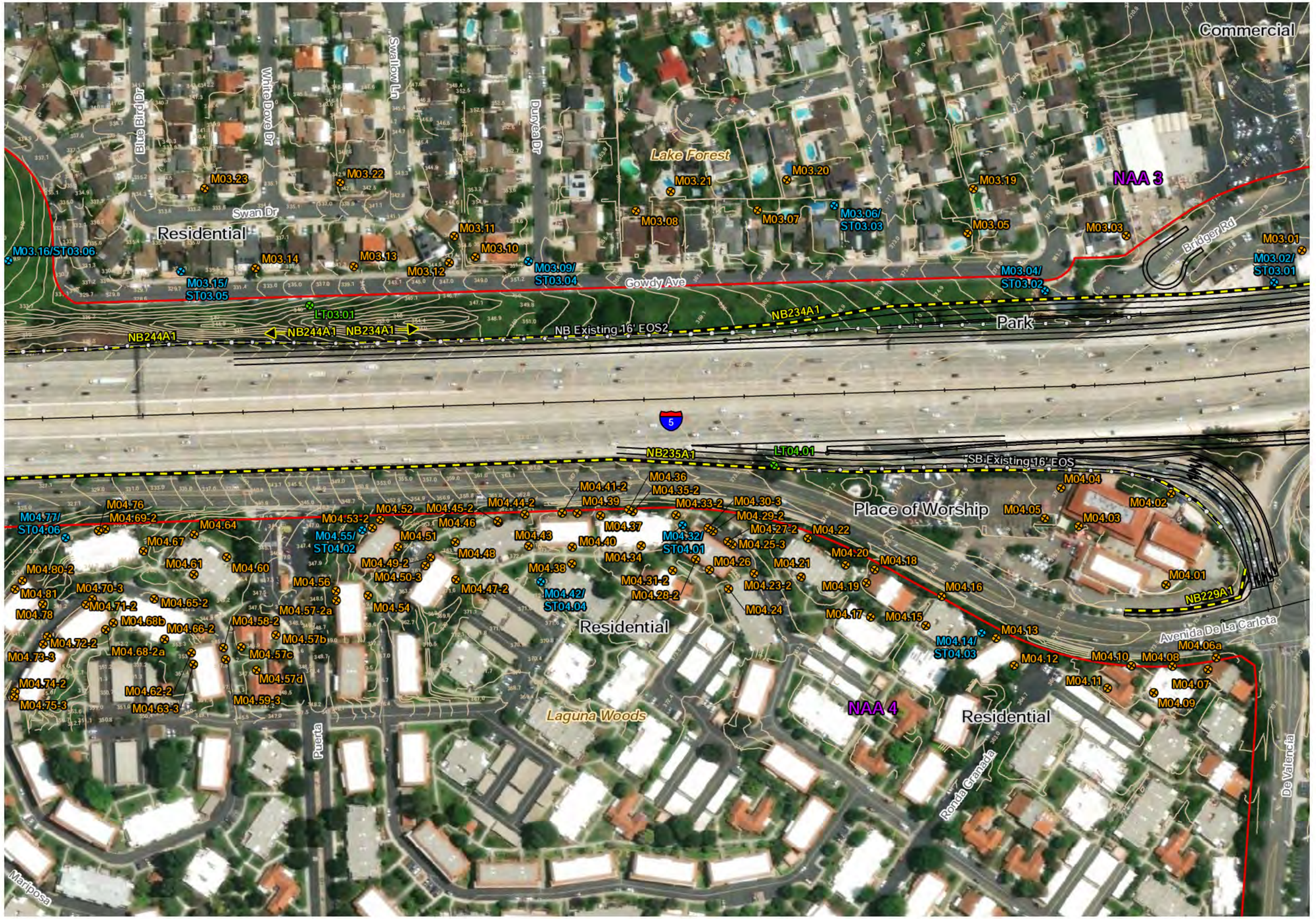
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- Limits of Disturbance
- Long-term Noise Measurement Location
- Modeled Receiver Location/Short-term Noise Measurement Location
- Modeled Receiver Location
- Evaluated Barrier Location
- Existing Barriers
- Project Layout

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Figure 5-1a, Sheet 1 of 6
Noise Measurement and Modeling Locations, and Evaluated Noise Barriers - Alternative 1
Interstate 5 El Toro Road Interchange Project

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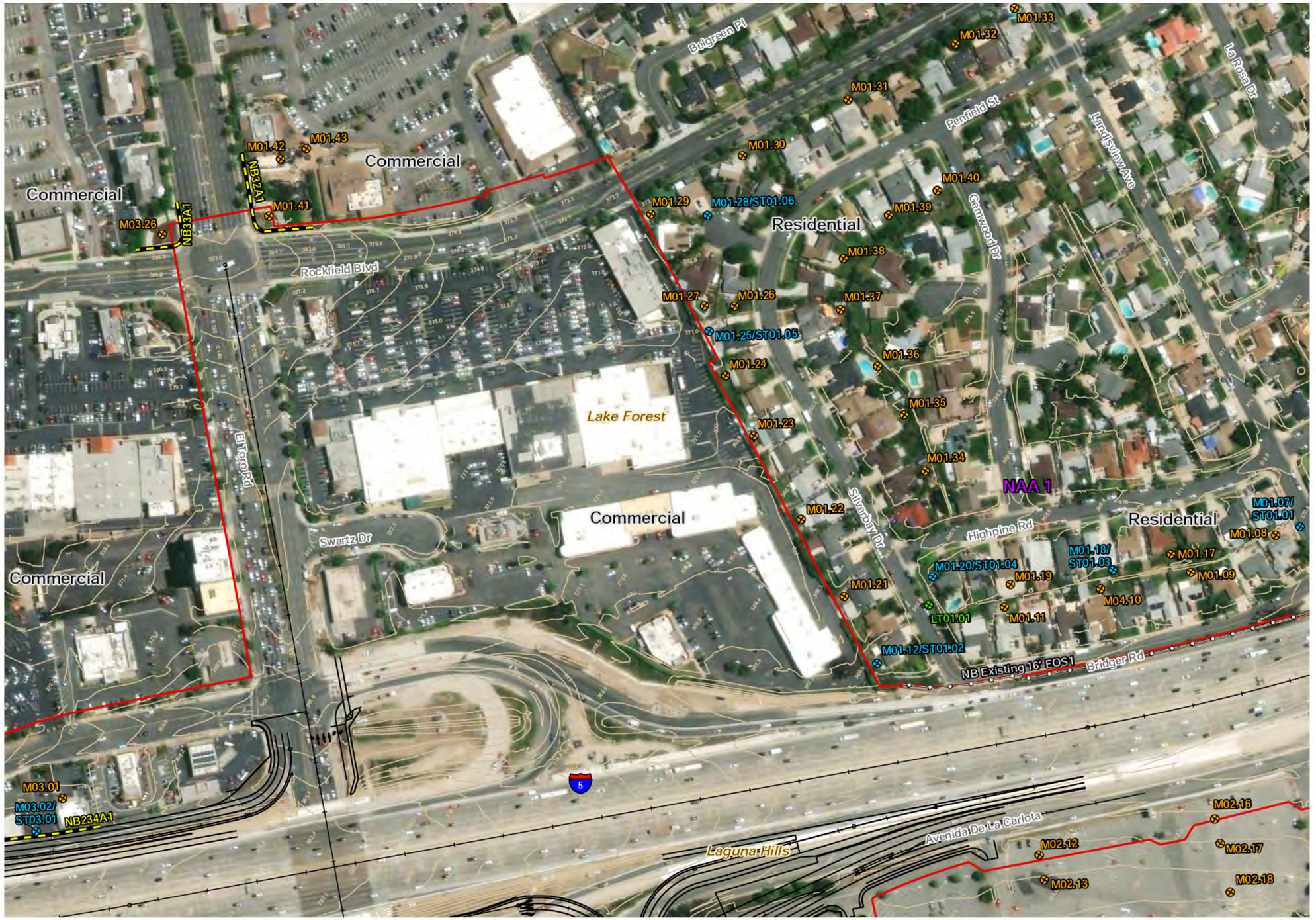
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- Existing Barriers
- Project Layout

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Figure 5-1a, Sheet 2 of 6
Noise Measurement and Modeling Locations, and Evaluated Noise Barriers - Alternative 1
Interstate 5 El Toro Road Interchange Project

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- Limits of Disturbance
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- Modeled Receiver Location/Short-term Noise Measurement Location
- Modeled Receiver Location
- Evaluated Barrier Location
- Existing Barriers
- Project Layout

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Figure 5-1a, Sheet 3 of 6
Noise Measurement and Modeling Locations, and Evaluated Noise Barriers - Alternative 1
Interstate 5 El Toro Road Interchange Project

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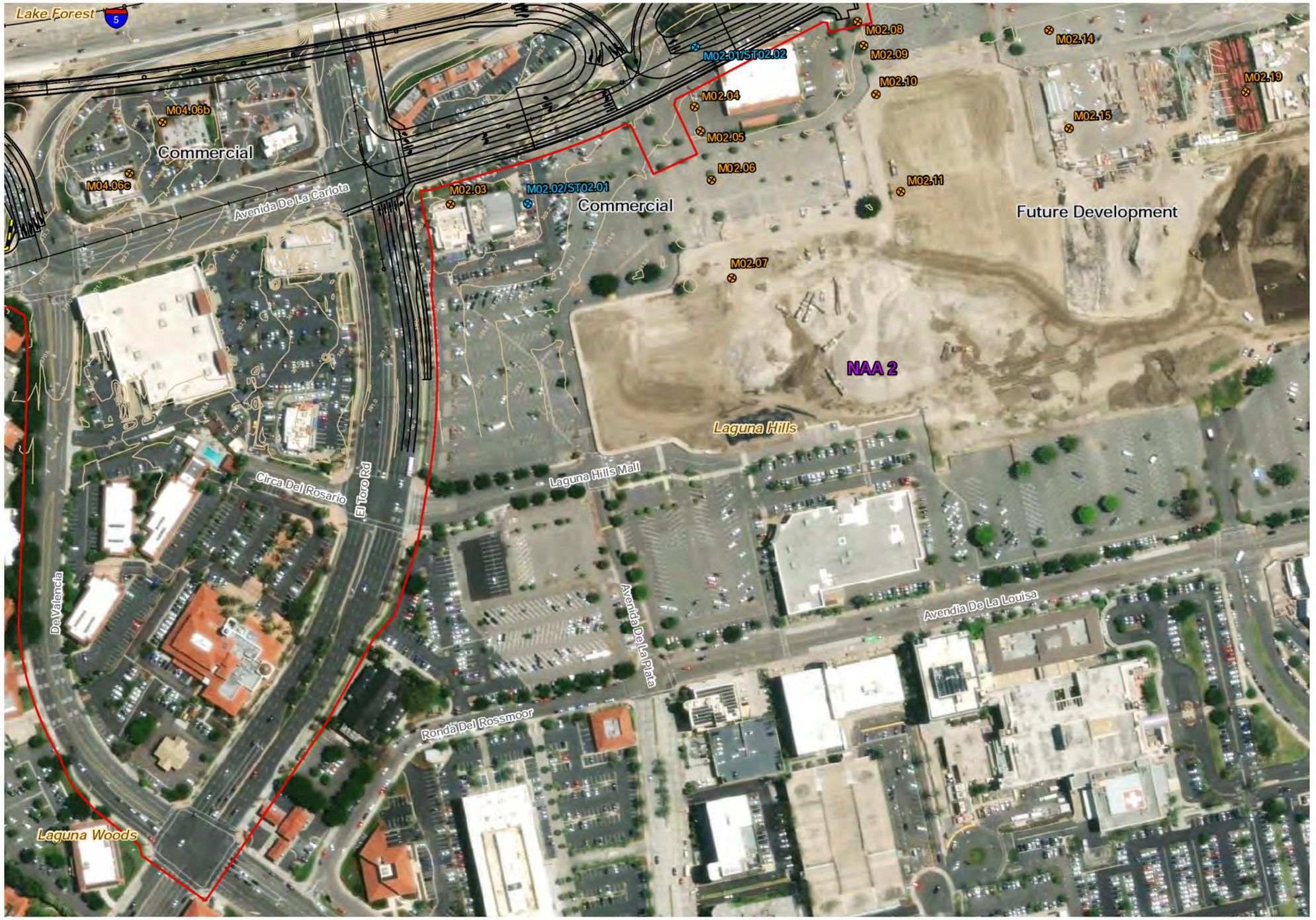
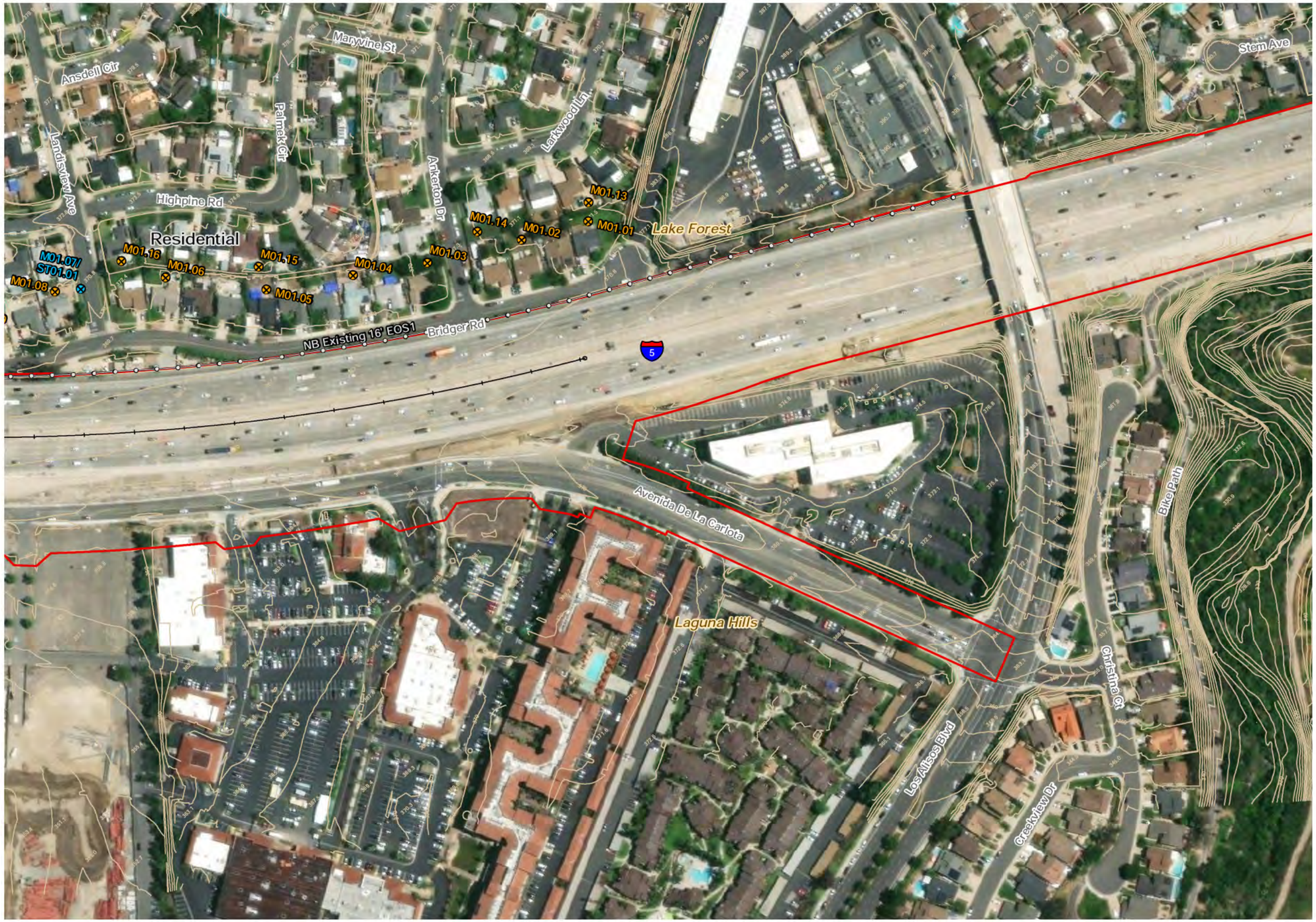


Figure 5-1a, Sheet 4 of 6
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Interstate 5 El Toro Road Interchange Project

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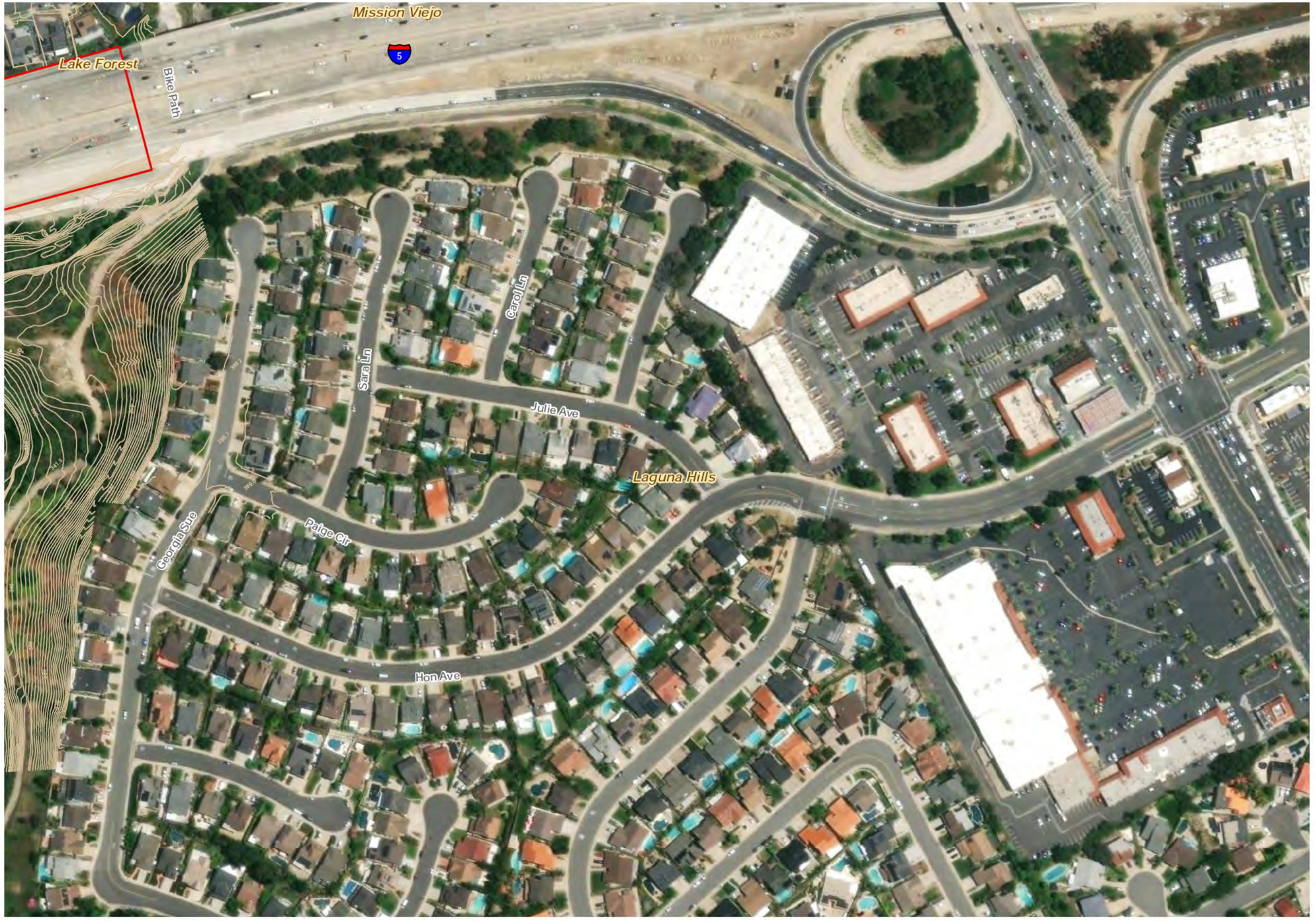
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- Existing Barriers
- Project Layout

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Figure 5-1a, Sheet 5 of 6
Noise Measurement and Modeling Locations, and Evaluated Noise Barriers - Alternative 1
Interstate 5 El Toro Road Interchange Project

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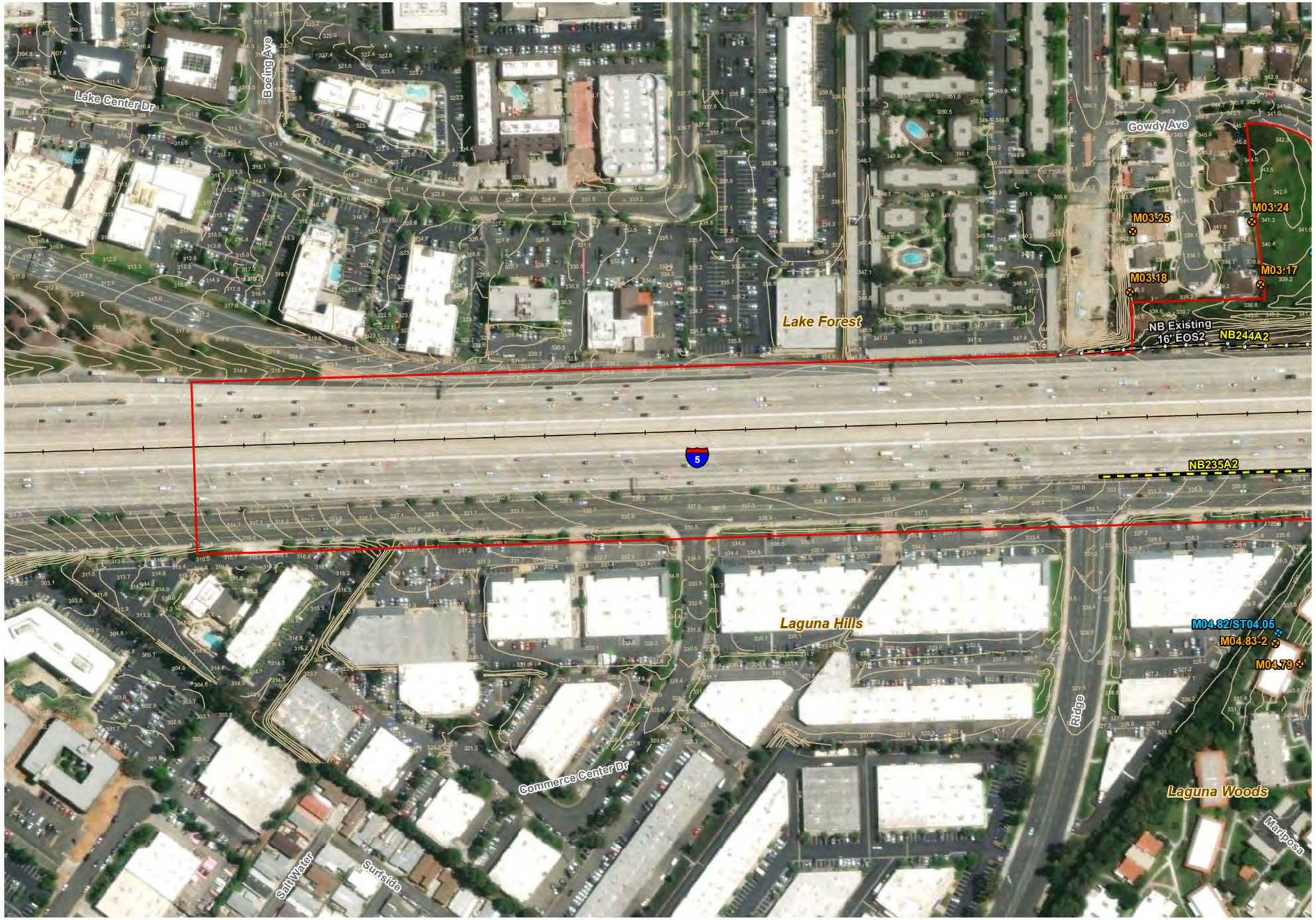
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- Modeled Receiver Location
- Evaluated Barrier Location
- Existing Barriers
- Project Layout

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Figure 5-1a, Sheet 6 of 6
Noise Measurement and Modeling Locations, and Evaluated Noise Barriers - Alternative 1
Interstate 5 El Toro Road Interchange Project

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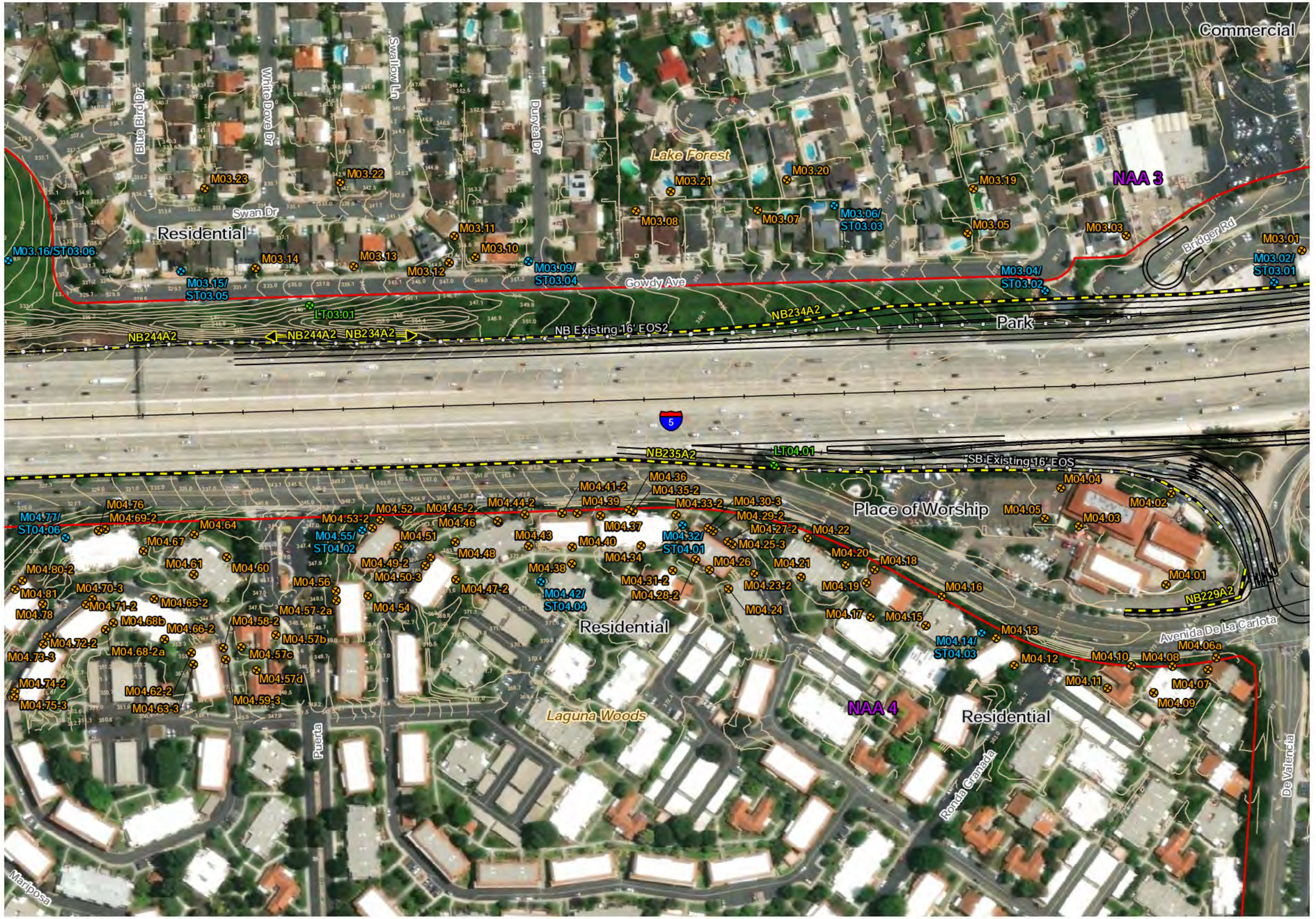
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- Long-term Noise Measurement Location
- Modeled Receiver Location/Short-term Noise Measurement Location
- Modeled Receiver Location
- Evaluated Barrier Location
- Existing Barriers
- Project Layout

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Figure 5-1b, Sheet 1 of 6
Noise Measurement and Modeling Locations, and Evaluated Noise Barriers - Alternative 2
Interstate 5 El Toro Road Interchange Project

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- Limits of Disturbance
- Long-term Noise Measurement Location
- Modeled Receiver Location/Short-term Noise Measurement Location
- Modeled Receiver Location
- Evaluated Barrier Location
- Existing Barriers
- Project Layout

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Figure 5-1b, Sheet 2 of 6
Noise Measurement and Modeling Locations, and Evaluated Noise Barriers - Alternative 2
Interstate 5 El Toro Road Interchange Project

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- Limits of Disturbance
- Long-term Noise Measurement Location
- Modeled Receiver Location/Short-term Noise Measurement Location
- Modeled Receiver Location
- Evaluated Barrier Location
- Existing Barriers
- Project Layout

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Figure 5-1b, Sheet 3 of 6
Noise Measurement and Modeling Locations, and Evaluated Noise Barriers - Alternative 2
Interstate 5 El Toro Road Interchange Project

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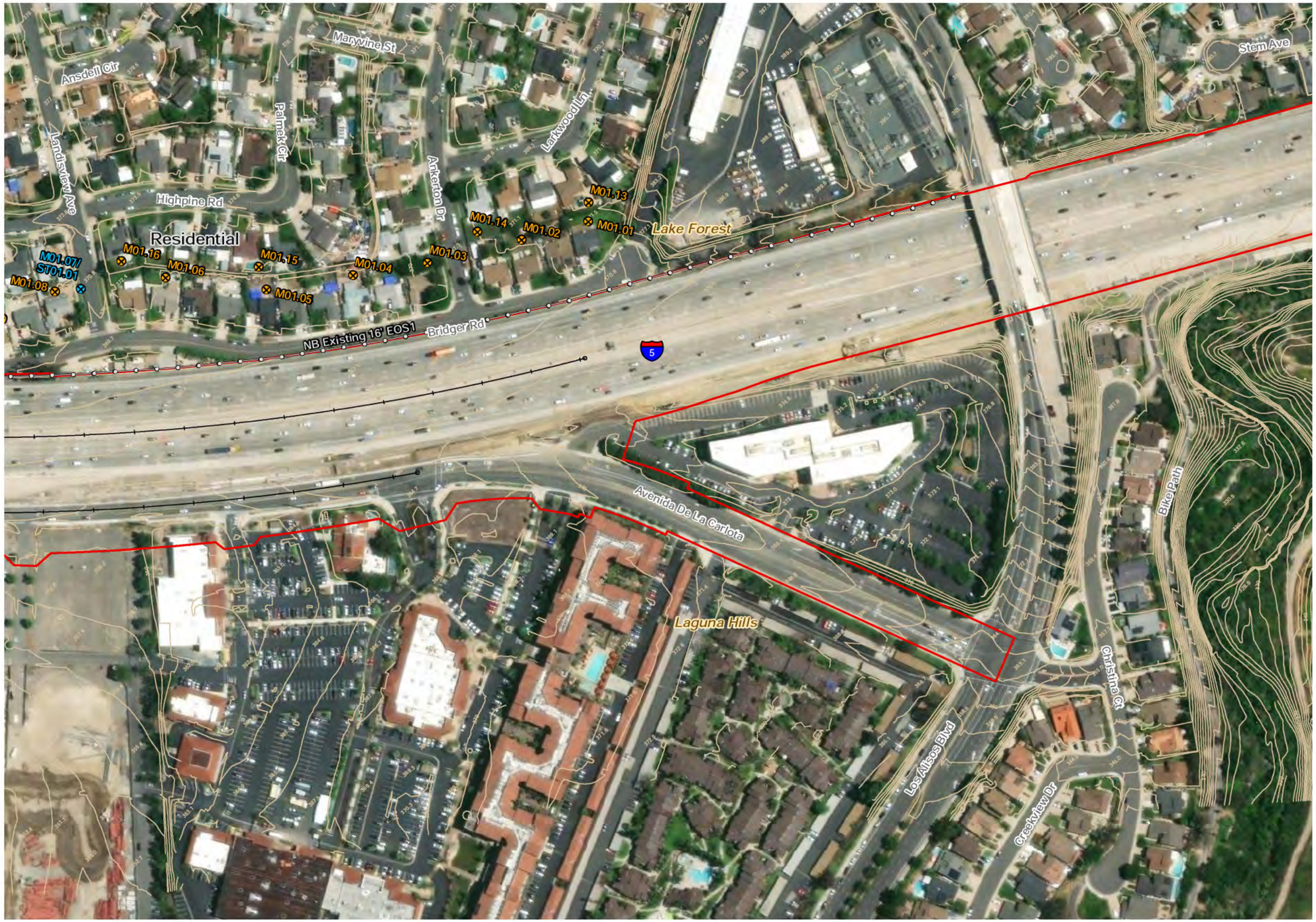


Legend

- Limits of Disturbance
- Long-term Noise Measurement Location
- Modeled Receiver Location/Short-term Noise Measurement Location
- Modeled Receiver Location
- Evaluated Barrier Location
- Existing Barriers
- Project Layout

Figure 5-1b, Sheet 4 of 6
Noise Measurement and Modeling Locations, and Evaluated Noise Barriers - Alternative 2
Interstate 5 El Toro Road Interchange Project

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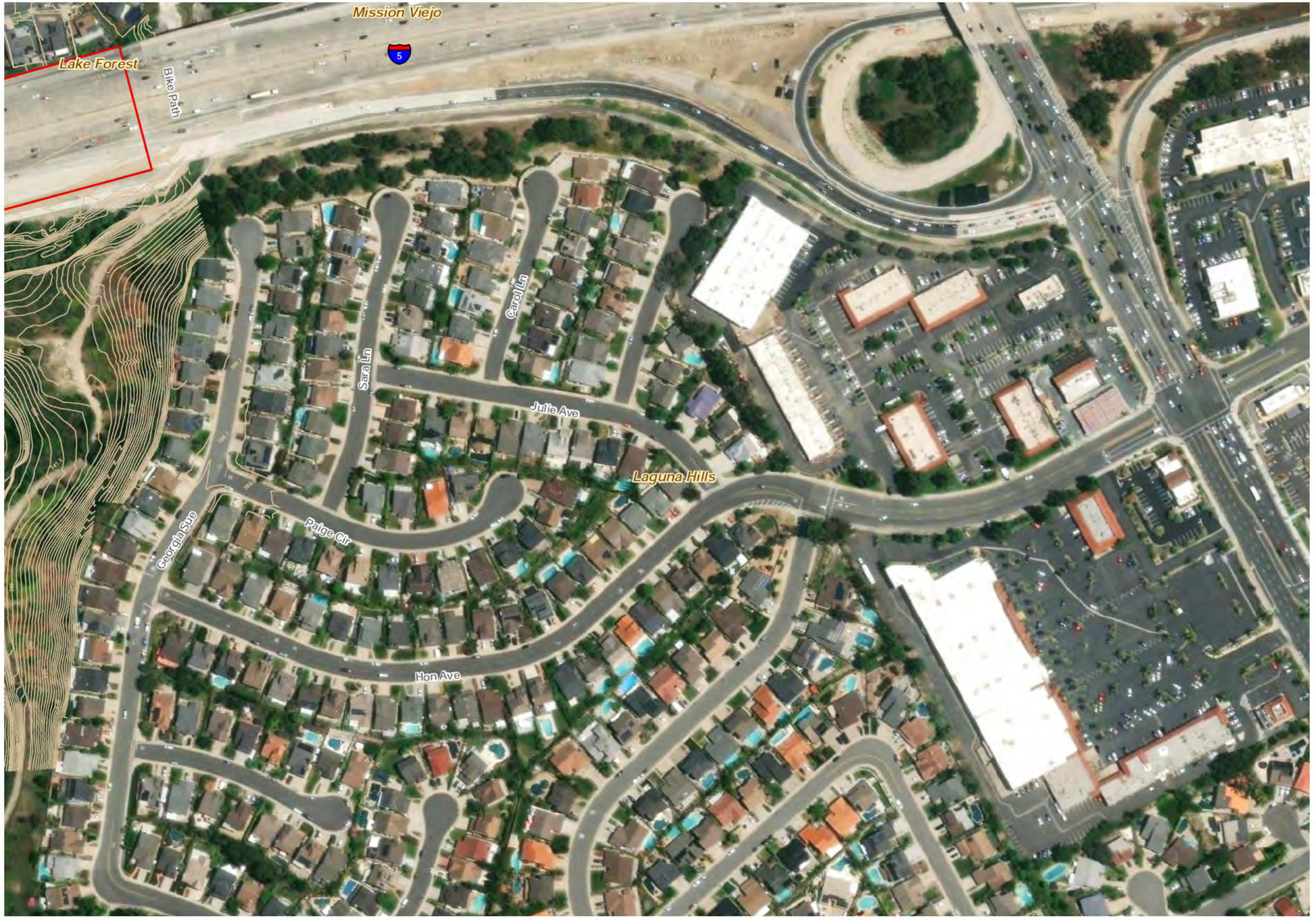
Legend

- Limits of Disturbance
- Long-term Noise Measurement Location
- Modeled Receiver Location/Short-term Noise Measurement Location
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Figure 5-1b, Sheet 5 of 6
Noise Measurement and Modeling Locations, and Evaluated Noise Barriers - Alternative 2
Interstate 5 El Toro Road Interchange Project

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Legend

- Limits of Disturbance
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0 100 200 Feet
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Figure 5-1b, Sheet 6 of 6
Noise Measurement and Modeling Locations, and Evaluated Noise Barriers - Alternative 2
Interstate 5 El Toro Road Interchange Project

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5.2.2 Long-Term Measurements

LT monitoring was conducted at three locations between December 3 and December 10, 2024. The LT measurement locations are identified on Figure 5-1. The locations were selected to ensure that traffic on I-5 would be the dominant source of noise during each measurement. The SLMs used in the measurements were secured as necessary to minimize the risk of theft or tampering. The purpose of these measurements was to identify diurnal noise traffic noise patterns throughout a typical day/night cycle. The results of LT monitoring are provided in Chapter 6.

LT noise measurements were conducted using three Soft dB Piccolo II SLMs (serial numbers P0222042804[1] and P0222042805). These are Type 2 instruments, as defined in ANSI specification S1.4-1984 and International Electrotechnical Commission publications 804 and 651.

5.3 Traffic Noise Level Prediction Methods

Traffic noise levels were predicted using the FHWA Traffic Noise Model, version 2.5 (TNM 2.5) (FHWA 2004). The TNM 2.5 computer model is based on two FHWA reports: FHWA-PD-96-009 and FHWA-PD-96-010 (FHWA 1998a, 1998b). Key geometric inputs for the model were the locations of roadways; shielding features (e.g., topography and buildings); noise barriers, including freeway sound walls and property walls along the right of way; and receivers. Three-dimensional representations of these inputs were developed using computer-aided design (CAD) drawings, profiles, and topographic contours provided by the Project Design Team. MicroStation software was the primary tool used to digitize the geometric inputs, based on the available CAD files, for input into TNM 2.5.

5.3.1 Validation of the Traffic Noise Model

To validate the accuracy of the model, TNM 2.5 was used to compare measured traffic noise levels with modeled noise levels at the ST measurement locations. For each receiver, traffic volumes counted during the ST measurement periods were normalized to 1-hour volumes. These normalized volumes were assigned to corresponding roadways in the Project area to simulate the strength of the noise source during the actual measurement period. Modeled and measured sound levels were then compared to determine the accuracy of the model and whether additional validation was necessary. The results of validation modeling are described in Chapter 6. Appendix A includes the normalized (1-hour) traffic volumes, based on the traffic videos obtained at the time of each measurement, and the corresponding traffic speeds.

[1] One Soft dB Piccolo II SLM (serial number P0222042804) was used to measure LT01.01 on December 3–4, 2024, and LT04.01 on December 5–7, 2024.

5.3.2 Traffic Noise Modeling

Traffic noise was evaluated under existing, Design-Year No-Build, and Design-Year Build conditions for Build Alternatives 1 and 2. The traffic volumes and assumptions used for each case are summarized below and listed in more detail in Appendix A. Full details of the TNM 2.5 input files are contained in Appendix D.

For traffic noise from any roadway, the loudest daily hour is generally characterized by high-volume but free-flowing traffic traveling at the highway's design speed. This is generally found to occur when the roadway is operating around level of service (LOS) C/D. When there is less traffic on the roadway, noise levels decrease due to lower overall traffic volumes; as more traffic (above LOS C/D) is added to the roadway, noise levels also decrease due to the onset of congestion and lower speeds. The LT noise monitoring data indicate that the existing noisiest hour in the study area occurs during morning time (refer to Section 6.3.3); however, a conservative approach was adopted by comparing the traffic volumes during morning and nighttime hours, selecting the higher of the two volumes to represent the worst noise hour traffic conditions under both existing and Design-Year scenarios.

The peak noise hour traffic volumes utilized for the noise analysis originated from the *Traffic Operations Analysis Report (TOAR) I-5/El Toro Interchange Improvement Project* (Jacobs 2025). The worst-case traffic volumes were selected and organized into detailed traffic data tables included in Appendix A, *Traffic Data Tables* (Tables A-2, A-3, A-4, A-5, and A-6).

General purpose lanes and auxiliary lanes are modeled at the design speed of the interstate. For on-ramps, speeds are modeled using the Flow Control feature in TNM 2.5. For unmetered on-ramps, the Onramp Flow Control option in TNM 2.5 is applied to 100 percent of the vehicles with acceleration up to the posted mainline speed; the starting speed constraint is 10 mph. For metered on-ramps, speeds before the meter are first modeled using flow control up to a maximum speed of 35 mph (the Onramp Flow Control option is applied to 100 percent of the vehicles with a starting speed constraint of 10 mph), then incrementally reduced to 10 mph immediately before the meter. After the meter, the Onramp Flow Control option is applied to 100 percent of vehicles with a starting speed constraint of 0 mph and acceleration up to the posted mainline speed. For loop on-ramps, the same general speed characteristics were applied except that the maximum speed on the curved part of the ramp was limited to the posted advisory speed limit (typically 25 mph). Because TNM 2.5 has no built-in function for modeling deceleration, traffic speeds are incrementally reduced down to 10 mph at the end of each off-ramp.

All local roadways were modeled using the predicted volumes supplied by the traffic engineer and the posted traffic speed limits.

5.4 Methods for Identifying Traffic Noise Impacts and Consideration of Abatement

Traffic noise impacts occur at receptor locations where predicted Design-Year noise levels are at least 12 dB greater than existing noise levels or where predicted Design-Year noise levels approach or exceed (defined as coming within 1 dB of) the NAC for the applicable activity category. Where traffic noise impacts are identified, noise abatement must be considered for reasonableness and feasibility, as required by 23 CFR 772 and the Protocol.

5.4.1 New Noise Abatement

According to the Protocol, abatement measures are considered acoustically feasible if a minimum noise reduction of 5 dB is predicted for at least one impacted receptor with implementation of the abatement measures. Any receptor predicted to receive 5 dB or more of noise reduction from an abatement measure is identified as a benefited receptor. In addition, noise barriers should be designed to intercept the line of sight from the exhaust stack of a truck to the first tier of receptors, as stated in Caltrans' *Highway Design Manual*, Chapter 1100 (Caltrans 2020b). Other factors that affect feasibility include topography, access requirements for driveways and ramps, the presence of local cross streets, utility conflicts, other noise sources in the area, and safety considerations.

The overall reasonableness of noise abatement is determined by three factors:

- The noise reduction design goal
- The cost of noise abatement
- The viewpoints of benefited receptors (including property owners and residents of the benefited receptors)

The Protocol states that 23 CFR 772 requires an acoustical design goal for the noise barrier of at least 7 dB of noise reduction at one or more benefited receptors. This design goal applies to any receptor and is not limited to impacted receptors.

The Protocol defines the procedure for assessing the reasonableness of noise barriers from a cost perspective. A reasonableness allowance is provided for each benefited receptor (i.e., receptors that receive at least 5 dB of noise reduction from a noise barrier that also provides at least 7 dB of noise reduction for one or more benefited receptors). The current allowance is $170,000 per benefited receptor. Total allowance for each noise barrier is calculated by multiplying the cost

allowance per receptor by the number of benefited receptors. If the estimated construction cost of a barrier is less than the total calculated allowance for the barrier, the barrier is considered reasonable from a cost perspective.

This SNSR analyzes and assesses whether noise abatement is acoustically feasible (providing at least 5 dB of noise reduction at one or more impacted receptors) and whether the design goal has been met (providing at least 7 dB of noise reduction at one or more benefited receptors). This SNSR also calculates the reasonable cost allowance based on the number of benefited receptors. However, this SNSR does not calculate the actual costs of construction and does not make any conclusions regarding the overall reasonableness of noise abatement. The analysis of construction costs and the subsequent determination of overall abatement reasonableness are provided in a separate Supplemental Noise Abatement Decision Report (SNADR). Any discussions of reasonableness (such as reasonableness Table 7-1 through Table 7-12) throughout the remainder of this SNSR are limited strictly to reasonable cost allowances and whether abatement meets the design goal of 7 dB insertion loss.

5.4.2 Existing Noise Abatement

It is common for noise-sensitive receptors (especially homes) near highways to be shielded by an existing noise abatement (existing barriers). If noise levels at modeled receptors do not approach or exceed the applicable NAC under the design year build condition, no impacts would be predicted and additional analysis of the existing noise abatement would not be conducted. However, if one or more noise impacts are identified behind an existing noise barrier then additional analysis is required per the supplemental guidance provided in Appendix E of the Protocol. The evaluation of existing noise barriers relies on the same concepts of acoustical feasibility and acoustical reasonableness described in Section 5.4.1. Based on the guidance in the Protocol, the following approach was used in this SNSR to evaluate existing noise barriers.

Where impacts are predicted to occur behind existing noise barriers under Design-Year Build conditions, traffic noise levels were calculated for all receivers behind the noise barrier, regardless of whether they were impacted. A design year no barrier model is created and the existing noise barrier was set to zero height in TNM 2.5 and the model was rerun for all receivers to generate “without-barrier” noise levels. The with- and without-barrier noise levels were than compared to assess the performance of the barrier. If modeled results showed that the existing noise barrier is providing at least 5 dB of noise reduction at one or more impacted receptors, the existing noise barrier meets the acoustical feasibility requirement. If the model results showed that the existing noise barrier is providing at least 7 dB of noise reduction (i.e., it meets the design goal) at one or more benefited receptors (impacted or non-impacted), the existing noise barrier meets the acoustical reasonableness requirement. If both noise reduction requirements

were met, the existing barrier was performing according to the requirements of the Protocol and no further analysis was conducted. If the existing noise barrier did not meet both the acoustical feasibility and acoustical reasonableness requirement, then analysis of additional noise abatement measures (in the form of increased barrier heights) for the impacted receivers was required. As described in Chapter 7, the results of the existing noise barrier analysis are provided in Table B-3.

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Chapter 6 Existing Noise Environment

6.1 Existing Land Uses

An investigation of the Project area was conducted to identify land uses that could be subject to traffic and construction noise impacts from the proposed Project. Land uses in the Project area consist primarily of single-family and multi-family residential (Activity Category B), a place of worship, a park, a playground, and a basketball court (half-court) (Activity Category C), a place of worship interior (Activity Category D), restaurants/bars (Activity Category E), and retail (Activity Category F).

Although all developed land uses are addressed under the Protocol, noise abatement is only considered for areas of frequent human use that would benefit from a lowered noise level. Accordingly, this impact analysis focuses on locations with defined outdoor activity areas, such as residential backyards of single-family homes and private or community outdoor use areas at multi-family residences (such as decks and balconies) (Activity Category B), a place of worship, a park, a playground, and a basketball court (half-court) (Activity Category C), and outdoor seating/dining areas (Activity Category E). Interior noise levels were also considered in the impact analysis conducted at the place of worship (Activity Category D). The property currently under development in NAA 2 is anticipated to include land uses corresponding to activity categories B, C, or E. However, a detailed analysis cannot be included due to the absence of specific project details. To assess potential noise impacts within this area, generalized receptors were placed within the property at intervals of 50, 100, 200, and 400 feet from the edge of Project improvements to identify the 66 and 71 dBA contour lines (see Section 6.2 for more details).

For the purpose of this SNSR, the study area is divided into four separate NAAs, as outlined below. The following sections describe the land uses as they existed at the time of field noise measurements.

NAA 1 – East side of I-5 south of El Toro Road: The land uses in this NAA are primarily residential (Activity Category B). Other land uses include outdoor seating areas (Activity Category E) and retail (Activity Category F). The topography in this area is generally flat with elevations at or below that of I-5. There is an existing 16-foot noise barrier at the right of way, and several existing block walls on private property provide shielding from I-5 at the residences.

NAA 2 – West side of I-5 south of El Toro Road: The land uses in this NAA are a mix of restaurants with outdoor seating (Activity Category E) and retail (Activity Category F). The

topography in this area is generally flat with elevations at or below that of I-5. A large area of land has been cleared for future development that will likely include activity category B, C, or E land uses (see Section 6.2 for more details).

NAA 3 – East side of I-5 north of El Toro Road: The land uses in this NAA are primarily residential (Activity Category B). Other land uses include a park, a playground and a basketball court (half-court) (Activity Category C), outdoor seating areas (Activity Category E), and retail (Activity Category F). The topography in this area is generally flat with elevations at or below that of I-5. There is an existing 16-foot noise barrier at the right of way, and several existing block walls on private property provide shielding from I-5 at the residences.

NAA 4 – West side of I-5 north of El Toro Road: The land uses in this NAA include multi-family residential (Activity Category B), a place of worship (Activity Category C and D), and outdoor seating areas (Activity Category E). The topography in this area is generally flat with elevations at or above that of I-5. There is an existing 16-foot noise barrier at the right of way, and several existing block walls on private property provide shielding from I-5 at the residences.

6.2 Permitted Development

The Cities of Lake Forest, Laguna Woods, and Laguna Hills were contacted to determine if any parcels along the Project corridor have been permitted for future development. The Protocol states that development proposed on undeveloped land is considered permitted on the date of issuance of a building permit by the local jurisdiction or the appropriate governing entity.

Information provided by the City of Laguna Hills indicates that one planned project (Village at Laguna Hills Project located in NAA 2) is under development within city jurisdiction in the vicinity of the Project. At the time of this analysis, the project design is in progress, which means it has not yet received final permitting. Therefore, a detailed model cannot be included in the current noise analysis. To assess potential impacts at future planned developments, the distance from the proposed improvements to the exterior NAC for Activity Category B, C, and E land uses was modeled. This was done by placing receivers 50, 100, 200, and 400 feet from the edge of the proposed improvements at four different cross sections (CS1 through CS4) of the future development area. This analysis resulted in the approximate distances to the 66 and 71 dBA contours, which represent noise levels approaching the NAC for Activity Categories B, C, and E, for the existing, Design-Year No-Build, and Design-Year Build conditions. This information may be utilized to assess potential impacts in the future. The results of this analysis are summarized in Table 6-1.

Table 6-1. Supplemental Analysis Summary for the Future Development Area

Cross Section (Receiver ID)	Hourly dBA (L_{eq}[h]) at 50 Feet	Hourly dBA (L_{eq}[h]) at 100 Feet	Hourly dBA (L_{eq}[h]) at 200 Feet	Hourly dBA (L_{eq}[h]) at 400 Feet	Approximate Distance to 66 dBA Contour (Feet)	Approximate Distance to 71 dBA Contour (Feet)
Existing						
CS1 (M02.04 - M02.07)	67.7	66.6	64	62.5	133	N/A
CS2 (M02.08 - M02.11)	71.8	70.2	66.6	62.5	254	65
CS3 (M02.12 - M02.15)	72.8	70.9	68.2	64.2	314	105
CS4 (M02.16 - M02.19)	71.8	70.0	67.2	63.6	281	63
No Build						
CS1 (M02.04 - M02.07)	68.9	67.7	65.1	63.6	165	N/A
CS2 (M02.08 - M02.11)	73.0	71.4	67.7	63.5	294	110
CS3 (M02.12 - M02.15)	74.3	72.2	69.4	65.3	332	126
CS4 (M02.16 - M02.19)	73.5	71.4	68.4	64.7	360	159
Build Alternative 1						
CS1 (M02.04 - M02.07)	64.3	64.6	63.1	61.9	N/A	N/A
CS2 (M02.08 - M02.11)	74.2	72.4	69.2	65.5	365	160
CS3 (M02.12 - M02.15)	73.5	71.8	69.6	66.3	404	152
CS4 (M02.16 - M02.19)	73.1	71.2	68.4	65.0	339	117
Build Alternative 2						
CS1 (M02.04 - M02.07)	69.9	69.0	66.5	64.2	274	N/A
CS2 (M02.08 - M02.11)	72.9	71.4	69.0	65.7	374	126
CS3 (M02.12 - M02.15)	74	72.1	69.3	65.7	374	156
CS4 (M02.16 - M02.19)	73.1	71.2	68.4	64.8	334	117

dBA = A-weighted decibel; L_{eq}[h] = hourly equivalent sound level; N/A = Not applicable due to the contour existing less than 50 feet away from the noise source.

6.3 Noise Measurement Results

The existing noise environment in the Project area is characterized below. The characterizations are based on the short- and long-term noise monitoring conducted for the proposed Project.

6.3.1 Short-Term Monitoring

Table 6-2 summarizes the results of ST noise monitoring conducted at 20 noise-sensitive receptor locations within the Project area. It lists the receiver name; general location or address; land use; activity category; measurement date, start time, and duration; and the measured L_{eq}. Field photos and noise measurement field sheets are included in Appendix D of this document. The noise measurement locations are also shown on Figure 5-1.

Table 6-2. Summary of Short-Term Measurements

Site No.	Street Address, City	Land Use	Activity Category	Measurement Date	Start Time	Duration (minutes)	Measured L_{eq}, dBA
ST01.01	24461 Bridger Rd, Lake Forest, CA 92630	Residential	B	12/3/2024	10:35 AM	10	58.6
				12/3/2024	10:47 AM	10	59.0
ST01.02	24111 Silverbay Dr, Lake Forest, CA 92630	Residential	B	12/3/2024	11:24 AM	10	64.7
				12/3/2024	11:36 AM	10	61.7
				12/3/2024	11:48 AM	10	60.4
ST01.03	24422 Highpine Rd, Lake Forest, CA 92630	Residential	B	12/3/2024	10:35 AM	10	54.5
				12/3/2024	10:47 AM	10	53.6
ST01.04	24382 Highpine Rd, Lake Forest, CA 92630	Residential	B	12/3/2024	11:24 AM	10	57.1
				12/3/2024	11:36 AM	10	55.5
				12/3/2024	11:48 AM	10	53.4
ST01.05	24011 Silverbay Dr, Lake Forest, CA 92630	Residential	B	12/3/2024	12:28 PM	10	49.5
				12/3/2024	12:39 PM	10	51.4
ST01.06	24461 Penfield St, Lake Forest, CA 92630	Residential	B	12/3/2024	1:07 PM	10	52.8
				12/3/2024	1:18 PM	10	53.5
ST02.01	24001 Avenida De La Carlota, Laguna Hills, CA 92653	Outdoor Seating Area	E	12/18/2024	10:09 AM	10	63.1
				12/18/2024	10:21 AM	10	63.1
ST02.02	24126 Laguna Hills Mall, Laguna Hills, CA 92653	Parking Lot	F	12/18/2024	10:40 AM	10	67.1
				12/18/2024	10:51 AM	10	68.6
ST03.01	23811 Bridger Rd, Lake Forest, CA 92630	Parking Lot	F	12/5/2024	10:33 AM	10	76.3
				12/5/2024	10:48 AM	10	76.1
				12/5/2024	11:29 AM	10	75.7
				12/5/2024	11:41 AM	10	76.5
ST03.02	Lake Forest Park	Park	C	12/3/2024	3:13 PM	10	66.0
				12/3/2024	3:27 PM	10	66.2
ST03.03	23971 Gowdy Ave, Lake Forest, CA 92630	Residential	B	12/5/2024	10:33 AM	10	54.1
				12/5/2024	10:48 AM	10	52.5
ST03.04	23611 Duryea Dr, Lake Forest, CA 92630	Residential	B	12/5/2024	11:29 AM	10	64.1
				12/5/2024	11:41 AM	10	64.4
ST03.05	23952 Swan Dr, Lake Forest, CA 92630	Residential	B	12/3/2024	2:32 PM	10	66.8
				12/3/2024	2:44 PM	10	66.5
ST03.06	Lake Forest Park	Park	C	12/3/2024	2:32 PM	10	68.2
				12/3/2024	2:44 PM	10	67.5

Site No.	Street Address, City	Land Use	Activity Category	Measurement Date	Start Time	Duration (minutes)	Measured L_{eq}, dBA
ST04.01	2121 Ronda Granada, Laguna Woods, CA 92637	Residential	B	12/5/2024	1:01 PM	10	64.8
				12/5/2024	1:20 PM	10	64.3
ST04.02	2115 Via Puerta, Laguna Woods, CA 92637	Residential	B	12/5/2024	2:39 PM	10	66.4
				12/5/2024	2:51 PM	10	65.3
ST04.03	2151 Ronda Granada, Laguna Woods, CA 92637	Residential	B	12/5/2024	12:30 PM	10	55.9
				12/5/2024	12:43 PM	10	55.5
ST04.04	2126 Via Puerta, Laguna Woods, CA 92637	Residential	B	12/5/2024	2:39 PM	10	60.0
				12/5/2024	2:51 PM	10	58.8
ST04.05	2231 Via Puerta, Laguna Woods, CA 92637	Residential	B	12/5/2024	2:01 PM	10	63.4
				12/5/2024	2:12 PM	10	63.3
ST04.06	2233 Via Puerta, Laguna Woods, CA 92637	Residential	B	12/5/2024	2:01 PM	10	71.0
				12/5/2024	2:12 PM	10	71.1

dBA = A-weighted decibel; L_{eq} = equivalent sound level

At land uses that did not have exterior areas of frequent human use (such as retail or restaurants without exterior dining areas), noise measurements were taken at accessible areas of the property that faced I-5. With few exceptions, for properties that included exterior areas of frequent human use, all ST measurements were obtained directly at those areas or on the same property immediately adjacent to those areas. The exceptions are as follows:

- ST01.01 was taken on the sidewalk outside of the fenced backyard area because the residents would not grant access to the fenced area. This location was used to validate the traffic noise model but was not used to assess impacts; an additional modeled receiver (M01.08) was added to model noise levels in the backyard of the residence.
- ST01.06 was taken on the driveway because the residents would not grant access to the backyard. This location was used to validate the traffic noise model but was not used to assess impacts; an additional modeled receiver (M01.29) was added to model noise levels in the backyard of the residence.
- ST02.01 was taken on the parking lot outside of the outdoor seating area to avoid measurement contamination from speech and amplified music. This location was used to validate the traffic noise model but was not used to assess impacts; an additional modeled receiver (M02.03) was added to model noise levels at the outdoor seating area.
- ST03.04 was taken on the sidewalk outside of the fenced backyard area because the residents would not grant access to the fenced area. This location was used to validate the traffic noise model but was not used to assess impacts; an additional modeled receiver (M03.10) was added to model noise levels in the backyard of the residence.
- ST04.03 was taken on the sidewalk next to a residential patio. This location was used to validate the traffic noise model but was not used to assess impacts; an additional modeled receiver (M04.13) was added to model noise levels at the outdoor seating area.

6.3.2 Long-Term Monitoring

Twenty-four-hour LT monitoring was conducted at 3 locations (LT01.01, LT03.01, and LT4.01) to determine changes in noise levels within the Project area throughout a typical day.

The hourly noise monitoring data for each of the 24-hour measurements are listed in tabular and graphical formats in Table 6-3 through Table 6-5 and Figure 6-1 through Figure 6-3, respectively. Twenty-four-hour LT monitoring locations are shown in Figure 5-1.

Table 6-3. Long-Term Monitoring at Site LT01.01

Date	Beginning Hour	Hourly dBA (L_{eq}[h])	Difference from Loudest Hour (dBA)
December 3, 2024	8:00	61.5	-3.9
	9:00	61.2	-4.2
	10:00	59.8	-5.6
	11:00	59.9	-5.5
	12:00	60.2	-5.2
	13:00	62.3	-3.1
	14:00	61.0	-4.4
	15:00	62.7	-2.7
	16:00	60.3	-5.1
	17:00	59.9	-5.5
	18:00	64.3	-1.1
	19:00	63.7	-1.7
	20:00	63.0	-2.4
	21:00	62.5	-2.9
	22:00	60.9	-4.5
	23:00	59.4	-6.0
December 4, 2024	0:00	57.2	-8.2
	1:00	55.3	-10.1
	2:00	55.4	-10.0
	3:00	57.1	-8.3
	4:00	60.0	-5.4
	5:00	64.5	-0.9
	6:00	**65.4**	**0.0**
	7:00	62.6	-2.8
	Maximum 65.4		
	Minimum 55.3		

Note: Worst noise hour is bolded. All times shown use a 24-hour clock (e.g., 6:00 = 6:00 a.m., 13:00 = 1:00 p.m.).
dBA = A-weighted decibel; L_{eq}[h] = hourly equivalent sound

Figure 6-1. Long-Term Monitoring at Site LT01.01

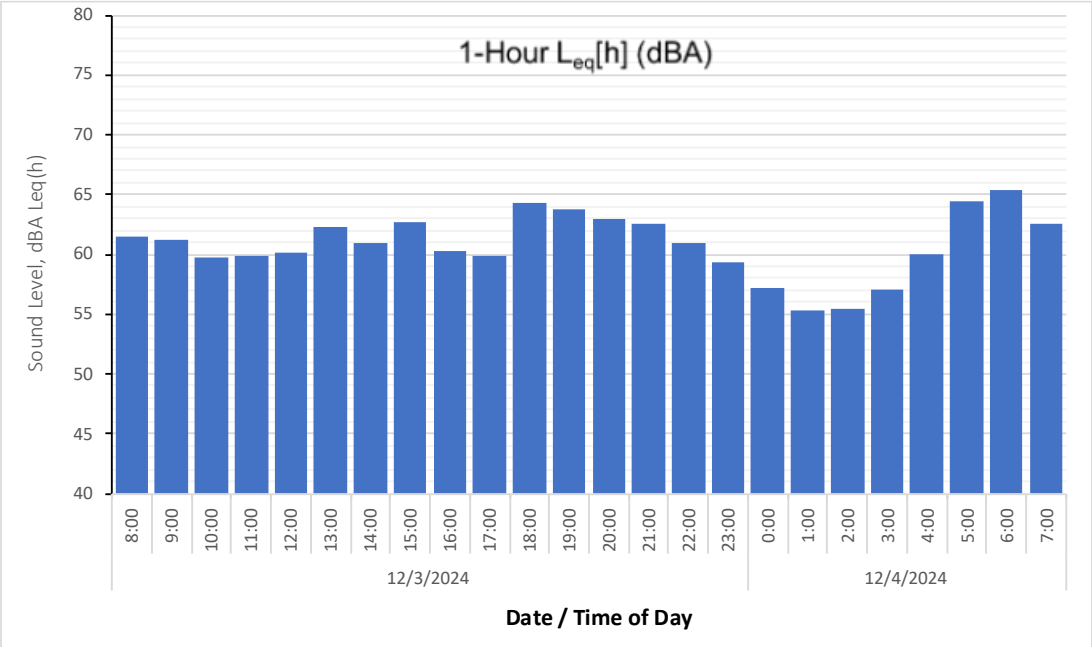


Table 6-4. Long-Term Monitoring at Site LT03.01

Date	Beginning Hour	Hourly dBA (L_{eq}[h])	Difference from Loudest Hour (dBA)
December 3, 2024	9:00	69.6	-2.2
	10:00	68.8	-3.0
	11:00	69.3	-2.5
	12:00	69.4	-2.4
	13:00	70.0	-1.8
	14:00	69.8	-2.0
	15:00	70.0	-1.8
	16:00	69.9	-1.9
	17:00	68.5	-3.3
	18:00	69.8	-2.0
	19:00	70.3	-1.5
	20:00	69.6	-2.2
	21:00	69.0	-2.8
	22:00	67.1	-4.7
December 4, 2024	23:00	66.1	-5.7
	0:00	64.0	-7.8
	1:00	61.6	-10.2
	2:00	62.0	-9.8
	3:00	63.2	-8.6
	4:00	66.7	-5.1
	5:00	70.3	-1.5
	6:00	**71.8**	**0.0**
	7:00	71.2	-0.6
	8:00	71.5	-0.3
	Maximum 71.8		
	Minimum 61.6		

Note: Worst noise hour is bolded. All times shown use a 24-hour clock (e.g., 6:00 = 6:00 a.m., 13:00 = 1:00 p.m.).
dBA = A-weighted decibel; L_{eq}[h] = hourly equivalent sound

Figure 6-2. Long-Term Monitoring at Site LT03.01

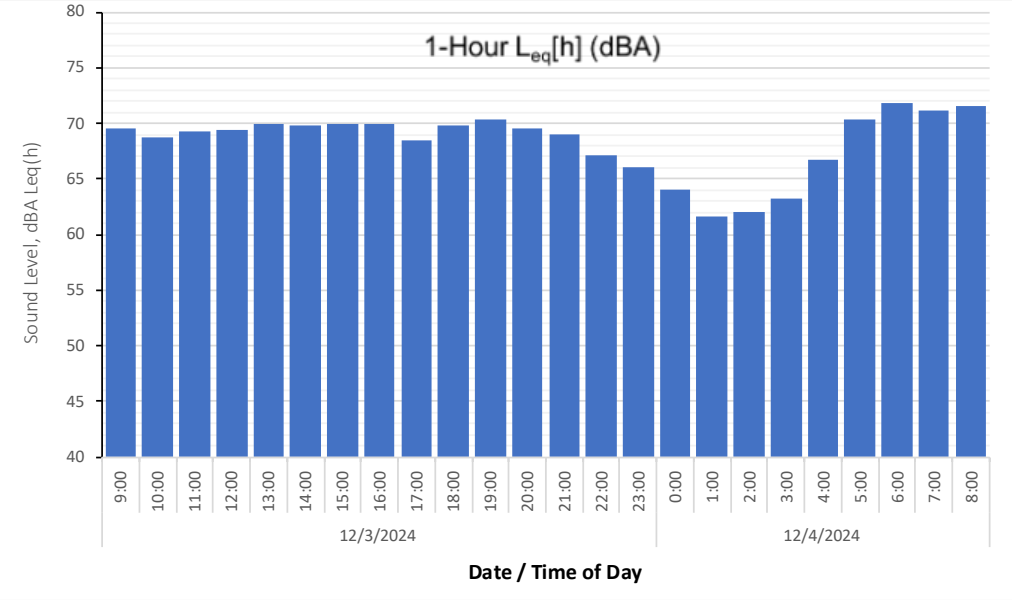
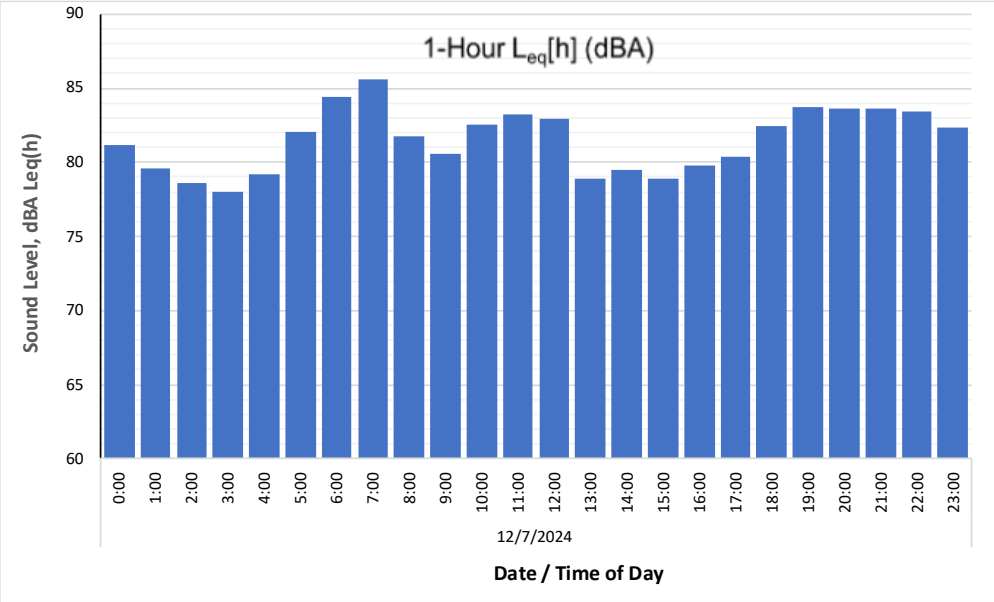


Table 6-5. Long-Term Monitoring at Site LT04.01

Date	Beginning Hour	Hourly dBA (L_{eq}[h])	Difference from Loudest Hour (dBA)
December 7, 2024	0:00	81.2	-4.4
	1:00	79.6	-6.0
	2:00	78.6	-7.0
	3:00	78.0	-7.6
	4:00	79.2	-6.4
	5:00	82.1	-3.5
	6:00	84.4	-1.2
	7:00	**85.6**	**0.0**
	8:00	81.8	-3.8
	9:00	80.6	-5.0
	10:00	82.5	-3.1
	11:00	83.2	-2.4
	12:00	82.9	-2.7
	13:00	78.9	-6.7
	14:00	79.5	-6.1
	15:00	78.9	-6.7
	16:00	79.8	-5.8
	17:00	80.4	-5.2
	18:00	82.4	-3.2
	19:00	83.7	-1.9
	20:00	83.6	-2.0
	21:00	83.6	-2.0
	22:00	83.4	-2.2
	23:00	82.3	-3.3
	Maximum 85.6		
	Minimum 78.0		

Note: Worst noise hour is bolded. All times shown use a 24-hour clock (e.g., 6:00 = 6:00 a.m., 13:00 = 1:00 p.m.).
dBA = A-weighted decibel; L_{eq}[h] = hourly equivalent sound

Figure 6-3. Long-Term Monitoring at Site LT04.01



6.3.3 Traffic Noise Model Validation

TNM 2.5 was used to compare measured traffic noise levels with modeled noise levels at field measurement locations, using the traffic count data collected at the time of the noise measurements. Table 6-6 compares measured and modeled noise levels at each measurement location. As stated in Appendix E of the Protocol, measured and modeled sound levels should be rounded before comparing the two values. The model is considered to be validated if the difference between the measured and modeled results is 3 dB or less. If differences are 4 dB or greater, model parameters are reviewed and adjusted, where possible, to achieve a difference of 3 dB or less. Validated measurement locations that showed any differential between the measured and modeled noise levels received an adjustment factor (K-factor) to bring the model into alignment with the validation measurements.[2]

Modeled noise levels were adjusted, as applicable, utilizing K-factors for subsequent modeling of existing and future worst-hour noise levels. Table 6-6 shows which K-factors were applied to each respective modeling receiver. The modeled existing worst-hour noise levels at all modeling receivers are listed in Appendix B (Table B).

[2] Section 4.4 in the TeNS provides guidance for validating the TNM model, which states that K-factors should only be 4 dB or greater because a difference of 3 dB or less is considered acceptable and does not require adjustment of the model. However, in accordance with Caltrans District 12 policy, discrepancies within 3 dB are included to ensure that modeled values more accurately reflect measured data.

Table 6-6. Comparison of Measured and Modeled Sound Levels in Traffic Noise Model, Version 2.5

Measurement ID	Model ID	Run Results to 1 Decimal Place		Rounded Results[a]		Measured Minus Predicted (dB)	K-Factor Used[b]	K-Factor Applied to Additional Modeled Receiver(s)
		Measured Sound Level (dBA)	Predicted Sound Level (dBA)	Measured Sound Level (dBA)	Predicted Sound Level (dBA)			
ST01.01	M01.07	58.6	60.8	59	61	-2	-2	M01.01, M01.02, M01.03, M01.04, M01.05, M01.06, M01.08, M01.09, M01.10, M01.11
		59.0	61.7	59	62	-3		
ST01.02	M01.12	61.7	62.5	62	63	-1	-1	--
		60.4	61.1	60	61	-1		
ST01.03	M01.18	54.5	58.2	55	58	-3	-3	M01.13, M01.14, M01.15, M01.16, M01.17
		53.6	59.1	54	59	-5		
ST01.04	M01.20	57.1	57.9	57	58	-1	-1	M01.19, M01.21, M01.22, M01.23
		55.5	57.7	56	58	-2		
ST01.05	M01.25	49.5	52.6	50	53	-3	-1	M01.24, M01.26, M01.27
		51.4	52.2	51	52	-1		
ST01.06	M01.28	52.8	52.4	53	52	1	1	M01.29, M01.30, M01.31, M01.32, M01.33, M01.34, M01.35, M01.36, M01.37, M01.38, M01.39, M01.40
		53.5	52.2	54	52	2		
ST02.01	M02.02	63.1	62.6	63	63	0	0	M02.03, M02.04, M02.05, M02.06, M02.07, M02.08, M02.09, M02.10, M02.11, M02.12, M02.13, M02.14, M02.15, M02.16, M02.17, M02.18, M02.19
		63.1	62.6	63	63	0		
ST02.02	M02.01	67.1	70.3	67	70	-3	-1	--
		68.6	69.9	69	70	-1		
ST03.01	M03.02	76.3	76.9	76	77	-1	0	M03.01
		76.1	76.9	76	77	-1		
		75.7	76.8	76	77	-1		
		76.5	76.9	77	77	0		
ST03.02	M03.04	66.0	65.1	66	65	1	0	M03.03
		66.2	65.7	66	66	0		
ST03.03	M03.06	54.1	54.8	54	55	-1	-1	M03.05, M03.07, M03.08, M03.19, M03.20, M03.21, M03.22, M03.23
		52.5	54.7	53	55	-2		
ST03.04	M03.09	64.1	63.3	64	63	1	1	M03.09, M03.10, M03.11, M03.12, M03.13
		64.4	63.4	64	63	1		
ST03.05	M03.15	66.8	62.7	67	63	4	4	M03.14
		66.5	62.7	67	63	4		

Measurement ID	Model ID	Run Results to 1 Decimal Place		Rounded Results[a]		Measured Minus Predicted (dB)	K-Factor Used[b]	K-Factor Applied to Additional Modeled Receiver(s)
		Measured Sound Level (dBA)	Predicted Sound Level (dBA)	Measured Sound Level (dBA)	Predicted Sound Level (dBA)			
ST03.06	M03.16	68.2	64.5	68	65	3	3	M03.17, M03.18, M03.24, M03.25
		67.5	63.8	68	64	4		
ST04.01	M03.32-2	64.8	61	65	61	4	3	M04.19, M04.21, M04.23-2, M04.25-3, M04.26, M04.27-2, M04.29-2, M04.30-3, M04.33-2, M04.34, M04.35-2, M04.36, M04.37, M04.39
		64.3	61.1	64	61	3		
ST04.02	M03.55	66.4	62.6	66	63	3	3	M04.41-2, M04.44-2, M04.45-2, M04.46, M04.48, M04.51, M04.52, M04.53-2
		65.3	62.2	65	62	3		
ST04.03	M03.14	55.9	56.1	56	56	0	0	M04.01, M04.02, M04.03, M04.04, M04.05, M04.06a, M04.06b, M04.06c, M04.07, M04.08, M04.09, M04.10, M04.11, M04.12, M04.13, M04.15, M04.16, M04.17, M04.18, M04.20, M04.22
		55.5	55.5	56	56	0		
ST04.04	M03.42	60.0	55.8	60	56	4	3	M04.24, M04.28-2, M04.31-2, M04.38, M04.40, M04.43, M04.47-2, M04.49-2, M04.50-3, M04.54, M04.56, M04.57-2a, M04.57a, M04.57b, M04.57c
		58.8	55.5	59	56	3		
ST04.05	M03.82	63.4	59.6	63	60	3	3	M04.57b, M04.57c, M04.57d, M04.58-2, M04.59-3, M04.61, M04.62-2, M04.63-3, M04.65-2, M04.66-2, M04.68-2a, M04.68b, M04.68b, M04.70-3, M04.71-2, M04.72-2, M04.73-3, M04.74-2, M04.75-3, M04.78, M04.79, M04.83-2
		63.3	59.8	63	60	3		
ST04.06	M03.77	71.0	69.3	71	69	2	1	M04.60, M04.64, M04.67, M04.69-2, M04.76, M04.80-2, M04.81
		71.1	69.5	71	70	1		

Notes:
[a] Per Protocol guidance, both measured and modeled sound levels are rounded prior to comparison, and the K-factor is determined from the difference between these rounded values.
[b] In accordance with Caltrans District 12 policy, discrepancies within 3 dB are assigned as K-factors to ensure that modeled values more accurately reflect measured data.
dBA = A-weighted decibel; ID = identification; L_{eq}[h] = hourly equivalent sound

Chapter 7 Future Noise Environment, Impacts, and Considered Abatement

7.1 Future Noise Environment and Impacts

Tables B-1 through B-3 in Appendix B summarize the predicted traffic noise levels for the existing, Design-Year No-Build, and the Build Alternative 1 and Build Alternative 2 Design-Year Build conditions. Predicted Design-Year traffic noise levels with the Project are compared to the existing conditions and the Design-Year No-Build conditions. The comparison to existing conditions is included in the analysis to identify "substantial" traffic noise increase impacts under 23 CFR 772. The comparison to No-Build conditions indicates the direct impact of noise resulting from the Project.

As stated in the Protocol, modeling results are rounded to the nearest dB before comparisons are made. In some cases, this can result in relative changes that may not appear intuitive. An example would be a comparison between sound levels of 64.4 and 64.5 dBA. The difference between these two values is 0.1 dBA. However, after rounding, the difference is reported as 1 dBA.

Modeling results in Appendix B indicate that predicted worst-hour traffic noise levels (L_{eq}[h]) for the Design-Year Build condition approach or exceed the NAC for several of the Activity Category B, C, D, and E land uses in the study area; therefore, noise abatement must be considered at these locations. Modeling results for developed land uses without an applicable NAC (Activity Category F) and for the future development in NAA 2 are provided for informational purposes only, and no noise impacts are identified at these land uses.

7.2 Preliminary Noise Abatement Analysis

Noise abatement is considered where noise impacts are predicted in areas of frequent human use that would benefit from a lowered noise level. Abatement could include:

- Construction of noise barriers, including the acquisition of property rights, either within or outside the highway right of way.
- Traffic management measures, including, but not limited to, traffic control devices and signage to prohibit certain vehicle types, time-use restrictions for certain vehicle types, modified speed limits, and exclusive lane designations.
- Alteration of horizontal and vertical alignments.

- Acquisition of real property or interests therein (predominantly unimproved property) to serve as a buffer zone and preempt development that would be adversely affected by traffic noise.
- Noise insulation for Activity Category D land uses listed in Table 4-1. Post-installation maintenance and operational costs for noise insulation are not eligible for federal-aid funding.

These abatement options have been considered; however, based on the nature and location of the Project and the development and geometry of the surrounding land uses, noise barriers are the only abatement measure analyzed. Noise barrier analyses were conducted at various locations including the highway mainline shoulders, on- and off-ramp shoulders, right of way lines, and private property. In addition to the analysis of individual noise barriers, an analysis was conducted for one noise barrier system that combined a barrier segment that would be reconstructed due to roadway widening, with an existing barrier segment that would remain in place. This was done to investigate the possibility of improving the acoustical performance and maximizing the overall number of benefited receptors.

Each noise barrier has been evaluated for acoustical feasibility based on its ability to achieve the required noise reduction of 5 dB or more at one or more impacted receivers. Each noise barrier has also been evaluated to determine if it can meet Caltrans' design goal of at least 7 dB of noise reduction at one or more benefited receptors. Reasonable cost allowances were calculated for each noise barrier and noise barrier system that was determined to be acoustically feasible and meet Caltrans' design goal. Table B-1 and Table B-2 in Appendix B summarize the predicted future noise levels at receiver locations with noise barriers ranging in height from 6 to 22 feet at the edge of shoulder, right of way, and private property for Build Alternatives 1 and 2.

The design of noise barriers presented in this report is preliminary and conducted at a level appropriate for environmental review and not for final design of the Project. Preliminary information on the physical location, length, and height of noise barriers is provided in this report. If pertinent parameters change substantially during final Project design, preliminary noise barrier designs may be modified or eliminated from the final Project. A final decision on the construction of location-specific noise abatement will be made upon completion of Project design.

The following sections discuss the noise impacts identified in each NAA and, where applicable, the noise abatement considered for each. For noise barriers that are acoustically feasible and meet the design goal, Table 7-1 through Table 7-12 are provided to assess the reasonable cost allowances for each of the considered heights for these barriers. The starting and ending station,

total length, base-of-wall elevations, top-of-wall elevations, and heights are presented in Table E-1 in Appendix E. The design barrier for each noise barrier (or barrier system) that is acoustically feasible and meets the design goal will be carried forward for consideration in the SNADR.

7.2.1 NAA 1: East Side of I-5 South of El Toro Road

There are 43 modeled receivers (M01.01 through M01.43), representing 90 benefited receptors, within NAA 1. The predicted worst-hour exterior traffic noise levels range from 52 to 70 dBA $L_{eq}(h)$ for existing, 53 to 72 dBA $L_{eq}(h)$ for Design-Year No-Build, 53 to 72 dBA $L_{eq}(h)$ for Build Alternative 1 Design-Year Build conditions, and 55 to 71 dBA $L_{eq}(h)$ for Build Alternative 2 Design-Year Build conditions. Design-Year Build noise levels for Build Alternative 1 are predicted to change by approximately 1 to 2 dBA relative to existing noise levels and by -1 (i.e., a 1-dBA decrease) to 0 dBA relative to Design-Year No-Build noise levels. Design-Year Build noise levels for Build Alternative 2 are predicted to change by approximately 0 to 8 dBA relative to existing noise levels and by -1 (i.e., a 1-dBA decrease) to 7 dBA relative to Design-Year No-Build noise levels. One modeled receiver, M01.41, representing one receptor, would approach or exceed the NAC for Activity Category E for both Build Alternatives; therefore, consideration of noise abatement is required. Table B-1 and Table B-2 in Appendix B shows the existing and future noise levels as well as the barrier analysis prepared for all barriers within NAA 1. Detailed modeling analysis was conducted for one barrier option at the right of way. The barrier was found to be feasible and met the noise reduction design goal of 7 dBA for Build Alternatives 1 and 2. A detailed analysis of each barrier is provided in the following section.

NAA 1 Noise Barriers: Build Alternative 1 – Southbound I-5 Hook Ramps

Noise Barrier 32A1 was evaluated along the right of way at the southeast quadrant of the El Toro Road and Rockfield Boulevard intersection, approximately from station 04+00 on Rockfield Boulevard to 34+25 on El Toro Road, with a total length of approximately 269 feet and modeled in 2-foot height increments from 6 feet to 22 feet. The location of Noise Barrier 32A1 is presented on Figure 5-1a. Noise Barrier 32A1 would provide acoustically feasible traffic noise abatement at barrier heights of 6 to 22 feet. The number of benefited receivers would range from one to three (representing a total of one to three benefited receptors), depending on the noise barrier height. Barrier heights of 6 to 22 feet would meet the noise reduction design goal of 7 dBA. Table 7-1 summarizes the reasonable cost allowances for Noise Barrier 32A1 at the range of considered barrier heights. Barrier heights that were found feasible and meet the 7 dBA design goal will be included in the SNADR. However, following coordination with the City of Lake Forest, the project team received confirmation that the City of Lake Forest does not support the construction of noise barriers at this location. As a result, Noise Barrier 32A1 will not be

considered as abatement and will only be discussed in the SNADR for informational purposes. Correspondence documenting the City of Lake Forest's position is included in Appendix D-5.

Table 7-1. Summary of Reasonableness Allowances: Noise Barrier 32A1 at the Right of Way

Design Year with Barrier	Barrier Height, feet								
	6	8	10	12	14	16	18	20	22
Number of Benefited Residences	1	3	3	3	3	3	3	3	3
Reasonable Allowance per Benefited Residence	$170,000								
Total Reasonable Allowance	$170,000	$510,000	$510,000	$510,000	$510,000	$510,000	$510,000	$510,000	$510,000

NAA 1 Noise Barriers: Build Alternative 2 – Flyover with Roundabout near Rockfield Boulevard

Noise Barrier 32A2 was evaluated along the right of way at the southeast quadrant of the El Toro Road and Rockfield Boulevard intersection, approximately from station 03+75 on Rockfield Boulevard to 34+00 on El Toro Road, with a total length of approximately 269 feet and modeled in 2-foot height increments from 6 feet to 22 feet. The location of Noise Barrier 32A2 is presented on Figure 5-1b. Noise Barrier 32A2 would provide acoustically feasible traffic noise abatement at barrier heights of 6 to 22 feet. The number of benefited receivers would range from one to three (representing a total of one to three benefited receptors), depending on the noise barrier height. Barrier heights of 8 to 22 feet would meet the noise reduction design goal of 7 dBA. Table 7-2 summarizes the reasonable cost allowances for Noise Barrier 32A2 at the range of considered barrier heights. Barrier heights that were found feasible and meet the 7 dBA design goal will be included in the SNADR. However, following coordination with the City of Lake Forest, the project team received confirmation that the City of Lake Forest does not support the construction of noise barriers at this location. As a result, Noise Barrier 32A2 will not be considered as abatement and will only be discussed in the SNADR for informational purposes. Correspondence documenting the City of Lake Forest's position is included in Appendix D-5.

Table 7-2. Summary of Reasonableness Allowances: Noise Barrier 32A2 at the Right of Way

Design Year with Barrier	Barrier Height, feet								
	6	8	10	12	14	16	18	20	22
Number of Benefited Residences	1	1	3	3	3	3	3	3	3
Reasonable Allowance per Benefited Residence	$170,000								
Total Reasonable Allowance	$170,000	$170,000	$510,000	$510,000	$510,000	$510,000	$510,000	$510,000	$510,000

7.2.2 NAA 2: West Side of I-5 South of El Toro Road

There are 19 modeled receivers (M02.01 through M02.19), representing 2 benefited receptors, within NAA 2. The predicted worst-hour exterior traffic noise levels range from 63 to 73 dBA Leq(h) for existing, 64 to 74 dBA Leq(h) for Design-Year No-Build, 62 to 74 dBA Leq(h) for Build Alternative 1 Design-Year Build conditions, and 64 to 74 dBA Leq(h) for Build Alternative 2 Design-Year Build conditions. Design-Year Build noise levels for Build Alternative 1 are predicted to change by approximately -4 (i.e., a 4-dBA decrease) to 4 dBA relative to existing noise levels and by -5 (i.e., a 5-dBA decrease) to 2 dBA relative to Design-Year No-Build noise levels. Design-Year Build noise levels for Build Alternative 2 are predicted to change by approximately 1 to 3 dBA relative to existing noise levels and by -1 (i.e., a 1-dBA decrease) to 2 dBA relative to Design-Year No-Build noise levels. Modeled receivers M02.04 through M02.19 are used to identify the 66 dBA and 71 dBA contour lines within the large area under development. This information is used to evaluate the likelihood of traffic noise impacts if future development occurs in this area. The results of this analysis are provided in Table 6-1 in Section 6.2. At the time of this analysis, the design for any planned or programmed projects has not been finalized; therefore, a detailed analysis could not be prepared. During final design, additional analysis may be necessary in order to determine if abatement is required for the Village at Laguna Hills Project. Because there are no predicted traffic noise impacts or substantial increases in noise as a result of the Project, noise abatement does not need to be considered for NAA 2.

7.2.3 NAA 3: East Side of I-5 North of El Toro Road

There are 26 modeled receivers (M03.01 through M03.26), representing 47 benefited receptors, within NAA 3. The predicted worst-hour exterior traffic noise levels range from 54 to 79 dBA Leq(h) for existing, 55 to 79 dBA Leq(h) for Design-Year No-Build, and 58 to 80 dBA Leq(h) for Build Alternative 1 and Build Alternative 2 Design-Year Build conditions. Design-Year Build noise levels for Build Alternative 1 and Build Alternative 2 are predicted to change by approximately -1 (i.e., a 1-dBA decrease) to 13 dBA relative to existing noise levels and by -1 (i.e., a 1-dBA decrease) to 12 dBA relative to Design-Year No-Build noise levels. Large increases in predicted noise levels under the Design-Year condition relative to the existing and No-Build conditions are due to the widening of the northbound mainline, which reduces the distance between the roadway and noise sensitive residences, and the existing 16-foot noise barrier being demolished to accommodate improvements to the ramps. Noise levels at 13 modeled receivers—M03.03, M03.04, M03.05, M03.10, M03.11, M03.12, M03.13, M03.14, M03.15, M03.16, M03.17, M03.18, and M03.26—representing 24 receptors, would approach or exceed the NAC for Activity Category B, C, and E for Build Alternatives 1 and 2; therefore, consideration of noise abatement is required. An additional analysis per the supplemental

guidance provided in Appendix E of the Protocol was completed for impacted receiver M03.03, located behind an existing 6-foot-tall private property barrier, and for receivers M03.13, M03.14, M03.15, M03.16, M03.17, M03.18, M03.22, and M03.23, located behind the existing 16-foot-tall northbound mainline edge of shoulder barrier that is not being demolished as part of the Project (See Section 5.4.2 for more details on the analysis). The results of the analysis, provided in Table B-3, show that the existing 6-foot-tall private property barrier and the existing 16-foot-tall northbound mainline edge of shoulder barrier would not meet the acoustical feasibility and acoustical reasonableness requirement. Therefore, additional abatement was analyzed. Table B-1 and Table B-2 in Appendix B show the existing and future noise levels as well as the barrier analysis prepared for all barriers within NAA 3. Detailed modeling analysis was conducted for two barriers at the northbound mainline edge of shoulder and one barrier at the El Toro Road and Rockfield Boulevard intersection right of way. All analyzed barriers were found to be feasible and met the noise reduction design goal of 7 dBA for Build Alternatives 1 and 2. A detailed analysis of each barrier is provided in the following section.

NAA 3 Noise Barriers: Build Alternative 1 – Southbound I-5 Hook Ramps

Noise Barrier 234A1 was evaluated along the northbound on-ramp and mainline edge of shoulder, from on-ramp station 05+00 to mainline station 245+00, with a total length of approximately 1,993 feet and modeled in 2-foot height increments from 6 feet to 22 feet. The location of Noise Barrier 234A1 is presented on Figure 5-1a. Noise Barrier 234A1 would provide acoustically feasible traffic noise abatement at barrier heights of 8 to 22 feet. The number of benefited receivers would range from one to 11 (representing a total of two to 20 benefited receptors), depending on the noise barrier height. Barrier heights of 10 to 22 feet would meet the noise reduction design goal of 7 dBA. Table 7-3 summarizes the reasonable cost allowances for Noise Barrier 234A1 at the range of considered barrier heights. Barrier heights that were found feasible and meet the 7 dBA design goal will be discussed more in detail in the SNADR.

Table 7-3. Summary of Reasonableness Allowances: Noise Barrier 234A1 at the Mainline Edge of Shoulder

Design Year with Barrier	Barrier Height, feet								
	6	8	10	12	14	16	18	20	22
Number of Benefited Residences	0	2	5	8	8	10	14	14	20
Reasonable Allowance per Benefited Residence	$170,000								
Total Reasonable Allowance	$0	$340,000	$850,000	$1.36M	$1.36M	$1.70M	$2.38M	$2.38M	$3.40M

Noise Barrier System 234A1 and 244A1 was evaluated with the two noise barriers in combination: Noise Barrier 234A1, analyzed separately above, and Noise Barrier 244A1, an existing 16-foot-tall segment that would remain in place, with taller barrier heights considered. The combined barrier was evaluated along the northbound on-ramp and mainline edge of shoulder, from on-ramp station 05+00 to mainline station 256+23, with a total length of approximately 3,125 feet and modeled in 2-foot height increments from 6 feet to 22 feet. The location of Noise Barrier System 234A1 and 244A1 is presented on Figure 5-1a. Noise Barrier System 234A1 and 244A1 would provide acoustically feasible traffic noise abatement at barrier heights of 8 to 22 feet. The number of benefited receivers would range from one to 17 (representing a total of two to 33 benefited receptors), depending on the noise barrier height. Barrier heights of 10 to 22 feet would meet the noise reduction design goal of 7 dBA. Table 7-3 summarizes the reasonable cost allowances for Noise Barrier System 234A1 and 244A1 at the range of considered barrier heights. Barrier heights that were found feasible and meet the 7 dBA design goal will be discussed more in detail in the SNADR.

Table 7-4. Summary of Reasonableness Allowances: Noise Barrier System 234A1 and 244A1 at the Mainline Edge of Shoulder

Design Year with Barrier	Barrier Height, feet								
	6	8	10	12	14	16	18	20	22
Number of Benefited Residences	0	2	5	8	8	11	20	27	33
Reasonable Allowance per Benefited Residence	$170,000								
Total Reasonable Allowance	$0	$340,000	$850,000	$1.36M	$1.36M	$1.87M	$3.4M	$4.59M	$5.61M

Noise Barrier 33A1 was evaluated along the right of way at the northeast quadrant of the El Toro Road and Rockfield Boulevard intersection, with a total length of approximately 174 feet and modeled in 2-foot height increments from 6 feet to 22 feet. The location of Noise Barrier 33A1 is presented on Figure 5-1a. Noise Barrier 33A1 would provide acoustically feasible traffic noise abatement at barrier heights of 6 to 22 feet for one benefited receiver (representing one benefited receptor). Barrier heights of 8 to 22 feet would meet the noise reduction design goal of 7 dBA. Table 7-5 summarizes the reasonable cost allowances for Noise Barrier 33A1 at the range of considered barrier heights. Barrier heights that were found feasible and meet the 7 dBA design goal will be included in the SNADR. However, following coordination with the City of Lake Forest, the project team received confirmation that the City of Lake Forest does not support the construction of noise barriers at this location. As a result, Noise Barrier 33A1 will not be considered as abatement and will only be discussed in the SNADR for informational purposes only. Correspondence documenting the City of Lake Forest's position is included in Appendix D-5.

Table 7-5. Summary of Reasonableness Allowances: Noise Barrier 33A1 at the Right of Way

Design Year with Barrier	Barrier Height, feet								
	6	8	10	12	14	16	18	20	22
Number of Benefited Residences	1	1	1	1	1	1	1	1	1
Reasonable Allowance per Benefited Residence	$170,000								
Total Reasonable Allowance	$170,000	$170,000	$170,000	$170,000	$170,000	$170,000	$170,000	$170,000	$170,000

NAA 3 Noise Barriers: Build Alternative 2 – Flyover with Roundabout near Rockfield Boulevard

Noise Barrier 234A2 was evaluated along the northbound on-ramp and mainline edge of shoulder, from on-ramp station 05+00 to mainline station 245+00, with a total length of approximately 1,993 feet and modeled in 2-foot height increments from 6 feet to 22 feet. The location of Noise Barrier 234A2 is presented on Figure 5-1b. Noise Barrier 234A2 would provide acoustically feasible traffic noise abatement at barrier heights of 8 to 22 feet. The number of benefited receivers would range from one to 11 (representing a total of two to 20 benefited receptors), depending on the noise barrier height. Barrier heights of 10 to 22 feet would meet the noise reduction design goal of 7 dBA. Table 7-6 summarizes the reasonable cost allowances for Noise Barrier 234A2 at the range of considered barrier heights. Barrier heights that were found feasible and meet the 7 dBA design goal will be discussed more in detail in the SNADR.

Table 7-6. Summary of Reasonableness Allowances: Noise Barrier 234A2 at the Mainline Edge of Shoulder

Design Year with Barrier	Barrier Height, feet								
	6	8	10	12	14	16	18	20	22
Number of Benefited Residences	0	2	5	8	8	10	14	14	20
Reasonable Allowance per Benefited Residence	$170,000								
Total Reasonable Allowance	$0	$340,000	$850,000	$1.36M	$1.36M	$1.70M	$2.38M	$2.38M	$3.40M

Noise Barrier System 234A2 and 244A2 was evaluated with the two noise barriers in combination: Noise Barrier 234A2, analyzed separately above, and Noise Barrier 244A2, an existing 16-foot-tall segment that would remain in place, with taller barrier heights considered. The combined barrier was evaluated along the northbound on-ramp and mainline edge of shoulder, from on-ramp station 05+00 to mainline station 256+23, with a total length of approximately 3,125 feet and modeled in 2-foot height increments from 6 feet to 22 feet. The

location of Noise Barrier System 234A2 and 244A2 is presented on Figure 5-1b. Noise Barrier System 234A2 and 244A2 would provide acoustically feasible traffic noise abatement at barrier heights of 8 to 22 feet. The number of benefited receivers would range from one to 17 (representing a total of two to 33 benefited receptors), depending on the noise barrier height. Barrier heights of 10 to 22 feet would meet the noise reduction design goal of 7 dBA. Table 7-7 summarizes the reasonable cost allowances for Noise Barrier System 234A2 and 244A2 at the range of considered barrier heights. Barrier heights that were found feasible and meet the 7 dBA design goal will be discussed more in detail in the SNADR.

Table 7-7. Summary of Reasonableness Allowances: Noise Barrier System 234A2 and 244A2 at the Mainline Edge of Shoulder

Design Year with Barrier	Barrier Height, feet								
	6	8	10	12	14	16	18	20	22
Number of Benefited Residences	0	2	5	8	8	11	20	27	33
Reasonable Allowance per Benefited Residence	$170,000								
Total Reasonable Allowance	$0	$340,000	$850,000	$1.36M	$1.36M	$1.87M	$3.4M	$4.59M	$5.61M

Noise Barrier 33A2 was evaluated along the right of way at the northeast quadrant of the El Toro Road and Rockfield Boulevard intersection, with a total length of approximately 174 feet and modeled in 2-foot height increments from 6 feet to 22 feet. The location of Noise Barrier 33A2 is presented on Figure 5-1b. Noise Barrier 33A2 would provide acoustically feasible traffic noise abatement at barrier heights of 6 to 22 feet for one benefited receiver (representing one benefited receptor). Barrier heights of 8 to 22 feet would meet the noise reduction design goal of 7 dBA. Table 7-8 summarizes the reasonable cost allowances for Noise Barrier 33A2 at the range of considered barrier heights. Barrier heights that were found feasible and meet the 7 dBA design goal will be included in the SNADR. However, following coordination with the City of Lake Forest, the project team received confirmation that the City of Lake Forest does not support the construction of noise barriers at this location. As a result, Noise Barrier 33A2 will not be considered as abatement and will only be discussed in the SNADR for informational purposes. Correspondence documenting the City of Lake Forest's position is included in Appendix D-5.

Table 7-8. Summary of Reasonableness Allowances: Noise Barrier 33A2 at the Right of Way

Design Year with Barrier	Barrier Height, feet								
	6	8	10	12	14	16	18	20	22
Number of Benefited Residences	1	1	1	1	1	1	1	1	1
Reasonable Allowance per Benefited Residence	$170,000								
Total Reasonable Allowance	$170,000	$170,000	$170,000	$170,000	$170,000	$170,000	$170,000	$170,000	$170,000

7.2.4 NAA 4: West Side of I-5 North of El Toro Road

There are 89 modeled receivers, representing 182 benefited receptors, within NAA 4: M04.01 through M04.06a, M04.06b, M04.06c, M04.07 through M04.57a, M04.57b, M04.57c. M04.57d, M04.58-2 through M04.68-2a, M04.68b, and M04.69-2 through M04.83-2. The predicted worst-hour exterior traffic noise levels range from 51 to 80 dBA Leq(h) for existing, 53 to 81 dBA Leq(h) for Design-Year No-Build, and 53 to 81 dBA Leq(h) for Build Alternative 1 and Build Alternative 2 Design-Year Build conditions. Design-Year Build noise levels for Build Alternative 1 are predicted to change by approximately -1 (i.e., a 1-dBA decrease) to 10 dBA relative to existing noise levels and by -2 (i.e., a 2-dBA decrease) to 9 dBA relative to Design-Year No-Build noise levels. Design-Year Build noise levels for Build Alternative 2 are predicted to change by approximately 0 to 10 dBA relative to existing noise levels and by -1 (i.e., a 1-dBA decrease) to 9 dBA relative to Design-Year No-Build noise levels. Large increases in predicted noise levels under the Design-Year condition relative to the existing and No-Build conditions are due to the existing 16-foot noise barrier being demolished to accommodate improvements to the ramps. Noise levels at 47 modeled receivers—M04.01 through M04.05, M04.23-2, M04.25-3, M04.27-2, M04.29-2 through M04.33-2, M04.35-2 through M04.37, M04.39, M04.41-2, M04.44-2 through M04.46, M04.48 through M04.50-3, M04.52, M04.53-2, M04.55 through M04.60, M04.63-3 through M04.65-2, M04.69-2 through M04.77, M04.80-2, M04.81, and M04.83-2—representing 85 receptors, would approach or exceed the NAC for Activity Category B, C, and D for Build Alternatives 1 and 2; therefore, consideration of noise abatement is required. An additional analysis per the supplemental guidance provided in Appendix E of the Protocol was completed for the impacted receivers in NAA 4, located behind an existing 8-foot-tall to 12-foot-tall private property barrier. The private property barrier does meet the acoustical feasibility and acoustical reasonableness requirement. However, additional abatement was considered to benefit impacted first-story receivers, as well as second- and third-story receivers that currently do not receive any benefit from the existing private property barrier. Table B-1 and Table B-2 in Appendix B show the existing and future noise levels as well as the barrier analysis prepared for all barriers within NAA 4. Detailed modeling analysis was conducted for two barriers at the southbound mainline edge of shoulder into the southbound off-ramp and on

private property along Avenida De La Carlota. Both barriers were found to be feasible and met the noise reduction design goal of 7 dBA for Build Alternatives 1 and 2. A detailed analysis of each barrier is provided in the following section.

NAA 4 Noise Barriers: Build Alternative 1 – Southbound I-5 Hook Ramps

Noise Barrier 235A1 was evaluated along the southbound mainline edge of shoulder and off-ramp, from mainline station 262+00 to southbound off-ramp station 02+00, with a total length of approximately 3484 feet and modeled in 2-foot height increments from 6 feet to 22 feet. The location of Noise Barrier 235A1 is presented on Figure 5-1a. Noise barrier 235A1 would provide acoustically feasible traffic noise abatement at barrier heights of 8 to 22 feet. The number of benefited receivers would range from three to 45 (representing a total of three to 87 benefited receptors), depending on the noise barrier height. Barrier heights of 10 to 22 feet would meet the noise reduction design goal of 7 dBA. Table 7-9 summarizes the reasonable cost allowances for Noise Barrier 235A1 at the range of considered barrier heights. Barrier heights that were found feasible and meet the 7 dBA design goal will be discussed more in detail in the SNADR.

Table 7-9. Summary of Reasonableness Allowances: Noise Barrier 235A1 at the Mainline Edge of Shoulder

Design Year with Barrier	Barrier Height, feet								
	6	8	10	12	14	16	18	20	22
Number of Benefited Residences	0	3	17	26	38	59	70	83	87
Reasonable Allowance per Benefited Residence	$170,000								
Total Reasonable Allowance	$0	$510,000	$2.89M	$4.42M	$6.46M	$10.03M	$11.900M	$14.11M	$14.79M

Noise Barrier 229A1 was evaluated on private property in place of an existing fence at northbound Avenida De La Carlota, north of Paseo De Valencia, with a total length of approximately 290 feet and modeled in 2-foot height increments from 6 feet to 22 feet. The location of Noise Barrier 229A1 is presented on Figure 5-1a. Noise Barrier 229A1 would provide acoustically feasible traffic noise abatement at barrier heights of 8 to 22 feet for one benefited receiver (representing one benefited receptor). Barrier heights of 10 to 22 feet would meet the noise reduction design goal of 7 dBA. Table 7-10 summarizes the reasonable cost allowances for Noise Barrier 229A1 at the range of considered barrier heights. Barrier heights that were found feasible and meet the 7 dBA design goal will be discussed more in detail in the SNADR.

Table 7-10. Summary of Reasonableness Allowances: Noise Barrier 229A1 at the Right of Way

Design Year with Barrier	Barrier Height, feet								
	6	8	10	12	14	16	18	20	22
Number of Benefited Residences	0	1	1	1	1	1	1	1	1
Reasonable Allowance per Benefited Residence	$170,000								
Total Reasonable Allowance	$0	$170,000	$170,000	$170,000	$170,000	$170,000	$170,000	$170,000	$170,000

NAA 4 Noise Barriers: Build Alternative 2 – Flyover with Roundabout near Rockfield Boulevard

Noise Barrier 235A2 was evaluated along the southbound mainline edge of shoulder and off-ramp, from mainline station 262+00 to off-ramp station 02+00, with a total length of approximately 3484 feet and modeled in 2-foot height increments from 6 feet to 22 feet. The location of Noise Barrier 235A2 is presented on Figure 5-1b. Noise Barrier 235A2 would provide acoustically feasible traffic noise abatement at barrier heights of 6 to 22 feet. The number of benefited receivers would range from one to 45 (representing a total of two to 87 benefited receptors), depending on the noise barrier height. Barrier heights of 8 to 22 feet would meet the noise reduction design goal of 7 dBA. Table 7-11 summarizes the reasonable cost allowances for Noise Barrier 235A2 at the range of considered barrier heights. Barrier heights that were found feasible and meet the 7 dBA design goal will be discussed more in detail in the SNADR.

Table 7-11. Summary of Reasonableness Allowances: Noise Barrier 235A2 at the Mainline Edge of Shoulder

Design Year with Barrier	Barrier Height, feet								
	6	8	10	12	14	16	18	20	22
Number of Benefited Residences	2	5	19	26	39	61	72	83	87
Reasonable Allowance per Benefited Residence	$170,000								
Total Reasonable Allowance	$340,000	$850,000	$3.230M	$4.42M	$6.63M	$10.37M	$12.24M	$14.11M	$14.79M

Noise Barrier 229A2 was evaluated on private property in place of an existing fence at northbound Avenida De La Carlota, north of Paseo De Valencia, with a total length of approximately 290 feet and modeled in 2-foot height increments from 6 feet to 22 feet. The location of Noise Barrier 229A2 is presented on Figure 5-1b. Noise Barrier 229A2 would provide acoustically feasible traffic noise abatement at barrier heights of 6 to 22 feet for one benefited receiver (representing one benefited receptor). Barrier heights of 10 to 22 feet would

meet the noise reduction design goal of 7 dBA. Table 7-12 summarizes the reasonable cost allowances for Noise Barrier 229A2 at the range of considered barrier heights. Barrier heights that were found feasible and meet the 7 dBA design goal will be discussed more in detail in the SNADR.

Table 7-12. Summary of Reasonableness Allowances: Noise Barrier 229A2 at the Right of Way

Design Year with Barrier	Barrier Height, feet								
	6	8	10	12	14	16	18	20	22
Number of Benefited Residences	1	1	1	1	1	1	1	1	1
Reasonable Allowance per Benefited Residence	$170,000								
Total Reasonable Allowance	$170,000	$170,000	$170,000	$170,000	$170,000	$170,000	$170,000	$170,000	$170,000

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Chapter 8 Construction Noise

During construction of the Project, noise from construction activities may intermittently dominate the noise environment in the immediate area of construction. Table 8-1 summarizes noise levels produced by construction equipment that is anticipated to be used for the Project. Standard construction equipment is expected to generate maximum noise levels ranging from 74 to 90 dBA at a distance of 50 feet, while pile driving would generate maximum noise levels of approximately 101 dBA at 50 feet. Each piece of construction equipment would be a localized noise source (i.e., point source); therefore, noise produced by construction equipment would be reduced at a rate of about 6 dB per doubling of distance, as described in Section 3.8.1, *Geometric Spreading*. As described in Section 3.8.2, *Ground Absorption*, additional attenuation of up to 1.5 dB per doubling of distance may occur over soft ground such as soft dirt, grass, or scattered bushes and trees) for a total attenuation of up to 7.5 dB per doubling of distance.

Table 8-1. Construction Equipment Noise

Equipment	L_{max} at 50 feet (dBA, slow)
Asphalt paver	77
Backhoe	78
Bulldozer	82
Compactor	83
Crane	81
Drill rig	79
Hoe rams	90
Loader	79
Man lift	75
Pile hammer	101
Road grader	85
Roller/sheeps foot roller/vibrating roller	80
Scraper	84
Sweeper	82
Trencher	80
Trucks (concrete, dump, flat bed, pickup, vacuum, water)	74–85

Source: FHWA 2008. See also: http://www.fhwa.dot.gov/environment/noise/construction_noise/rcnm/rcnm.pdf.

Noise associated with construction is controlled by Caltrans 2024 Standard Specification Section 14-8.02, Noise Control, which states the following:

- Control and monitor noise resulting from work activities.
- Do not exceed 86 dBA L_{max} at 50 feet from the job site between 9:00 p.m. and 6:00 a.m.

If needed based on public comments received during the draft environmental document public review, a noise control plan (NCP) may be prepared to minimize construction noise including backup alarms. The NCP would include the following:

1. List of the locations and construction activities to be monitored
2. Description of the construction activities and anticipated noise levels at these locations
3. Operating sound levels of construction equipment at specified distances and locations
4. Sound control measures to maintain noise levels within specified limits
5. Corrective actions if specified sound levels are exceeded
6. List of sound level meters and calibrators with current calibration certifications
7. Names, qualifications, and resumes of:
    a. Person who prepared NCP
    b. Personnel who will perform noise monitoring
8. Notification letter for residents that includes:
    a. Project location
    b. Project start and completion date
    c. Project contact person information
    d. Activities and duration of activities that could contribute to an increase in noise levels in the area

The NCP will be prepared by a qualified person that meets one of the following requirements:

1. Board Certified by the Institute of Noise Control Engineering of the USA with 2 years of noise control experience
2. Registered Civil engineer with 3 years of full-time noise control experience
3. Bachelor's or higher degree from an Accreditation Board for Engineering and Technology, Inc. (ABET)-accredited institution of higher education in a relevant field of engineering, environmental science, or earth science and 5 years of full-time noise control experience
4. Bachelor's or higher degree from an ABET-accredited institution of higher education and 10 years of full-time noise control experience

Noise monitoring will be conducted by a person with at least 2 years of experience in conducting field noise measurements. Submit the qualifications of each of the individuals who will be performing the noise monitoring.

Fourteen days before starting construction activities described in the NCP, notify:

1. The Engineer

2. Entities or residents within 500 feet from the job site activity with the NCP letter delivered in person

Monitor noise:

1. The first time each activity described in the NCP is performed and when equipment or activities have changed from the authorized NCP
2. Each time noise complaint is received

Measure Noise levels with a Type 1 or Type 2 SLM. The SLM must:

1. Be calibrated and certified by the manufacturer or an independent acoustical laboratory
2. Be capable of taking A-weighted measurements and have slow response settings
3. Have a microphone fitted with a windscreen
4. Be recalibrated annually by the manufacturer or an independent National Institute of Standards and Technology–certified acoustical laboratory

Submit a noise monitoring report within 24 hours of completing noise monitoring for each of the activities. The report must include A-weighted noise levels, measurement location, types of noise measuring equipment including model number and identification number, time of day, temperature, and wind speed.

Conduct noise monitoring to investigate noise complaints that are attributed to a particular construction operation. If the operation exceeds the sound level submit a list of authorized contingency measures from the NCP that will be implemented.

The noise level requirements apply to the equipment on the job or related to the job, including impact pile driver, trucks, transit mixers, or transient equipment used on the Project.

If noise monitoring is required by Caltrans, a Type 1 or Type 2 SLM and one acoustic calibrator will be furnished to Caltrans for use until contract acceptance to monitor noise.

The SLM must:

1. Be calibrated and certified by the manufacturer or an independent acoustical laboratory before delivery to Caltrans
2. Be capable of taking A-weighted measurements and have slow response settings
3. Have a microphone fitted with a windscreen
4. Be recalibrated annually by the manufacturer or an independent acoustical laboratory

Noise monitoring equipment training will be provided by the authorized noise monitor to one Caltrans employee and Caltrans will return the equipment at contract acceptance.

No adverse noise impacts from construction are anticipated because construction would be conducted in accordance with Caltrans Standard Specifications Section 14.8-02 and Standard Special Provisions 14-8.02. Construction noise would be short term, intermittent, and overshadowed by local traffic noise.

Chapter 9 References

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Chapter 10 Preparers' Qualifications

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Appendix A Traffic Data Tables

This appendix contains tables presenting the traffic data used for the traffic noise model validation runs, and for the modeling of existing conditions, Design-Year conditions under the No-Build Alternative, and Design-Year conditions under the Build Alternatives.

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Appendix A-1 Traffic Volumes for Model Validation

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Receiver	Address/Description	Land Use	Activity Category	Run #	Start Date/ Time	Duration (minutes)	Leq (dBA)	Roadway & Direction	Autos		Medium		Heavy Trucks		Buses		Motorcycles	
									#	Speed (mph)	#	Speed (mph)	#	Speed (mph)	#	Speed (mph)	#	Speed (mph)
ST01.01	24461 Bridger Rd, Lake Forest, CA 92630	Residential	B	1	12/03/2024 10:35 a.m.	10	58.6	Northbound I-5 (south of El Toro Ramps)	7788	28 - 47	390	28 - 47	348	28 - 47	0	0	6	28 - 47
								Southbound I-5 (south of El Toro Ramps)	6288	63 - 76	216	63 - 76	228	55	0	0	24	63 - 76
								NB El Toro Off Ramp	552	35	6	35	0	0	0	0	6	35
								NB El Toro Loop On Ramp	552	25 - 35	18	25 - 35	0	0	6	25 - 35	6	25 - 35
				2	12/03/2024 10:47 a.m.	10	59.0	Northbound I-5 (south of El Toro Ramps)	7536	28 - 50	318	28 - 50	474	28 - 50	6	28 - 50	12	28 - 50
								Southbound I-5 (south of El Toro Ramps)	7656	67 - 77	366	67 - 77	222	55	12	67 - 77	12	67 - 77
								NB El Toro Off Ramp	678	35 - 36	24	35 - 36	6	35 - 36	0	0	0	0
								NB El Toro Loop On Ramp	702	25 - 36	6	25 - 36	6	25 - 36	0	0	0	0
ST01.02	24111 Silverbay Dr, Lake Forest, CA 92630	Residential	B	1	12/03/2024 11:24 a.m.	10	64.7	Northbound I-5 (south of El Toro Ramps)	8190	39 - 50	330	39 - 50	612	39 - 50	6	39 - 50	6	39 - 50
								Southbound I-5 (south of El Toro Ramps)	7422	64 - 75	252	64 - 75	318	55	6	64 - 75	0	0
								NB El Toro Off Ramp	672	35 - 43	6	35 - 43	18	35 - 43	0	0	0	0
								NB El Toro Loop On Ramp	636	25 - 43	24	25 - 43	0	0	6	25 - 43	0	0
				2	12/03/2024 11:36 a.m.	10	61.7	Northbound I-5 (south of El Toro Ramps)	7536	32 - 49	378	32 - 49	372	32 - 49	6	32 - 49	12	32 - 49
								Southbound I-5 (south of El Toro Ramps)	8358	60 - 80	252	60 - 80	252	55	12	60 - 80	18	60 - 80
								NB El Toro Off Ramp	726	35 - 47	24	35 - 47	12	35 - 47	0	0	0	0
								NB El Toro Loop On Ramp	708	25 - 47	30	25 - 47	6	25 - 47	0	0	0	0
				3	12/03/2024 11:48 a.m.	10	60.4	Northbound I-5 (south of El Toro Ramps)	7344	23 - 38	282	23 - 38	444	23 - 38	0	0	24	23 - 38
								Southbound I-5 (south of El Toro Ramps)	7578	64 - 74	216	64 - 74	300	55	0	0	24	64 - 74
								NB El Toro Off Ramp	774	35 - 38	6	35 - 38	6	35 - 38	0	0	0	0
								NB El Toro Loop On Ramp	588	25 - 69	24	25 - 69	6	25 - 55	6	25 - 69	0	0
ST01.03	24422 Highpine Rd, Lake Forest, CA 92630	Residential	B	1	Simultaneous with ST01.01	10	54.5	Northbound I-5 (south of El Toro Ramps)	7788	28 - 47	390	28 - 47	348	28 - 47	0	0	6	28 - 47
								Southbound I-5 (south of El Toro Ramps)	6288	63 - 76	216	63 - 76	228	55	0	0	24	63 - 76
								NB El Toro Off Ramp	552	35	6	35	0	0	0	0	6	35
								NB El Toro Loop On Ramp	552	25 - 35	18	25 - 35	0	0	6	25 - 35	6	25 - 35
				2	Simultaneous with ST01.01	10	53.6	Northbound I-5 (south of El Toro Ramps)	7536	28 - 50	318	28 - 50	474	28 - 50	6	28 - 50	12	28 - 50
								Southbound I-5 (south of El Toro Ramps)	7656	67 - 77	366	67 - 77	222	55	12	67 - 77	12	67 - 77
								NB El Toro Off Ramp	678	35 - 36	24	35 - 36	6	35 - 36	0	0	0	0
								NB El Toro Loop On Ramp	702	25 - 36	6	25 - 36	6	25 - 36	0	0	0	0
ST01.04	24382 Highpine Rd, Lake Forest, CA 92630	Residential	B	1	Simultaneous with ST01.02	10	57.1	Northbound I-5 (south of El Toro Ramps)	8190	39 - 50	330	39 - 50	612	39 - 50	6	39 - 50	6	39 - 50
								Southbound I-5 (south of El Toro Ramps)	7422	64 - 75	252	64 - 75	318	55	6	64 - 75	0	0
								NB El Toro Off Ramp	672	35 - 43	6	35 - 43	18	35 - 43	0	0	0	0
								NB El Toro Loop On Ramp	636	25 - 43	24	25 - 43	0	0	6	25 - 43	0	0
				2	Simultaneous with ST01.02	10	55.5	Northbound I-5 (south of El Toro Ramps)	7536	32 - 49	378	32 - 49	372	32 - 49	6	32 - 49	12	32 - 49
								Southbound I-5 (south of El Toro Ramps)	8358	60 - 80	252	60 - 80	252	55	12	60 - 80	18	60 - 80
								NB El Toro Off Ramp	726	35 - 47	24	35 - 47	12	35 - 47	0	0	0	0
								NB El Toro Loop On Ramp	708	25 - 47	30	25 - 47	6	25 - 47	0	0	0	0
				3	Simultaneous with ST01.02	10	53.4	Northbound I-5 (south of El Toro Ramps)	7344	23 - 38	282	23 - 38	444	23 - 38	0	0	24	23 - 38
								Southbound I-5 (south of El Toro Ramps)	7578	64 - 74	216	64 - 74	300	55	0	0	24	64 - 74
								NB El Toro Off Ramp	774	35 - 38	6	35 - 38	6	35 - 38	0	0	0	0
								NB El Toro Loop On Ramp	588	25 - 69	24	25 - 69	6	25 - 55	6	25 - 69	0	0
ST01.05	24011 Silverbay Dr, Lake Forest, CA 92630	Residential	B	1	12/03/2024 12:28 p.m.	10	49.5	Northbound I-5 (south of El Toro Ramps)	7320	34 - 59	324	34 - 59	360	34 - 55	6	34 - 59	12	34 - 59
								Southbound I-5 (south of El Toro Ramps)	7938	66 - 76	216	66 - 76	222	55	0	0	6	66 - 76
								NB El Toro Off Ramp	894	35 - 37	18	35 - 37	6	35 - 37	0	0	0	35 - 37
								NB El Toro Loop On Ramp	720	25 - 37	12	25 - 37	0	25 - 37	0	0	0	25 - 37
								NB Rockfield Blvd	438	40	6	40	0	0	0	0	0	0
								SB Rockfield Blvd	426	40	6	40	0	0	0	0	0	0
				2	12/03/2024 12:39 p.m.	10	51.4	Northbound I-5 (south of El Toro Ramps)	7590	32 - 43	336	32 - 43	348	32 - 43	6	32 - 43	18	32 - 43
								Southbound I-5 (south of El Toro Ramps)	8238	67 - 72	216	67 - 72	192	55	0	0	6	67 - 72
								NB El Toro Off Ramp	786	35 - 35	6	35 - 35	0	0	0	0	0	0
								NB El Toro Loop On Ramp	732	25 - 35	24	25 - 35	0	0	0	0	0	0
								NB Rockfield Blvd	450	40	6	40	0	0	0	0	6	40
								SB Rockfield Blvd	480	40	6	40	0	0	0	0	0	0

Receiver	Address/Description	Land Use	Activity Category	Run #	Start Date/ Time	Duration (minutes)	Leq (dBA)	Roadway & Direction	Autos		Medium		Heavy Trucks		Buses		Motorcycles	
									#	Speed (mph)	#	Speed (mph)	#	Speed (mph)	#	Speed (mph)	#	Speed (mph)
ST01.06	24461 Penfield St, Lake Forest, CA 92630	Residential	B	1	12/03/2024 1:07 p.m.	10	52.8	Northbound I-5 (south of El Toro Ramps)	8202	48 - 66	408	48 - 66	360	48 - 55	12	48 - 66	0	0
								Southbound I-5 (south of El Toro Ramps)	8340	65 - 72	162	65 - 72	270	55	6	65 - 72	30	65 - 72
								NB El Toro Off Ramp	756	35 - 52	6	35 - 52	6	35 - 52	0	0	0	0
								NB El Toro Loop On Ramp	690	25 - 52	12	25 - 52	0	0	6	25 - 52	0	0
								NB Rockfield Blvd	558	40	12	40	0	0	0	0	0	0
								SB Rockfield Blvd	528	40	0	0	0	0	0	0	0	0
				2	12/03/2024 1:18 p.m.	10	53.5	Northbound I-5 (south of El Toro Ramps)	7764	55 - 74	324	55 - 74	306	55	6	55 - 74	30	55 - 74
								Southbound I-5 (south of El Toro Ramps)	8340	62 - 74	174	62 - 74	228	55	18	62 - 74	24	62 - 74
								NB El Toro Off Ramp	972	35 - 55	18	35 - 55	6	35 - 55	0	0	6	35 - 55
								NB El Toro Loop On Ramp	726	25 - 55	54	25 - 55	6	25 - 55	6	25 - 55	0	0
								NB Rockfield Blvd	510	40	0	0	0	0	0	0	6	40
								SB Rockfield Blvd	480	40	0	0	0	0	0	0	0	0
ST02.01	24001 Avenida De La Carlota, Laguna Hills, CA 92653	Restaurant	E	1	12/18/2024 10:09 a.m.	10	63.1	Northbound I-5 (south of El Toro Ramps)	7500	54 - 64	228	54 - 64	372	54 - 55	0	0	0	0
								Southbound I-5 (south of El Toro Ramps)	8052	56 - 66	312	56 - 66	360	55	6	56 - 66	0	0
								NB El Toro Off Ramp	600	35 - 54	12	35 - 54	12	35 - 54	0	0	0	0
								NB El Toro Loop On Ramp	690	25 - 54	18	25 - 54	6	25 - 54	0	0	6	25 - 54
								SB El Toro On Ramp	372	35 - 56	12	35 - 56	0	0	0	0	0	0
								NB Avenida De La Carlota	384	40	6	40	0	0	0	0	6	40
								SB Avenida De La Carlota	432	40	12	40	6	40	0	0	0	0
								EB El Toro Rd	2088	40	72	40	12	40	6	40	12	40
								WB El Toro Rd	1314	40	42	40	12	40	6	40	0	0
				2	12/18/2024 10:21 a.m.	10	63.1	Northbound I-5 (south of El Toro Ramps)	7884	55 - 65	246	55 - 65	336	55	6	55 - 65	12	55 - 65
								Southbound I-5 (south of El Toro Ramps)	8550	56 - 66	354	56 - 66	252	55	0	0	6	56 - 66
								NB El Toro Off Ramp	570	35 - 55	24	35 - 55	0	0	0	0	0	0
								NB El Toro Loop On Ramp	708	25 - 55	6	25 - 55	0	0	6	25 - 55	0	0
								SB El Toro On Ramp	276	35 - 56	6	35 - 56	6	35 - 55	0	0	0	0
								NB Avenida De La Carlota	402	40	12	40	6	40	0	0	0	0
								SB Avenida De La Carlota	420	40	12	40	0	0	18	40	0	0
								EB El Toro Rd	2106	40	48	40	12	40	6	40	6	40
								WB El Toro Rd	1218	40	12	40	6	40	0	0	0	0
ST02.02	24126 Laguna Hills Mall, Laguna Hills, CA 92653	Restaurant	E	1	12/18/2024 10:40 a.m.	10	67.1	Northbound I-5 (south of El Toro Ramps)	7080	55 - 66	168	55 - 66	372	55	12	55 - 66	18	55 - 66
								Southbound I-5 (south of El Toro Ramps)	8496	56 - 66	288	56 - 66	288	55	0	0	0	0
								NB El Toro Off Ramp	588	35 - 55	24	35 - 55	0	0	0	0	0	0
								NB El Toro Loop On Ramp	840	25 - 55	6	25 - 55	0	0	0	0	0	0
								SB El Toro On Ramp	372	35 - 56	6	35 - 56	0	0	0	0	0	0
								NB Avenida De La Carlota	330	40	0	0	0	0	0	0	0	0
								SB Avenida De La Carlota	336	40	12	40	6	40	6	40	6	40
								EB El Toro Rd	2328	40	72	40	18	40	0	0	6	40
								WB El Toro Rd	1314	40	48	40	6	40	0	0	0	0
				2	12/18/2024 10:51 a.m.	10	68.6	Northbound I-5 (south of El Toro Ramps)	7824	55 - 66	204	55 - 66	240	55	6	55 - 66	24	55 - 66
								Southbound I-5 (south of El Toro Ramps)	8052	56 - 66	258	56 - 66	234	55	12	56 - 66	18	56 - 66
								NB El Toro Off Ramp	618	35 - 55	0	0	0	0	0	0	0	0
								NB El Toro Loop On Ramp	720	25 - 55	24	25 - 55	0	0	6	25 - 55	0	0
								SB El Toro On Ramp	318	35 - 56	6	35 - 56	0	0	0	0	0	0
								NB Avenida De La Carlota	336	40	6	40	0	0	0	0	0	0
								SB Avenida De La Carlota	402	40	6	40	0	0	6	40	0	0
								EB El Toro Rd	2466	40	48	40	6	40	12	40	0	0
								WB El Toro Rd	1362	40	18	40	0	40	0	0	6	40

Receiver	Address/Description	Land Use	Activity Category	Run #	Start Date/ Time	Duration (minutes)	Leq (dBA)	Roadway & Direction	Autos		Medium		Heavy Trucks		Buses		Motorcycles	
									#	Speed (mph)	#	Speed (mph)	#	Speed (mph)	#	Speed (mph)	#	Speed (mph)
ST03.01	23811 Bridger Rd #111, Lake Forest, CA 92630	Commercial	E	1	12/5/2024 10:33 a.m.	10	76.3	Northbound I-5 (south of El Toro Ramps)	7572	57 - 67	282	57 - 67	432	55	24	57 - 67	0	0
								Southbound I-5 (south of El Toro Ramps)	8142	54 - 64	336	54 - 64	306	54 - 55	12	54 - 64	6	54 - 64
								NB El Toro On Ramp	702	35 - 57	30	35 - 57	0	0	0	0	0	0
								SB El Toro Off Ramp	1152	35 - 55	36	25 - 55	18	25 - 55	0	0	0	0
								SB El Toro On Ramp	456	35 - 55	24	35 - 55	0	0	0	0	0	0
				2	12/5/2024 10:48 a.m.	10	76.1	Northbound I-5 (south of El Toro Ramps)	7692	57 - 67	180	57 - 67	444	55	6	57 - 67	0	0
								Southbound I-5 (south of El Toro Ramps)	8004	53 - 64	300	53 - 64	312	53 - 55	18	53 - 64	0	0
								NB El Toro On Ramp	636	35 - 57	24	35 - 57	24	35 - 55	0	0	0	0
								SB El Toro Off Ramp	1206	35 - 55	30	25 - 55	6	25 - 55	6	25 - 55	0	0
								SB El Toro On Ramp	396	35 - 55	12	35 - 55	0	0	0	0	0	0
				3	12/5/2024 11:29 a.m.	10	75.7	Northbound I-5 (south of El Toro Ramps)	7914	57 - 67	270	57 - 67	336	55	6	57 - 67	6	57 - 67
								Southbound I-5 (south of El Toro Ramps)	8604	54 - 64	270	54 - 64	306	54 - 55	0	0	18	54 - 64
								NB El Toro On Ramp	750	35 - 57	18	35 - 57	6	35 - 55	0	0	0	0
								SB El Toro Off Ramp	1320	35 - 56	36	25 - 56	12	25 - 55	0	0	0	0
								SB El Toro On Ramp	456	35 - 56	0	0	0	0	0	0	0	0
				4	12/5/2024 11:41 a.m.	10	76.5	Northbound I-5 (south of El Toro Ramps)	7632	57 - 67	264	57 - 67	450	55	0	0	0	0
								Southbound I-5 (south of El Toro Ramps)	8652	54 - 64	228	54 - 64	300	54 - 55	18	54 - 64	12	54 - 64
								NB El Toro On Ramp	684	35 - 57	30	35 - 57	12	35 - 55	0	0	0	0
								SB El Toro Off Ramp	1404	35 - 55	36	25 - 55	6	25 - 55	0	0	0	0
								SB El Toro On Ramp	540	35 - 55	6	35 - 55	0	0	0	0	0	0
ST03.02	Lake Forest Park	Park	C	1	12/3/2024 3:13 p.m.	10	66	Northbound I-5 (south of El Toro Ramps)	8334	56 - 67	216	56 - 67	156	55	24	56 - 67	24	56 - 67
								Southbound I-5 (south of El Toro Ramps)	10956	50 - 59	180	50 - 59	198	50 - 55	30	50 - 59	12	50 - 59
								NB El Toro On Ramp	678	35 - 56	0	0	0	0	6	35 - 56	0	0
								SB El Toro Off Ramp	1314	35 - 52	36	25 - 52	18	25 - 52	6	25 - 52	0	0
								SB El Toro On Ramp	612	35 - 52	6	35 - 52	0	0	0	0	0	0
				2	12/3/2024 3:27 p.m.	10	66.2	Northbound I-5 (south of El Toro Ramps)	7782	56 - 67	354	56 - 67	222	55	60	56 - 67	12	56 - 67
								Southbound I-5 (south of El Toro Ramps)	10644	57 - 68	156	57 - 68	186	55	6	57 - 68	30	57 - 68
								NB El Toro On Ramp	648	35 - 56	30	35 - 56	6	35 - 55	6	35 - 56	0	0
								SB El Toro Off Ramp	1278	35 - 59	6	25 - 59	0	0	6	25 - 59	0	0
								SB El Toro On Ramp	576	35 - 59	0	0	0	0	6	35 - 59	6	35 - 59
ST03.03	23971 Gowdy Ave, Lake Forest, CA 92630	Residential	B	1	Simultaneous with ST03.01 R1	10	54.1	Northbound I-5 (south of El Toro Ramps)	7572	57 - 67	282	57 - 67	432	55	24	57 - 67	0	0
								Southbound I-5 (south of El Toro Ramps)	8142	54 - 64	336	54 - 64	306	54 - 55	12	54 - 64	6	54 - 64
								NB El Toro On Ramp	702	35 - 57	30	35 - 57	0	0	0	0	0	0
								SB El Toro Off Ramp	1152	35 - 55	36	25 - 55	18	25 - 55	0	0	0	0
								SB El Toro On Ramp	456	35 - 55	24	35 - 55	0	0	0	0	0	0
				2	Simultaneous with ST03.01 R2	10	52.5	Northbound I-5 (south of El Toro Ramps)	7692	57 - 67	180	57 - 67	444	55	6	57 - 67	0	0
								Southbound I-5 (south of El Toro Ramps)	8004	53 - 64	300	53 - 64	312	53 - 55	18	53 - 64	0	0
								NB El Toro On Ramp	636	35 - 57	24	35 - 57	24	35 - 55	0	0	0	0
								SB El Toro Off Ramp	1206	35 - 55	30	25 - 55	6	25 - 55	6	25 - 55	0	0
								SB El Toro On Ramp	396	35 - 55	12	35 - 55	0	0	0	0	0	0
ST03.04	23611 Duryea Dr, Lake Forest, CA 92630	Residential	B	1	Simultaneous with ST03.01 R3	10	64.1	Northbound I-5 (south of El Toro Ramps)	7914	57 - 67	270	57 - 67	336	55	6	57 - 67	6	57 - 67
								Southbound I-5 (south of El Toro Ramps)	8604	54 - 64	270	54 - 64	306	54 - 55	0	0	18	54 - 64
								NB El Toro On Ramp	750	35 - 57	18	35 - 57	6	35 - 55	0	0	0	0
								SB El Toro Off Ramp	1320	35 - 56	36	25 - 56	12	25 - 55	0	0	0	0
								SB El Toro On Ramp	456	35 - 56	0	0	0	0	0	0	0	0
				2	Simultaneous with ST03.01 R3	10	64.4	Northbound I-5 (south of El Toro Ramps)	7632	57 - 67	264	57 - 67	450	55	0	0	0	0
								Southbound I-5 (south of El Toro Ramps)	8652	54 - 64	228	54 - 64	300	54 - 55	18	54 - 64	12	54 - 64
								NB El Toro On Ramp	684	35 - 57	30	35 - 57	12	35 - 55	0	0	0	0
								SB El Toro Off Ramp	1404	35 - 55	36	25 - 55	6	25 - 55	0	0	0	0
								SB El Toro On Ramp	540	35 - 55	6	35 - 55	0	0	0	0	0	0

Receiver	Address/Description	Land Use	Activity Category	Run #	Start Date/ Time	Duration (minutes)	Leq (dBA)	Roadway & Direction	Autos		Medium		Heavy Trucks		Buses		Motorcycles	
									#	Speed (mph)	#	Speed (mph)	#	Speed (mph)	#	Speed (mph)	#	Speed (mph)
ST03.05	23952 Swan Dr, Lake Forest, CA 92630	Residential	B	1	12/3/2024 2:32 p.m.	10	66.8	Northbound I-5 (south of El Toro Ramps)	7968	57 - 67	276	57 - 67	282	55	18	57 - 67	6	57 - 67
								Southbound I-5 (south of El Toro Ramps)	10722	58 - 70	126	58 - 70	108	55	18	58 - 70	18	58 - 70
				2	12/3/2024 2:44 p.m.	10	66.5	Northbound I-5 (south of El Toro Ramps)	7902	56 - 67	264	56 - 67	288	55	18	56 - 67	6	56 - 67
								Southbound I-5 (south of El Toro Ramps)	10578	58 - 70	126	58 - 70	162	55	30	55 - 55	12	55 - 55
ST03.06	Lake Forest Park	Park	C	1	Simultaneous with ST03.05	10	68.2	Northbound I-5 (south of El Toro Ramps)	7968	57 - 67	276	57 - 67	282	55	18	57 - 67	6	57 - 67
								Southbound I-5 (south of El Toro Ramps)	10722	58 - 70	126	58 - 70	108	55	18	58 - 70	18	58 - 70
				2	Simultaneous with ST03.05	10	67.5	Northbound I-5 (south of El Toro Ramps)	7902	56 - 67	264	56 - 67	288	55	18	56 - 67	6	56 - 67
								Southbound I-5 (south of El Toro Ramps)	10578	58 - 70	126	58 - 70	162	55	30	55 - 55	12	55 - 55
ST04.01	2121 Ronda Granada, Laguna Woods, CA 92637	Residential	B	1	12/5/2024 1:01 p.m.	10	64.8	Northbound I-5 (south of El Toro Ramps)	7878	57 - 68	372	57 - 68	384	55	54	57 - 68	24	57 - 68
								Southbound I-5 (south of El Toro Ramps)	8736	55 - 65	180	55 - 65	234	55	24	55 - 65	6	55 - 65
								NB El Toro On Ramp	570	35 - 57	12	35 - 57	6	35 - 55	0	0	6	35 - 57
								SB El Toro Off Ramp	1098	35 - 56	18	25 - 56	12	25 - 55	0	0	6	25 - 56
								NB Avenida De La Carlota	408	40	24	40	0	0	0	0	6	40
								SB Avenida De La Carlota	588	40	6	40	0	0	0	0	0	0
				2	12/5/2024 1:20 p.m.	10	64.3	Northbound I-5 (south of El Toro Ramps)	7770	57 - 67	390	57 - 67	306	55	12	57 - 67	18	57 - 67
								Southbound I-5 (south of El Toro Ramps)	9390	54 - 65	210	54 - 65	222	54 - 55	36	54 - 65	24	54 - 65
								NB El Toro On Ramp	600	35 - 57	0	0	12	35 - 55	0	0	0	0
								SB El Toro Off Ramp	1392	35 - 56	12	25 - 56	0	0	18	25 - 56	0	0
								NB Avenida De La Carlota	426	40	12	40	0	0	0	0	0	0
								SB Avenida De La Carlota	498	40	18	40	6	40	0	0	0	0
ST04.02	2115 Via Puerta, Laguna Woods, CA 92637	Residential	B	1	12/5/2024 2:39 p.m.	10	66.4	Northbound I-5 (south of El Toro Ramps)	7860	56 - 67	360	56 - 67	228	55	18	56 - 67	6	56 - 67
								Southbound I-5 (south of El Toro Ramps)	10848	51 - 61	126	51 - 61	144	51 - 55	12	51 - 61	18	51 - 61
								SB El Toro Off Ramp	1380	35 - 54	12	25 - 54	6	25 - 54	0	0	0	0
								NB Avenida De La Carlota	348	40	0	0	0	0	0	0	0	0
								SB Avenida De La Carlota	474	40	6	40	6	40	0	0	0	0
				2	12/5/2024 2:51 p.m.	10	65.3	Northbound I-5 (south of El Toro Ramps)	7494	56 - 66	312	56 - 66	282	55	0	0	0	0
								Southbound I-5 (south of El Toro Ramps)	10800	46 - 55	144	46 - 55	174	46 - 55	48	46 - 55	12	46 - 55
								SB El Toro Off Ramp	1416	35 - 48	12	25 - 48	6	25 - 48	6	25 - 48	0	0
								NB Avenida De La Carlota	408	40	6	40	0	0	0	0	0	0
								SB Avenida De La Carlota	654	40	6	40	6	40	0	0	0	0
ST04.03	2151 Ronda Granada, Laguna Woods, CA 92637	Residential	B	1	12/5/2024 12:30 p.m.	10	55.9	Northbound I-5 (south of El Toro Ramps)	7530	57 - 67	246	57 - 67	366	55	12	57 - 67	6	57 - 67
								Southbound I-5 (south of El Toro Ramps)	9450	55 - 65	252	55 - 65	282	55	0	0	6	55 - 65
								NB El Toro On Ramp	792	35 - 57	30	35 - 57	18	35 - 55	0	0	0	0
								SB El Toro Off Ramp	1302	35 - 56	42	25 - 56	0	0	0	0	0	0
								NB Avenida De La Carlota	468	40	6	40	6	40	0	0	0	0
								SB Avenida De La Carlota	570	40	6	40	0	0	0	0	0	0
				2	12/5/2024 12:43 p.m.	10	55.5	Northbound I-5 (south of El Toro Ramps)	7704	57 - 67	288	57 - 67	252	55	0	0	12	57 - 67
								Southbound I-5 (south of El Toro Ramps)	8670	55 - 66	246	55 - 66	222	55	12	55 - 66	42	55 - 66
								NB El Toro On Ramp	660	35 - 57	12	35 - 57	12	35 - 55	0	0	0	0
								SB El Toro Off Ramp	1260	35 - 57	36	25 - 57	6	25 - 55	0	0	6	25 - 57
								NB Avenida De La Carlota	276	40	12	40	0	0	0	0	0	0
								SB Avenida De La Carlota	456	40	6	40	0	0	0	0	0	0
ST04.04	2126 Via Puerta, Laguna Woods, CA 92637	Residential	B	1	Simultaneous with ST04.02	10	60.0	Northbound I-5 (south of El Toro Ramps)	7860	56 - 67	360	56 - 67	228	55	18	56 - 67	6	56 - 67
								Southbound I-5 (south of El Toro Ramps)	10848	51 - 61	126	51 - 61	144	51 - 55	12	51 - 61	18	51 - 61
								SB El Toro Off Ramp	1380	35 - 54	12	25 - 54	6	25 - 54	0	0	0	0
								NB Avenida De La Carlota	348	40	0	0	0	0	0	0	0	0
								SB Avenida De La Carlota	474	40	6	40	6	40	0	0	0	0
				2	Simultaneous with ST04.02	10	58.8	Northbound I-5 (south of El Toro Ramps)	7494	56 - 66	312	56 - 66	282	55	0	0	0	0
								Southbound I-5 (south of El Toro Ramps)	10800	46 - 55	144	46 - 55	174	46 - 55	48	46 - 55	12	46 - 55
								SB El Toro Off Ramp	1416	35 - 48	12	25 - 48	6	25 - 48	6	25 - 48	0	0
								NB Avenida De La Carlota	408	40	6	40	0	0	0	0	0	0
								SB Avenida De La Carlota	654	40	6	40	6	40	0	0	0	0

Receiver	Address/Description	Land Use	Activity Category	Run #	Start Date/ Time	Duration (minutes)	Leq (dBA)	Roadway & Direction	Autos		Medium		Heavy Trucks		Buses		Motorcycles	
									#	Speed (mph)	#	Speed (mph)	#	Speed (mph)	#	Speed (mph)	#	Speed (mph)
ST04.05	2231 Via Puerta, Laguna Woods, CA 92637	Residential	B	1	12/5/2024 2:01 p.m.	10	63.4	Northbound I-5 (south of El Toro Ramps)	7698	57 - 67	384	57 - 67	300	55	12	57 - 67	6	57 - 67
								Southbound I-5 (south of El Toro Ramps)	9468	54 - 65	174	54 - 65	168	54 - 55	30	54 - 65	12	54 - 65
								SB El Toro Off Ramp	1230	35 - 57	12	25 - 57	18	25 - 55	6	25 - 57	0	0
								NB Avenida De La Carlota	330	40	12	40	0	0	0	0	0	0
								SB Avenida De La Carlota	450	40	36	40	0	0	0	0	0	0
				2	12/5/2024 2:12 p.m.	10	63.3	Northbound I-5 (south of El Toro Ramps)	7956	57 - 67	342	57 - 67	282	55	6	57 - 67	12	57 - 67
								Southbound I-5 (south of El Toro Ramps)	10002	55 - 65	174	55 - 65	204	55	12	55 - 65	18	55 - 65
								SB El Toro Off Ramp	1212	35 - 57	36	25 - 57	6	25 - 55	0	0	0	0
								NB Avenida De La Carlota	348	40	0	0	0	0	0	0	0	0
								SB Avenida De La Carlota	432	40	12	40	0	0	0	0	0	0
ST04.06	2233 Via Puerta, Laguna Woods, CA 92637	Residential	B	1	Simultaneous with ST04.05	10	71.0	Northbound I-5 (south of El Toro Ramps)	7698	57 - 67	384	57 - 67	300	55	12	57 - 67	6	57 - 67
								Southbound I-5 (south of El Toro Ramps)	9468	54 - 65	174	54 - 65	168	54 - 55	30	54 - 65	12	54 - 65
								SB El Toro Off Ramp	1230	35 - 57	12	25 - 57	18	25 - 55	6	25 - 57	0	0
								NB Avenida De La Carlota	330	40	12	40	0	0	0	0	0	0
								SB Avenida De La Carlota	450	40	36	40	0	0	0	0	0	0
				2	Simultaneous with ST04.05	10	71.1	Northbound I-5 (south of El Toro Ramps)	7956	57 - 67	342	57 - 67	282	55	6	57 - 67	12	57 - 67
								Southbound I-5 (south of El Toro Ramps)	10002	55 - 65	174	55 - 65	204	55	12	55 - 65	18	55 - 65
								SB El Toro Off Ramp	1212	35 - 57	36	25 - 57	6	25 - 55	0	0	0	0
								NB Avenida De La Carlota	348	40	0	0	0	0	0	0	0	0
								SB Avenida De La Carlota	432	40	12	40	0	0	0	0	0	0

Notes:

Traffic speed ranges provided due to speeds varying by lane.

The total directional traffic volumes are distributed evenly across all lanes in TNM.

Medium truck, heavy truck, and bus traffic volumes are restricted on HOV lanes and inside lanes in TNM.

Appendix A-2 Existing Traffic Volumes

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Table A-2a is based on traffic data supplied by the project's licensed traffic engineer (Jacobs). Rules were applied to the traffic data in order to represent worst-case traffic noise conditions. These rules are described in the NSR and summarized below. Rules that only apply to specific features (i.e. NB on-ramp, SB off-ramp, etc.) are identified in the "Notes" column below.

1. Truck percentages for mainline, ramps and local roads are be based on validation traffic data.
2. Heavy trucks are modeled on the two outside lanes of the mainline.
3. This note is not used in Table A-2a

Roadway/Lane(s)	Segment	Number of Lanes	Peak Hour Volume	Auto		Medium Truck		Heavy Truck		Speed (Auto/MT/HT)	Notes
				%	Volume	%	Volume	%	Volume		
NB I-5 HOV (Total)	South of El Toro Road	2	1,337	100.0%	1,337	0.0%	0	0.0%	0	70 / 70 / 55	
NB I-5 HOV Lane 1		1	669	--	669	--	0	--	0		
NB I-5 HOV Lane 2		1	668	--	668	--	0	--	0		
NB I-5 GP Lanes (Total)		6	8,792	92.0%	8,088	3.6%	317	4.4%	387		
General Purpose Lane 1		1	1,465	--	1,412	--	53	--	0		
General Purpose Lane 2		1	1,465	--	1,412	--	53	--	0		
General Purpose Lane 3		1	1,465	--	1,412	--	53	--	0		
General Purpose Lane 4		1	1,465	--	1,412	--	53	--	0		
General Purpose Lane 5		1	1,466	--	1,219	--	53	--	194		
General Purpose Lane 6 (Aux)		1	1,466	--	1,221	--	52	--	193		
I-5 Northbound El Toro Road Off-Ramp	El Toro Road Off-ramp	2-4	785	97.4%	764	2.0%	16	0.6%	5	70 / 70 / 55 to 10 / 10 / 10	
Off-Ramp Lane 1		1	196	--	191	--	4	--	1		
Off-Ramp Lane 2		1	196	--	191	--	4	--	1		
Off-Ramp Lane 3		1	196	--	191	--	4	--	1		
Off-Ramp Lane 4		1	197	--	191	--	4	--	2		
NB I-5 HOV (Total)	Between El Toro Road off-ramp and loop On-ramp	2	1,544	100.0%	1,544	0.0%	0	0.0%	0	70 / 70 / 55	
NB I-5 HOV Lane 1		1	772	--	772	--	0	--	0		
NB I-5 HOV Lane 2		1	772	--	772	--	0	--	0		
NB I-5 GP Lanes (Total)		5	7,885	92.0%	7,254	3.6%	284	4.4%	347		
General Purpose Lane 1		1	1,577	--	1,520	--	57	--	0		
General Purpose Lane 2		1	1,577	--	1,520	--	57	--	0		
General Purpose Lane 3		1	1,577	--	1,520	--	57	--	0		
General Purpose Lane 4		1	1,577	--	1,346	--	57	--	174		
General Purpose Lane 5		1	1,577	--	1,348	--	56	--	173		
I-5 Northbound El Toro Road	El Toro Road Loop On-ramp	2-1	780	96.9%	756	2.7%	21	0.4%	3	10 / 10 / 10 to 70 / 70 / 55	
On-Ramp Lane 1		1	391	--	378	--	11	--	2		
On-Ramp Lane 2		1	389	--	378	--	10	--	1		

Roadway/Lane(s)	Segment	Number of Lanes	Peak Hour Volume	Auto		Medium Truck		Heavy Truck		Speed (Auto/MT/HT)	Notes
				%	Volume	%	Volume	%	Volume		
NB I-5 HOV (Total)	Between El Toro Road loop On-ramp and On-ramp	2	1,555	100.0%	1,555	0.0%	0	0.0%	0	70 / 70 / 55	
NB I-5 HOV Lane 1		1	778	--	778	--	0	--	0		
NB I-5 HOV Lane 2		1	777	--	777	--	0	--	0		
NB I-5 GP Lanes (Total)		5	8,459	92.7%	7,841	3.6%	305	3.7%	313		
General Purpose Lane 1		1	1,692	--	1,631	--	61	--	0		
General Purpose Lane 2		1	1,692	--	1,631	--	61	--	0		
General Purpose Lane 3		1	1,692	--	1,631	--	61	--	0		
General Purpose Lane 4		1	1,692	--	1,474	--	61	--	157		
General Purpose Lane 5		1	1,691	--	1,474	--	61	--	156		
I-5 Northbound El Toro Road On-Ramp	El Toro Road On-ramp	2-1	850	96.0%	816	2.6%	22	1.4%	12	10 / 10 / 10 to 70 / 70 / 55	
On-Ramp Lane 1		1	425	--	408	--	11	--	6		
On-Ramp Lane 2		1	425	--	408	--	11	--	6		
NB I-5 HOV (Total)	North of El Toro Road	2	1,773	100.0%	1,773	0.0%	0	0.0%	0	70 / 70 / 55	
NB I-5 HOV Lane 1		1	887	--	887	--	0	--	0		
NB I-5 HOV Lane 2		1	886	--	886	--	0	--	0		
NB I-5 GP Lanes (Total)		6	9,091	92.7%	8,428	3.6%	327	3.7%	336		
General Purpose Lane 1		1	1,515	--	1,460	--	55	--	0		
General Purpose Lane 2		1	1,515	--	1,460	--	55	--	0		
General Purpose Lane 3		1	1,515	--	1,460	--	55	--	0		
General Purpose Lane 4		1	1,515	--	1,461	--	54	--	0		
General Purpose Lane 5		1	1,515	--	1,293	--	54	--	168		
General Purpose Lane 6 (Aux)		1	1,516	--	1,294	--	54	--	168		
NB I-5 HOV (Total)	North of El Toro Road	2	1,773	100.0%	1,773	0.0%	0	0.0%	0	70 / 70 / 55	
NB I-5 HOV Lane 1		1	887	--	887	--	0	--	0		
NB I-5 HOV Lane 2		1	886	--	886	--	0	--	0		
NB I-5 GP Lanes (Total)		7	9,091	92.7%	8,428	3.6%	327	3.7%	336		
General Purpose Lane 1		1	1,299	--	1,252	--	47	--	0		
General Purpose Lane 2		1	1,299	--	1,252	--	47	--	0		
General Purpose Lane 3		1	1,299	--	1,252	--	47	--	0		
General Purpose Lane 4		1	1,299	--	1,252	--	47	--	0		
General Purpose Lane 5		1	1,299	--	1,252	--	47	--	0		
General Purpose Lane 6		1	1,299		1,085		46		168		
General Purpose Lane 7		1	1,297	--	1,083	--	46	--	168		

Table A-2b is based on traffic data supplied by the project's licensed traffic engineer (Jacobs). Rules were applied to the traffic data in order to represent worst-case traffic noise conditions. These rules are described in the NSR and summarized below. Rules that only apply to specific features (i.e. NB on-ramp, SB off-ramp, etc.) are identified in the "Notes" column below.

1. Truck percentages for mainline, ramps and local roads are be based on validation traffic data.
2. Heavy trucks are modeled on the two outside lanes of the mainline.
3. This note is not used in Table A-2b

Roadway/Lane(s)	Segment	Number of Lanes	Peak Hour Volume	Auto		Medium Truck		Heavy Truck		Speed (Auto/MT/HT)	Notes
				%	Volume	%	Volume	%	Volume		
SB I-5 HOV (Total)	North of El Toro Road	2	2,099	100.0%	2,099	0.0%	0	0.0%	0	70 / 70 / 55	
SB I-5 HOV Lane 1		1	1,050	--	1,050	--	0	--	0		
SB I-5 HOV Lane 2		1	1,049	--	1,049	--	0	--	0		
SB I-5 GP Lanes (Total)		6	8,097	95.6%	7,741	2.1%	170	2.3%	186		
General Purpose Lane 1		1	1,350	--	1,322	--	28	--	0		
General Purpose Lane 2		1	1,350	--	1,322	--	28	--	0		
General Purpose Lane 3		1	1,350	--	1,322	--	28	--	0		
General Purpose Lane 4		1	1,349	--	1,321	--	28	--	0		
General Purpose Lane 5		1	1,349	--	1,227	--	29	--	93		
General Purpose Lane 6 (Aux)		1	1,349	--	1,227	--	29	--	93		
I-5 Southbound Avenida De La Carlota Off-Ramp	Avenida De La Carlota Off-ramp	2-4	1,510	97.4%	1,471	2.0%	30	0.6%	9	70 / 70 / 55 to 10 / 10 / 10	
Off-Ramp Lane 1		1	378	--	368	--	8	--	2		
Off-Ramp Lane 2		1	378	--	368	--	8	--	2		
Off-Ramp Lane 3		1	377	--	368	--	7	--	2		
Off-Ramp Lane 4		1	377	--	367	--	7	--	3		
SB I-5 HOV (Total)	Between Avenida De La Carlota off-ramp and Hook On-ramp	2	1,683	100.0%	1,683	0.0%	0	0.0%	0	70 / 70 / 55	
SB I-5 HOV Lane 1		1	842	--	842	--	0	--	0		
SB I-5 HOV Lane 2		1	841	--	841	--	0	--	0		
SB I-5 GP Lanes (Total)		5	6,972	95.6%	6,666	2.1%	146	2.3%	160		
General Purpose Lane 1		1	1,394	--	1,365	--	29	--	0		
General Purpose Lane 2		1	1,394	--	1,365	--	29	--	0		
General Purpose Lane 3		1	1,394	--	1,365	--	29	--	0		
General Purpose Lane 4		1	1,394	--	1,285	--	29	--	80		
General Purpose Lane 5		1	1,396	--	1,286	--	30	--	80		
I-5 Southbound Avenida De La Carlota On-Ramp	Avenida De La Carlota Hook On-ramp	2-1	585	98.3%	575	1.7%	10	0.0%	0	10 / 10 / 10 to 70 / 70 / 55	
On-Ramp Lane 1		1	293	--	288	--	5	--	0		
On-Ramp Lane 2		1	292	--	287	--	5	--	0		

Roadway/Lane(s)	Segment	Number of Lanes	Peak Hour Volume	Auto		Medium Truck		Heavy Truck		Speed (Auto/MT/HT)	Notes
				%	Volume	%	Volume	%	Volume		
SB I-5 HOV (Total)	Between Avenida De La Carlota Hook On-ramp and El Toro Road On-ramp	2	1,553	100.0%	1,553	0.0%	0	0.0%	0	70 / 70 / 55	
SB I-5 HOV Lane 1		1	777	--	777	--	0	--	0		
SB I-5 HOV Lane 2		1	776	--	776	--	0	--	0		
SB I-5 GP Lanes (Total)		5	7,686	92.7%	7,125	3.6%	277	3.7%	284		
General Purpose Lane 1		1	1,537	--	1,482	--	55	--	0		
General Purpose Lane 2		1	1,537	--	1,482	--	55	--	0		
General Purpose Lane 3		1	1,537	--	1,482	--	55	--	0		
General Purpose Lane 4		1	1,537	--	1,339	--	56	--	142		
General Purpose Lane 5		1	1,538	--	1,340	--	56	--	142		
I-5 Southbound Avenida De La Carlota On-Ramp	El Toro Road On-ramp	2-1	270	97.3%	263	2.2%	6	0.5%	1	10 / 10 / 10 to 70 / 70 / 55	
On-Ramp Lane 1		1	136	--	132	--	3	--	1		
On-Ramp Lane 2		1	134	--	131	--	3	--	0		
SB I-5 HOV (Total)	South of El Toro Road On-ramp	2	1,422	100.0%	1,422	0.0%	0	0.0%	0	70 / 70 / 55	
SB I-5 HOV Lane 1		1	711	--	711	--	0	--	0		
SB I-5 HOV Lane 2		1	711	--	711	--	0	--	0		
SB I-5 GP Lanes (Total)		6	7,881	92.7%	7,305	3.6%	284	3.7%	292		
General Purpose Lane 1		1	1,314	--	1,267	--	47	--	0		
General Purpose Lane 2		1	1,314	--	1,267	--	47	--	0		
General Purpose Lane 3		1	1,314	--	1,267	--	47	--	0		
General Purpose Lane 4		1	1,314	--	1,267	--	47	--	0		
General Purpose Lane 5		1	1,314	--	1,120	--	48	--	146		
General Purpose Lane 6 (Aux)		1	1,311	--	1,117	--	48	--	146		

Table A-2c. Existing Local Traffic Volumes for TNM Modeling

Roadway/Lane(s)	Segment	Number of Lanes	Peak Hour Volume	Auto		Medium Truck		Heavy Truck		Speed (Auto/MT
				%	Volume	%	Volume	%	Volume	
EB El Toro Road (Total)	El Toro Road West of Avenida De La Carlota	4	1,820	96.9%	1,764	2.6%	47	0.5%	9	40
Eastbound Lane 1		1	455		442		11		2	
Eastbound Lane 2		1	455		441		12		2	
Eastbound Lane 3		1	455		441		12		2	
Eastbound Lane 4		1	455		440		12		3	
WB El Toro Road (Total)		3	1,730	97.3%	1,683	2.2%	38	0.5%	9	40
Westbound Lane 1		1	577		562		12		3	
Westbound Lane 2		1	577		561		13		3	
Westbound Lane 3		1	576		560		13		3	
EB El Toro Road (Total)	El Toro Road East of Avenida De La Carlota	4	1,820	96.9%	1,764	2.6%	47	0.5%	9	40
Eastbound Lane 1		1	455		442		11		2	
Eastbound Lane 2		1	455		441		12		2	
Eastbound Lane 3		1	455		441		12		2	
Eastbound Lane 4		1	455		440		12		3	
WB El Toro Road (Total)		6	1,730	97.3%	1,683	2.2%	38	0.5%	9	40
Westbound Lane 1		1	288		281		6		1	
Westbound Lane 2		1	288		281		6		1	
Westbound Lane 3		1	288		281		6		1	
Westbound Lane 4		1	288		280		6		2	
Westbound Lane 5		1	288		279		7		2	
Westbound Lane 6		1	290		281		7		2	
EB El Toro Road (Total)	El Toro Road West of NorthBound Ramps	5	1,820	96.9%	1,764	2.6%	47	0.5%	9	40
Eastbound Lane 1		1	364		354		9		1	
Eastbound Lane 2		1	364		353		9		2	
Eastbound Lane 3		1	364		353		9		2	
Eastbound Lane 4		1	364		352		10		2	
Eastbound Lane 5		1	364		352		10		2	
WB El Toro Road (Total)		3	1,730	97.3%	1,683	2.2%	38	0.5%	9	40
Westbound Lane 1		1	577		562		12		3	
Westbound Lane 2		1	577		561		13		3	
Westbound Lane 3		1	576		560		13		3	

Table A-2c. Existing Local Traffic Volumes for TNM Modeling

Roadway/Lane(s)	Segment	Number of Lanes	Peak Hour Volume	Auto		Medium Truck		Heavy Truck		Speed (Auto/MT
				%	Volume	%	Volume	%	Volume	
EB El Toro Road (Total)	El Toro Road East of NorthBound Ramps	4	1,820	96.9%	1,764	2.6%	47	0.5%	9	40
Eastbound Lane 1		1	455		442		11		2	
Eastbound Lane 2		1	455		441		12		2	
Eastbound Lane 3		1	455		441		12		2	
Eastbound Lane 4		1	455		440		12		3	
WB El Toro Road (Total)		5	1,730	97.3%	1,683	2.2%	38	0.5%	9	40
Westbound Lane 1		1	346		338		7		1	
Westbound Lane 2		1	346		337		7		2	
Westbound Lane 3		1	346		336		8		2	
Westbound Lane 4		1	346		336		8		2	
Westbound Lane 5		1	346		336		8		2	
EB El Toro Road (Total)	El Toro Road West of Rockfield Boulevard	6	1,820	96.9%	1,764	2.6%	47	0.5%	9	40
Eastbound Lane 1		1	303		295		7		1	
Eastbound Lane 2		1	303		294		8		1	
Eastbound Lane 3		1	303		294		8		1	
Eastbound Lane 4		1	303		293		8		2	
Eastbound Lane 5		1	303		293		8		2	
Eastbound Lane 6		1	305		295		8		2	
WB El Toro Road (Total)		5	1,730	97.3%	1,683	2.2%	38	0.5%	9	40
Westbound Lane 1		1	346		338		7		1	
Westbound Lane 2		1	346		337		7		2	
Westbound Lane 3		1	346		336		8		2	
Westbound Lane 4		1	346		336		8		2	
Westbound Lane 5		1	346		336		8		2	

Table A-2c. Existing Local Traffic Volumes for TNM Modeling

Roadway/Lane(s)	Segment	Number of Lanes	Peak Hour Volume	Auto		Medium Truck		Heavy Truck		Speed (Auto/MT
				%	Volume	%	Volume	%	Volume	
EB El Toro Road (Total)	El Toro Road East of Rockfield Boulevard	4	1,820	96.9%	1,764	2.6%	47	0.5%	9	40
Eastbound Lane 1		1	455		442		11		2	
Eastbound Lane 2		1	455		441		12		2	
Eastbound Lane 3		1	455		441		12		2	
Eastbound Lane 4		1	455		440		12		3	
WB El Toro Road (Total)		6	1,730	97.3%	1,683	2.2%	38	0.5%	9	40
Westbound Lane 1		1	288		281		6		1	
Westbound Lane 2		1	288		281		6		1	
Westbound Lane 3		1	288		281		6		1	
Westbound Lane 4		1	288		280		6		2	
Westbound Lane 5		1	288		279		7		2	
Westbound Lane 6		1	290		281		7		2	
NB Avenida De La Carlota (Total)	Avenida De La Carlota South of El Toro Road	2	620	97.7%	606	2.1%	13	0.2%	1	40
Northbound Lane 1		1	310		304		6		0	
Northbound Lane 2		1	310		302		7		1	
SB Avenida De La Carlota (Total)		2	795	97.0%	771	2.5%	20	0.5%	4	40
Southbound Lane 1		1	398		386		10		2	
Southbound Lane 2		1	397		385		10		2	
NB Avenida De La Carlota (Total)	Avenida De La Carlota North of El Toro Road	2	620	97.7%	606	2.1%	13	0.2%	1	40
Northbound Lane 1		1	310		303		7		0	
Northbound Lane 2		1	310		303		6		1	
SB Avenida De La Carlota (Total)		6	795	97.0%	771	2.5%	20	0.5%	4	40
Southbound Lane 1		1	133		130		3		0	
Southbound Lane 2		1	133		130		3		0	
Southbound Lane 3		1	133		129		3		1	
Southbound Lane 4		1	133		129		3		1	
Southbound Lane 5		1	133		128		4		1	
Southbound Lane 6		1	130		125		4		1	

Table A-2c. Existing Local Traffic Volumes for TNM Modeling

Roadway/Lane(s)	Segment	Number of Lanes	Peak Hour Volume	Auto		Medium Truck		Heavy Truck		Speed (Auto/MT
				%	Volume	%	Volume	%	Volume	
NB Avenida De La Carlota	Avenida De La Carlota South of Paseo De Valencia	4	620	97.7%	606	2.1%	13	0.2%	1	40
Northbound Lane 1		1	155		152		3		0	
Northbound Lane 2		1	155		152		3		0	
Northbound Lane 3		1	155		152		3		0	
Northbound Lane 4		1	155		150		4		1	
SB Avenida De La Carlota		4	795	97.0%	771	2.5%	20	0.5%	4	40
Southbound Lane 1		1	199		193		5		1	
Southbound Lane 2		1	199		193		5		1	
Southbound Lane 3		1	199		193		5		1	
Southbound Lane 4		1	198		192		5		1	
NB Avenida De La Carlota	Avenida De La Carlota North of Paseo De Valencia	2	620	97.7%	606	2.1%	13	0.2%	1	40
Northbound Lane 1		1	310		304		6		0	
Northbound Lane 2		1	310		302		7		1	
SB Avenida De La Carlota		5	795	97.0%	771	2.5%	20	0.5%	4	40
Southbound Lane 1		1	159		155		4		0	
Southbound Lane 2		1	159		154		4		1	
Southbound Lane 3		1	159		154		4		1	
Southbound Lane 4		1	159		154		4		1	
Southbound Lane 5		1	159		154		4		1	
EB Paseo De Valencia (Total)	Paseo De Valencia West of Avenida De La Carlota	4	875	97.7%	855	2.1%	18	0.2%	2	40
Eastbound Lane 1		1	219		215		4		0	
Eastbound Lane 2		1	219		215		4		0	
Eastbound Lane 3		1	219		213		5		1	
Eastbound Lane 4		1	218		212		5		1	
WB Paseo De Valencia (Total)		2	930	97.0%	902	2.5%	23	0.5%	5	40
Westbound Lane 1		1	465		452		11		2	
Westbound Lane 2		1	465		450		12		3	

Table A-2c. Existing Local Traffic Volumes for TNM Modeling

Roadway/Lane(s)	Segment	Number of Lanes	Peak Hour Volume	Auto		Medium Truck		Heavy Truck		Speed (Auto/MT
				%	Volume	%	Volume	%	Volume	
NB Bridger Rd (Total)	Bridger Road North of El Toro Road	1	155	96.9%	150	2.6%	4	0.5%	1	25
Northbound Lane 1		1	155		150		4		1	
SB Bridger Rd (Total)		3	210	97.3%	204	2.2%	5	0.5%	1	25
Southbound Lane 1		1	70		68		2		0	
Southbound Lane 2		1	70		68		2		0	
Southbound Lane 3		1	70		68		1		1	
NB Rockfield Boulevard	Rockfield Boulevard South of El Toro Road	5	685	96.9%	664	2.6%	18	0.5%	3	40
Northbound Lane 1		1	137		134		3		0	
Northbound Lane 2		1	137		134		3		0	
Northbound Lane 3		1	137		132		4		1	
Northbound Lane 4		1	137		132		4		1	
Northbound Lane 5		1	137		132		4		1	
SB Rockfield Boulevard		2	735	97.3%	715	2.2%	16	0.5%	4	40
Southbound Lane 1		1	368		358		8		2	
Southbound Lane 2		1	367		357		8		2	
NB Rockfield Boulevard (Total)	Rockfield Boulevard North of El Toro Road	2	685	96.9%	664	2.6%	18	0.5%	3	40
Northbound Lane 1		1	343		333		9		1	
Northbound Lane 2		1	342		331		9		2	
SB Rockfield Boulevard (Total)		5	735	97.3%	715	2.2%	16	0.5%	4	40
Southbound Lane 1		1	147		144		3		0	
Southbound Lane 2		1	147		143		3		1	
Southbound Lane 3		1	147		143		3		1	
Southbound Lane 4		1	147		143		3		1	
Southbound Lane 5		1	147		142		4		1	

Appendix A-3 Design-Year No-Build Traffic Volumes

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Table A-3a is based on traffic data supplied by the project's licensed traffic engineer (Jacobs). Rules were applied to the traffic data in order to represent worst-case traffic noise conditions. These rules are described in the NSR and summarized below. Rules that only apply to specific features (i.e. NB on-ramp, SB off-ramp, etc.) are identified in the "Notes" column below.

1. Truck percentages for mainline, ramps and local roads are be based on validation traffic data.
2. Heavy trucks are modeled on the two outside lanes of the mainline.
3. This note is not used in Table A-3a

Roadway/Lane(s)	Segment	Number of Lanes	Peak Hour Volume	Auto		Medium Truck		Heavy Truck		Speed (Auto/MT/HT)	Notes
				%	Volume	%	Volume	%	Volume		
NB I-5 HOV (Total)	South of El Toro Road	2	1,554	100.0%	1,554	0.0%	0	0.0%	0	70 / 70 / 55	
NB I-5 HOV Lane 1		1	777	--	777	--	0	--	0		
NB I-5 HOV Lane 2		1	777	--	777	--	0	--	0		
NB I-5 GP Lanes (Total)		6	10,502	92.0%	9,662	3.6%	378	4.4%	462		
General Purpose Lane 1		1	1,750	--	1,687	--	63	--	0		
General Purpose Lane 2		1	1,750	--	1,687	--	63	--	0		
General Purpose Lane 3		1	1,750	--	1,687	--	63	--	0		
General Purpose Lane 4		1	1,750	--	1,687	--	63	--	0		
General Purpose Lane 5		1	1,750	--	1,456	--	63	--	231		
General Purpose Lane 6 (Aux)		1	1,752	--	1,458	--	63	--	231		
I-5 Northbound El Toro Road Off-Ramp	El Toro Road Off-ramp	2-4	1,407	97.4%	1,371	2.0%	28	0.6%	8	70 / 70 / 55 to 10 / 10 / 10	
Off-Ramp Lane 1		1	352	--	343	--	7	--	2		
Off-Ramp Lane 2		1	352	--	343	--	7	--	2		
Off-Ramp Lane 3		1	352	--	343	--	7	--	2		
Off-Ramp Lane 4		1	351	--	342	--	7	--	2		
NB I-5 HOV (Total)	Between El Toro Road off-ramp and loop On-ramp	2	2,387	100.0%	2,387	0.0%	0	0.0%	0	70 / 70 / 55	
NB I-5 HOV Lane 1		1	1,194	--	1,194	--	0	--	0		
NB I-5 HOV Lane 2		1	1,193	--	1,193	--	0	--	0		
NB I-5 GP Lanes (Total)		5	8,568	92.0%	7,883	3.6%	308	4.4%	377		
General Purpose Lane 1		1	1,714	--	1,653	--	61	--	0		
General Purpose Lane 2		1	1,714	--	1,653	--	61	--	0		
General Purpose Lane 3		1	1,714	--	1,652	--	62	--	0		
General Purpose Lane 4		1	1,714	--	1,463	--	62	--	189		
General Purpose Lane 5		1	1,712	--	1,462	--	62	--	188		
I-5 Northbound El Toro Road	El Toro Road Loop On-ramp	2-1	1,467	96.9%	1,421	2.7%	40	0.4%	6	10 / 10 / 10 to 70 / 70 / 55	
On-Ramp Lane 1		1	734	--	711	--	20	--	3		
On-Ramp Lane 2		1	733	--	710	--	20	--	3		

Roadway/Lane(s)	Segment	Number of Lanes	Peak Hour Volume	Auto		Medium Truck		Heavy Truck		Speed (Auto/MT/HT)	Notes
				%	Volume	%	Volume	%	Volume		
NB I-5 HOV (Total)	Between El Toro Road loop On-ramp and On-ramp	2	2,422	100.0%	2,422	0.0%	0	0.0%	0	70 / 70 / 55	
NB I-5 HOV Lane 1		1	1,211	--	1,211	--	0	--	0		
NB I-5 HOV Lane 2		1	1,211	--	1,211	--	0	--	0		
NB I-5 GP Lanes (Total)		5	9,476	92.7%	8,784	3.6%	341	3.7%	351		
General Purpose Lane 1		1	1,895	--	1,827	--	68	--	0		
General Purpose Lane 2		1	1,895	--	1,827	--	68	--	0		
General Purpose Lane 3		1	1,895	--	1,827	--	68	--	0		
General Purpose Lane 4		1	1,895	--	1,651	--	68	--	176		
General Purpose Lane 5		1	1,896	--	1,652	--	69	--	175		
I-5 Northbound El Toro Road On-Ramp	El Toro Road On-ramp	2-1	1,094	96.0%	1,051	2.6%	28	1.4%	15	10 / 10 / 10 to 70 / 70 / 55	
On-Ramp Lane 1		1	548	--	526	--	14	--	8		
On-Ramp Lane 2		1	546	--	525	--	14	--	7		
NB I-5 HOV (Total)	North of El Toro Road	2	2,048	100.0%	2,048	0.0%	0	0.0%	0	70 / 70 / 55	
NB I-5 HOV Lane 1		1	1,024	--	1,024	--	0	--	0		
NB I-5 HOV Lane 2		1	1,024	--	1,024	--	0	--	0		
NB I-5 GP Lanes (Total)		6	10,943	92.7%	10,144	3.6%	394	3.7%	405		
General Purpose Lane 1		1	1,824	--	1,758	--	66	--	0		
General Purpose Lane 2		1	1,824	--	1,758	--	66	--	0		
General Purpose Lane 3		1	1,824	--	1,758	--	66	--	0		
General Purpose Lane 4		1	1,824	--	1,758	--	66	--	0		
General Purpose Lane 5		1	1,824	--	1,555	--	66	--	203		
General Purpose Lane 6 (Aux)		1	1,823	--	1,557	--	64	--	202		
NB I-5 HOV (Total)	North of El Toro Road	2	2,048	100.0%	2,048	0.0%	0	0.0%	0	70 / 70 / 55	
NB I-5 HOV Lane 1		1	1,024	--	1,024	--	0	--	0		
NB I-5 HOV Lane 2		1	1,024	--	1,024	--	0	--	0		
NB I-5 GP Lanes (Total)		7	10,943	92.7%	10,144	3.6%	394	3.7%	405		
General Purpose Lane 1		1	1,563	--	1,507	--	56	--	0		
General Purpose Lane 2		1	1,563	--	1,507	--	56	--	0		
General Purpose Lane 3		1	1,563	--	1,507	--	56	--	0		
General Purpose Lane 4		1	1,563	--	1,507	--	56	--	0		
General Purpose Lane 5		1	1,563	--	1,507	--	56	--	0		
General Purpose Lane 6		1	1,563	--	1,304	--	56	--	203		
General Purpose Lane 7		1	1,565	--	1,305	--	58	--	202		

Table A-3b is based on traffic data supplied by the project's licensed traffic engineer (Jacobs). Rules were applied to the traffic data in order to represent worst-case traffic noise conditions. These rules are described in the NSR and summarized below. Rules that only apply to specific features (i.e. NB on-ramp, SB off-ramp, etc.) are identified in the "Notes" column below.

1. Truck percentages for mainline, ramps and local roads are be based on validation traffic data.
2. Heavy trucks are modeled on the two outside lanes of the mainline.
3. This note is not used in Table A-3b

Roadway/Lane(s)	Segment	Number of Lanes	Peak Hour Volume	Auto		Medium Truck		Heavy Truck		Speed	Notes
				%	Volume	%	Volume	%	Volume	(Auto/MT/HT)	
SB I-5 HOV (Total)	North of El Toro Road	2	2,513	100.0%	2,513	0.0%	0	0.0%	0	70 / 70 / 55	
SB I-5 HOV Lane 1		1	1,257	--	1,257	--	0	--	0		
SB I-5 HOV Lane 2		1	1,256	--	1,256	--	0	--	0		
SB I-5 GP Lanes (Total)		6	10,271	95.6%	9,819	2.1%	216	2.3%	236		
General Purpose Lane 1		1	1,712	--	1,676	--	36	--	0		
General Purpose Lane 2		1	1,712	--	1,676	--	36	--	0		
General Purpose Lane 3		1	1,712	--	1,676	--	36	--	0		
General Purpose Lane 4		1	1,712	--	1,676	--	36	--	0		
General Purpose Lane 5		1	1,712	--	1,558	--	36	--	118		
General Purpose Lane 6 (Aux)		1	1,711	--	1,557	--	36	--	118		
I-5 Southbound Avenida De La Carlota Off-Ramp	Avenida De La Carlota Off-ramp	2-4	2,155	97.4%	2,099	2.0%	43	0.6%	13	70 / 70 / 55 to 10 / 10 / 10	
Off-Ramp Lane 1		1	539	--	525	--	11	--	3		
Off-Ramp Lane 2		1	539	--	525	--	11	--	3		
Off-Ramp Lane 3		1	539	--	525	--	11	--	3		
Off-Ramp Lane 4		1	538	--	524	--	10	--	4		
SB I-5 HOV (Total)	Between Avenida De La Carlota off-ramp and Hook On-ramp	2	2,235	100.0%	2,235	0.0%	0	0.0%	0	70 / 70 / 55	
SB I-5 HOV Lane 1		1	1,118	--	1,118	--	0	--	0		
SB I-5 HOV Lane 2		1	1,117	--	1,117	--	0	--	0		
SB I-5 GP Lanes (Total)		5	8,624	95.6%	8,245	2.1%	181	2.3%	198		
General Purpose Lane 1		1	1,725	--	1,689	--	36	--	0		
General Purpose Lane 2		1	1,725	--	1,689	--	36	--	0		
General Purpose Lane 3		1	1,725	--	1,689	--	36	--	0		
General Purpose Lane 4		1	1,725	--	1,590	--	36	--	99		
General Purpose Lane 5		1	1,724	--	1,588	--	37	--	99		
I-5 Southbound Avenida De La Carlota On-Ramp	Avenida De La Carlota Hook On-ramp	2-1	1,025	98.3%	1,008	1.7%	17	0.0%	0	10 / 10 / 10 to 70 / 70 / 55	
On-Ramp Lane 1		1	513	--	504	--	9	--	0		
On-Ramp Lane 2		1	512	--	504	--	8	--	0		

Roadway/Lane(s)	Segment	Number of Lanes	Peak Hour Volume	Auto		Medium Truck		Heavy Truck		Speed (Auto/MT/HT)	Notes
				%	Volume	%	Volume	%	Volume		
SB I-5 HOV (Total)	Between Avenida De La Carlota Hook On-ramp and El Toro Road On-ramp	2	2,442	100.0%	2,442	0.0%	0	0.0%	0	70 / 70 / 55	
SB I-5 HOV Lane 1		1	1,221	--	1,221	--	0	--	0		
SB I-5 HOV Lane 2		1	1,221	--	1,221	--	0	--	0		
SB I-5 GP Lanes (Total)		5	9,441	92.7%	8,752	3.6%	340	3.7%	349		
General Purpose Lane 1		1	1,888	--	1,820	--	68	--	0		
General Purpose Lane 2		1	1,888	--	1,820	--	68	--	0		
General Purpose Lane 3		1	1,888	--	1,820	--	68	--	0		
General Purpose Lane 4		1	1,888	--	1,645	--	68	--	175		
General Purpose Lane 5		1	1,889	--	1,647	--	68	--	174		
I-5 Southbound Avenida De La Carlota On-Ramp	El Toro Road On-ramp	2-1	466	97.3%	454	2.2%	10	0.5%	2	10 / 10 / 10 to 70 / 70 / 55	
On-Ramp Lane 1		1	233	--	227	--	5	--	1		
On-Ramp Lane 2		1	233	--	227	--	5	--	1		
SB I-5 HOV (Total)	South of El Toro Road On-ramp	2	1,906	100.0%	1,906	0.0%	0	0.0%	0	70 / 70 / 55	
SB I-5 HOV Lane 1		1	953	--	953	--	0	--	0		
SB I-5 HOV Lane 2		1	953	--	953	--	0	--	0		
SB I-5 GP Lanes (Total)		6	10,420	92.7%	9,659	3.6%	375	3.7%	386		
General Purpose Lane 1		1	1,737	--	1,674	--	63	--	0		
General Purpose Lane 2		1	1,737	--	1,674	--	63	--	0		
General Purpose Lane 3		1	1,737	--	1,674	--	63	--	0		
General Purpose Lane 4		1	1,737	--	1,674	--	63	--	0		
General Purpose Lane 5		1	1,737	--	1,481	--	63	--	193		
General Purpose Lane 6 (Aux)		1	1,735	--	1,482	--	60	--	193		

Table A-3c. No Build Local Traffic Volumes for TNM Modeling

Roadway/Lane(s)	Segment	Number of Lanes	Peak Hour Volume	Auto		Medium Truck		Heavy Truck		Speed (Auto/MT
				%	Volume	%	Volume	%	Volume	
EB El Toro Road (Total)	El Toro Road West of Avenida De La Carlota	4	3,248	96.9%	3,148	2.6%	84	0.5%	16	40
Eastbound Lane 1		1	812		787		21		4	
Eastbound Lane 2		1	812		787		21		4	
Eastbound Lane 3		1	812		787		21		4	
Eastbound Lane 4		1	812		787		21		4	
WB El Toro Road (Total)		3	2,416	97.3%	2,351	2.2%	53	0.5%	12	40
Westbound Lane 1		1	805		783		18		4	
Westbound Lane 2		1	805		783		18		4	
Westbound Lane 3		1	806		785		17		4	
EB El Toro Road (Total)	El Toro Road East of Avenida De La Carlota	4	3,248	96.9%	3,148	2.6%	84	0.5%	16	40
Eastbound Lane 1		1	812		787		21		4	
Eastbound Lane 2		1	812		787		21		4	
Eastbound Lane 3		1	812		787		21		4	
Eastbound Lane 4		1	812		787		21		4	
WB El Toro Road (Total)		6	2,416	97.3%	2,351	2.2%	53	0.5%	12	40
Westbound Lane 1		1	403		392		9		2	
Westbound Lane 2		1	403		392		9		2	
Westbound Lane 3		1	403		392		9		2	
Westbound Lane 4		1	403		392		9		2	
Westbound Lane 5		1	403		392		9		2	
Westbound Lane 6		1	401		391		8		2	
EB El Toro Road (Total)	El Toro Road West of NorthBound Ramps	5	3,248	96.9%	3,148	2.6%	84	0.5%	16	40
Eastbound Lane 1		1	650		630		17		3	
Eastbound Lane 2		1	650		630		17		3	
Eastbound Lane 3		1	650		630		17		3	
Eastbound Lane 4		1	650		630		17		3	
Eastbound Lane 5		1	648		628		16		4	
WB El Toro Road (Total)		3	2,416	97.3%	2,351	2.2%	53	0.5%	12	40
Westbound Lane 1		1	805		783		18		4	
Westbound Lane 2		1	805		783		18		4	
Westbound Lane 3		1	806		785		17		4	

Roadway/Lane(s)	Segment	Number of Lanes	Peak Hour Volume	Auto		Medium Truck		Heavy Truck		Speed (Auto/MT
				%	Volume	%	Volume	%	Volume	
EB El Toro Road (Total)	El Toro Road East of NorthBound Ramps	4	3,248	96.9%	3,148	2.6%	84	0.5%	16	40
Eastbound Lane 1		1	812		787		21		4	
Eastbound Lane 2		1	812		787		21		4	
Eastbound Lane 3		1	812		787		21		4	
Eastbound Lane 4		1	812		787		21		4	
WB El Toro Road (Total)		5	2,416	97.3%	2,351	2.2%	53	0.5%	12	40
Westbound Lane 1		1	483		470		11		2	
Westbound Lane 2		1	483		470		11		2	
Westbound Lane 3		1	483		470		11		2	
Westbound Lane 4		1	483		470		10		3	
Westbound Lane 5		1	484		471		10		3	
EB El Toro Road (Total)	El Toro Road West of Rockfield Boulevard	6	3,248	96.9%	3,148	2.6%	84	0.5%	16	40
Eastbound Lane 1		1	541		524		14		3	
Eastbound Lane 2		1	541		524		14		3	
Eastbound Lane 3		1	541		524		14		3	
Eastbound Lane 4		1	541		524		14		3	
Eastbound Lane 5		1	541		525		14		2	
Eastbound Lane 6		1	543		527		14		2	
WB El Toro Road (Total)		5	2,416	97.3%	2,351	2.2%	53	0.5%	12	40
Westbound Lane 1		1	483		470		11		2	
Westbound Lane 2		1	483		470		11		2	
Westbound Lane 3		1	483		470		11		2	
Westbound Lane 4		1	483		470		10		3	
Westbound Lane 5		1	484		471		10		3	

Table A-3c. No Build Local Traffic Volumes for TNM Modeling

Roadway/Lane(s)	Segment	Number of Lanes	Peak Hour Volume	Auto		Medium Truck		Heavy Truck		Speed (Auto/MT
				%	Volume	%	Volume	%	Volume	
EB El Toro Road (Total)	El Toro Road East of Rockfield Boulevard	4	3,248	96.9%	3,148	2.6%	84	0.5%	16	40
Eastbound Lane 1		1	812		787		21		4	
Eastbound Lane 2		1	812		787		21		4	
Eastbound Lane 3		1	812		787		21		4	
Eastbound Lane 4		1	812		787		21		4	
WB El Toro Road (Total)		6	2,416	97.3%	2,351	2.2%	53	0.5%	12	40
Westbound Lane 1		1	403		392		9		2	
Westbound Lane 2		1	403		392		9		2	
Westbound Lane 3		1	403		392		9		2	
Westbound Lane 4		1	403		392		9		2	
Westbound Lane 5		1	403		392		9		2	
Westbound Lane 6		1	401		391		8		2	
NB Avenida De La Carlota (Total)	Avenida De La Carlota South of El Toro Road	2	1,167	97.7%	1,140	2.1%	25	0.2%	2	40
Northbound Lane 1		1	584		570		13		1	
Northbound Lane 2		1	583		570		12		1	
SB Avenida De La Carlota (Total)		2	1,873	97.0%	1,817	2.5%	47	0.5%	9	40
Southbound Lane 1		1	937		908		24		5	
Southbound Lane 2		1	936		909		23		4	
NB Avenida De La Carlota (Total)	Avenida De La Carlota North of El Toro Road	2	1,167	97.7%	1,140	2.1%	25	0.2%	2	40
Northbound Lane 1		1	584		570		13		1	
Northbound Lane 2		1	583		570		12		1	
SB Avenida De La Carlota (Total)		6	1,873	97.0%	1,817	2.5%	47	0.5%	9	40
Southbound Lane 1		1	312		304		7		1	
Southbound Lane 2		1	312		303		8		1	
Southbound Lane 3		1	312		303		8		1	
Southbound Lane 4		1	312		302		8		2	
Southbound Lane 5		1	312		302		8		2	
Southbound Lane 6		1	313		303		8		2	

Table A-3c. No Build Local Traffic Volumes for TNM Modeling

Roadway/Lane(s)	Segment	Number of Lanes	Peak Hour Volume	Auto		Medium Truck		Heavy Truck		Speed (Auto/MT
				%	Volume	%	Volume	%	Volume	
NB Avenida De La Carlota	Avenida De La Carlota South of Paseo De Valencia	4	1,167	97.7%	1,140	2.1%	25	0.2%	2	40
Northbound Lane 1		1	292		286		6		0	
Northbound Lane 2		1	292		286		6		0	
Northbound Lane 3		1	292		285		6		1	
Northbound Lane 4		1	291		283		7		1	
SB Avenida De La Carlota		4	1,873	97.0%	1,817	2.5%	47	0.5%	9	40
Southbound Lane 1		1	468		455		11		2	
Southbound Lane 2		1	468		454		12		2	
Southbound Lane 3		1	468		454		12		2	
Southbound Lane 4		1	469		454		12		3	
NB Avenida De La Carlota	Avenida De La Carlota North of Paseo De Valencia	2	1,167	97.7%	1,140	2.1%	25	0.2%	2	40
Northbound Lane 1		1	584		571		12		1	
Northbound Lane 2		1	583		569		13		1	
SB Avenida De La Carlota		5	1,873	97.0%	1,817	2.5%	47	0.5%	9	40
Southbound Lane 1		1	375		364		9		2	
Southbound Lane 2		1	375		364		9		2	
Southbound Lane 3		1	375		364		9		2	
Southbound Lane 4		1	375		363		10		2	
Southbound Lane 5		1	373		362		10		1	
EB Paseo De Valencia (Total)	Paseo De Valencia West of Avenida De La Carlota	4	1,144	97.7%	1,118	2.1%	24	0.2%	2	40
Eastbound Lane 1		1	286		279		6		1	
Eastbound Lane 2		1	286		279		6		1	
Eastbound Lane 3		1	286		280		6		0	
Eastbound Lane 4		1	286		280		6		0	
WB Paseo De Valencia (Total)		2	1,076	97.0%	1,044	2.5%	27	0.5%	5	40
Westbound Lane 1		1	538		523		12		3	
Westbound Lane 2		1	538		521		15		2	

Table A-3c. No Build Local Traffic Volumes for TNM Modeling

Roadway/Lane(s)	Segment	Number of Lanes	Peak Hour Volume	Auto		Medium Truck		Heavy Truck		Speed (Auto/MT
				%	Volume	%	Volume	%	Volume	
NB Bridger Rd (Total)	Bridger Road North of El Toro Road	1	180	96.9%	174	2.6%	5	0.5%	1	25
Northbound Lane 1		1	180		174		5		1	
SB Bridger Rd (Total)		3	251	97.3%	244	2.2%	6	0.5%	1	25
Southbound Lane 1		1	84		83		1		0	
Southbound Lane 2		1	84		82		2		0	
Southbound Lane 3		1	83		79		3		1	
NB Rockfield Boulevard	Rockfield Boulevard South of El Toro Road	5	909	96.9%	880	2.6%	24	0.5%	5	40
Northbound Lane 1		1	182		176		5		1	
Northbound Lane 2		1	182		176		5		1	
Northbound Lane 3		1	182		176		5		1	
Northbound Lane 4		1	182		176		5		1	
Northbound Lane 5		1	181		176		4		1	
SB Rockfield Boulevard		2	1,074	97.3%	1,045	2.2%	24	0.5%	5	40
Southbound Lane 1		1	537		522		12		3	
Southbound Lane 2		1	537		523		12		2	
NB Rockfield Boulevard (Total)	Rockfield Boulevard North of El Toro Road	2	909	96.9%	880	2.6%	24	0.5%	5	40
Northbound Lane 1		1	455		440		12		3	
Northbound Lane 2		1	454		440		12		2	
SB Rockfield Boulevard (Total)		5	1,074	97.3%	1,045	2.2%	24	0.5%	5	40
Southbound Lane 1		1	215		210		4		1	
Southbound Lane 2		1	215		209		5		1	
Southbound Lane 3		1	215		209		5		1	
Southbound Lane 4		1	215		209		5		1	
Southbound Lane 5		1	214		208		5		1	

Appendix A-4 Design-Year Build Traffic Volumes

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Table A-4a. Build Alternative 1 Northbound Traffic Volumes for TNM Modeling

Table A-4a is based on traffic data supplied by the project's licensed traffic engineer (Jacobs). Rules were applied to the traffic data in order to represent worst-case traffic noise conditions. These rules are described in the NSR and summarized below. Rules that only apply to specific features (i.e. NB on-ramp, SB off-ramp, etc.) are identified in the "Notes" column below.

1. Truck percentages for mainline, ramps and local roads are be based on validation traffic data.
2. Heavy trucks are modeled on the two outside lanes of the mainline.
3. This note is not used in Table A-4a

Roadway/Lane(s)	Segment	Number of Lanes	Peak Hour Volume	Auto		Medium Truck		Heavy Truck		Speed (Auto/MT/HT)	Notes
				%	Volume	%	Volume	%	Volume		
NB I-5 HOV (Total)	South of El Toro Road	2	1,554	100.0%	1,554	0.0%	0	0.0%	0	70 / 70 / 55	
NB I-5 HOV Lane 1		1	777	--	777	--	0	--	0		
NB I-5 HOV Lane 2		1	777	--	777	--	0	--	0		
NB I-5 GP Lanes (Total)		6	10,502	92.0%	9,662	3.6%	378	4.4%	462		
General Purpose Lane 1		1	1,750	--	1,687	--	63	--	0		
General Purpose Lane 2		1	1,750	--	1,687	--	63	--	0		
General Purpose Lane 3		1	1,750	--	1,687	--	63	--	0		
General Purpose Lane 4		1	1,750	--	1,687	--	63	--	0		
General Purpose Lane 5		1	1,750	--	1,456	--	63	--	231		
General Purpose Lane 6 (Aux)		1	1,752	--	1,458	--	63	--	231		
I-5 Northbound El Toro Road Off-Ramp	El Toro Road Off-ramp	2-4	1,407	97.4%	1,371	2.0%	28	0.6%	8	70 / 70 / 55 to 10 / 10 / 10	
Off-Ramp Lane 1		1	352	--	343	--	7	--	2		
Off-Ramp Lane 2		1	352	--	343	--	7	--	2		
Off-Ramp Lane 3		1	352	--	343	--	7	--	2		
Off-Ramp Lane 4		1	351	--	342	--	7	--	2		
NB I-5 HOV (Total)	Between El Toro Road off-ramp and loop On-ramp	2	2,387	100.0%	2,387	0.0%	0	0.0%	0	70 / 70 / 55	
NB I-5 HOV Lane 1		1	1,194	--	1,194	--	0	--	0		
NB I-5 HOV Lane 2		1	1,193	--	1,193	--	0	--	0		
NB I-5 GP Lanes (Total)		5	8,568	92.0%	7,883	3.6%	308	4.4%	377		
General Purpose Lane 1		1	1,714	--	1,653	--	61	--	0		
General Purpose Lane 2		1	1,714	--	1,653	--	61	--	0		
General Purpose Lane 3		1	1,714	--	1,652	--	62	--	0		
General Purpose Lane 4		1	1,714	--	1,464	--	62	--	188		
General Purpose Lane 5		1	1,712	--	1,461	--	62	--	189		
I-5 Northbound El Toro Road	El Toro Road Loop On-ramp	2-1	1,467	96.9%	1,421	2.7%	40	0.4%	6	10 / 10 / 10 to 70 / 70 / 55	
On-Ramp Lane 1		1	734	--	711	--	20	--	3		
On-Ramp Lane 2		1	733	--	710	--	20	--	3		

Table A-4a. Build Alternative 1 Northbound Traffic Volumes for TNM Modeling

Roadway/Lane(s)	Segment	Number of Lanes	Peak Hour Volume	Auto		Medium Truck		Heavy Truck		Speed (Auto/MT/HT)	Notes
				%	Volume	%	Volume	%	Volume		
NB I-5 HOV (Total)	Between El Toro Road loop On-ramp and On-ramp	2	2,422	100.0%	2,422	0.0%	0	0.0%	0	70 / 70 / 55	
NB I-5 HOV Lane 1		1	1,211	--	1,211	--	0	--	0		
NB I-5 HOV Lane 2		1	1,211	--	1,211	--	0	--	0		
NB I-5 GP Lanes (Total)		6	9,476	92.7%	8,784	3.6%	341	3.7%	351		
General Purpose Lane 1		1	1,579	--	1,523	--	56	--	0		
General Purpose Lane 2		1	1,579	--	1,522	--	57	--	0		
General Purpose Lane 3		1	1,579	--	1,522	--	57	--	0		
General Purpose Lane 4		1	1,579	--	1,522	--	57	--	0		
General Purpose Lane 5		1	1,579	--	1,347	--	57	--	175		
General Purpose Lane 6		1	1,581	--	1,348	--	57	--	176		
I-5 Northbound El Toro Road On-Ramp	El Toro Road On-ramp	2-1	1,094	96.0%	1,051	2.6%	28	1.4%	15	10 / 10 / 10 to 70 / 70 / 55	
On-Ramp Lane 1		1	548	--	526	--	14	--	8		
On-Ramp Lane 2		1	546	--	525	--	14	--	7		
NB I-5 HOV (Total)	North of El Toro Road On-ramp	2	2,048	100.0%	2,048	0.0%	0	0.0%	0	70 / 70 / 55	
NB I-5 HOV Lane 1		1	1,024	--	1,024	--	0	--	0		
NB I-5 HOV Lane 2		1	1,024	--	1,024	--	0	--	0		
NB I-5 GP Lanes (Total)		7	10,943	92.7%	10,144	3.6%	394	3.7%	405		
General Purpose Lane 1		1	1,563	--	1,507	--	56	--	0		
General Purpose Lane 2		1	1,563	--	1,507	--	56	--	0		
General Purpose Lane 3		1	1,563	--	1,507	--	56	--	0		
General Purpose Lane 4		1	1,563	--	1,507	--	56	--	0		
General Purpose Lane 5		1	1,563	--	1,507	--	56	--	0		
General Purpose Lane 6		1	1,563	--	1,303	--	57	--	203		
General Purpose Lane 7		1	1,565	--	1,306	--	57	--	202		

Table A-4b is based on traffic data supplied by the project's licensed traffic engineer (Jacobs). Rules were applied to the traffic data in order to represent worst-case traffic noise conditions. These rules are described in the NSR and summarized below. Rules that only apply to specific features (i.e. NB on-ramp, SB off-ramp, etc.) are identified in the "Notes" column below.

1. Truck percentages for mainline, ramps and local roads are be based on validation traffic data.
2. Heavy trucks are modeled on the two outside lanes of the mainline.
3. SB Off-ramp volumes were split evenly resulting in 50% of the freeway volume exiting onto Avenida De La Carlota and 50% exiting onto Paseo De Valencia.

Roadway/Lane(s)	Segment	Number of Lanes	Peak Hour Volume	Auto		Medium Truck		Heavy Truck		Speed	Notes
				%	Volume	%	Volume	%	Volume	(Auto/MT/HT)	
SB I-5 HOV (Total)	North of Valencia/Carlota Off-ramp	2	2,513	100.0%	2,513	0.0%	0	0.0%	0	70 / 70 / 55	
SB I-5 HOV Lane 1		1	1,257	--	1,257	--	0	--	0		
SB I-5 HOV Lane 2		1	1,256	--	1,256	--	0	--	0		
SB I-5 GP Lanes (Total)		6	10,270	95.6%	9,818	2.1%	216	2.3%	236		
General Purpose Lane 1		1	1,712	--	1,676	--	36	--	0		
General Purpose Lane 2		1	1,712	--	1,676	--	36	--	0		
General Purpose Lane 3		1	1,712	--	1,676	--	36	--	0		
General Purpose Lane 4		1	1,712	--	1,676	--	36	--	0		
General Purpose Lane 5		1	1,712	--	1,558	--	36	--	118		
General Purpose Lane 6 (Aux)		1	1,710	--	1,556	--	36	--	118		
I-5 Southbound Valencia/Carlota Off-Ramp	Valencia/Carlota Off-ramp	2	2,155	97.4%	2,099	2.0%	43	0.6%	13	70 / 70 / 55 to 10 / 10 / 10	3
Off-Ramp Lane 1		1	1,077	--	1,049	--	22	--	6		
Off-Ramp Lane 2		1	1,078	--	1,050	--	21	--	7		
I-5 Southbound Paseo De Valencia Off-Ramp	Off-ramp to Paseo De Valencia	2-4	1,078	97.4%	1,050	2.0%	22	0.6%	6	70 / 70 / 55 to 10 / 10 / 10	3
Off-Ramp Lane 1		1	269	--	263	--	5	--	1		
Off-Ramp Lane 2		1	269	--	263	--	5	--	1		
Off-Ramp Lane 3		1	271	--	263	--	6	--	2		
Off-Ramp Lane 4		1	269	--	261	--	6	--	2		
I-5 Southbound Avenida De La Carlota Off-Ramp	Off-ramp to Avenida De La Carlota	2-4	1,077	97.4%	1,049	2.0%	22	0.6%	6	70 / 70 / 55 to 10 / 10 / 10	3
Off-Ramp Lane 1		1	268	--	262	--	5	--	1		
Off-Ramp Lane 2		1	268	--	262	--	5	--	1		
Off-Ramp Lane 3		1	270	--	262	--	6	--	2		
Off-Ramp Lane 4		1	271	--	263	--	6	--	2		

Roadway/Lane(s)	Segment	Number of Lanes	Peak Hour Volume	Auto		Medium Truck		Heavy Truck		Speed (Auto/MT/HT)	Notes
				%	Volume	%	Volume	%	Volume		
SB I-5 HOV (Total)	Between Avenida De La Carlota off-ramp and Hook On-ramp	2	2,235	100.0%	2,235	0.0%	0	0.0%	0	70 / 70 / 55	
SB I-5 HOV Lane 1		1	1,118	--	1,118	--	0	--	0		
SB I-5 HOV Lane 2		1	1,117	--	1,117	--	0	--	0		
SB I-5 GP Lanes (Total)		5	8,624	95.6%	8,245	2.1%	181	2.3%	198		
General Purpose Lane 1		1	1,725	--	1,689	--	36	--	0		
General Purpose Lane 2		1	1,725	--	1,689	--	36	--	0		
General Purpose Lane 3		1	1,725	--	1,689	--	36	--	0		
General Purpose Lane 4		1	1,725	--	1,590	--	36	--	99		
General Purpose Lane 5		1	1,724	--	1,588	--	37	--	99		
I-5 Southbound Avenida De La Carlota On-Ramp	Avenida De La Carlota Hook On-ramp	2-1	1,025	98.3%	1,008	1.7%	17	0.0%	0	10 / 10 / 10 to 70 / 70 / 55	
On-Ramp Lane 1		1	513	--	504	--	9	--	0		
On-Ramp Lane 2		1	512	--	504	--	8	--	0		
SB I-5 HOV (Total)	Between Avenida De La Carlota Hook On-ramp and El Toro Road On-ramp	2	2,442	100.0%	2,442	0.0%	0	0.0%	0	70 / 70 / 55	
SB I-5 HOV Lane 1		1	1,221	--	1,221	--	0	--	0		
SB I-5 HOV Lane 2		1	1,221	--	1,221	--	0	--	0		
SB I-5 GP Lanes (Total)		5	9,441	92.7%	8,752	3.6%	340	3.7%	349		
General Purpose Lane 1		1	1,888	--	1,820	--	68	--	0		
General Purpose Lane 2		1	1,888	--	1,820	--	68	--	0		
General Purpose Lane 3		1	1,888	--	1,820	--	68	--	0		
General Purpose Lane 4		1	1,888	--	1,645	--	68	--	175		
General Purpose Lane 5		1	1,889	--	1,647	--	68	--	174		
I-5 Southbound Avenida De La Carlota On-Ramp	El Toro Road On-ramp	2-1	466	97.3%	454	2.2%	10	0.5%	2	10 / 10 / 10 to 70 / 70 / 55	
On-Ramp Lane 1		1	233	--	227	--	5	--	1		
On-Ramp Lane 2		1	233	--	227	--	5	--	1		
SB I-5 HOV (Total)	South of El Toro Road On-ramp	2	1,906	100.0%	1,906	0.0%	0	0.0%	0	70 / 70 / 55	
SB I-5 HOV Lane 1		1	953	--	953	--	0	--	0		
SB I-5 HOV Lane 2		1	953	--	953	--	0	--	0		
SB I-5 GP Lanes (Total)		6	10,406	92.7%	9,646	3.6%	375	3.7%	385		
General Purpose Lane 1		1	1,734	--	1,671	--	63	--	0		
General Purpose Lane 2		1	1,734	--	1,671	--	63	--	0		
General Purpose Lane 3		1	1,734	--	1,671	--	63	--	0		
General Purpose Lane 4		1	1,734	--	1,671	--	63	--	0		
General Purpose Lane 5		1	1,734	--	1,478	--	63	--	193		
General Purpose Lane 6 (Aux)		1	1,736	--	1,484	--	60	--	192		

Table A-4c. Build Alternative 1 Local Traffic Volumes for TNM Modeling

Roadway/Lane(s)	Segment	Number of Lanes	Peak Hour Volume	Auto		Medium Truck		Heavy Truck		Speed (Auto/MT
				%	Volume	%	Volume	%	Volume	
EB El Toro Road (Total)	El Toro Road West of Avenida De La Carlota	5	3,205	96.9%	3,106	2.6%	83	0.5%	16	40
Eastbound Lane 1		1	641		621		17		3	
Eastbound Lane 2		1	641		621		17		3	
Eastbound Lane 3		1	641		621		17		3	
Eastbound Lane 4		1	641		622		16		3	
Eastbound Lane 5		1	641		621		16		4	
WB El Toro Road (Total)		3	2,416	97.3%	2,351	2.2%	53	0.5%	12	40
Westbound Lane 1		1	805		783		18		4	
Westbound Lane 2		1	805		783		18		4	
Westbound Lane 3		1	806		785		17		4	
EB El Toro Road (Total)	El Toro Road East of Avenida De La Carlota	4	3,205	96.9%	3,106	2.6%	83	0.5%	16	40
Eastbound Lane 1		1	801		776		21		4	
Eastbound Lane 2		1	801		776		21		4	
Eastbound Lane 3		1	801		776		21		4	
Eastbound Lane 4		1	802		778		20		4	
WB El Toro Road (Total)		6	2,416	97.3%	2,351	2.2%	53	0.5%	12	40
Westbound Lane 1		1	403		392		9		2	
Westbound Lane 2		1	403		392		9		2	
Westbound Lane 3		1	403		392		9		2	
Westbound Lane 4		1	403		392		9		2	
Westbound Lane 5		1	403		392		9		2	
Westbound Lane 6		1	401		391		8		2	
EB El Toro Road (Total)	El Toro Road West of NorthBound Ramps	6	3,205	96.9%	3,106	2.6%	83	0.5%	16	40
Eastbound Lane 1		1	534		518		14		2	
Eastbound Lane 2		1	534		518		14		2	
Eastbound Lane 3		1	534		517		14		3	
Eastbound Lane 4		1	534		517		14		3	
Eastbound Lane 5		1	534		517		14		3	
Eastbound Lane 6		1	535		519		13		3	
WB El Toro Road (Total)		3	2,416	97.3%	2,351	2.2%	53	0.5%	12	40
Westbound Lane 1		1	805		783		18		4	
Westbound Lane 2		1	805		783		18		4	
Westbound Lane 3		1	806		785		17		4	

Table A-4c. Build Alternative 1 Local Traffic Volumes for TNM Modeling

Roadway/Lane(s)	Segment	Number of Lanes	Peak Hour Volume	Auto		Medium Truck		Heavy Truck		Speed (Auto/MT
				%	Volume	%	Volume	%	Volume	
EB El Toro Road (Total)	El Toro Road East of NorthBound Ramps	4	3,205	96.9%	3,106	2.6%	83	0.5%	16	40
Eastbound Lane 1		1	801		776		21		4	
Eastbound Lane 2		1	801		776		21		4	
Eastbound Lane 3		1	801		776		21		4	
Eastbound Lane 4		1	802		778		20		4	
WB El Toro Road (Total)		5	2,416	97.3%	2,351	2.2%	53	0.5%	12	40
Westbound Lane 1		1	483		470		11		2	
Westbound Lane 2		1	483		470		11		2	
Westbound Lane 3		1	483		470		11		2	
Westbound Lane 4		1	483		470		10		3	
Westbound Lane 5		1	484		471		10		3	
EB El Toro Road (Total)	El Toro Road West of Rockfield Boulevard	6	3,205	96.9%	3,106	2.6%	83	0.5%	16	40
Eastbound Lane 1		1	534		522		9		3	
Eastbound Lane 2		1	534		522		9		3	
Eastbound Lane 3		1	534		517		14		3	
Eastbound Lane 4		1	534		517		14		3	
Eastbound Lane 5		1	534		517		14		3	
Eastbound Lane 6		1	535		511		23		1	
WB El Toro Road (Total)		5	2,416	97.3%	2,351	2.2%	53	0.5%	12	40
Westbound Lane 1		1	483		470		11		2	
Westbound Lane 2		1	483		470		11		2	
Westbound Lane 3		1	483		470		11		2	
Westbound Lane 4		1	483		470		10		3	
Westbound Lane 5		1	484		471		10		3	

Table A-4c. Build Alternative 1 Local Traffic Volumes for TNM Modeling

Roadway/Lane(s)	Segment	Number of Lanes	Peak Hour Volume	Auto		Medium Truck		Heavy Truck		Speed (Auto/MT
				%	Volume	%	Volume	%	Volume	
EB El Toro Road (Total)	El Toro Road East of Rockfield Boulevard	4	3,205	96.9%	3,106	2.6%	83	0.5%	16	40
Eastbound Lane 1		1	801		776		21		4	
Eastbound Lane 2		1	801		776		21		4	
Eastbound Lane 3		1	801		776		21		4	
Eastbound Lane 4		1	802		778		20		4	
WB El Toro Road (Total)		6	2,416	97.3%	2,351	2.2%	53	0.5%	12	40
Westbound Lane 1		1	403		392		9		2	
Westbound Lane 2		1	403		392		9		2	
Westbound Lane 3		1	403		392		9		2	
Westbound Lane 4		1	403		392		9		2	
Westbound Lane 5		1	403		392		9		2	
Westbound Lane 6		1	401		391		8		2	
NB Avenida De La Carlota (Total)	Avenida De La Carlota South of El Toro Road	4	1,449	97.7%	1,416	2.1%	30	0.2%	3	40
Northbound Lane 1		1	362		354		8		0	
Northbound Lane 2		1	362		353		8		1	
Northbound Lane 3		1	362		354		7		1	
Northbound Lane 4		1	363		355		7		1	
SB Avenida De La Carlota (Total)		2	1,122	97.0%	1,088	2.5%	28	0.5%	6	40
Southbound Lane 1		1	561		544		14		3	
Southbound Lane 2		1	561		544		14		3	

Table A-4c. Build Alternative 1 Local Traffic Volumes for TNM Modeling

Roadway/Lane(s)	Segment	Number of Lanes	Peak Hour Volume	Auto		Medium Truck		Heavy Truck		Speed (Auto/MT
				%	Volume	%	Volume	%	Volume	
NB Avenida De La Carlota (Total)	Avenida De La Carlota North of El Toro Road	2	1,449	97.7%	1,416	2.1%	30	0.2%	3	40
Northbound Lane 1		1	725		708		15		2	
Northbound Lane 2		1	724		708		15		1	
SB Avenida De La Carlota (Total)		6	1,122	97.0%	1,088	2.5%	28	0.5%	6	40
Southbound Lane 1		1	187		181		5		1	
Southbound Lane 2		1	187		181		5		1	
Southbound Lane 3		1	187		181		5		1	
Southbound Lane 4		1	187		181		5		1	
Southbound Lane 5		1	187		182		4		1	
Southbound Lane 6		1	187		182		4		1	
NB Avenida De La Carlota (Total)	Avenida De La Carlota South of Paseo De Valencia	4	1,449	97.7%	1,416	2.1%	30	0.2%	3	40
Northbound Lane 1		1	362		354		8		0	
Northbound Lane 2		1	362		353		8		1	
Northbound Lane 3		1	362		354		7		1	
Northbound Lane 4		1	363		355		7		1	
SB Avenida De La Carlota (Total)		4	1,122	97.0%	1,088	2.5%	28	0.5%	6	40
Southbound Lane 1		1	281		273		7		1	
Southbound Lane 2		1	281		273		7		1	
Southbound Lane 3		1	281		272		7		2	
Southbound Lane 4		1	279		270		7		2	

Table A-4c. Build Alternative 1 Local Traffic Volumes for TNM Modeling

Roadway/Lane(s)	Segment	Number of Lanes	Peak Hour Volume	Auto		Medium Truck		Heavy Truck		Speed (Auto/MT
				%	Volume	%	Volume	%	Volume	
NB Avenida De La Carlota (Total)	Avenida De La Carlota North of Paseo De Valencia	2	1,449	97.7%	1,416	2.1%	30	0.2%	3	40
Northbound Lane 1		1	725		709		15		1	
Northbound Lane 2		1	724		707		15		2	
SB Avenida De La Carlota (Total)		5	1,122	97.0%	1,088	2.5%	28	0.5%	6	40
Southbound Lane 1		1	224		217		6		1	
Southbound Lane 2		1	224		217		6		1	
Southbound Lane 3		1	224		217		6		1	
Southbound Lane 4		1	224		218		5		1	
Southbound Lane 5		1	226		219		5		2	
EB Paseo De Valencia (Total)	Paseo De Valencia West of Avenida De La Carlota	4	1,144	97.7%	1,118	2.1%	24	0.2%	2	40
Eastbound Lane 1		1	286		280		6		0	
Eastbound Lane 2		1	286		280		6		0	
Eastbound Lane 3		1	286		279		6		1	
Eastbound Lane 4		1	286		279		6		1	
WB Paseo De Valencia (Total)		2	1,076	97.0%	1,044	2.5%	27	0.5%	5	40
Westbound Lane 1		1	538		521		14		3	
Westbound Lane 2		1	538		523		13		2	
NB Bridger Rd (Total)	Bridger Road North of El Toro Road	1	197	96.9%	191	2.6%	5	0.5%	1	25
Northbound Lane 1		1	197		191		5		1	
SB Bridger Rd (Total)		3	251	97.3%	244	2.2%	6	0.5%	1	25
Southbound Lane 1		1	84		83		1		0	
Southbound Lane 2		1	84		82		2		0	
Southbound Lane 3		1	83		79		3		1	

Table A-4c. Build Alternative 1 Local Traffic Volumes for TNM Modeling

Roadway/Lane(s)	Segment	Number of Lanes	Peak Hour Volume	Auto		Medium Truck		Heavy Truck		Speed (Auto/MT
				%	Volume	%	Volume	%	Volume	
NB Rockfield Boulevard	Rockfield Boulevard South of El Toro Road	5	909	96.9%	880	2.6%	24	0.5%	5	40
Northbound Lane 1		1	182		177		4		1	
Northbound Lane 2		1	182		176		5		1	
Northbound Lane 3		1	182		176		5		1	
Northbound Lane 4		1	182		176		5		1	
Northbound Lane 5		1	181		175		5		1	
SB Rockfield Boulevard		2	1,033	97.3%	1,005	2.2%	23	0.5%	5	40
Southbound Lane 1		1	517		504		11		2	
Southbound Lane 2		1	516		501		12		3	
NB Rockfield Boulevard (Total)	Rockfield Boulevard North of El Toro Road	2	909	96.9%	880	2.6%	24	0.5%	5	40
Northbound Lane 1		1	455		440		12		3	
Northbound Lane 2		1	454		440		12		2	
SB Rockfield Boulevard (Total)		5	1,033	97.3%	1,005	2.2%	23	0.5%	5	40
Southbound Lane 1		1	207		201		5		1	
Southbound Lane 2		1	207		201		5		1	
Southbound Lane 3		1	207		201		5		1	
Southbound Lane 4		1	207		202		4		1	
Southbound Lane 5		1	205		200		4		1	

Table A-5a. Build Alternative 2 Northbound Traffic Volumes for TNM Modeling

Table A-5a is based on traffic data supplied by the project's licensed traffic engineer (Jacobs). Rules were applied to the traffic data in order to represent worst-case traffic noise conditions. These rules are described in the NSR and summarized below. Rules that only apply to specific features (i.e. NB on-ramp, SB off-ramp, etc.) are identified in the "Notes" column below.

1. Truck percentages for mainline, ramps and local roads are be based on validation traffic data.
2. Heavy trucks are modeled on the two outside lanes of the mainline.
3. This note is not used in Table A-5a

Roadway/Lane(s)	Segment	Number of Lanes	Peak Hour Volume	Auto		Medium Truck		Heavy Truck		Speed (Auto/MT/HT)	Notes
				%	Volume	%	Volume	%	Volume		
NB I-5 HOV (Total)	South of El Toro Road	2	1,554	100.0%	1,554	0.0%	0	0.0%	0	70 / 70 / 55	
NB I-5 HOV Lane 1		1	777	--	777	--	0	--	0		
NB I-5 HOV Lane 2		1	777	--	777	--	0	--	0		
NB I-5 GP Lanes (Total)		6	10,502	92.0%	9,662	3.6%	378	4.4%	462		
General Purpose Lane 1		1	1,750	--	1,687	--	63	--	0		
General Purpose Lane 2		1	1,750	--	1,687	--	63	--	0		
General Purpose Lane 3		1	1,750	--	1,687	--	63	--	0		
General Purpose Lane 4		1	1,750	--	1,687	--	63	--	0		
General Purpose Lane 5		1	1,750	--	1,456	--	63	--	231		
General Purpose Lane 6 (Aux)		1	1,752	--	1,458	--	63	--	231		
I-5 Northbound El Toro Road Off-Ramp	El Toro Road Off-ramp	2-4	1,405	97.4%	1,369	2.0%	28	0.6%	8	70 / 70 / 55 to 10 / 10 / 10	
Off-Ramp Lane 1		1	351	--	342	--	7	--	2		
Off-Ramp Lane 2		1	351	--	342	--	7	--	2		
Off-Ramp Lane 3		1	351	--	342	--	7	--	2		
Off-Ramp Lane 4		1	352	--	343	--	7	--	2		
NB I-5 HOV (Total)	Between El Toro Road off-ramp and loop On-ramp	2	2,387	100.0%	2,387	0.0%	0	0.0%	0	70 / 70 / 55	
NB I-5 HOV Lane 1		1	1,194	--	1,194	--	0	--	0		
NB I-5 HOV Lane 2		1	1,193	--	1,193	--	0	--	0		
NB I-5 GP Lanes (Total)		5	8,568	92.0%	7,883	3.6%	308	4.4%	377		
General Purpose Lane 1		1	1,714	--	1,653	--	61	--	0		
General Purpose Lane 2		1	1,714	--	1,653	--	61	--	0		
General Purpose Lane 3		1	1,714	--	1,652	--	62	--	0		
General Purpose Lane 4		1	1,714	--	1,464	--	62	--	188		
General Purpose Lane 5		1	1,712	--	1,461	--	62	--	189		
I-5 Northbound El Toro Road	El Toro Road Loop On-ramp	2-1	1,467	96.9%	1,421	2.7%	40	0.4%	6	10 / 10 / 10 to 70 / 70 / 55	
On-Ramp Lane 1		1	734	--	711	--	20	--	3		
On-Ramp Lane 2		1	733	--	710	--	20	--	3		

Table A-5a. Build Alternative 2 Northbound Traffic Volumes for TNM Modeling

Roadway/Lane(s)	Segment	Number of Lanes	Peak Hour Volume	Auto		Medium Truck		Heavy Truck		Speed (Auto/MT/HT)	Notes
				%	Volume	%	Volume	%	Volume		
NB I-5 HOV (Total)	Between El Toro Road loop On-ramp and On-ramp	2	2,422	100.0%	2,422	0.0%	0	0.0%	0	70 / 70 / 55	
NB I-5 HOV Lane 1		1	1,211	--	1,211	--	0	--	0		
NB I-5 HOV Lane 2		1	1,211	--	1,211	--	0	--	0		
NB I-5 GP Lanes (Total)		6	9,476	92.7%	8,784	3.6%	341	3.7%	351		
General Purpose Lane 1		1	1,579	--	1,523	--	56	--	0		
General Purpose Lane 2		1	1,579	--	1,522	--	57	--	0		
General Purpose Lane 3		1	1,579	--	1,522	--	57	--	0		
General Purpose Lane 4		1	1,579	--	1,522	--	57	--	0		
General Purpose Lane 5		1	1,579	--	1,347	--	57	--	175		
General Purpose Lane 6		1	1,581	--	1,348	--	57	--	176		
I-5 Northbound El Toro Road On-Ramp	El Toro Road On-ramp	2-1	1,094	96.0%	1,051	2.6%	28	1.4%	15	10 / 10 / 10 to 70 / 70 / 55	
On-Ramp Lane 1		1	547	--	526	--	14	--	7		
On-Ramp Lane 2		1	547	--	525	--	14	--	8		
NB I-5 HOV (Total)	North of El Toro Road	2	2,048	100.0%	2,048	0.0%	0	0.0%	0	70 / 70 / 55	
NB I-5 HOV Lane 1		1	1,024	--	1,024	--	0	--	0		
NB I-5 HOV Lane 2		1	1,024	--	1,024	--	0	--	0		
NB I-5 GP Lanes (Total)		7	10,943	92.7%	10,144	3.6%	394	3.7%	405		
General Purpose Lane 1		1	1,563	--	1,507	--	56	--	0		
General Purpose Lane 2		1	1,563	--	1,507	--	56	--	0		
General Purpose Lane 3		1	1,563	--	1,507	--	56	--	0		
General Purpose Lane 4		1	1,563	--	1,507	--	56	--	0		
General Purpose Lane 5		1	1,563	--	1,507	--	56	--	0		
General Purpose Lane 6		1	1,563	--	1,304	--	57	--	202		
General Purpose Lane 7		1	1,565	--	1,305	--	57	--	203		

Table A-5b is based on traffic data supplied by the project's licensed traffic engineer (Jacobs). Rules were applied to the traffic data in order to represent worst-case traffic noise conditions. These rules are described in the NSR and summarized below. Rules that only apply to specific features (i.e. NB on-ramp, SB off-ramp, etc.) are identified in the "Notes" column below.

1. Truck percentages for mainline, ramps and local roads are be based on validation traffic data.
2. Heavy trucks are modeled on the two outside lanes of the mainline.
3. SB Off-ramp volumes were split evenly resulting in 50% of the freeway volume exiting onto Avenida De La Carlota and 50% exiting onto Paseo De Valencia.

Roadway/Lane(s)	Segment	Number of Lanes	Peak Hour Volume	Auto		Medium Truck		Heavy Truck		Speed (Auto/MT/HT)	Notes
				%	Volume	%	Volume	%	Volume		
SB I-5 HOV (Total)	North of Avenida De La Carlota Off-ramp	2	2,513	100.0%	2,513	0.0%	0	0.0%	0	70 / 70 / 55	
SB I-5 HOV Lane 1		1	1,257	--	1,257	--	0	--	0		
SB I-5 HOV Lane 2		1	1,256	--	1,256	--	0	--	0		
SB I-5 GP Lanes (Total)		6	10,270	95.6%	9,818	2.1%	216	2.3%	236		
General Purpose Lane 1		1	1,712	--	1,676	--	36	--	0		
General Purpose Lane 2		1	1,712	--	1,676	--	36	--	0		
General Purpose Lane 3		1	1,712	--	1,676	--	36	--	0		
General Purpose Lane 4		1	1,712	--	1,676	--	36	--	0		
General Purpose Lane 5		1	1,712	--	1,558	--	36	--	118		
General Purpose Lane 6 (Aux)		1	1,710	--	1,556	--	36	--	118		
I-5 Southbound Valencia/Carlota Off-Ramp	Valencia/Carlota Off-ramp	1-2	2,156	97.4%	2,100	2.0%	43	0.6%	13	70 / 70 / 55 to 10 / 10 / 10	3
Off-Ramp Lane 1		1	1,078	--	1,050	--	22	--	6		
Off-Ramp Lane 2		1	1,078	--	1,050	--	21	--	7		
I-5 Southbound Paseo De Valencia Off-Ramp	Off-ramp to Paseo De Valencia	2-4	1,078	97.4%	1,051	2.0%	21	0.6%	6	70 / 70 / 55 to 10 / 10 / 10	3
Off-Ramp Lane 1		1	269	--	263	--	5	--	1		
Off-Ramp Lane 2		1	269	--	263	--	5	--	1		
Off-Ramp Lane 3		1	270	--	263	--	5	--	2		
Off-Ramp Lane 4		1	270	--	262	--	6	--	2		
I-5 Southbound El Toro Road Flyover Off-Ramp	El Toro Road Flyover Off-ramp	1	1,078	97.4%	1,050	2.0%	22	0.6%	6	70 / 70 / 55 to 10 / 10 / 10	3
Off-Ramp Lane 1		1	1,078	--	1,050	--	22	--	6		

Roadway/Lane(s)	Segment	Number of Lanes	Peak Hour Volume	Auto		Medium Truck		Heavy Truck		Speed (Auto/MT/HT)	Notes
				%	Volume	%	Volume	%	Volume		
SB I-5 HOV (Total)	Between Avenida De La Carlota off-ramp and Hook On-ramp	2	2,235	100.0%	2,235	0.0%	0	0.0%	0	70 / 70 / 55	
SB I-5 HOV Lane 1		1	1,118	--	1,118	--	0	--	0		
SB I-5 HOV Lane 2		1	1,117	--	1,117	--	0	--	0		
SB I-5 GP Lanes (Total)		5	8,624	95.6%	8,245	2.1%	181	2.3%	198		
General Purpose Lane 1		1	1,725	--	1,689	--	36	--	0		
General Purpose Lane 2		1	1,725	--	1,689	--	36	--	0		
General Purpose Lane 3		1	1,725	--	1,689	--	36	--	0		
General Purpose Lane 4		1	1,725	--	1,590	--	36	--	99		
General Purpose Lane 5		1	1,724	--	1,588	--	37	--	99		
I-5 Southbound Avenida De La Carlota On-Ramp	Avenida De La Carlota Hook On-ramp	2-1	1,025	98.3%	1,008	1.7%	17	0.0%	0	10 / 10 / 10 to 70 / 70 / 55	
On-Ramp Lane 1		1	513	--	504	--	9	--	0		
On-Ramp Lane 2		1	512	--	504	--	8	--	0		
SB I-5 HOV (Total)	Between Avenida De La Carlota Hook On-ramp and El Toro Road On-ramp	2	2,442	100.0%	2,442	0.0%	0	0.0%	0	70 / 70 / 55	
SB I-5 HOV Lane 1		1	1,221	--	1,221	--	0	--	0		
SB I-5 HOV Lane 2		1	1,221	--	1,221	--	0	--	0		
SB I-5 GP Lanes (Total)		5	9,441	92.7%	8,752	3.6%	340	3.7%	349		
General Purpose Lane 1		1	1,888	--	1,820	--	68	--	0		
General Purpose Lane 2		1	1,888	--	1,820	--	68	--	0		
General Purpose Lane 3		1	1,888	--	1,820	--	68	--	0		
General Purpose Lane 4		1	1,888	--	1,646	--	68	--	174		
General Purpose Lane 5		1	1,889	--	1,646	--	68	--	175		
I-5 Southbound Avenida De La Carlota On-Ramp	El Toro Road On-ramp	2-1	466	97.3%	454	2.2%	10	0.5%	2	10 / 10 / 10 to 70 / 70 / 55	
On-Ramp Lane 1		1	233	--	227	--	5	--	1		
On-Ramp Lane 2		1	233	--	227	--	5	--	1		
SB I-5 HOV (Total)	South of El Toro Road On-ramp	2	1,906	100.0%	1,906	0.0%	0	0.0%	0	70 / 70 / 55	
SB I-5 HOV Lane 1		1	953	--	953	--	0	--	0		
SB I-5 HOV Lane 2		1	953	--	953	--	0	--	0		
SB I-5 GP Lanes (Total)		6	10,420	92.7%	9,659	3.6%	375	3.7%	386		
General Purpose Lane 1		1	1,737	--	1,674	--	63	--	0		
General Purpose Lane 2		1	1,737	--	1,674	--	63	--	0		
General Purpose Lane 3		1	1,737	--	1,674	--	63	--	0		
General Purpose Lane 4		1	1,737	--	1,674	--	63	--	0		
General Purpose Lane 5		1	1,737	--	1,482	--	62	--	193		
General Purpose Lane 6 (Aux)		1	1,735	--	1,481	--	61	--	193		

Table A-5c. Build Alternative 2 Local Traffic Volumes for TNM Modeling

Roadway/Lane(s)	Segment	Number of Lanes	Peak Hour Volume	Auto		Medium Truck		Heavy Truck		Speed (Auto/MT
				%	Volume	%	Volume	%	Volume	
EB El Toro Road (Total)	El Toro Road West of Avenida De La Carlota	5	2,715	96.9%	2,630	2.6%	71	0.5%	14	40
Eastbound Lane 1		1	543		526		14		3	
Eastbound Lane 2		1	543		526		14		3	
Eastbound Lane 3		1	543		526		14		3	
Eastbound Lane 4		1	543		526		14		3	
Eastbound Lane 5		1	543		526		15		2	
WB El Toro Road (Total)		3	2,416	97.3%	2,351	2.2%	53	0.5%	12	40
Westbound Lane 1		1	805		783		18		4	
Westbound Lane 2		1	805		783		18		4	
Westbound Lane 3		1	806		785		17		4	
EB El Toro Road (Total)	El Toro Road East of Avenida De La Carlota	4	2,715	96.9%	2,630	2.6%	71	0.5%	14	40
Eastbound Lane 1		1	679		658		18		3	
Eastbound Lane 2		1	679		658		18		3	
Eastbound Lane 3		1	679		657		18		4	
Eastbound Lane 4		1	678		657		17		4	
WB El Toro Road (Total)		6	2,416	97.3%	2,351	2.2%	53	0.5%	12	40
Westbound Lane 1		1	403		392		9		2	
Westbound Lane 2		1	403		392		9		2	
Westbound Lane 3		1	403		392		9		2	
Westbound Lane 4		1	403		392		9		2	
Westbound Lane 5		1	403		392		9		2	
Westbound Lane 6		1	401		391		8		2	
EB El Toro Road (Total)	El Toro Road West of Northbound Ramps	6	2,715	96.9%	2,630	2.6%	71	0.5%	14	40
Eastbound Lane 1		1	453		440		11		2	
Eastbound Lane 2		1	453		439		12		2	
Eastbound Lane 3		1	453		439		12		2	
Eastbound Lane 4		1	453		439		12		2	
Eastbound Lane 5		1	453		438		12		3	
Eastbound Lane 6		1	450		435		12		3	
WB El Toro Road (Total)		3	2,416	97.3%	2,351	2.2%	53	0.5%	12	40
Westbound Lane 1		1	805		784		17		4	
Westbound Lane 2		1	805		783		18		4	
Westbound Lane 3		1	806		784		18		4	

Roadway/Lane(s)	Segment	Number of Lanes	Peak Hour Volume	Auto		Medium Truck		Heavy Truck		Speed (Auto/MT
				%	Volume	%	Volume	%	Volume	
EB El Toro Road (Total)	El Toro Road East of Northbound Ramps	4	2,715	96.9%	2,630	2.6%	71	0.5%	14	40
Eastbound Lane 1		1	679		659		17		3	
Eastbound Lane 2		1	679		658		18		3	
Eastbound Lane 3		1	679		657		18		4	
Eastbound Lane 4		1	678		656		18		4	
WB El Toro Road (Total)		5	2,416	97.3%	2,351	2.2%	53	0.5%	12	40
Westbound Lane 1		1	483		471		10		2	
Westbound Lane 2		1	483		471		10		2	
Westbound Lane 3		1	483		470		11		2	
Westbound Lane 4		1	483		469		11		3	
Westbound Lane 5		1	484		470		11		3	
EB El Toro Road (Total)	El Toro Road West of Rockfield Boulevard	6	2,715	96.9%	2,630	2.6%	71	0.5%	14	40
Eastbound Lane 1		1	453		440		11		2	
Eastbound Lane 2		1	453		439		12		2	
Eastbound Lane 3		1	453		439		12		2	
Eastbound Lane 4		1	453		439		12		2	
Eastbound Lane 5		1	453		438		12		3	
Eastbound Lane 6		1	450		435		12		3	
WB El Toro Road (Total)		5	2,416	97.3%	2,351	2.2%	53	0.5%	12	40
Westbound Lane 1		1	483		471		10		2	
Westbound Lane 2		1	483		471		10		2	
Westbound Lane 3		1	483		470		11		2	
Westbound Lane 4		1	483		469		11		3	
Westbound Lane 5		1	484		470		11		3	

Table A-5c. Build Alternative 2 Local Traffic Volumes for TNM Modeling

Roadway/Lane(s)	Segment	Number of Lanes	Peak Hour Volume	Auto		Medium Truck		Heavy Truck		Speed (Auto/MT
				%	Volume	%	Volume	%	Volume	
EB El Toro Road (Total)	El Toro Road East of Rockfield Boulevard	4	2,715	96.9%	2,630	2.6%	71	0.5%	14	40
Eastbound Lane 1		1	679		659		17		3	
Eastbound Lane 2		1	679		658		18		3	
Eastbound Lane 3		1	679		657		18		4	
Eastbound Lane 4		1	678		656		18		4	
WB El Toro Road (Total)		6	2,416	97.3%	2,351	2.2%	53	0.5%	12	40
Westbound Lane 1		1	403		393		8		2	
Westbound Lane 2		1	403		392		9		2	
Westbound Lane 3		1	403		392		9		2	
Westbound Lane 4		1	403		392		9		2	
Westbound Lane 5		1	403		392		9		2	
Westbound Lane 6		1	401		390		9		2	
NB Avenida De La Carlota (Total)	Avenida De La Carlota South of El Toro Road	4	1,167	97.7%	1,140	2.1%	25	0.2%	2	40
Northbound Lane 1		1	292		285		6		0	
Northbound Lane 2		1	292		285		6		0	
Northbound Lane 3		1	292		285		6		1	
Northbound Lane 4		1	291		285		7		1	
SB Avenida De La Carlota (Total)		2	1,238	97.0%	1,201	2.5%	31	0.5%	6	40
Southbound Lane 1		1	619		601		15		3	
Southbound Lane 2		1	619		600		16		3	

Table A-5c. Build Alternative 2 Local Traffic Volumes for TNM Modeling

Roadway/Lane(s)	Segment	Number of Lanes	Peak Hour Volume	Auto		Medium Truck		Heavy Truck		Speed (Auto/MT
				%	Volume	%	Volume	%	Volume	
NB Avenida De La Carlota (Total)	Avenida De La Carlota North of El Toro Road	2	1,167	97.7%	1,140	2.1%	25	0.2%	2	40
Northbound Lane 1		1	584		571		12		1	
Northbound Lane 2		1	583		569		13		1	
SB Avenida De La Carlota (Total)		6	1,238	97.0%	1,201	2.5%	31	0.5%	6	40
Southbound Lane 1		1	206		200		5		1	
Southbound Lane 2		1	206		200		5		1	
Southbound Lane 3		1	206		200		5		1	
Southbound Lane 4		1	206		200		5		1	
Southbound Lane 5		1	206		200		5		1	
Southbound Lane 6		1	208		201		6		1	
NB Avenida De La Carlota (Total)	Avenida De La Carlota South of Paseo De Valencia	4	1,167	97.7%	1,140	2.1%	25	0.2%	2	40
Northbound Lane 1		1	292		286		6		0	
Northbound Lane 2		1	292		286		6		0	
Northbound Lane 3		1	292		285		6		1	
Northbound Lane 4		1	291		283		7		1	
SB Avenida De La Carlota (Total)		4	1,238	97.0%	1,201	2.5%	31	0.5%	6	40
Southbound Lane 1		1	310		302		7		1	
Southbound Lane 2		1	310		301		8		1	
Southbound Lane 3		1	310		300		8		2	
Southbound Lane 4		1	308		298		8		2	

Table A-5c. Build Alternative 2 Local Traffic Volumes for TNM Modeling

Roadway/Lane(s)	Segment	Number of Lanes	Peak Hour Volume	Auto		Medium Truck		Heavy Truck		Speed (Auto/MT
				%	Volume	%	Volume	%	Volume	
NB Avenida De La Carlota (Total)	Avenida De La Carlota North of Paseo De Valencia	2	1,167	97.7%	1,140	2.1%	25	0.2%	2	40
Northbound Lane 1		1	584		570		13		1	
Northbound Lane 2		1	583		570		12		1	
SB Avenida De La Carlota (Total)		5	1,238	97.0%	1,201	2.5%	31	0.5%	6	40
Southbound Lane 1		1	248		241		6		1	
Southbound Lane 2		1	248		241		6		1	
Southbound Lane 3		1	248		241		6		1	
Southbound Lane 4		1	248		241		6		1	
Southbound Lane 5		1	246		237		7		2	
EB Paseo De Valencia (Total)	Paseo De Valencia West of Avenida De La Carlota	4	1,144	97.7%	1,118	2.1%	24	0.2%	2	40
Eastbound Lane 1		1	286		280		6		0	
Eastbound Lane 2		1	286		280		6		0	
Eastbound Lane 3		1	286		279		6		1	
Eastbound Lane 4		1	286		279		6		1	
WB Paseo De Valencia (Total)		2	1,076	97.0%	1,044	2.5%	27	0.5%	5	40
Westbound Lane 1		1	538		523		13		2	
Westbound Lane 2		1	538		521		14		3	
NB Bridger Road (Total)	Bridger Road North of El Toro Road	1	197	96.9%	191	2.6%	5	0.5%	1	25
Northbound Lane 1		1	197		191		5		1	
SB Bridger Road (Total)		3	251	97.3%	244	2.2%	6	0.5%	1	25
Southbound Lane 1		1	84		83		1		0	
Southbound Lane 2		1	84		82		2		0	
Southbound Lane 3		1	83		79		3		1	

Table A-5c. Build Alternative 2 Local Traffic Volumes for TNM Modeling

Roadway/Lane(s)	Segment	Number of Lanes	Peak Hour Volume	Auto		Medium Truck		Heavy Truck		Speed (Auto/MT
				%	Volume	%	Volume	%	Volume	
NB Rockfield Boulevard (Total)	Rockfield Boulevard South of El Toro Road	6	909	96.9%	880	2.6%	24	0.5%	5	40
Northbound Lane 1		1	152		147		4		1	
Northbound Lane 2		1	152		147		4		1	
Northbound Lane 3		1	152		147		4		1	
Northbound Lane 4		1	152		147		4		1	
Northbound Lane 5		1	152		147		4		1	
Northbound Lane 6		1	149		145		4		0	
SB Rockfield Boulevard		2	840	97.3%	818	2.2%	18	0.5%	4	40
Southbound Lane 1		1	420		409		9		2	
Southbound Lane 2		1	420		409		9		2	
NB Rockfield Boulevard (Total)	Rockfield Boulevard North of El Toro Road	2	909	96.9%	880	2.6%	24	0.5%	5	40
Northbound Lane 1		1	455		441		12		2	
Northbound Lane 2		1	454		439		12		3	
SB Rockfield Boulevard (Total)		5	840	97.3%	818	2.2%	18	0.5%	4	40
Southbound Lane 1		1	168		165		3		0	
Southbound Lane 2		1	168		164		3		1	
Southbound Lane 3		1	168		163		4		1	
Southbound Lane 4		1	168		163		4		1	
Southbound Lane 5		1	168		163		4		1	
NB Rockfield Boulevard (Total)	Rockfield Boulevard South of Orchard Lane	2	909	96.9%	880	2.6%	24	0.5%	5	40
Northbound Lane 1		1	455		441		12		2	
Northbound Lane 2		1	454		439		12		3	
SB Rockfield Boulevard (Total)		2	840	96.9%	814	2.6%	22	0.5%	4	40
Southbound Lane 1		1	420		407		11		2	
Southbound Lane 2		1	420		407		11		2	

Table A-5c. Build Alternative 2 Local Traffic Volumes for TNM Modeling

Roadway/Lane(s)	Segment	Number of Lanes	Peak Hour Volume	Auto		Medium Truck		Heavy Truck		Speed (Auto/MT
				%	Volume	%	Volume	%	Volume	
EB Orchard Lane (Total)	Orchard Lane West of Rockfield Boulevard	4	981	96.9%	950	2.6%	26	0.5%	5	25
Eastbound Lane 1		1	245		238		6		1	
Eastbound Lane 2		1	245		238		6		1	
Eastbound Lane 3		1	245		238		7		1	
Eastbound Lane 4		1	246		236		7		2	
WB Orchard Lane (Total)		1	192	96.9%	186	2.6%	5	0.5%	1	25
Westbound Lane 1		1	192		186		5		1	
NB New Swartz Drive (Total)	New Swartz Drive North of Orchard Lane	1	139	96.9%	134	2.6%	4	0.5%	1	25
Northbound Lane 1		1	139		134		4		1	
SB New Swartz Drive (Total)		1	96	96.9%	94	2.6%	2	0.5%	0	25
Southbound Lane 1		1	96		94		2		0	

Appendix B Predicted Future Noise Levels and Noise Barrier Analysis

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Table B-1. Predicted Future Noise Levels

| I-5 El Toro Road Interchange Project Alternative 1 – EA 0M980 – Project Worst Hour Noise Levels (Traffic Noise Only) - Leq(h), dBA | | |

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| I-5 El Toro Road Interchange Project Alternative 1 – EA 0M980 – Project Worst Hour Noise Levels (Traffic Noise Only) - Leq(h), dBA | | |

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| I-5 El Toro Road Interchange Project Alternative 1 – EA 0M980 – Project Worst Hour Noise Levels (Traffic Noise Only) - Leq(h), dBA | | |

Table B-1. Predicted Future Noise Levels

I-5 El Toro Road Interchange Project Alternative 1 – EA 0M980 – Project Worst Hour Noise Levels (Traffic Noise Only) - Leq(h), dBA

Receiver I.D. / Measurement Location	Applied Validation Constant (Reference Measurement)	Noise Analysis Area	Evaluated Noise Barrier I.D. & Location	Existing Mainline Noise Barrier I.D., Height & Location	Land Use	Number of Dwelling Units or Equivalent	Address	Existing Noise Level, $L_{eq}(h)$, dBA	Design Year No-Build Noise Level, Leq(h), dBA	Design Year Build Alt 1 Noise Level, Leq(h), dBA	Design Year No-Build Noise Level minus Existing Conditions Leq(h), dBA	Design Year Build Noise Level minus No-Build Noise Level Leq(h), dBA	Design Year Build Noise Level minus Existing Conditions Leq(h), dBA	Activity Category (NAC)	Impact Type (None, or A/E)	Noise Prediction with Barrier, Barrier Insertion Loss (I.L.), and Number of Benefited Receivers (NBR)																									
																6 feet			8 feet			10 feet			12 feet			14 feet			16 feet			18 feet			20 feet			22 feet		
																$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR
M03.01	0 (ST03.01)	3	NB234A1 + NB244A1 - NB Mainline EOS	NB Existing 16' EOS 2	Outdoor Seating Area / E	1	23851 Bridger Rd, Lake Forest, CA 92630	66	66	68	0	2	2	E (72)	NONE	65	3	0	65	3	0	64	4	0	63	5	1	62	6	1	62	6	1	61	7	1	61	7	1	61	7	1
M03.02 / ST03.01	0 (ST03.01)	3			Retail Parking Lot / F	0	Near 23811 Bridger Rd #111, Lake Forest, CA 92630	79	79	78	0	-1	-1	F (-)	NONE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M03.03	0 (ST03.02)	3			Residential / B	1	23762 Cavanaugh Rd, Lake Forest, CA 92630	62	63	67	1	4	5	B (67)	A/E	67	0	0	66	1	0	65	2	0	64	3	0	64	3	0	64	3	0	63	4	0	63	4	0	62	5	1
M03.04 / ST03.02	0 (ST03.02)	3			Park / C	1	Park near 23762 Cavanaugh Rd, Lake Forest, CA 92630	67	68	80	1	12	13	C (67)	S/A/E	80	0	0	77	3	0	72	8	1	70	10	1	68	12	1	67	13	1	66	14	1	65	15	1	64	16	1
M03.05	-1 (ST03.03)	3			Residential / B	2	23712 Dune Mear Rd, Lake Forest, CA 92630	60	61	67	1	6	7	B (67)	A/E	65	2	0	64	3	0	63	4	0	61	6	2	62	5	2	61	6	2	61	6	2	61	6	2	60	7	2
M03.06 / ST03.03	-1 (ST03.03)	3			Residential / B	2	23971 Gowdy Ave, Lake Forest, CA 92630	55	56	59	1	3	4	B (67)	NONE	59	0	0	59	0	0	59	0	0	58	1	0	57	2	0	56	3	0	55	4	0	55	4	0	54	5	2
M03.07	-1 (ST03.03)	3			Residential / B	3	23951 Gowdy Ave, Lake Forest, CA 92630	54	55	58	1	3	4	B (67)	NONE	58	0	0	58	0	0	58	0	0	57	1	0	57	1	0	56	2	0	55	3	0	54	4	0	54	4	0
M03.08	-1 (ST03.03)	3			Residential / B	3	23951 Gowdy Ave, Lake Forest, CA 92630	56	57	59	1	2	3	B (67)	NONE	59	0	0	59	0	0	59	0	0	58	1	0	58	1	0	57	2	0	56	3	0	56	3	0	55	4	0
M03.09 / ST03.04*	1 (ST03.04)	3			Sidewalk / F	0	Near 23951 Gowdy Ave, Lake Forest, CA 92630	66	67	77	1	10	11	F (-)	NONE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M03.10	1 (ST03.04)	3			Residential / B	2	23951 Gowdy Ave, Lake Forest, CA 92630	67	68	76	1	8	9	B (67)	A/E	74	2	0	73	3	0	71	5	2	70	6	2	69	7	2	67	9	2	67	9	2	66	10	2	65	11	2
M03.11	1 (ST03.04)	3			Residential / B	2	23542 Swallow Ln, Lake Forest, CA 92630	62	63	71	1	8	9	B (67)	A/E	67	4	0	66	5	2	65	6	2	65	6	2	63	8	2	62	9	2	61	10	2	60	11	2	60	11	2
M03.12	1 (ST03.04)	3			Residential / B	2	24012 Swan Dr, Lake Forest, CA 92630	63	64	68	1	4	5	B (67)	A/E	67	2	0	67	2	0	67	2	0	66	3	0	65	4	0	64	5	2	63	6	2	63	6	2	63	6	2
M03.13	1 (ST03.04)	3			Residential / B	3	23986 Swan Dr, Lake Forest, CA 92630	66	67	69	1	2	3	B (67)	A/E	70	0**	0	70	0**	0	69	1**	0	69	1**	0	68	2**	0	66	4**	0	66	4**	0	65	5**	3	64	6**	3
M03.14	4 (ST03.05)	3			Residential / B	3	23966 Swan Dr, Lake Forest, CA 92630	69	70	70	1	0	1	B (67)	A/E	72	0**	0	71	1**	0	71	1**	0	71	1**	0	70	2**	0	69	3**	0	68	4**	0	68	4**	0	67	5**	3
M03.15 / ST03.05	4 (ST03.05)	3			Residential / B	4	23952 Swan Dr, Lake Forest, CA 92630	69	70	70	1	0	1	B (67)	A/E	73	0**	0	72	1**	0	72	1**	0	71	2**	0	70	3**	0	69	4**	0	68	5**	4	68	5**	4	68	5**	4
M03.16 / ST03.06	3 (ST03.06)	3			Park / C	1	Park near 23432 Red Robin Way, Lake Forest, CA 92630	69	70	70	1	0	1	C (67)	A/E	73	0**	0	72	1**	0	72	1**	0	71	2**	0	70	3**	0	69	4**	0	69	4**	0	68	5**	1	67	6**	1
M03.17	3 (ST03.06)	3			Residential / B	1	23432 Red Robin Way, Lake Forest, CA 92630	66	67	66	1	-1	0	B (67)	A/E	70	0**	0	70	0**	0	69	1**	0	69	1**	0	68	2**	0	66	4**	0	65	5**	1	64	6**	1	65	5**	1
M03.18	3 (ST03.06)	3			Residential / B	1	23431 Red Robin Way, Lake Forest, CA 92630	67	68	68	1	0	1	B (67)	A/E	71	1**	0	71	1**	0	70	2**	0	69	3**	0	69	3**	0	67	5**	1	66	6**	1	65	7**	1	65	7**	1
M03.19	-1 (ST03.03)	3			Residential / B	2	23741 Cavanaugh Rd, Lake Forest, CA 92630	59	60	64	1	4	5	B (67)	NONE	64	0	0	63	1	0	62	2	0	62	2	0	61	3	0	60	4	0	59	5	2	59	5	2	58	6	2
M03.20	-1 (ST03.03)	3			Residential / B	3	24042 Alderglen Dr, Lake Forest, CA 92630	56	57	60	1	3	4	B (67)	NONE	59	1	0	59	1	0	59	1	0	58	2	0	57	3	0	57	3	0	56	4	0	55	5	3	55	5	3
M03.21	-1 (ST03.03)	3			Residential / B	2	24012 Alderglen Dr, Lake Forest, CA 92630	56	57	61	1	4	5	B (67)	NONE	60	1	0	59	2	0	60	1	0	59	2	0	58	3	0	57	4	0	56	5	2	56	5	2	55	6	2
M03.22	-1 (ST03.03)	3			Residential / B	2	23535 Swallow Ln, Lake Forest, CA 92630	57	58	60	1	2	3	B (67)	NONE	61	0**	0	61	0**	0	61	0**	0	60	1**	0	59	2**	0	58	3**	0	58	3**	0	58	3**	0	59	3**	0
M03.23	-1 (ST03.03)	3			Residential / B	2	23472 Blue Bird Dr, Lake Forest, CA 92630	57	58	59	1	1	2	B (67)	NONE	61	0**	0	61	0**	0	60	1**	0	60	1**	0	59	2**	0	58	3**	0	57	4**	0	58	3**	0	58	3**	0
M03.24	3 (ST03.06)	3			Residential / B	2	23412 Red Robin Way, Lake Forest, CA 92630	63	64	65	1	1	2	B (67)	NONE	65	0	0	65	0	0	65	0	0	64	1	0	64	1	0	64	1	0	63	2	0	62	3	0	61	4	0
M03.25	3 (ST03.06)	3			Residential / B	2	23411 Red Robin Way, Lake Forest, CA 92630	62	63	63	1	0	1	B (67)	NONE	63	0	0	63	0	0	63	0	0	63	0	0	63	0	0	63	0	0	63	0	0	63	0	0	62	1	0
M03.26	0 (--)	3	NB33A1 - El Toro Rd/Rockfield Blvd ROW		Outdoor Seating Area / E	1	Outdoor seating near 23731 El Toro Rd, Lake Forest, CA 92630	69	71	71	2	0	2	E (72)	A/E	66	5	1	64	7	1	63	8	1	62	9	1	62	9	1	62	9	1	61	10	1	61	10	1	61	10	1
M04.01	0 (ST04.03)	4	NB229A1 - Private Property		Place of Worship / C	1	23802 Avenida De La Carlota, Laguna Hills, CA 92653	64	66	66	2	0	2	C (67)	A/E	62	4	0	60	6	1	59	7	1	59	7	1	58	8	1	58	8	1	58	8	1	58	8	1	58	8	1

Table B-1. Predicted Future Noise Levels

| I-5 El Toro Road Interchange Project Alternative 1 – EA 0M980 – Project Worst Hour Noise Levels (Traffic Noise Only) - Leq(h), dBA | | |

Table B-1. Predicted Future Noise Levels

I-5 El Toro Road Interchange Project Alternative 1 – EA 0M980 – Project Worst Hour Noise Levels (Traffic Noise Only) - Leq(h), dBA

Receiver I.D. / Measurement Location	Applied Validation Constant (Reference Measurement)	Noise Analysis Area	Evaluated Noise Barrier I.D. & Location	Existing Mainline Noise Barrier I.D., Height & Location	Land Use	Number of Dwelling Units or Equivalent	Address	Existing Noise Level, $L_{eq}(h)$, dBA	Design Year No-Build Noise Level, Leq(h), dBA	Design Year Build Alt 1 Noise Level, Leq(h), dBA	Design Year No-Build Noise Level minus Existing Conditions Leq(h), dBA	Design Year Build Noise Level minus No-Build Noise Level Leq(h), dBA	Design Year Build Noise Level minus Existing Conditions Leq(h), dBA	Activity Category (NAC)	Impact Type (None, or A/E)	Noise Prediction with Barrier, Barrier Insertion Loss (I.L.), and Number of Benefited Receivers (NBR)																							
																6 feet			8 feet			10 feet			12 feet			14 feet			16 feet			18 feet			20 feet			22 feet		
																$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR
M04.30-3	3 (ST04.01)	4	NB235A1 - SB Mainline EOS		Residential / B	1	2122 Ronda Granada, Laguna Woods, CA 92637	78	79	81	1	2	3	B (67)	A/E	80	1	0	79	2	0	78	3	0	76	5	1	74	7	1	73	8	1	72	9	1	71	10	1	71	10	1
M04.31-2	3 (ST04.04)	4			Residential / B	2	2125 Ronda Granada, Laguna Woods, CA 92637	67	68	69	1	1	2	B (67)	A/E	67	2	0	66	3	0	65	4	0	64	5	2	63	6	2	63	6	2	63	6	2	63	6	2	63	6	2
M04.32 / ST04.01	3 (ST04.01)	4			Residential / B	1	Near 2122 Ronda Granada, Laguna Woods, CA 92637	65	66	68	1	2	3	B (67)	A/E	66	2	0	65	3	0	65	3	0	65	3	0	65	3	0	64	4	0	64	4	0	64	4	0	64	4	0
M04.33-2	3 (ST04.01)	4			Residential / B	1	2121 Ronda Granada, Laguna Woods, CA 92637	76	77	78	1	1	2	B (67)	A/E	77	1	0	75	3	0	73	5	1	71	7	1	71	7	1	70	8	1	69	9	1	69	9	1	68	10	1
M04.34	3 (ST04.01)	4			Residential / B	4	2121 Ronda Granada, Laguna Woods, CA 92637	57	58	58	1	0	1	B (67)	NONE	58	0	0	58	0	0	58	0	0	58	0	0	57	1	0	57	1	0	57	1	0	56	2	0	56	2	0
M04.35-2	3 (ST04.01)	4			Residential / B	4	2121 Ronda Granada, Laguna Woods, CA 92637	79	80	81	1	1	2	B (67)	A/E	79	2	0	77	4	0	75	6	4	74	7	4	73	8	4	72	9	4	71	10	4	71	10	4	70	11	4
M04.36	3 (ST04.01)	4			Residential / B	2	2121 Ronda Granada, Laguna Woods, CA 92637	67	68	69	1	1	2	B (67)	A/E	68	1	0	67	2	0	66	3	0	65	4	0	65	4	0	64	5	2	64	5	2	64	5	2	63	6	2
M04.37	3 (ST04.01)	4			Residential / B	1	2121 Ronda Granada, Laguna Woods, CA 92637	68	69	70	1	1	2	B (67)	A/E	68	2	0	67	3	0	65	5	1	65	5	1	64	6	1	64	6	1	64	6	1	64	6	1	65	5	1
M04.38	3 (ST04.04)	4			Residential / B	4	2126 Via Puerta, Laguna Woods, CA 92637	59	60	60	1	0	1	B (67)	NONE	60	0	0	60	0	0	60	0	0	60	0	0	59	1	0	58	2	0	58	2	0	58	2	0	57	3	0
M04.39	3 (ST04.01)	4			Residential / B	2	2120 Via Puerta, Laguna Woods, CA 92637	68	69	69	1	0	1	B (67)	A/E	68	1	0	67	2	0	66	3	0	66	3	0	65	4	0	65	4	0	64	5	2	64	5	2	64	5	2
M04.40	3 (ST04.04)	4			Residential / B	2	2120 Via Puerta, Laguna Woods, CA 92637	55	56	56	1	0	1	B (67)	NONE	56	0	0	56	0	0	56	0	0	55	1	0	55	1	0	55	1	0	54	2	0	54	2	0	53	3	0
M04.41-2	3 (ST04.02)	4			Residential / B	2	2120 Via Puerta, Laguna Woods, CA 92637	79	80	81	1	1	2	B (67)	A/E	79	2	0	78	3	0	76	5	2	75	6	2	74	7	2	73	8	2	72	9	2	72	9	2	72	9	2
M04.42 / ST04.04	3 (ST04.04)	4			Residential / B	4	2126 Via Puerta, Laguna Woods, CA 92637	61	62	62	1	0	1	B (67)	NONE	62	0	0	61	1	0	62	0	0	61	1	0	61	1	0	60	2	0	60	2	0	59	3	0	59	3	0
M04.43	3 (ST04.04)	4			Residential / B	4	2119 Via Puerta, Laguna Woods, CA 92637	58	59	59	1	0	1	B (67)	NONE	58	1	0	58	1	0	58	1	0	58	1	0	57	2	0	57	2	0	56	3	0	56	3	0	55	4	0
M04.44-2	3 (ST04.02)	4			Residential / B	1	2119 Via Puerta, Laguna Woods, CA 92637	78	79	79	1	0	1	B (67)	A/E	78	1	0	76	3	0	74	5	1	73	6	1	72	7	1	71	8	1	71	8	1	70	9	1	69	10	1
M04.45-2	3 (ST04.02)	4			Residential / B	2	2119 Via Puerta, Laguna Woods, CA 92637	78	79	79	1	0	1	B (67)	A/E	78	1	0	76	3	0	74	5	2	73	6	2	72	7	2	71	8	2	70	9	2	70	9	2	69	10	2
M04.46	3 (ST04.02)	4			Residential / B	2	2119 Via Puerta, Laguna Woods, CA 92637	68	69	69	1	0	1	B (67)	A/E	69	0	0	67	2	0	66	3	0	66	3	0	65	4	0	65	4	0	65	4	0	64	5	2	64	5	2
M04.47-2	3 (ST04.04)	4			Residential / B	2	2118 Via Puerta, Laguna Woods, CA 92637	64	65	65	1	0	1	B (67)	NONE	65	0	0	64	1	0	64	1	0	63	2	0	63	2	0	63	2	0	62	3	0	62	3	0	62	3	0
M04.48	3 (ST04.02)	4			Residential / B	2	2119 Via Puerta, Laguna Woods, CA 92637	67	68	68	1	0	1	B (67)	A/E	67	1	0	66	2	0	65	3	0	64	4	0	66	2	0	67	1	0	66	2	0	66	2	0	65	3	0
M04.49-2	3 (ST04.04)	4			Residential / B	2	2118 Via Puerta, Laguna Woods, CA 92637	76	77	77	1	0	1	B (67)	A/E	76	1	0	75	2	0	73	4	0	72	5	2	71	6	2	71	6	2	70	7	2	69	8	2	68	9	2
M04.50-3	3 (ST04.04)	4			Residential / B	2	2118 Via Puerta, Laguna Woods, CA 92637	78	79	79	1	0	1	B (67)	A/E	78	1	0	77	2	0	77	2	0	76	3	0	75	4	0	73	6	2	72	7	2	71	8	2	70	9	2
M04.51	3 (ST04.02)	4			Residential / B	2	2115 Via Puerta, Laguna Woods, CA 92637	62	63	64	1	1	2	B (67)	NONE	62	2	0	61	3	0	61	3	0	60	4	0	62	2	0	62	2	0	62	2	0	61	3	0	61	3	0
M04.52	3 (ST04.02)	4			Residential / B	1	2115 Via Puerta, Laguna Woods, CA 92637	67	68	68	1	0	1	B (67)	A/E	67	1	0	66	2	0	65	3	0	64	4	0	64	4	0	63	5	1	62	6	1	62	6	1	62	6	1
M04.53-2	3 (ST04.02)	4			Residential / B	2	2115 Via Puerta, Laguna Woods, CA 92637	78	79	78	1	-1	0	B (67)	A/E	78	0	0	77	1	0	75	3	0	74	4	0	73	5	2	72	6	2	71	7	2	70	8	2	69	9	2
M04.54	3 (ST04.04)	4			Residential / B	2	2114 Via Puerta, Laguna Woods, CA 92637	60	61	61	1	0	1	B (67)	NONE	60	1	0	59	2	0	58	3	0	60	1	0	60	1	0	59	2	0	59	2	0	58	3	0	58	3	0
M04.55 / ST04.02	3 (ST04.02)	4			Residential / B	1	2115 Via Puerta, Laguna Woods, CA 92637	68	69	69	1	0	1	B (67)	A/E	68	1	0	67	2	0	66	3	0	65	4	0	64	5	1	64	5	1	63	6	1	63	6	1	63	6	1
M04.56	3 (ST04.04)	4			Residential / B	2	2114 Via Puerta, Laguna Woods, CA 92637	68	69	69	1	0	1	B (67)	A/E	67	2	0	66	3	0	66	3	0	65	4	0	64	5	2	64	5	2	64	5	2	63	6	2	63	6	2
M04.57-2a	3 (ST04.04)	4			Residential / B	2	2114 Via Puerta, Laguna Woods, CA 92637	72	73	72	1	-1	0	B (67)	A/E	71	1	0	70	2	0	69	3	0	69	3	0	68	4	0	67	5	2	66	6	2	65	7	2	65	7	2
M04.57b	3 (ST04.05)	4			Residential / B	1	2235 Via Puerta, Laguna Woods, CA 92637	63	64	64	1	0	1	B (67)	NONE	63	1	0	62	2	0	61	3	0	61	3	0	61	3	0	61	3	0	61	3	0	60	4	0	60	4	0
M04.57c	3 (ST04.05)	4			Residential / B	1	2235 Via Puerta, Laguna Woods, CA 92637	54	55	55	1	0	1	B (67)	NONE	55	0	0	55	0	0	54	1	0	54	1	0	54	1	0	54	1	0	53	2	0	53	2	0	52	3	0
M04.57d	3 (ST04.05)	4			Residential / B	1	2236 Via Puerta, Laguna Woods, CA 92637	59	60	60	1	0	1	B (67)	NONE	60	0	0	59	1	0	59	1	0	59	1	0	58	2	0	58	2	0	57	3	0	57	3	0	56	4	0
M04.58-2	3 (ST04.05)	4			Residential / B	2	2244 Via Puerta, Laguna Woods, CA 92637	67	68	67	1	-1	0	B (67)	A/E	66	1	0	65	2	0	64	3	0	64	3	0	63	4	0	62	5	2	61	6	2	61	6	2	61	6	2

Table B-1. Predicted Future Noise Levels

I-5 El Toro Road Interchange Project Alternative 1 – EA 0M980 – Project Worst Hour Noise Levels (Traffic Noise Only) - Leq(h), dBA

Receiver I.D. / Measurement Location	Applied Validation Constant (Reference Measurement)	Noise Analysis Area	Evaluated Noise Barrier I.D. & Location	Existing Mainline Noise Barrier I.D., Height & Location	Land Use	Number of Dwelling Units or Equivalent	Address	Existing Noise Level, $L_{eq}(h)$, dBA	Design Year No-Build Noise Level, Leq(h), dBA	Design Year Build Alt 1 Noise Level, Leq(h), dBA	Design Year No-Build Noise Level minus Existing Conditions Leq(h), dBA	Design Year Build Noise Level minus No-Build Noise Level Leq(h), dBA	Design Year Build Noise Level minus Existing Conditions Leq(h), dBA	Activity Category (NAC)	Impact Type (None, or A/E)	Noise Prediction with Barrier, Barrier Insertion Loss (I.L.), and Number of Benefited Receivers (NBR)																							
																6 feet			8 feet			10 feet			12 feet			14 feet			16 feet			18 feet			20 feet			22 feet		
																$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR
M04.59-3	3 (ST04.05)	4	NB235A1 - SB Mainline EOS		Residential / B	2	2244 Via Puerta, Laguna Woods, CA 92637	69	70	69	1	-1	0	B (67)	A/E	68	1	0	67	2	0	66	3	0	65	4	0	65	4	0	64	5	2	63	6	2	63	6	2	62	7	2
M04.60	1 (ST04.06)	4			Residential / B	2	2234 Via Puerta, Laguna Woods, CA 92637	66	67	67	1	0	1	B (67)	A/E	66	1	0	65	2	0	64	3	0	64	3	0	64	3	0	64	3	0	64	3	0	64	3	0	64	3	0
M04.61	3 (ST04.05)	4			Residential / B	4	2234 Via Puerta, Laguna Woods, CA 92637	60	61	61	1	0	1	B (67)	NONE	61	0	0	61	0	0	61	0	0	60	1	0	60	1	0	60	1	0	60	1	0	59	2	0	58	3	0
M04.62-2	3 (ST04.05)	4			Residential / B	2	2244 Via Puerta, Laguna Woods, CA 92637	59	60	60	1	0	1	B (67)	NONE	60	0	0	60	0	0	60	0	0	59	1	0	59	1	0	59	1	0	58	2	0	57	3	0	56	4	0
M04.63-3	3 (ST04.05)	4			Residential / B	2	2244 Via Puerta, Laguna Woods, CA 92637	67	68	68	1	0	1	B (67)	A/E	68	0	0	68	0	0	67	1	0	67	1	0	67	1	0	66	2	0	65	3	0	64	4	0	64	4	0
M04.64	1 (ST04.06)	4			Residential / B	2	2234 Via Puerta, Laguna Woods, CA 92637	72	73	73	1	0	1	B (67)	A/E	72	1	0	71	2	0	71	2	0	70	3	0	69	4	0	69	4	0	68	5	2	67	6	2	66	7	2
M04.65-2	3 (ST04.05)	4			Residential / B	4	2243 Via Puerta, Laguna Woods, CA 92637	71	72	72	1	0	1	B (67)	A/E	72	0	0	71	1	0	71	1	0	70	2	0	69	3	0	68	4	0	67	5	4	66	6	4	66	6	4
M04.66-2	3 (ST04.05)	4			Residential / B	4	2243 Via Puerta, Laguna Woods, CA 92637	62	63	63	1	0	1	B (67)	NONE	63	0	0	63	0	0	62	1	0	62	1	0	61	2	0	61	2	0	60	3	0	59	4	0	58	5	4
M04.67	1 (ST04.06)	4			Residential / B	4	2233 Via Puerta, Laguna Woods, CA 92637	61	62	62	1	0	1	B (67)	NONE	61	1	0	61	1	0	61	1	0	60	2	0	59	3	0	59	3	0	58	4	0	57	5	4	57	5	4
M04.68-2a	3 (ST04.05)	4			Residential / B	2	2242 Via Puerta, Laguna Woods, CA 92637	59	60	60	1	0	1	B (67)	NONE	60	0	0	59	1	0	59	1	0	59	1	0	59	1	0	58	2	0	58	2	0	57	3	0	57	3	0
M04.68b	3 (ST04.05)	4			Residential / B	2	2242 Via Puerta, Laguna Woods, CA 92637	54	55	55	1	0	1	B (67)	NONE	55	0	0	54	1	0	54	1	0	54	1	0	53	2	0	52	3	0	52	3	0	51	4	0	51	4	0
M04.69-2	1 (ST04.06)	4			Residential / B	4	2233 Via Puerta, Laguna Woods, CA 92637	80	81	81	1	0	1	B (67)	A/E	80	1	0	79	2	0	78	3	0	76	5	4	75	6	4	73	8	4	71	10	4	70	11	4	69	12	4
M04.70-3	3 (ST04.05)	4			Residential / B	2	2242 Via Puerta, Laguna Woods, CA 92637	78	79	79	1	0	1	B (67)	A/E	78	1	0	78	1	0	78	1	0	77	2	0	76	3	0	76	3	0	74	5	2	72	7	2	71	8	2
M04.71-2	3 (ST04.05)	4			Residential / B	2	2242 Via Puerta, Laguna Woods, CA 92637	75	76	76	1	0	1	B (67)	A/E	75	1	0	74	2	0	73	3	0	72	4	0	72	4	0	70	6	2	69	7	2	68	8	2	67	9	2
M04.72-2	3 (ST04.05)	4			Residential / B	2	2241 Via Puerta, Laguna Woods, CA 92637	76	77	77	1	0	1	B (67)	A/E	76	1	0	75	2	0	74	3	0	74	3	0	73	4	0	71	6	2	70	7	2	69	8	2	68	9	2
M04.73-3	3 (ST04.05)	4			Residential / B	1	2241 Via Puerta, Laguna Woods, CA 92637	76	77	77	1	0	1	B (67)	A/E	77	0	0	76	1	0	76	1	0	75	2	0	74	3	0	74	3	0	73	4	0	71	6	1	69	8	1
M04.74-2	3 (ST04.05)	4			Residential / B	2	2241 Via Puerta, Laguna Woods, CA 92637	72	72	72	0	0	0	B (67)	A/E	72	0	0	71	1	0	71	1	0	70	2	0	69	3	0	67	5	2	66	6	2	66	6	2	65	7	2
M04.75-3	3 (ST04.05)	4			Residential / B	1	2241 Via Puerta, Laguna Woods, CA 92637	71	72	72	1	0	1	B (67)	A/E	71	1	0	70	2	0	69	3	0	69	3	0	68	4	0	67	5	1	65	7	1	64	8	1	64	8	1
M04.76	1 (ST04.06)	4			Residential / B	3	2233 Via Puerta, Laguna Woods, CA 92637	70	71	71	1	0	1	B (67)	A/E	70	1	0	69	2	0	68	3	0	67	4	0	66	5	3	66	5	3	66	5	3	66	5	3	66	5	3
M04.77 / ST04.06	1 (ST04.06)	4			Residential / B	1	2233 Via Puerta, Laguna Woods, CA 92637	72	73	73	1	0	1	B (67)	A/E	72	1	0	71	2	0	70	3	0	69	4	0	70	3	0	69	4	0	68	5	1	67	6	1	66	7	1
M04.78	3 (ST04.05)	4			Residential / B	2	2232 Via Puerta, Laguna Woods, CA 92637	60	60	60	0	0	0	B (67)	NONE	60	0	0	60	0	0	60	0	0	60	0	0	59	1	0	59	1	0	58	2	0	57	3	0	56	4	0
M04.79	3 (ST04.05)	4			Residential / B	2	2231 Via Puerta, Laguna Woods, CA 92637	57	58	57	1	-1	0	B (67)	NONE	57	0	0	57	0	0	57	0	0	57	0	0	57	0	0	56	1	0	55	2	0	54	3	0	54	3	0
M04.80-2	1 (ST04.06)	4			Residential / B	2	2232 Via Puerta, Laguna Woods, CA 92637	75	76	76	1	0	1	B (67)	A/E	75	1	0	74	2	0	73	3	0	72	4	0	69	7	2	69	7	2	67	9	2	67	9	2	66	10	2
M04.81	1 (ST04.06)	4			Residential / B	2	2232 Via Puerta, Laguna Woods, CA 92637	66	67	67	1	0	1	B (67)	A/E	66	1	0	65	2	0	64	3	0	63	4	0	63	4	0	62	5	2	62	5	2	62	5	2	61	6	2
M04.82 / ST04.05	3 (ST04.05)	4			Residential / B	2	2231 Via Puerta, Laguna Woods, CA 92637	64	65	65	1	0	1	B (67)	NONE	65	0	0	64	1	0	63	2	0	63	2	0	62	3	0	62	3	0	61	4	0	60	5	2	60	5	2
M04.83-2	3 (ST04.05)	4			Residential / B	2	2231 Via Puerta, Laguna Woods, CA 92637	70	71	71	1	0	1	B (67)	A/E	70	1	0	69	2	0	69	2	0	67	4	0	66	5	2	66	5	2	65	6	2	65	6	2	64	7	2

Notes:

An additional value is added to the receiver I.D. number to signify receivers modeled above the first floor (e.g., "-2" for second floor, "-3" for third floor)

Interior noise levels are estimated from exterior noise levels using building noise reduction factors from Table 6 of Highway Traffic Noise: Analysis and Abatement Guidance (FHWA 2011). 20 dB exterior-to-interior noise reduction is assumed at M04.04. This corresponds to light frame construction with ordinary sash windows.

* This receiver was used for model validation purposes only and does not accurately represent the primary area of outdoor human use. Nearby modeled receiver(s) are used to assess impacts at this land use.

** Due to the presence of an existing 16 foot noise barrier, insertion loss was assessed relative to the modeled "no barrier" case provided in Table B-3.

*** This receiver, included for informational purposes only, was used to assess potential impacts for future development by identifying the distance to the 66 and 71 dBA contour line.

Table B-2. Predicted Future Noise Levels

| I-5 El Toro Road Interchange Project Alternative 2 – EA 0M980 – Project Worst Hour Noise Levels (Traffic Noise Only) - L_{eq}(h), dBA | | |

Table B-2. Predicted Future Noise Levels

| I-5 El Toro Road Interchange Project Alternative 2 – EA 0M980 – Project Worst Hour Noise Levels (Traffic Noise Only) - $L_{eq}(h)$, dBA | | |

Table B-2. Predicted Future Noise Levels

| I-5 El Toro Road Interchange Project Alternative 2 – EA 0M980 – Project Worst Hour Noise Levels (Traffic Noise Only) - $L_{eq}(h)$, dBA | | |

Table B-2. Predicted Future Noise Levels

| I-5 El Toro Road Interchange Project Alternative 2 – EA 0M980 – Project Worst Hour Noise Levels (Traffic Noise Only) - L_{eq}(h), dBA | | |

Table B-2. Predicted Future Noise Levels

I-5 El Toro Road Interchange Project Alternative 2 – EA 0M980 – Project Worst Hour Noise Levels (Traffic Noise Only) - $L_{eq}(h)$, dBA

Receiver I.D. / Measurement Location	Applied Validation Constant (Reference Measurement)	Noise Analysis Area	Evaluated Noise Barrier I.D. & Location	Existing Mainline Noise Barrier I.D., Height & Location	Land Use	Number of Dwelling Units or Equivalent	Address	Existing Noise Level, $L_{eq}(h)$, dBA	Design Year No-Build Noise Level, Leq(h), dBA	Design Year Build Alt 2 Noise Level, Leq(h), dBA	Design Year No-Build Noise Level minus Existing Conditions Leq(h), dBA	Design Year Build Noise Level minus No-Build Noise Level Leq(h), dBA	Design Year Build Noise Level minus Existing Conditions Leq(h), dBA	Activity Category (NAC)	Impact Type (None, or A/E)	Noise Prediction with Barrier, Barrier Insertion Loss (I.L.), and Number of Benefited Receivers (NBR)																							
																6 feet			8 feet			10 feet			12 feet			14 feet			16 feet			18 feet			20 feet			22 feet		
																$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR
M03.01	0 (ST03.01)	3	NB234A2 + NB244A2 - NB Mainline EOS	NB Existing 16' EOS 2	Outdoor Seating Area / E	1	23851 Bridger Rd, Lake Forest, CA 92630	66	66	68	0	2	2	E (72)	NONE	65	3	0	65	3	0	64	4	0	63	5	1	62	6	1	62	6	1	61	7	1	61	7	1	61	7	1
M03.02 / ST03.01	0 (ST03.01)	3			Retail Parking Lot / F	0	Near 23811 Bridger Rd #111, Lake Forest, CA 92630	79	79	78	0	-1	-1	F (-)	NONE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M03.03	0 (ST03.02)	3			Residential / B	1	23762 Cavanaugh Rd, Lake Forest, CA 92630	62	63	67	1	4	5	B (67)	A/E	67	0	0	66	1	0	65	2	0	64	3	0	64	3	0	64	3	0	63	4	0	63	4	0	62	5	1
M03.04 / ST03.02	0 (ST03.02)	3			Park / C	1	Park near 23762 Cavanaugh Rd, Lake Forest, CA 92630	67	68	80	1	12	13	C (67)	S/A/E	80	0	0	77	3	0	72	8	1	70	10	1	68	12	1	67	13	1	66	14	1	65	15	1	64	16	1
M03.05	-1 (ST03.03)	3			Residential / B	2	23712 Dune Mear Rd, Lake Forest, CA 92630	60	61	67	1	6	7	B (67)	A/E	65	2	0	64	3	0	63	4	0	61	6	2	62	5	2	61	6	2	61	6	2	61	6	2	60	7	2
M03.06 / ST03.03	-1 (ST03.03)	3			Residential / B	2	23971 Gowdy Ave, Lake Forest, CA 92630	55	56	59	1	3	4	B (67)	NONE	59	0	0	59	0	0	59	0	0	58	1	0	57	2	0	56	3	0	55	4	0	55	4	0	54	5	2
M03.07	-1 (ST03.03)	3			Residential / B	3	23951 Gowdy Ave, Lake Forest, CA 92630	54	55	58	1	3	4	B (67)	NONE	58	0	0	58	0	0	58	0	0	57	1	0	57	1	0	56	2	0	55	3	0	54	4	0	54	4	0
M03.08	-1 (ST03.03)	3			Residential / B	3	23951 Gowdy Ave, Lake Forest, CA 92630	56	57	59	1	2	3	B (67)	NONE	59	0	0	59	0	0	59	0	0	58	1	0	58	1	0	57	2	0	56	3	0	56	3	0	55	4	0
M03.09 / ST03.04*	1 (ST03.04)	3			Sidewalk / F	0	Near 23951 Gowdy Ave, Lake Forest, CA 92630	66	67	77	1	10	11	F (-)	NONE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M03.10	1 (ST03.04)	3			Residential / B	2	23951 Gowdy Ave, Lake Forest, CA 92630	67	68	76	1	8	9	B (67)	A/E	74	2	0	73	3	0	71	5	2	70	6	2	69	7	2	67	9	2	67	9	2	66	10	2	65	11	2
M03.11	1 (ST03.04)	3			Residential / B	2	23542 Swallow Ln, Lake Forest, CA 92630	62	63	71	1	8	9	B (67)	A/E	67	4	0	66	5	2	65	6	2	65	6	2	63	8	2	62	9	2	61	10	2	60	11	2	60	11	2
M03.12	1 (ST03.04)	3			Residential / B	2	24012 Swan Dr, Lake Forest, CA 92630	63	64	69	1	5	6	B (67)	A/E	67	2	0	67	2	0	67	2	0	66	3	0	65	4	0	64	5	2	63	6	2	63	6	2	63	6	2
M03.13	1 (ST03.04)	3			Residential / B	3	23986 Swan Dr, Lake Forest, CA 92630	66	67	69	1	2	3	B (67)	A/E	70	0**	0	70	0**	0	69	1**	0	69	1**	0	68	2**	0	66	4**	0	66	4**	0	65	5**	3	64	6**	3
M03.14	4 (ST03.05)	3			Residential / B	3	23966 Swan Dr, Lake Forest, CA 92630	69	70	70	1	0	1	B (67)	A/E	72	0**	0	71	1**	0	71	1**	0	71	1**	0	70	2**	0	69	3**	0	68	4**	0	68	4**	0	67	5**	3
M03.15 / ST03.05	4 (ST03.05)	3			Residential / B	4	23952 Swan Dr, Lake Forest, CA 92630	69	70	70	1	0	1	B (67)	A/E	73	0**	0	72	1**	0	72	1**	0	71	2**	0	70	3**	0	69	4**	0	68	5**	4	68	5**	4	68	5**	4
M03.16 / ST03.06	3 (ST03.06)	3			Park / C	1	Park near 23432 Red Robin Way, Lake Forest, CA 92630	69	70	70	1	0	1	C (67)	A/E	73	0**	0	72	1**	0	72	1**	0	71	2**	0	70	3**	0	69	4**	0	69	4**	0	68	5**	1	67	6**	1
M03.17	3 (ST03.06)	3			Residential / B	1	23432 Red Robin Way, Lake Forest, CA 92630	66	67	66	1	-1	0	B (67)	A/E	70	0**	0	70	0**	0	69	1**	0	69	1**	0	68	2**	0	66	4**	0	65	5**	1	64	6**	1	65	5**	1
M03.18	3 (ST03.06)	3			Residential / B	1	23431 Red Robin Way, Lake Forest, CA 92630	67	68	68	1	0	1	B (67)	A/E	71	1**	0	71	1**	0	70	2**	0	69	3**	0	69	3**	0	67	5**	1	66	6**	1	65	7**	1	65	7**	1
M03.19	-1 (ST03.03)	3			Residential / B	2	23741 Cavanaugh Rd, Lake Forest, CA 92630	59	60	64	1	4	5	B (67)	NONE	63	1	0	63	1	0	62	2	0	62	2	0	61	3	0	60	4	0	59	5	2	59	5	2	58	6	2
M03.20	-1 (ST03.03)	3			Residential / B	3	24042 Alderglen Dr, Lake Forest, CA 92630	56	57	60	1	3	4	B (67)	NONE	59	1	0	59	1	0	59	1	0	58	2	0	57	3	0	57	3	0	56	4	0	55	5	3	55	5	3
M03.21	-1 (ST03.03)	3			Residential / B	2	24012 Alderglen Dr, Lake Forest, CA 92630	56	57	61	1	4	5	B (67)	NONE	60	1	0	59	2	0	60	1	0	59	2	0	58	3	0	57	4	0	56	5	2	56	5	2	55	6	2
M03.22	-1 (ST03.03)	3			Residential / B	2	23535 Swallow Ln, Lake Forest, CA 92630	57	58	60	1	2	3	B (67)	NONE	61	0**	0	61	0**	0	61	0**	0	60	1**	0	59	2**	0	58	3**	0	58	3**	0	58	3**	0	59	3**	0
M03.23	-1 (ST03.03)	3			Residential / B	2	23472 Blue Bird Dr, Lake Forest, CA 92630	57	58	59	1	1	2	B (67)	NONE	61	0**	0	61	0**	0	60	1**	0	60	1**	0	59	2**	0	58	3**	0	57	4**	0	58	3**	0	58	3**	0
M03.24	3 (ST03.06)	3			Residential / B	2	23412 Red Robin Way, Lake Forest, CA 92630	63	64	65	1	1	2	B (67)	NONE	65	0	0	65	0	0	65	0	0	64	1	0	64	1	0	64	1	0	63	2	0	62	3	0	61	4	0
M03.25	3 (ST03.06)	3			Residential / B	2	23411 Red Robin Way, Lake Forest, CA 92630	62	63	63	1	0	1	B (67)	NONE	63	0	0	63	0	0	63	0	0	63	0	0	63	0	0	63	0	0	63	0	0	63	0	0	62	1	0
M03.26	0 (--)	3	NB33A2 - El Toro Rd/Rockfield Blvd ROW		Outdoor Seating Area / E	1	Outdoor seating near 23731 El Toro Rd, Lake Forest, CA 92630	69	71	71	2	0	2	E (72)	A/E	65	6	1	64	7	1	63	8	1	62	9	1	62	9	1	61	10	1	61	10	1	61	10	1	61	10	1
M04.01	0 (ST04.03)	4	NB229A2 - Private Property		Place of Worship / C	1	23802 Avenida De La Carlota, Laguna Hills, CA 92653	64	66	66	2	0	2	C (67)	A/E	61	5	1	60	6	1	59	7	1	59	7	1	58	8	1	58	8	1	58	8	1	58	8	1	57	9	1

Table B-2. Predicted Future Noise Levels

| I-5 El Toro Road Interchange Project Alternative 2 – EA 0M980 – Project Worst Hour Noise Levels (Traffic Noise Only) - L_{eq}(h), dBA | | |

Table B-2. Predicted Future Noise Levels

| I-5 El Toro Road Interchange Project Alternative 2 – EA 0M980 – Project Worst Hour Noise Levels (Traffic Noise Only) - L_{eq}(h), dBA | | |

Table B-2. Predicted Future Noise Levels

I-5 El Toro Road Interchange Project Alternative 2 – EA 0M980 – Project Worst Hour Noise Levels (Traffic Noise Only) - L_{eq}(h), dBA

Receiver I.D. / Measurement Location	Applied Validation Constant (Reference Measurement)	Noise Analysis Area	Evaluated Noise Barrier I.D. & Location	Existing Mainline Noise Barrier I.D., Height & Location	Land Use	Number of Dwelling Units or Equivalent	Address	Existing Noise Level, L_{eq}(h), dBA	Design Year No-Build Noise Level, Leq(h), dBA	Design Year Build Alt 2 Noise Level, Leq(h), dBA	Design Year No-Build Noise Level minus Existing Conditions Leq(h), dBA	Design Year Build Noise Level minus No-Build Noise Level Leq(h), dBA	Design Year Build Noise Level minus Existing Conditions Leq(h), dBA	Activity Category (NAC)	Impact Type (None, or A/E)	Noise Prediction with Barrier, Barrier Insertion Loss (I.L.), and Number of Benefited Receivers (NBR)																							
																6 feet			8 feet			10 feet			12 feet			14 feet			16 feet			18 feet			20 feet			22 feet		
																L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR
M04.59-3	3 (ST04.05)	4	NB235A2 - SB Mainline EOS		Residential / B	2	2244 Via Puerta, Laguna Woods, CA 92637	69	70	69	1	-1	0	B (67)	A/E	68	1	0	67	2	0	66	3	0	65	4	0	65	4	0	64	5	2	63	6	2	63	6	2	62	7	2
M04.60	1 (ST04.06)	4			Residential / B	2	2234 Via Puerta, Laguna Woods, CA 92637	66	67	67	1	0	1	B (67)	A/E	66	1	0	65	2	0	64	3	0	63	4	0	63	4	0	63	4	0	63	4	0	63	4	0	63	4	0
M04.61	3 (ST04.05)	4			Residential / B	4	2234 Via Puerta, Laguna Woods, CA 92637	60	61	61	1	0	1	B (67)	NONE	61	0	0	61	0	0	61	0	0	60	1	0	60	1	0	60	1	0	60	1	0	59	2	0	58	3	0
M04.62-2	3 (ST04.05)	4			Residential / B	2	2244 Via Puerta, Laguna Woods, CA 92637	59	60	60	1	0	1	B (67)	NONE	60	0	0	60	0	0	60	0	0	59	1	0	59	1	0	59	1	0	58	2	0	57	3	0	56	4	0
M04.63-3	3 (ST04.05)	4			Residential / B	2	2244 Via Puerta, Laguna Woods, CA 92637	67	68	68	1	0	1	B (67)	A/E	68	0	0	68	0	0	67	1	0	67	1	0	67	1	0	66	2	0	65	3	0	64	4	0	64	4	0
M04.64	1 (ST04.06)	4			Residential / B	2	2234 Via Puerta, Laguna Woods, CA 92637	72	73	73	1	0	1	B (67)	A/E	72	1	0	71	2	0	71	2	0	70	3	0	69	4	0	69	4	0	68	5	2	67	6	2	66	7	2
M04.65-2	3 (ST04.05)	4			Residential / B	4	2243 Via Puerta, Laguna Woods, CA 92637	71	72	72	1	0	1	B (67)	A/E	72	0	0	71	1	0	71	1	0	70	2	0	69	3	0	68	4	0	67	5	4	66	6	4	66	6	4
M04.66-2	3 (ST04.05)	4			Residential / B	4	2243 Via Puerta, Laguna Woods, CA 92637	62	63	63	1	0	1	B (67)	NONE	63	0	0	63	0	0	62	1	0	62	1	0	61	2	0	61	2	0	60	3	0	59	4	0	58	5	4
M04.67	1 (ST04.06)	4			Residential / B	4	2233 Via Puerta, Laguna Woods, CA 92637	61	62	62	1	0	1	B (67)	NONE	61	1	0	61	1	0	61	1	0	60	2	0	59	3	0	59	3	0	58	4	0	57	5	4	57	5	4
M04.68-2a	3 (ST04.05)	4			Residential / B	2	2242 Via Puerta, Laguna Woods, CA 92637	59	60	60	1	0	1	B (67)	NONE	60	0	0	59	1	0	59	1	0	59	1	0	59	1	0	58	2	0	58	2	0	57	3	0	57	3	0
M04.68b	3 (ST04.05)	4			Residential / B	2	2242 Via Puerta, Laguna Woods, CA 92637	54	55	55	1	0	1	B (67)	NONE	55	0	0	54	1	0	54	1	0	54	1	0	53	2	0	52	3	0	52	3	0	51	4	0	51	4	0
M04.69-2	1 (ST04.06)	4			Residential / B	4	2233 Via Puerta, Laguna Woods, CA 92637	80	81	81	1	0	1	B (67)	A/E	80	1	0	79	2	0	78	3	0	76	5	4	75	6	4	73	8	4	71	10	4	70	11	4	69	12	4
M04.70-3	3 (ST04.05)	4			Residential / B	2	2242 Via Puerta, Laguna Woods, CA 92637	78	79	79	1	0	1	B (67)	A/E	78	1	0	78	1	0	78	1	0	77	2	0	76	3	0	76	3	0	74	5	2	72	7	2	71	8	2
M04.71-2	3 (ST04.05)	4			Residential / B	2	2242 Via Puerta, Laguna Woods, CA 92637	75	76	76	1	0	1	B (67)	A/E	75	1	0	74	2	0	73	3	0	72	4	0	72	4	0	70	6	2	68	8	2	68	8	2	67	9	2
M04.72-2	3 (ST04.05)	4			Residential / B	2	2241 Via Puerta, Laguna Woods, CA 92637	76	77	77	1	0	1	B (67)	A/E	76	1	0	75	2	0	74	3	0	74	3	0	73	4	0	71	6	2	70	7	2	69	8	2	68	9	2
M04.73-3	3 (ST04.05)	4			Residential / B	1	2241 Via Puerta, Laguna Woods, CA 92637	76	77	77	1	0	1	B (67)	A/E	77	0	0	76	1	0	76	1	0	75	2	0	74	3	0	74	3	0	73	4	0	71	6	1	69	8	1
M04.74-2	3 (ST04.05)	4			Residential / B	2	2241 Via Puerta, Laguna Woods, CA 92637	72	72	72	0	0	0	B (67)	A/E	72	0	0	71	1	0	71	1	0	70	2	0	69	3	0	67	5	2	66	6	2	66	6	2	65	7	2
M04.75-3	3 (ST04.05)	4			Residential / B	1	2241 Via Puerta, Laguna Woods, CA 92637	71	72	72	1	0	1	B (67)	A/E	71	1	0	70	2	0	69	3	0	69	3	0	68	4	0	67	5	1	65	7	1	64	8	1	64	8	1
M04.76	1 (ST04.06)	4			Residential / B	3	2233 Via Puerta, Laguna Woods, CA 92637	70	71	71	1	0	1	B (67)	A/E	70	1	0	69	2	0	68	3	0	67	4	0	66	5	3	66	5	3	66	5	3	66	5	3	66	5	3
M04.77 / ST04.06	1 (ST04.06)	4			Residential / B	1	2233 Via Puerta, Laguna Woods, CA 92637	72	73	73	1	0	1	B (67)	A/E	72	1	0	71	2	0	70	3	0	69	4	0	70	3	0	69	4	0	68	5	1	67	6	1	66	7	1
M04.78	3 (ST04.05)	4			Residential / B	2	2232 Via Puerta, Laguna Woods, CA 92637	60	60	60	0	0	0	B (67)	NONE	60	0	0	60	0	0	60	0	0	60	0	0	59	1	0	59	1	0	58	2	0	57	3	0	56	4	0
M04.79	3 (ST04.05)	4			Residential / B	2	2231 Via Puerta, Laguna Woods, CA 92637	57	58	57	1	-1	0	B (67)	NONE	57	0	0	57	0	0	57	0	0	57	0	0	57	0	0	56	1	0	55	2	0	54	3	0	54	3	0
M04.80-2	1 (ST04.06)	4			Residential / B	2	2232 Via Puerta, Laguna Woods, CA 92637	75	76	76	1	0	1	B (67)	A/E	75	1	0	74	2	0	73	3	0	72	4	0	69	7	2	69	7	2	67	9	2	66	10	2	66	10	2
M04.81	1 (ST04.06)	4			Residential / B	2	2232 Via Puerta, Laguna Woods, CA 92637	66	67	67	1	0	1	B (67)	A/E	66	1	0	65	2	0	64	3	0	63	4	0	63	4	0	62	5	2	62	5	2	62	5	2	61	6	2
M04.82 / ST04.05	3 (ST04.05)	4			Residential / B	2	2231 Via Puerta, Laguna Woods, CA 92637	64	65	65	1	0	1	B (67)	NONE	65	0	0	64	1	0	63	2	0	63	2	0	62	3	0	62	3	0	61	4	0	60	5	2	60	5	2
M04.83-2	3 (ST04.05)	4			Residential / B	2	2231 Via Puerta, Laguna Woods, CA 92637	70	71	71	1	0	1	B (67)	A/E	70	1	0	69	2	0	69	2	0	67	4	0	66	5	2	66	5	2	65	6	2	65	6	2	64	7	2

Notes:

An additional value is added to the receiver I.D. number to signify receivers modeled above the first floor (e.g., "-2" for second floor, "-3" for third floor)

Interior noise levels are estimated from exterior noise levels using building noise reduction factors from Table 6 of Highway Traffic Noise: Analysis and Abatement Guidance (FHWA 2011). 20 dB exterior-to-interior noise reduction is assumed at M04.04. This corresponds to light frame construction with ordinary sash windows.

* This receiver was used for model validation purposes only and does not accurately represent the primary area of outdoor human use. Nearby modeled receiver(s) are used to assess impacts at this land use.

** Due to the presence of an existing 16 foot noise barrier, insertion loss was assessed relative to the modeled "no barrier" case provided in Table B-3.

*** This receiver, included for informational purposes only, was used to assess potential impacts for future development by identifying the distance to the 66 and 71 dBA contour line.

Table B-3. Existing Noise Barrier Analysis

I-5 El Toro Road Interchange Project – EA 0M980 – Evaluation of Existing Barriers - Leq(h), dBA										
Receiver I.D. / Measurement Location	Applied Validation Constant (Reference Measurement)	Noise Analysis Area	Existing Noise Barrier I.D. [2]	Land Use	Number of Dwelling Units or Equivalent	Activity Category (NAC)	Impact Type (None, or A/E)	Design Year Build Noise Level With Existing Noise Barrier, Leq(h), dBA	Design Year Build Noise Level Without Existing Noise Barrier, Leq(h), dBA (modeled at zero height)	Design Year Build with Existing Noise Barrier Minus Design Year Build Without Existing Noise Barrier
M03.03	0 (ST03.02)	3	Existing PP Barrier	Residential / B	1	B (67)	A/E	67	73	6
M03.13	1 (ST03.04)	3	Existing 16ft EOS Barrier	Residential / B	3	B (67)	A/E	69	70	1
M03.14	4 (ST03.05)	3		Residential / B	3	B (67)	A/E	70	72	2
M03.15 / ST03.05	4 (ST03.05)	3		Residential / B	4	B (67)	A/E	70	73	3
M03.16 / ST03.06	3 (ST03.06)	3		Park / C	1	C (67)	A/E	70	73	3
M03.17	3 (ST03.06)	3		Residential / B	1	B (67)	A/E	66	70	4
M03.18	3 (ST03.06)	3		Residential / B	1	B (67)	A/E	68	72	4
M03.22	-1 (ST03.03)	3		Residential / B	2	B (67)	NONE	60	61	1
M03.23	-1 (ST03.03)	3		Residential / B	2	B (67)	NONE	59	61	2
M04.01	0 (ST04.03)	4	Existing PP Barrier	Place of Worship / C	1	C (67)	A/E	66	66	0
M04.02	0 (ST04.03)	4		Park / C	1	C (67)	A/E	72	72	0
M04.03	0 (ST04.03)	4		Playground / C	1	C (67)	A/E	67	67	0
M04.04	0 (ST04.03)	4		Place of Worship Interior / D	1	D (52)	A/E	55 #	55 #	0
M04.05	0 (ST04.03)	4		Playground / C	1	C (67)	A/E	72	72	0
M04.06a	0 (ST04.03)	4		Residential / B	2	B (67)	NONE	61	70	9
M04.06b	0 (ST04.03)	4		Outdoor Seating Area / E	1	E (72)	S	67	0	--
M04.06c	0 (ST04.03)	4		Outdoor Seating Area / E	1	E (72)	S	67	0	--
M04.07	0 (ST04.03)	4		Residential / B	2	B (67)	NONE	61	68	7
M04.08	0 (ST04.03)	4		Residential / B	2	B (67)	NONE	61	70	9
M04.09	0 (ST04.03)	4		Residential / B	2	B (67)	NONE	54	54	0
M04.10	0 (ST04.03)	4		Residential / B	2	B (67)	NONE	60	69	9
M04.11	0 (ST04.03)	4		Residential / B	2	B (67)	NONE	57	62	5
M04.12	0 (ST04.03)	4		Residential / B	4	B (67)	NONE	53	57	4
M04.13	0 (ST04.03)	4		Residential / B	2	B (67)	NONE	61	67	6
M04.14 / ST04.03 [1]	0 (ST04.03)	4		Sidewalk / F	0	F (-)	NONE	61	67	6
M04.15	0 (ST04.03)	4		Residential / B	2	B (67)	NONE	54	54	0
M04.16	0 (ST04.03)	4		Residential / B	2	B (67)	NONE	62	71	9
M04.17	0 (ST04.03)	4		Residential / B	2	B (67)	NONE	55	56	1
M04.18	0 (ST04.03)	4		Residential / B	2	B (67)	NONE	63	70	7

Table B-3. Existing Noise Barrier Analysis

I-5 El Toro Road Interchange Project – EA 0M980 – Evaluation of Existing Barriers - Leq(h), dBA										
Receiver I.D. / Measurement Location	Applied Validation Constant (Reference Measurement)	Noise Analysis Area	Existing Noise Barrier I.D. [2]	Land Use	Number of Dwelling Units or Equivalent	Activity Category (NAC)	Impact Type (None, or A/E)	Design Year Build Noise Level With Existing Noise Barrier, Leq(h), dBA	Design Year Build Noise Level Without Existing Noise Barrier, Leq(h), dBA (modeled at zero height)	Design Year Build with Existing Noise Barrier Minus Design Year Build Without Existing Noise Barrier
M04.19	3 (ST04.01)	4	Existing PP Barrier	Residential / B	2	B (67)	NONE	65	70	5
M04.20	0 (ST04.03)	4		Residential / B	2	B (67)	NONE	64	70	6
M04.21	3 (ST04.01)	4		Residential / B	4	B (67)	NONE	60	61	1
M04.22	0 (ST04.03)	4		Residential / B	2	B (67)	NONE	65	72	7
M04.23-2	3 (ST04.01)	4		Residential / B	4	B (67)	A/E	69	74	5
M04.24	3 (ST04.04)	4		Residential / B	4	B (67)	NONE	56	56	0
M04.25-3	3 (ST04.01)	4		Residential / B	1	B (67)	A/E	80	80	0
M04.26	3 (ST04.01)	4		Residential / B	2	B (67)	NONE	56	56	0
M04.27-2	3 (ST04.01)	4		Residential / B	1	B (67)	A/E	76	78	2
M04.28-2	3 (ST04.04)	4		Residential / B	2	B (67)	NONE	62	62	0
M04.29-2	3 (ST04.01)	4		Residential / B	1	B (67)	A/E	78	79	1
M04.30-3	3 (ST04.01)	4		Residential / B	1	B (67)	A/E	81	81	0
M04.31-2	3 (ST04.04)	4		Residential / B	2	B (67)	A/E	69	70	1
M04.32 / ST04.01	3 (ST04.01)	4		Residential / B	1	B (67)	A/E	68	75	7
M04.33-2	3 (ST04.01)	4		Residential / B	1	B (67)	A/E	78	81	3
M04.34	3 (ST04.01)	4		Residential / B	4	B (67)	NONE	58	58	0
M04.35-2	3 (ST04.01)	4		Residential / B	4	B (67)	A/E	81	82	1
M04.36	3 (ST04.01)	4		Residential / B	2	B (67)	A/E	69	79	10
M04.37	3 (ST04.01)	4		Residential / B	1	B (67)	A/E	70	77	7
M04.38	3 (ST04.04)	4		Residential / B	4	B (67)	NONE	60	60	0
M04.39	3 (ST04.01)	4		Residential / B	2	B (67)	A/E	69	77	8
M04.40	3 (ST04.04)	4		Residential / B	2	B (67)	NONE	56	56	0
M04.41-2	3 (ST04.02)	4		Residential / B	2	B (67)	A/E	81	81	0
M04.42 / ST04.04	3 (ST04.04)	4		Residential / B	4	B (67)	NONE	62	65	3
M04.43	3 (ST04.04)	4		Residential / B	4	B (67)	NONE	59	60	1
M04.44-2	3 (ST04.02)	4		Residential / B	1	B (67)	A/E	79	80	1
M04.45-2	3 (ST04.02)	4		Residential / B	2	B (67)	A/E	79	80	1
M04.46	3 (ST04.02)	4		Residential / B	2	B (67)	A/E	69	76	7
M04.47-2	3 (ST04.04)	4		Residential / B	2	B (67)	NONE	65	65	0
M04.48	3 (ST04.02)	4		Residential / B	2	B (67)	A/E	68	74	6
M04.49-2	3 (ST04.04)	4		Residential / B	2	B (67)	A/E	77	77	0

Table B-3. Existing Noise Barrier Analysis

I-5 El Toro Road Interchange Project – EA 0M980 – Evaluation of Existing Barriers - Leq(h), dBA										
Receiver I.D. / Measurement Location	Applied Validation Constant (Reference Measurement)	Noise Analysis Area	Existing Noise Barrier I.D. [2]	Land Use	Number of Dwelling Units or Equivalent	Activity Category (NAC)	Impact Type (None, or A/E)	Design Year Build Noise Level With Existing Noise Barrier, Leq(h), dBA	Design Year Build Noise Level Without Existing Noise Barrier, Leq(h), dBA (modeled at zero height)	Design Year Build with Existing Noise Barrier Minus Design Year Build Without Existing Noise Barrier
M04.50-3	3 (ST04.04)	4	Existing PP Barrier	Residential / B	2	B (67)	A/E	79	79	0
M04.51	3 (ST04.02)	4		Residential / B	2	B (67)	NONE	64	67	3
M04.52	3 (ST04.02)	4		Residential / B	1	B (67)	A/E	68	77	9
M04.53-2	3 (ST04.02)	4		Residential / B	2	B (67)	A/E	78	80	2
M04.54	3 (ST04.04)	4		Residential / B	2	B (67)	NONE	61	63	2
M04.55 / ST04.02	3 (ST04.02)	4		Residential / B	1	B (67)	A/E	69	77	8
M04.56	3 (ST04.04)	4		Residential / B	2	B (67)	A/E	69	72	3
M04.57-2a	3 (ST04.04)	4		Residential / B	2	B (67)	A/E	72	73	1
M04.57b	3 (ST04.05)	4		Residential / B	1	B (67)	NONE	64	65	1
M04.57c	3 (ST04.05)	4		Residential / B	1	B (67)	NONE	55	55	0
M04.57d	3 (ST04.05)	4		Residential / B	1	B (67)	NONE	60	62	2
M04.58-2	3 (ST04.05)	4		Residential / B	2	B (67)	A/E	67	68	1
M04.59-3	3 (ST04.05)	4		Residential / B	2	B (67)	A/E	69	69	0
M04.60	1 (ST04.06)	4		Residential / B	2	B (67)	A/E	67	75	8
M04.61	3 (ST04.05)	4		Residential / B	4	B (67)	NONE	61	61	0
M04.62-2	3 (ST04.05)	4		Residential / B	2	B (67)	NONE	60	60	0
M04.63-3	3 (ST04.05)	4		Residential / B	2	B (67)	A/E	68	68	0
M04.64	1 (ST04.06)	4		Residential / B	2	B (67)	A/E	73	79	6
M04.65-2	3 (ST04.05)	4		Residential / B	4	B (67)	A/E	72	74	2
M04.66-2	3 (ST04.05)	4		Residential / B	4	B (67)	NONE	63	63	0
M04.67	1 (ST04.06)	4		Residential / B	4	B (67)	NONE	62	64	2
M04.68-2a	3 (ST04.05)	4		Residential / B	2	B (67)	NONE	60	60	0
M04.68b	3 (ST04.05)	4		Residential / B	2	B (67)	NONE	55	55	0
M04.69-2	1 (ST04.06)	4		Residential / B	4	B (67)	A/E	81	81	0

Table B-3. Existing Noise Barrier Analysis

I-5 El Toro Road Interchange Project – EA 0M980 – Evaluation of Existing Barriers - Leq(h), dBA

Receiver I.D. / Measurement Location	Applied Validation Constant (Reference Measurement)	Noise Analysis Area	Existing Noise Barrier I.D. [2]	Land Use	Number of Dwelling Units or Equivalent	Activity Category (NAC)	Impact Type (None, or A/E)	Design Year Build Noise Level With Existing Noise Barrier, Leq(h), dBA	Design Year Build Noise Level Without Existing Noise Barrier, Leq(h), dBA (modeled at zero height)	Design Year Build with Existing Noise Barrier Minus Design Year Build Without Existing Noise Barrier
M04.70-3	3 (ST04.05)	4	Existing PP Barrier	Residential / B	2	B (67)	A/E	79	79	0
M04.71-2	3 (ST04.05)	4		Residential / B	2	B (67)	A/E	76	76	0
M04.72-2	3 (ST04.05)	4		Residential / B	2	B (67)	A/E	77	77	0
M04.73-3	3 (ST04.05)	4		Residential / B	1	B (67)	A/E	77	77	0
M04.74-2	3 (ST04.05)	4		Residential / B	2	B (67)	A/E	72	72	0
M04.75-3	3 (ST04.05)	4		Residential / B	1	B (67)	A/E	72	72	0
M04.76	1 (ST04.06)	4		Residential / B	3	B (67)	A/E	71	80	9
M04.77 / ST04.06	1 (ST04.06)	4		Residential / B	1	B (67)	A/E	73	79	6
M04.78	3 (ST04.05)	4		Residential / B	2	B (67)	NONE	60	61	1
M04.79	3 (ST04.05)	4		Residential / B	2	B (67)	NONE	57	58	1
M04.80-2	1 (ST04.06)	4		Residential / B	2	B (67)	A/E	76	77	1
M04.81	1 (ST04.06)	4		Residential / B	2	B (67)	A/E	67	74	7
M04.82 / ST04.05	3 (ST04.05)	4		Residential / B	2	B (67)	NONE	65	70	5
M04.83-2	3 (ST04.05)	4		Residential / B	2	B (67)	A/E	71	72	1

Notes:

EOS = edge of shoulder

PP = Private Property

An additional value is added to the receiver I.D. number to signify receivers modeled above the first floor (e.g., "-2" for second floor, "-3" for third floor)

Interior noise levels are estimated from exterior noise levels using building noise reduction factors from Table 6 of Highway Traffic Noise: Analysis and Abatement Guidance (FHWA 2011). 20 dB exterior-to-interior noise reduction is assumed at M04.04. This corresponds to light frame construction with ordinary sash windows.

[1] This receiver was used for model validation purposes only and does not accurately represent the primary area of outdoor human use. Nearby modeled receiver(s) are used to assess impacts at this land use.

[2] Existing noise barriers were analyzed for feasibility and reasonableness following the steps outlined in Appendix E of the Traffic Noise Analysis Protocol.

Appendix C Noise Barrier Analysis Worksheets

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Table C-1. Analysis of Noise Barrier NB32A1 - El Toro Rd/Rockfield Blvd ROW

	Receivers[a]			Total Number of Benefited Receptors
	M01.41	M01.42	M01.43	
Number of Units Represented	1	1	1	--
Existing Traffic Noise Level, dBA L_{eq}(h)	70	65	61	--
Design Year Build Traffic Noise Level, dBA Leq(h)	**72**	66	63	--
Design Year Build - Existing Traffic Noise Level, dBA Leq(h)	2	1	2	--
6-Foot Barrier				
Design Year Build Traffic Noise Level, dBA Leq(h)	65	63	59	--
Predicted Insertion Loss, dB	7	3	4	--
Number of Benefited Receptors	1	0	0	1
8-Foot Barrier				
Design Year Build Traffic Noise Level, dBA Leq(h)	63	61	58	--
Predicted Insertion Loss, dB	9	5	5	--
Number of Benefited Receivers	1	1	1	3
10-Foot Barrier				
Design Year Build Traffic Noise Level, dBA Leq(h)	62	60	58	--
Predicted Insertion Loss, dB	10	6	5	--
Number of Benefited Receivers	1	1	1	3
12-Foot Barrier[b]				
Design Year Build Traffic Noise Level, dBA Leq(h)	61	59	57	--
Predicted Insertion Loss, dB	11	7	6	--
Number of Benefited Receivers	1	1	1	3
14-Foot Barrier				
Design Year Build Traffic Noise Level, dBA Leq(h)	60	59	57	--
Predicted Insertion Loss, dB	12	7	6	--
Number of Benefited Receivers	1	1	1	3
16-Foot Barrier				
Design Year Build Traffic Noise Level, dBA Leq(h)	59	58	56	--
Predicted Insertion Loss, dB	13	8	7	--
Number of Benefited Receivers	1	1	1	3
18-Foot Barrier				
Design Year Build Traffic Noise Level, dBA Leq(h)	59	58	56	--
Predicted Insertion Loss, dB	13	8	7	--
Number of Benefited Receivers	1	1	1	3
20-Foot Barrier				
Design Year Build Traffic Noise Level, dBA Leq(h)	58	57	56	--
Predicted Insertion Loss, dB	14	9	7	--
Number of Benefited Receivers	1	1	1	3
22-Foot Barrier				
Design Year Build Traffic Noise Level, dBA Leq(h)	58	57	56	--
Predicted Insertion Loss, dB	14	9	7	--
Number of Benefited Receivers	1	1	1	3

[a] Traffic noise levels that approach or exceed the NAC are shown in bold.

[b] Minimum noise barrier height needed to block line-of-sight between an 11.5-foot truck exhaust stack and the first row of benefited receptors.

Table C-2. Analysis of Noise Barrier NB32A2 - El Toro Rd/Rockfield Blvd ROW

	Receivers[a]			Total Number of Benefited Receptors
	M01.41	M01.42	M01.43	
Number of Units Represented	1	1	1	--
Existing Traffic Noise Level, dBA L_{eq}(h)	70	65	61	--
Design Year Build Traffic Noise Level, dBA Leq(h)	**71**	66	63	--
Design Year Build - Existing Traffic Noise Level, dBA Leq(h)	1	1	2	--
6-Foot Barrier				
Design Year Build Traffic Noise Level, dBA Leq(h)	65	63	60	--
Predicted Insertion Loss, dB	6	3	3	--
Number of Benefited Receptors	1	0	0	1
8-Foot Barrier				
Design Year Build Traffic Noise Level, dBA Leq(h)	63	63	59	--
Predicted Insertion Loss, dB	8	3	4	--
Number of Benefited Receivers	1	0	0	1
10-Foot Barrier				
Design Year Build Traffic Noise Level, dBA Leq(h)	62	61	58	--
Predicted Insertion Loss, dB	9	5	5	--
Number of Benefited Receivers	1	1	1	3
12-Foot Barrier[b]				
Design Year Build Traffic Noise Level, dBA Leq(h)	61	61	58	--
Predicted Insertion Loss, dB	10	5	5	--
Number of Benefited Receivers	1	1	1	3
14-Foot Barrier				
Design Year Build Traffic Noise Level, dBA Leq(h)	60	60	58	--
Predicted Insertion Loss, dB	11	6	5	--
Number of Benefited Receivers	1	1	1	3
16-Foot Barrier				
Design Year Build Traffic Noise Level, dBA Leq(h)	59	60	57	--
Predicted Insertion Loss, dB	12	6	6	--
Number of Benefited Receivers	1	1	1	3
18-Foot Barrier				
Design Year Build Traffic Noise Level, dBA Leq(h)	59	59	57	--
Predicted Insertion Loss, dB	12	7	6	--
Number of Benefited Receivers	1	1	1	3
20-Foot Barrier				
Design Year Build Traffic Noise Level, dBA Leq(h)	58	59	57	--
Predicted Insertion Loss, dB	13	7	6	--
Number of Benefited Receivers	1	1	1	3
22-Foot Barrier				
Design Year Build Traffic Noise Level, dBA Leq(h)	58	59	57	--
Predicted Insertion Loss, dB	13	7	6	--
Number of Benefited Receivers	1	1	1	3

[a] Traffic noise levels that approach or exceed the NAC are shown in bold.

[b] Minimum noise barrier height needed to block line-of-sight between an 11.5-foot truck exhaust stack and the first row of benefited receptors.

Table C-3. Analysis of Noise Barrier NB234A1 - NB Mainline EOS

	Receivers[a]												
	M03.01	**M03.02 / ST03.01**	**M03.03**	**M03.04 / ST03.02**	**M03.05**	**M03.06 / ST03.03**	**M03.07**	**M03.08**	**M03.09 / ST03.04***	**M03.10**	**M03.11**	**M03.12**	**M03.13**
Number of Units Represented	1	0	1	1	2	2	3	3	0	2	2	2	3
Existing Traffic Noise Level, dBA L_{eq}(h)	66	79	62	67	60	55	54	56	66	67	62	63	66
Design Year Build Traffic Noise Level, dBA Leq(h)	68	78	**67**	**80**	**67**	59	58	59	77	**76**	**71**	**68**	**69**
Design Year Build - Existing Traffic Noise Level, dBA Leq(h)	2	-1	5	13	7	4	4	3	11	9	9	5	3
6-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	65	--	**67**	**80**	65	59	58	59	--	**74**	**67**	**67**	**69**
Predicted Insertion Loss, dB	3	--	0	0	2	0	0	0	--	2	4	2	0
Number of Benefited Receptors	0	--	0	0	0	0	0	0	--	0	0	0	0
8-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	65	--	**66**	**77**	64	59	58	59	--	**72**	**66**	**67**	**68**
Predicted Insertion Loss, dB	3	--	1	3	3	0	0	0	--	4	5	2	1
Number of Benefited Receivers	0	--	0	0	0	0	0	0	--	0	2	0	0
10-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	64	--	65	**72**	63	59	58	59	--	**71**	65	**66**	**68**
Predicted Insertion Loss, dB	4	--	2	8	4	0	0	0	--	5	6	3	1
Number of Benefited Receivers	0	--	0	1	0	0	0	0	--	2	2	0	0
12-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	63	--	64	**70**	61	58	57	58	--	**70**	65	**66**	**68**
Predicted Insertion Loss, dB	5	--	3	10	6	1	1	1	--	6	6	3	1
Number of Benefited Receivers	1	--	0	1	2	0	0	0	--	2	2	0	0
14-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	62	--	64	**68**	62	57	57	58	--	**69**	63	65	**67**
Predicted Insertion Loss, dB	6	--	3	12	5	2	1	1	--	7	8	4	2
Number of Benefited Receivers	1	--	0	1	2	0	0	0	--	2	2	0	0
16-Foot Barrier[b]													
Design Year Build Traffic Noise Level, dBA Leq(h)	62	--	64	**67**	61	56	56	57	--	**67**	62	64	**66**
Predicted Insertion Loss, dB	6	--	3	13	6	3	2	2	--	9	9	5	3
Number of Benefited Receivers	1	--	0	1	2	0	0	0	--	2	2	2	0
18-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	61	--	63	**66**	61	55	55	56	--	**67**	61	64	**66**
Predicted Insertion Loss, dB	7	--	4	14	6	4	3	3	--	9	10	5	3
Number of Benefited Receivers	1	--	0	1	2	0	0	0	--	2	2	2	0
20-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	61	--	63	65	61	55	54	56	--	**67**	61	63	66
Predicted Insertion Loss, dB	7	--	4	15	6	4	4	3	--	9	10	6	3
Number of Benefited Receivers	1	--	0	1	2	0	0	0	--	2	2	2	0
22-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	61	--	62	64	60	54	54	56	--	66	60	63	65
Predicted Insertion Loss, dB	7	--	5	16	7	5	4	3	--	10	11	6	4
Number of Benefited Receivers	1	--	1	1	2	2	0	0	--	2	2	2	0

[a] Traffic noise levels that approach or exceed the NAC are shown in bold.

[b] Minimum noise barrier height needed to block line-of-sight between an 11.5-foot truck exhaust stack and the first row of benefited receptors.

Table C-3. Analysis of Noise Barrier NB234A1 - NB Mainline EOS

	Receivers[a]												Total Number of Benefited Receptors
	M03.14	M03.15 / ST03.05	M03.16 / ST03.06	M03.17	M03.18	M03.19	M03.20	M03.21	M03.22	M03.23	M03.24	M03.25	
Number of Units Represented	3	4	1	1	1	2	3	2	2	2	2	2	--
Existing Traffic Noise Level, dBA L_{eq}(h)	69	69	69	66	67	59	56	56	57	57	63	62	--
Design Year Build Traffic Noise Level, dBA Leq(h)	**70**	**70**	**70**	**66**	**68**	64	60	61	60	59	65	63	--
Design Year Build - Existing Traffic Noise Level, dBA Leq(h)	1	1	1	0	1	5	4	5	3	2	2	1	--
6-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**70**	**70**	**70**	**66**	**68**	64	59	60	60	59	64	63	--
Predicted Insertion Loss, dB	0	0	0	0	0	0	1	1	0	0	1	0	--
Number of Benefited Receptors	0	0	0	0	0	0	0	0	0	0	0	0	0
8-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**69**	**69**	**70**	**66**	**68**	63	59	59	60	59	64	63	--
Predicted Insertion Loss, dB	1	1	0	0	0	1	1	2	0	0	1	0	--
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	0	0	0	2
10-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**69**	**69**	**70**	**66**	**68**	62	58	60	60	59	64	63	--
Predicted Insertion Loss, dB	1	1	0	0	0	2	2	1	0	0	1	0	--
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	0	0	0	5
12-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**69**	**69**	**69**	**66**	**68**	62	58	59	59	58	64	63	--
Predicted Insertion Loss, dB	1	1	1	0	0	2	2	2	1	1	1	0	--
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	0	0	0	8
14-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**69**	**69**	**69**	**66**	**68**	61	57	58	59	58	64	63	--
Predicted Insertion Loss, dB	1	1	1	0	0	3	3	3	1	1	1	0	--
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	0	0	0	8
16-Foot Barrier[b]													
Design Year Build Traffic Noise Level, dBA Leq(h)	**69**	**69**	**69**	**66**	**68**	60	57	57	58	58	64	63	--
Predicted Insertion Loss, dB	1	1	1	0	0	4	3	4	2	1	1	0	--
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	0	0	0	10
18-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**69**	**69**	**69**	66	**68**	59	56	56	58	58	64	63	--
Predicted Insertion Loss, dB	1	1	1	0	0	5	4	5	2	1	1	0	--
Number of Benefited Receivers	0	0	0	0	0	2	0	2	0	0	0	0	14
20-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**68**	**69**	**69**	66	68	59	56	56	58	58	64	63	--
Predicted Insertion Loss, dB	2	1	1	0	0	5	4	5	2	1	1	0	--
Number of Benefited Receivers	0	0	0	0	0	2	0	2	0	0	0	0	14
22-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**68**	**69**	**69**	66	68	58	55	55	58	58	64	63	--
Predicted Insertion Loss, dB	2	1	1	0	0	6	5	6	2	1	1	0	--
Number of Benefited Receivers	0	0	0	0	0	2	3	2	0	0	0	0	20

Table C-4. Analysis of Noise Barrier NB234A2 - NB Mainline EOS

	Receivers[a]												
	M03.01	**M03.02 / ST03.01**	**M03.03**	**M03.04 / ST03.02**	**M03.05**	**M03.06 / ST03.03**	**M03.07**	**M03.08**	**M03.09 / ST03.04***	**M03.10**	**M03.11**	**M03.12**	**M03.13**
Number of Units Represented	1	0	1	1	2	2	3	3	0	2	2	2	3
Existing Traffic Noise Level, dBA L_{eq}(h)	66	79	62	67	60	55	54	56	66	67	62	63	66
Design Year Build Traffic Noise Level, dBA Leq(h)	**68**	78	**67**	**80**	**67**	59	58	59	77	**76**	**71**	**69**	**69**
Design Year Build - Existing Traffic Noise Level, dBA Leq(h)	2	-1	5	13	7	4	4	3	11	9	9	6	3
6-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	65	--	**67**	**80**	65	59	58	59	--	**74**	**67**	**67**	**69**
Predicted Insertion Loss, dB	3	--	0	0	2	0	0	0	--	2	4	2	0
Number of Benefited Receptors	0	--	0	0	0	0	0	0	--	0	0	0	0
8-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	65	--	**66**	**77**	64	59	58	59	--	**72**	**66**	**67**	**68**
Predicted Insertion Loss, dB	3	--	1	3	3	0	0	0	--	4	5	2	1
Number of Benefited Receivers	0	--	0	0	0	0	0	0	--	0	2	0	0
10-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	64	--	65	**72**	63	59	58	59	--	**71**	65	**66**	**68**
Predicted Insertion Loss, dB	4	--	2	8	4	0	0	0	--	5	6	3	1
Number of Benefited Receivers	0	--	0	1	0	0	0	0	--	2	2	0	0
12-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	63	--	64	**70**	61	58	57	58	--	**70**	65	**66**	**68**
Predicted Insertion Loss, dB	5	--	3	10	6	1	1	1	--	6	6	3	1
Number of Benefited Receivers	1	--	0	1	2	0	0	0	--	2	2	0	0
14-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	62	--	64	**68**	62	57	57	58	--	**69**	63	65	**67**
Predicted Insertion Loss, dB	6	--	3	12	5	2	1	1	--	7	8	4	2
Number of Benefited Receivers	1	--	0	1	2	0	0	0	--	2	2	0	0
16-Foot Barrier[b]													
Design Year Build Traffic Noise Level, dBA Leq(h)	62	--	64	**67**	61	56	56	57	--	**67**	62	64	**66**
Predicted Insertion Loss, dB	6	--	3	13	6	3	2	2	--	9	9	5	3
Number of Benefited Receivers	1	--	0	1	2	0	0	0	--	2	2	2	0
18-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	61	--	63	**66**	61	55	55	56	--	**67**	61	64	**66**
Predicted Insertion Loss, dB	7	--	4	14	6	4	3	3	--	9	10	5	3
Number of Benefited Receivers	1	--	0	1	2	0	0	0	--	2	2	2	0
20-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	61	--	63	65	61	55	54	56	--	**67**	61	63	66
Predicted Insertion Loss, dB	7	--	4	15	6	4	4	3	--	9	10	6	3
Number of Benefited Receivers	1	--	0	1	2	0	0	0	--	2	2	2	0
22-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	61	--	62	64	60	54	54	56	--	66	60	63	65
Predicted Insertion Loss, dB	7	--	5	16	7	5	4	3	--	10	11	6	4
Number of Benefited Receivers	1	--	1	1	2	2	0	0	--	2	2	2	0

[a] Traffic noise levels that approach or exceed the NAC are shown in bold.

[b] Minimum noise barrier height needed to block line-of-sight between an 11.5-foot truck exhaust stack and the first row of benefited receptors.

Table C-4. Analysis of Noise Barrier NB234A2 - NB Mainline EOS

	Receivers[a]												Total Number of Benefited Receptors
	M03.14	M03.15 / ST03.05	M03.16 / ST03.06	M03.17	M03.18	M03.19	M03.20	M03.21	M03.22	M03.23	M03.24	M03.25	
Number of Units Represented	3	4	1	1	1	2	3	2	2	2	2	2	--
Existing Traffic Noise Level, dBA L_{eq}(h)	69	69	69	66	67	59	56	56	57	57	63	62	--
Design Year Build Traffic Noise Level, dBA Leq(h)	**70**	**70**	**70**	**66**	**68**	64	60	61	60	59	65	63	--
Design Year Build - Existing Traffic Noise Level, dBA Leq(h)	1	1	1	0	1	5	4	5	3	2	2	1	--
6-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**70**	**70**	**70**	**66**	**68**	63	59	60	60	59	64	63	--
Predicted Insertion Loss, dB	0	0	0	0	0	1	1	1	0	0	1	0	--
Number of Benefited Receptors	0	0	0	0	0	0	0	0	0	0	0	0	0
8-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**69**	**69**	**70**	**66**	**68**	63	59	59	60	59	64	63	--
Predicted Insertion Loss, dB	1	1	0	0	0	1	1	2	0	0	1	0	--
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	0	0	0	2
10-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**69**	**69**	**70**	**66**	**68**	62	58	60	60	59	64	63	--
Predicted Insertion Loss, dB	1	1	0	0	0	2	2	1	0	0	1	0	--
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	0	0	0	5
12-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**69**	**69**	**69**	**66**	**68**	62	58	59	59	58	64	63	--
Predicted Insertion Loss, dB	1	1	1	0	0	2	2	2	1	1	1	0	--
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	0	0	0	8
14-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**69**	**69**	**69**	**66**	**68**	61	57	58	59	58	64	63	--
Predicted Insertion Loss, dB	1	1	1	0	0	3	3	3	1	1	1	0	--
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	0	0	0	8
16-Foot Barrier[b]													
Design Year Build Traffic Noise Level, dBA Leq(h)	**69**	**69**	**69**	**66**	**68**	60	57	57	58	58	64	63	--
Predicted Insertion Loss, dB	1	1	1	0	0	4	3	4	2	1	1	0	--
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	0	0	0	10
18-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**69**	**69**	**69**	66	**68**	59	56	56	58	58	64	63	--
Predicted Insertion Loss, dB	1	1	1	0	0	5	4	5	2	1	1	0	--
Number of Benefited Receivers	0	0	0	0	0	2	0	2	0	0	0	0	14
20-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**68**	**69**	**69**	66	68	59	56	56	58	58	64	63	--
Predicted Insertion Loss, dB	2	1	1	0	0	5	4	5	2	1	1	0	--
Number of Benefited Receivers	0	0	0	0	0	2	0	2	0	0	0	0	14
22-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**68**	**69**	**69**	66	68	58	55	55	58	58	64	63	--
Predicted Insertion Loss, dB	2	1	1	0	0	6	5	6	2	1	1	0	--
Number of Benefited Receivers	0	0	0	0	0	2	3	2	0	0	0	0	20

Table C-5. Analysis of Noise Barrier NB234A1 + NB244A1 - NB Mainline EOS

	Receivers[a]												
	M03.01	**M03.02 / ST03.01**	**M03.03**	**M03.04 / ST03.02**	**M03.05**	**M03.06 / ST03.03**	**M03.07**	**M03.08**	**M03.09 / ST03.04***	**M03.10**	**M03.11**	**M03.12**	**M03.13**
Number of Units Represented	1	0	1	1	2	2	3	3	0	2	2	2	3
Existing Traffic Noise Level, dBA L_{eq}(h)	66	79	62	67	60	55	54	56	66	67	62	63	66
Design Year Build Traffic Noise Level, dBA Leq(h)	68	78	**67**	**80**	**67**	59	58	59	77	**76**	**71**	**68**	**69**
Design Year Build - Existing Traffic Noise Level, dBA Leq(h)	2	-1	5	13	7	4	4	3	11	9	9	5	3
6-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	65	--	**67**	**80**	65	59	58	59	--	**74**	**67**	**67**	**70**
Predicted Insertion Loss, dB	3	--	0	0	2	0	0	0	--	2	4	2	0**
Number of Benefited Receptors	0	--	0	0	0	0	0	0	--	0	0	0	0
8-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	65	--	**66**	**77**	64	59	58	59	--	**73**	**66**	**67**	**70**
Predicted Insertion Loss, dB	3	--	1	3	3	0	0	0	--	3	5	2	0**
Number of Benefited Receivers	0	--	0	0	0	0	0	0	--	0	2	0	0
10-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	64	--	65	**72**	63	59	58	59	--	**71**	65	**67**	**69**
Predicted Insertion Loss, dB	4	--	2	8	4	0	0	0	--	5	6	2	1**
Number of Benefited Receivers	0	--	0	1	0	0	0	0	--	2	2	0	0
12-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	63	--	64	**70**	61	58	57	58	--	**70**	65	**66**	**69**
Predicted Insertion Loss, dB	5	--	3	10	6	1	1	1	--	6	6	3	1**
Number of Benefited Receivers	1	--	0	1	2	0	0	0	--	2	2	0	0
14-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	62	--	64	**68**	62	57	57	58	--	**69**	63	65	**68**
Predicted Insertion Loss, dB	6	--	3	12	5	2	1	1	--	7	8	4	2**
Number of Benefited Receivers	1	--	0	1	2	0	0	0	--	2	2	0	0
16-Foot Barrier[b]													
Design Year Build Traffic Noise Level, dBA Leq(h)	62	--	64	**67**	61	56	56	57	--	**67**	62	64	**66**
Predicted Insertion Loss, dB	6	--	3	13	6	3	2	2	--	9	9	5	4**
Number of Benefited Receivers	1	--	0	1	2	0	0	0	--	2	2	2	0
18-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	61	--	63	**66**	61	55	55	56	--	**67**	61	63	**66**
Predicted Insertion Loss, dB	7	--	4	14	6	4	3	3	--	9	10	6	4**
Number of Benefited Receivers	1	--	0	1	2	0	0	0	--	2	2	2	0
20-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	61	--	63	65	61	55	54	56	--	**66**	60	63	65
Predicted Insertion Loss, dB	7	--	4	15	6	4	4	3	--	10	11	6	5**
Number of Benefited Receivers	1	--	0	1	2	0	0	0	--	2	2	2	3
22-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	61	--	62	64	60	54	54	55	--	65	60	63	64
Predicted Insertion Loss, dB	7	--	5	16	7	5	4	4	--	11	11	6	6**
Number of Benefited Receivers	1	--	1	1	2	2	0	0	--	2	2	2	3

[a] Traffic noise levels that approach or exceed the NAC are shown in bold.

[b] Minimum noise barrier height needed to block line-of-sight between an 11.5-foot truck exhaust stack and the first row of benefited receptors.

Table C-5. Analysis of Noise Barrier NB234A1 + NB244A1 - NB Mainline EOS

	Receivers[a]												Total Number of Benefited Receptors
	M03.14	M03.15 / ST03.05	M03.16 / ST03.06	M03.17	M03.18	M03.19	M03.20	M03.21	M03.22	M03.23	M03.24	M03.25	
Number of Units Represented	3	4	1	1	1	2	3	2	2	2	2	2	--
Existing Traffic Noise Level, dBA L_{eq}(h)	69	69	69	66	67	59	56	56	57	57	63	62	--
Design Year Build Traffic Noise Level, dBA Leq(h)	**70**	**70**	**70**	**66**	**68**	64	60	61	60	59	65	63	--
Design Year Build - Existing Traffic Noise Level, dBA Leq(h)	1	1	1	0	1	5	4	5	3	2	2	1	--
6-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**72**	**73**	**73**	**70**	**71**	64	59	60	61	61	65	63	--
Predicted Insertion Loss, dB	0**	0**	0**	0**	1**	0	1	1	0**	0**	0	0	--
Number of Benefited Receptors	0	0	0	0	0	0	0	0	0	0	0	0	0
8-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**71**	**72**	**72**	**70**	**71**	63	59	59	61	61	65	63	--
Predicted Insertion Loss, dB	1**	1**	1**	0**	1**	1	1	2	0**	0**	0	0	--
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	0	0	0	2
10-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**71**	**72**	**72**	**69**	**70**	62	59	60	61	60	65	63	--
Predicted Insertion Loss, dB	1**	1**	1**	1**	2**	2	1	1	0**	1**	0	0	--
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	0	0	0	5
12-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**71**	**71**	**71**	**69**	**69**	62	58	59	60	60	64	63	--
Predicted Insertion Loss, dB	1**	2**	2**	1**	3**	2	2	2	1**	1**	1	0	--
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	0	0	0	8
14-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**70**	**70**	**70**	**68**	**69**	61	57	58	59	59	64	63	--
Predicted Insertion Loss, dB	2**	3**	3**	2**	3**	3	3	3	2**	2**	1	0	--
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	0	0	0	8
16-Foot Barrier[b]													
Design Year Build Traffic Noise Level, dBA Leq(h)	**69**	**69**	**69**	**66**	**67**	60	57	57	58	58	64	63	--
Predicted Insertion Loss, dB	3**	4**	4**	4**	5**	4	3	4	3**	3**	1	0	--
Number of Benefited Receivers	0	0	0	0	1	0	0	0	0	0	0	0	11
18-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**68**	**68**	**69**	65	**66**	59	56	56	58	57	63	63	--
Predicted Insertion Loss, dB	4**	5**	4**	5**	6**	5	4	5	3**	4**	2	0	--
Number of Benefited Receivers	0	4	0	1	1	2	0	2	0	0	0	0	20
20-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**68**	**68**	**68**	64	65	59	55	56	58	58	62	63	--
Predicted Insertion Loss, dB	4**	5**	5**	6**	7**	5	5	5	3**	3**	3	0	--
Number of Benefited Receivers	0	4	1	1	1	2	3	2	0	0	0	0	27
22-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**67**	**68**	**67**	65	65	58	55	55	59	58	61	62	--
Predicted Insertion Loss, dB	5**	5**	6**	5**	7**	6	5	6	3**	3**	4	1	--
Number of Benefited Receivers	3	4	1	1	1	2	3	2	0	0	0	0	33

Table C-6. Analysis of Noise Barrier NB234A2 + NB244A2 - NB Mainline EOS

	Receivers[a]												
	M03.01	**M03.02 / ST03.01**	**M03.03**	**M03.04 / ST03.02**	**M03.05**	**M03.06 / ST03.03**	**M03.07**	**M03.08**	**M03.09 / ST03.04***	**M03.10**	**M03.11**	**M03.12**	**M03.13**
Number of Units Represented	1	0	1	1	2	2	3	3	0	2	2	2	3
Existing Traffic Noise Level, dBA L_{eq}(h)	66	79	62	67	60	55	54	56	66	67	62	63	66
Design Year Build Traffic Noise Level, dBA Leq(h)	**68**	78	**67**	**80**	**67**	59	58	59	77	**76**	**71**	**69**	**69**
Design Year Build - Existing Traffic Noise Level, dBA Leq(h)	2	-1	5	13	7	4	4	3	11	9	9	6	3
6-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	65	--	**67**	**80**	65	59	58	59	--	**74**	**67**	**67**	**70**
Predicted Insertion Loss, dB	3	--	0	0	2	0	0	0	--	2	4	2	0**
Number of Benefited Receptors	0	--	0	0	0	0	0	0	--	0	0	0	0
8-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	65	--	**66**	**77**	64	59	58	59	--	**73**	**66**	**67**	**70**
Predicted Insertion Loss, dB	3	--	1	3	3	0	0	0	--	3	5	2	0**
Number of Benefited Receivers	0	--	0	0	0	0	0	0	--	0	2	0	0
10-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	64	--	65	**72**	63	59	58	59	--	**71**	65	**67**	**69**
Predicted Insertion Loss, dB	4	--	2	8	4	0	0	0	--	5	6	2	1**
Number of Benefited Receivers	0	--	0	1	0	0	0	0	--	2	2	0	0
12-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	63	--	64	**70**	61	58	57	58	--	**70**	65	**66**	**69**
Predicted Insertion Loss, dB	5	--	3	10	6	1	1	1	--	6	6	3	1**
Number of Benefited Receivers	1	--	0	1	2	0	0	0	--	2	2	0	0
14-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	62	--	64	**68**	62	57	57	58	--	**69**	63	65	**68**
Predicted Insertion Loss, dB	6	--	3	12	5	2	1	1	--	7	8	4	2**
Number of Benefited Receivers	1	--	0	1	2	0	0	0	--	2	2	0	0
16-Foot Barrier[b]													
Design Year Build Traffic Noise Level, dBA Leq(h)	62	--	64	**67**	61	56	56	57	--	**67**	62	64	**66**
Predicted Insertion Loss, dB	6	--	3	13	6	3	2	2	--	9	9	5	4**
Number of Benefited Receivers	1	--	0	1	2	0	0	0	--	2	2	2	0
18-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	61	--	63	**66**	61	55	55	56	--	**67**	61	63	**66**
Predicted Insertion Loss, dB	7	--	4	14	6	4	3	3	--	9	10	6	4**
Number of Benefited Receivers	1	--	0	1	2	0	0	0	--	2	2	2	0
20-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	61	--	63	65	61	55	54	56	--	**66**	60	63	65
Predicted Insertion Loss, dB	7	--	4	15	6	4	4	3	--	10	11	6	5**
Number of Benefited Receivers	1	--	0	1	2	0	0	0	--	2	2	2	3
22-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	61	--	62	64	60	54	54	55	--	65	60	63	64
Predicted Insertion Loss, dB	7	--	5	16	7	5	4	4	--	11	11	6	6**
Number of Benefited Receivers	1	--	1	1	2	2	0	0	--	2	2	2	3

[a] Traffic noise levels that approach or exceed the NAC are shown in bold.

[b] Minimum noise barrier height needed to block line-of-sight between an 11.5-foot truck exhaust stack and the first row of benefited receptors.

Table C-6. Analysis of Noise Barrier NB234A2 + NB244A2 - NB Mainline EOS

	Receivers[a]												Total Number of Benefited Receptors
	M03.14	M03.15 / ST03.05	M03.16 / ST03.06	M03.17	M03.18	M03.19	M03.20	M03.21	M03.22	M03.23	M03.24	M03.25	
Number of Units Represented	3	4	1	1	1	2	3	2	2	2	2	2	--
Existing Traffic Noise Level, dBA L_{eq}(h)	69	69	69	66	67	59	56	56	57	57	63	62	--
Design Year Build Traffic Noise Level, dBA Leq(h)	**70**	**70**	**70**	**66**	**68**	64	60	61	60	59	65	63	--
Design Year Build - Existing Traffic Noise Level, dBA Leq(h)	1	1	1	0	1	5	4	5	3	2	2	1	--
6-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**72**	**73**	**73**	**70**	**71**	63	59	60	61	61	65	63	--
Predicted Insertion Loss, dB	0**	0**	0**	0**	1**	1	1	1	0**	0**	0	0	--
Number of Benefited Receptors	0	0	0	0	0	0	0	0	0	0	0	0	0
8-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**71**	**72**	**72**	**70**	**71**	63	59	59	61	61	65	63	--
Predicted Insertion Loss, dB	1**	1**	1**	0**	1**	1	1	2	0**	0**	0	0	--
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	0	0	0	2
10-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**71**	**72**	**72**	**69**	**70**	62	59	60	61	60	65	63	--
Predicted Insertion Loss, dB	1**	1**	1**	1**	2**	2	1	1	0**	1**	0	0	--
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	0	0	0	5
12-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**71**	**71**	**71**	**69**	**69**	62	58	59	60	60	64	63	--
Predicted Insertion Loss, dB	1**	2**	2**	1**	3**	2	2	2	1**	1**	1	0	--
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	0	0	0	8
14-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**70**	**70**	**70**	**68**	**69**	61	57	58	59	59	64	63	--
Predicted Insertion Loss, dB	2**	3**	3**	2**	3**	3	3	3	2**	2**	1	0	--
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	0	0	0	8
16-Foot Barrier[b]													
Design Year Build Traffic Noise Level, dBA Leq(h)	**69**	**69**	**69**	**66**	**67**	60	57	57	58	58	64	63	--
Predicted Insertion Loss, dB	3**	4**	4**	4**	5**	4	3	4	3**	3**	1	0	--
Number of Benefited Receivers	0	0	0	0	1	0	0	0	0	0	0	0	11
18-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**68**	**68**	**69**	65	**66**	59	56	56	58	57	63	63	--
Predicted Insertion Loss, dB	4**	5**	4**	5**	6**	5	4	5	3**	4**	2	0	--
Number of Benefited Receivers	0	4	0	1	1	2	0	2	0	0	0	0	20
20-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**68**	**68**	**68**	64	65	59	55	56	58	58	62	63	--
Predicted Insertion Loss, dB	4**	5**	5**	6**	7**	5	5	5	3**	3**	3	0	--
Number of Benefited Receivers	0	4	1	1	1	2	3	2	0	0	0	0	27
22-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**67**	**68**	**67**	65	65	58	55	55	59	58	61	62	--
Predicted Insertion Loss, dB	5**	5**	6**	5**	7**	6	5	6	3**	3**	4	1	--
Number of Benefited Receivers	3	4	1	1	1	2	3	2	0	0	0	0	33

Table C-7. Analysis of Noise Barrier NB33A1 - El Toro Rd/Rockfield Blvd ROW

	Receivers[a]	Total Number of Benefited Receptors
	M03.26	
Number of Units Represented	1	--
Existing Traffic Noise Level, dBA L_{eq}(h)	69	--
Design Year Build Traffic Noise Level, dBA Leq(h)	**71**	--
Design Year Build - Existing Traffic Noise Level, dBA Leq(h)	2	--
6-Foot Barrier		
Design Year Build Traffic Noise Level, dBA Leq(h)	66	--
Predicted Insertion Loss, dB	5	--
Number of Benefited Receptors	1	1
8-Foot Barrier		
Design Year Build Traffic Noise Level, dBA Leq(h)	64	--
Predicted Insertion Loss, dB	7	--
Number of Benefited Receivers	1	1
10-Foot Barrier[b]		
Design Year Build Traffic Noise Level, dBA Leq(h)	63	--
Predicted Insertion Loss, dB	8	--
Number of Benefited Receivers	1	1
12-Foot Barrier		
Design Year Build Traffic Noise Level, dBA Leq(h)	62	--
Predicted Insertion Loss, dB	9	--
Number of Benefited Receivers	1	1
14-Foot Barrier		
Design Year Build Traffic Noise Level, dBA Leq(h)	62	--
Predicted Insertion Loss, dB	9	--
Number of Benefited Receivers	1	1
16-Foot Barrier		
Design Year Build Traffic Noise Level, dBA Leq(h)	62	--
Predicted Insertion Loss, dB	9	--
Number of Benefited Receivers	1	1
18-Foot Barrier		
Design Year Build Traffic Noise Level, dBA Leq(h)	61	--
Predicted Insertion Loss, dB	10	--
Number of Benefited Receivers	1	1
20-Foot Barrier		
Design Year Build Traffic Noise Level, dBA Leq(h)	61	--
Predicted Insertion Loss, dB	10	--
Number of Benefited Receivers	1	1
22-Foot Barrier		
Design Year Build Traffic Noise Level, dBA Leq(h)	61	--
Predicted Insertion Loss, dB	10	--
Number of Benefited Receivers	1	1

[a] Traffic noise levels that approach or exceed the NAC are shown in bold.

[b] Minimum noise barrier height needed to block line-of-sight between an 11.5-foot truck exhaust stack and the first row of benefited receptors.

Table C-8. Analysis of Noise Barrier NB33A2 - El Toro Rd/Rockfield Blvd ROW

	Receivers[a]	Total Number of Benefited Receptors
	M03.26	
Number of Units Represented	1	--
Existing Traffic Noise Level, dBA L_{eq}(h)	69	--
Design Year Build Traffic Noise Level, dBA Leq(h)	**71**	--
Design Year Build - Existing Traffic Noise Level, dBA Leq(h)	2	--
6-Foot Barrier		
Design Year Build Traffic Noise Level, dBA Leq(h)	65	--
Predicted Insertion Loss, dB	6	--
Number of Benefited Receptors	1	1
8-Foot Barrier		
Design Year Build Traffic Noise Level, dBA Leq(h)	64	--
Predicted Insertion Loss, dB	7	--
Number of Benefited Receivers	1	1
10-Foot Barrier[b]		
Design Year Build Traffic Noise Level, dBA Leq(h)	63	--
Predicted Insertion Loss, dB	8	--
Number of Benefited Receivers	1	1
12-Foot Barrier		
Design Year Build Traffic Noise Level, dBA Leq(h)	62	--
Predicted Insertion Loss, dB	9	--
Number of Benefited Receivers	1	1
14-Foot Barrier		
Design Year Build Traffic Noise Level, dBA Leq(h)	62	--
Predicted Insertion Loss, dB	9	--
Number of Benefited Receivers	1	1
16-Foot Barrier		
Design Year Build Traffic Noise Level, dBA Leq(h)	61	--
Predicted Insertion Loss, dB	10	--
Number of Benefited Receivers	1	1
18-Foot Barrier		
Design Year Build Traffic Noise Level, dBA Leq(h)	61	--
Predicted Insertion Loss, dB	10	--
Number of Benefited Receivers	1	1
20-Foot Barrier		
Design Year Build Traffic Noise Level, dBA Leq(h)	61	--
Predicted Insertion Loss, dB	10	--
Number of Benefited Receivers	1	1
22-Foot Barrier		
Design Year Build Traffic Noise Level, dBA Leq(h)	61	--
Predicted Insertion Loss, dB	10	--
Number of Benefited Receivers	1	1

[a] Traffic noise levels that approach or exceed the NAC are shown in bold.

[b] Minimum noise barrier height needed to block line-of-sight between an 11.5-foot truck exhaust stack and the first row of benefited receptors.

Table C-9. Analysis of Noise Barrier NB235A1 - SB Mainline EOS

	Receivers[a]												
	M04.01	**M04.02**	**M04.03**	**M04.04**	**M04.05**	**M04.06a**	**M04.06b**	**M04.06c**	**M04.07**	**M04.08**	**M04.09**	**M04.10**	**M04.11**
Number of Units Represented	1	1	1	1	1	2	1	1	2	2	2	2	2
Existing Traffic Noise Level, dBA L_{eq}(h)	64	62	61	45 #	64	59	68	66	59	59	51	58	55
Design Year Build Traffic Noise Level, dBA Leq(h)	**66**	**72**	**67**	**55 #**	**72**	61	67	67	61	61	54	60	57
Design Year Build - Existing Traffic Noise Level, dBA Leq(h)	2	10	6	10	8	2	-1	1	2	2	3	2	2
6-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**66**	**72**	64	**51 #**	**69**	61	--	--	60	61	54	60	57
Predicted Insertion Loss, dB	0	0	3	4	3	0	--	--	1	0	0	0	0
Number of Benefited Receptors	0	0	0	0	0	0	--	--	0	0	0	0	0
8-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**66**	**66**	64	50 #	**68**	61	--	--	60	61	53	60	57
Predicted Insertion Loss, dB	0	6	3	5	4	0	--	--	1	0	1	0	0
Number of Benefited Receivers	0	1	0	1	0	0	--	--	0	0	0	0	0
10-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**66**	64	64	48 #	**67**	61	--	--	60	61	53	60	56
Predicted Insertion Loss, dB	0	8	3	7	5	0	--	--	1	0	1	0	1
Number of Benefited Receivers	0	1	0	1	1	0	--	--	0	0	0	0	0
12-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**66**	63	63	47 #	**66**	61	--	--	60	61	52	60	56
Predicted Insertion Loss, dB	0	9	4	8	6	0	--	--	1	0	2	0	1
Number of Benefited Receivers	0	1	0	1	1	0	--	--	0	0	0	0	0
14-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**66**	61	63	46 #	**66**	61	--	--	60	61	52	60	56
Predicted Insertion Loss, dB	0	11	4	9	6	0	--	--	1	0	2	0	1
Number of Benefited Receivers	0	1	0	1	1	0	--	--	0	0	0	0	0
16-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**66**	60	62	45 #	65	61	--	--	60	61	52	59	56
Predicted Insertion Loss, dB	0	12	5	10	7	0	--	--	1	0	2	1	1
Number of Benefited Receivers	0	1	1	1	1	0	--	--	0	0	0	0	0
18-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**66**	60	62	45 #	65	61	--	--	60	60	52	59	56
Predicted Insertion Loss, dB	0	12	5	10	7	0	--	--	1	1	2	1	1
Number of Benefited Receivers	0	1	1	1	1	0	--	--	0	0	0	0	0
20-Foot Barrier[b]													
Design Year Build Traffic Noise Level, dBA Leq(h)	**66**	59	62	44 #	64	60	--	--	60	60	52	59	56
Predicted Insertion Loss, dB	0	13	5	11	8	1	--	--	1	1	2	1	1
Number of Benefited Receivers	0	1	1	1	1	0	--	--	0	0	0	0	0
22-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**66**	59	61	44 #	64	60	--	--	60	60	51	59	55
Predicted Insertion Loss, dB	0	13	6	11	8	1	--	--	1	1	3	1	2
Number of Benefited Receivers	0	1	1	1	1	0	--	--	0	0	0	0	0

[a] Traffic noise levels that approach or exceed the NAC are shown in bold.

[b] Minimum noise barrier height needed to block line-of-sight between an 11.5-foot truck exhaust stack and the first row of benefited receptors.

Table C-9. Analysis of Noise Barrier NB235A1 - SB Mainline EOS

	Receivers[a]												
	M04.12	**M04.13**	**M04.14 / ST04.03***	**M04.15**	**M04.16**	**M04.17**	**M04.18**	**M04.19**	**M04.20**	**M04.21**	**M04.22**	**M04.23-2**	**M04.24**
Number of Units Represented	4	2	0	2	2	2	2	2	2	4	2	4	4
Existing Traffic Noise Level, dBA L_{eq}(h)	52	58	58	52	58	53	58	60	59	57	61	**66**	55
Design Year Build Traffic Noise Level, dBA Leq(h)	53	61	61	54	62	55	63	65	64	60	65	**69**	56
Design Year Build - Existing Traffic Noise Level, dBA Leq(h)	1	3	3	2	4	2	5	5	5	3	4	3	1
6-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	53	60	--	54	61	55	62	63	62	59	63	**68**	56
Predicted Insertion Loss, dB	0	1	--	0	1	0	1	2	2	1	2	1	0
Number of Benefited Receptors	0	0	--	0	0	0	0	0	0	0	0	0	0
8-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	53	60	--	53	61	55	61	63	62	58	63	**67**	56
Predicted Insertion Loss, dB	0	1	--	1	1	0	2	2	2	2	2	2	0
Number of Benefited Receivers	0	0	--	0	0	0	0	0	0	0	0	0	0
10-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	53	60	--	53	60	54	60	62	61	58	62	**66**	56
Predicted Insertion Loss, dB	0	1	--	1	2	1	3	3	3	2	3	3	0
Number of Benefited Receivers	0	0	--	0	0	0	0	0	0	0	0	0	0
12-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	53	59	--	53	60	54	60	62	61	57	62	**66**	55
Predicted Insertion Loss, dB	0	2	--	1	2	1	3	3	3	3	3	3	1
Number of Benefited Receivers	0	0	--	0	0	0	0	0	0	0	0	0	0
14-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	53	59	--	53	60	54	60	62	61	57	61	65	55
Predicted Insertion Loss, dB	0	2	--	1	2	1	3	3	3	3	4	4	1
Number of Benefited Receivers	0	0	--	0	0	0	0	0	0	0	0	0	0
16-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	53	59	--	53	60	53	60	61	61	57	61	65	54
Predicted Insertion Loss, dB	0	2	--	1	2	2	3	4	3	3	4	4	2
Number of Benefited Receivers	0	0	--	0	0	0	0	0	0	0	0	0	0
18-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	53	59	--	52	59	53	59	61	60	57	61	65	54
Predicted Insertion Loss, dB	0	2	--	2	3	2	4	4	4	3	4	4	2
Number of Benefited Receivers	0	0	--	0	0	0	0	0	0	0	0	0	0
20-Foot Barrier[b]													
Design Year Build Traffic Noise Level, dBA Leq(h)	53	59	--	52	59	52	59	61	60	57	61	64	53
Predicted Insertion Loss, dB	0	2	--	2	3	3	4	4	4	3	4	5	3
Number of Benefited Receivers	0	0	--	0	0	0	0	0	0	0	0	4	0
22-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	53	58	--	52	59	52	59	61	60	56	61	64	53
Predicted Insertion Loss, dB	0	3	--	2	3	3	4	4	4	4	4	5	3
Number of Benefited Receivers	0	0	--	0	0	0	0	0	0	0	0	4	0

Table C-9. Analysis of Noise Barrier NB235A1 - SB Mainline EOS

	Receivers[a]												
	M04.25-3	**M04.26**	**M04.27-2**	**M04.28-2**	**M04.29-2**	**M04.30-3**	**M04.31-2**	**M04.32 / ST04.01**	**M04.33-2**	**M04.34**	**M04.35-2**	**M04.36**	**M04.37**
Number of Units Represented	1	2	1	2	1	1	2	1	1	4	4	2	1
Existing Traffic Noise Level, dBA L_{eq}(h)	**76**	54	**72**	61	**74**	**78**	**67**	65	**76**	57	**79**	**67**	**68**
Design Year Build Traffic Noise Level, dBA Leq(h)	**80**	56	**76**	62	**78**	**81**	**69**	**68**	**78**	58	**81**	**69**	**70**
Design Year Build - Existing Traffic Noise Level, dBA Leq(h)	4	2	4	1	4	3	2	3	2	1	2	2	2
6-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**78**	55	**73**	62	**74**	**80**	**67**	**66**	**77**	58	**79**	**68**	**68**
Predicted Insertion Loss, dB	2	1	3	0	4	1	2	2	1	0	2	1	2
Number of Benefited Receptors	0	0	0	0	0	0	0	0	0	0	0	0	0
8-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**77**	55	**72**	62	**72**	79	**66**	65	**75**	58	**77**	**67**	**67**
Predicted Insertion Loss, dB	3	1	4	0	6	2	3	3	3	0	4	2	3
Number of Benefited Receivers	0	0	0	0	1	0	0	0	0	0	0	0	0
10-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**75**	55	**70**	61	**71**	78	**65**	65	**73**	58	**75**	**66**	65
Predicted Insertion Loss, dB	5	1	6	1	7	3	4	3	5	0	6	3	5
Number of Benefited Receivers	1	0	1	0	1	0	0	0	1	0	4	0	1
12-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**74**	55	**70**	61	**70**	76	**64**	65	**71**	58	**74**	65	65
Predicted Insertion Loss, dB	6	1	6	1	8	5	5	3	7	0	7	4	5
Number of Benefited Receivers	1	0	1	0	1	1	2	0	1	0	4	0	1
14-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**73**	55	**69**	60	**69**	74	**63**	65	**71**	57	**73**	65	64
Predicted Insertion Loss, dB	7	1	7	2	9	7	6	3	7	1	8	4	6
Number of Benefited Receivers	1	0	1	0	1	1	2	0	1	0	4	0	1
16-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**71**	54	**68**	60	**69**	73	**63**	64	**70**	57	**72**	64	64
Predicted Insertion Loss, dB	9	2	8	2	9	8	6	4	8	1	9	5	6
Number of Benefited Receivers	1	0	1	0	1	1	2	0	1	0	4	2	1
18-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**70**	54	**67**	60	**68**	72	**63**	64	**69**	57	**71**	64	64
Predicted Insertion Loss, dB	10	2	9	2	10	9	6	4	9	1	10	5	6
Number of Benefited Receivers	1	0	1	0	1	1	2	0	1	0	4	2	1
20-Foot Barrier[b]													
Design Year Build Traffic Noise Level, dBA Leq(h)	**70**	53	**67**	59	**68**	71	**63**	64	**69**	56	**71**	64	64
Predicted Insertion Loss, dB	10	3	9	3	10	10	6	4	9	2	10	5	6
Number of Benefited Receivers	1	0	1	0	1	1	2	0	1	0	4	2	1
22-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**69**	53	**66**	59	**67**	71	**63**	64	**68**	56	**70**	63	65
Predicted Insertion Loss, dB	11	3	10	3	11	10	6	4	10	2	11	6	5
Number of Benefited Receivers	1	0	1	0	1	1	2	0	1	0	4	2	1

Table C-9. Analysis of Noise Barrier NB235A1 - SB Mainline EOS

	Receivers[a]												
	M04.38	**M04.39**	**M04.40**	**M04.41-2**	**M04.42 / ST04.04**	**M04.43**	**M04.44-2**	**M04.45-2**	**M04.46**	**M04.47-2**	**M04.48**	**M04.49-2**	**M04.50-3**
Number of Units Represented	4	2	2	2	4	4	1	2	2	2	2	2	2
Existing Traffic Noise Level, dBA L_{eq}(h)	59	**68**	55	**79**	61	58	**78**	**78**	**68**	64	**67**	**76**	**78**
Design Year Build Traffic Noise Level, dBA Leq(h)	60	**69**	56	**81**	62	59	**79**	**79**	**69**	65	**68**	**77**	**79**
Design Year Build - Existing Traffic Noise Level, dBA Leq(h)	1	1	1	2	1	1	1	1	1	1	1	1	1
6-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	60	**68**	56	**79**	62	58	**78**	**78**	**69**	65	**67**	**76**	**78**
Predicted Insertion Loss, dB	0	1	0	2	0	1	1	1	0	0	1	1	1
Number of Benefited Receptors	0	0	0	0	0	0	0	0	0	0	0	0	0
8-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	60	**67**	56	**78**	61	58	**76**	**76**	**67**	64	**66**	**75**	**77**
Predicted Insertion Loss, dB	0	2	0	3	1	1	3	3	2	1	2	2	2
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	0	0	0	0
10-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	60	**66**	56	**76**	62	58	**74**	**74**	**66**	64	65	**73**	**77**
Predicted Insertion Loss, dB	0	3	0	5	0	1	5	5	3	1	3	4	2
Number of Benefited Receivers	0	0	0	2	0	0	1	2	0	0	0	0	0
12-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	60	**66**	55	**75**	61	58	**73**	**73**	**66**	63	64	**72**	**76**
Predicted Insertion Loss, dB	0	3	1	6	1	1	6	6	3	2	4	5	3
Number of Benefited Receivers	0	0	0	2	0	0	1	2	0	0	0	2	0
14-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	59	65	55	**74**	61	57	**72**	**72**	65	63	66	**71**	**75**
Predicted Insertion Loss, dB	1	4	1	7	1	2	7	7	4	2	2	6	4
Number of Benefited Receivers	0	0	0	2	0	0	1	2	0	0	0	2	0
16-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	58	65	55	**73**	60	57	**71**	**71**	65	63	67	**71**	**73**
Predicted Insertion Loss, dB	2	4	1	8	2	2	8	8	4	2	1	6	6
Number of Benefited Receivers	0	0	0	2	0	0	1	2	0	0	0	2	2
18-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	58	64	54	**72**	60	56	**71**	**70**	65	62	66	**70**	**72**
Predicted Insertion Loss, dB	2	5	2	9	2	3	8	9	4	3	2	7	7
Number of Benefited Receivers	0	2	0	2	0	0	1	2	0	0	0	2	2
20-Foot Barrier[b]													
Design Year Build Traffic Noise Level, dBA Leq(h)	58	64	54	**72**	59	56	**70**	**70**	64	62	66	**69**	**71**
Predicted Insertion Loss, dB	2	5	2	9	3	3	9	9	5	3	2	8	8
Number of Benefited Receivers	0	2	0	2	0	0	1	2	2	0	0	2	2
22-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	57	64	53	**72**	59	55	**69**	**69**	64	62	65	**68**	**70**
Predicted Insertion Loss, dB	3	5	3	9	3	4	10	10	5	3	3	9	9
Number of Benefited Receivers	0	2	0	2	0	0	1	2	2	0	0	2	2

Table C-9. Analysis of Noise Barrier NB235A1 - SB Mainline EOS

	Receivers[a]												
	M04.51	**M04.52**	**M04.53-2**	**M04.54**	**M04.55 / ST04.02**	**M04.56**	**M04.57-2a**	**M04.57b**	**M04.57c**	**M04.57d**	**M04.58-2**	**M04.59-3**	**M04.60**
Number of Units Represented	2	1	2	2	1	2	2	1	1	1	2	2	2
Existing Traffic Noise Level, dBA L_{eq}(h)	62	**67**	**78**	60	**68**	**68**	**72**	63	54	59	**67**	**69**	**66**
Design Year Build Traffic Noise Level, dBA Leq(h)	64	**68**	**78**	61	**69**	**69**	**72**	64	55	60	**67**	**69**	**67**
Design Year Build - Existing Traffic Noise Level, dBA Leq(h)	2	1	0	1	1	1	0	1	1	1	0	0	1
6-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	62	**67**	**78**	60	**68**	**67**	**71**	63	55	60	**66**	**68**	**66**
Predicted Insertion Loss, dB	2	1	0	1	1	2	1	1	0	0	1	1	1
Number of Benefited Receptors	0	0	0	0	0	0	0	0	0	0	0	0	0
8-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	61	**66**	**77**	59	**67**	**66**	**70**	62	55	59	65	**67**	65
Predicted Insertion Loss, dB	3	2	1	2	2	3	2	2	0	1	2	2	2
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	0	0	0	0
10-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	61	65	**75**	58	**66**	**66**	**69**	61	54	59	64	**66**	64
Predicted Insertion Loss, dB	3	3	3	3	3	3	3	3	1	1	3	3	3
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	0	0	0	0
12-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	60	64	**74**	60	65	65	**69**	61	54	59	64	65	64
Predicted Insertion Loss, dB	4	4	4	1	4	4	3	3	1	1	3	4	3
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	0	0	0	0
14-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	62	64	**73**	60	64	64	**68**	61	54	58	63	65	64
Predicted Insertion Loss, dB	2	4	5	1	5	5	4	3	1	2	4	4	3
Number of Benefited Receivers	0	0	2	0	1	2	0	0	0	0	0	0	0
16-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	62	63	**72**	59	64	64	**67**	61	54	58	62	64	64
Predicted Insertion Loss, dB	2	5	6	2	5	5	5	3	1	2	5	5	3
Number of Benefited Receivers	0	1	2	0	1	2	2	0	0	0	2	2	0
18-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	62	62	**71**	59	63	64	**66**	61	53	57	61	63	64
Predicted Insertion Loss, dB	2	6	7	2	6	5	6	3	2	3	6	6	3
Number of Benefited Receivers	0	1	2	0	1	2	2	0	0	0	2	2	0
20-Foot Barrier[b]													
Design Year Build Traffic Noise Level, dBA Leq(h)	61	62	**70**	58	63	63	65	60	53	57	61	63	64
Predicted Insertion Loss, dB	3	6	8	3	6	6	7	4	2	3	6	6	3
Number of Benefited Receivers	0	1	2	0	1	2	2	0	0	0	2	2	0
22-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	61	62	**69**	58	63	63	65	60	52	56	61	62	64
Predicted Insertion Loss, dB	3	6	9	3	6	6	7	4	3	4	6	7	3
Number of Benefited Receivers	0	1	2	0	1	2	2	0	0	0	2	2	0

Table C-9. Analysis of Noise Barrier NB235A1 - SB Mainline EOS

	Receivers[a]												
	M04.61	**M04.62-2**	**M04.63-3**	**M04.64**	**M04.65-2**	**M04.66-2**	**M04.67**	**M04.68-2a**	**M04.68b**	**M04.69-2**	**M04.70-3**	**M04.71-2**	**M04.72-2**
Number of Units Represented	4	2	2	2	4	4	4	2	2	4	2	2	2
Existing Traffic Noise Level, dBA L_{eq}(h)	60	59	**67**	**72**	**71**	62	61	59	54	**80**	**78**	**75**	**76**
Design Year Build Traffic Noise Level, dBA Leq(h)	61	60	**68**	**73**	**72**	63	62	60	55	**81**	**79**	**76**	**77**
Design Year Build - Existing Traffic Noise Level, dBA Leq(h)	1	1	1	1	1	1	1	1	1	1	1	1	1
6-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	61	60	**68**	**72**	**72**	63	61	60	55	**80**	**78**	**75**	**76**
Predicted Insertion Loss, dB	0	0	0	1	0	0	1	0	0	1	1	1	1
Number of Benefited Receptors	0	0	0	0	0	0	0	0	0	0	0	0	0
8-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	61	60	**68**	**71**	**71**	63	61	59	54	**79**	**78**	**74**	**75**
Predicted Insertion Loss, dB	0	0	0	2	1	0	1	1	1	2	1	2	2
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	0	0	0	0
10-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	61	60	**67**	**71**	**71**	62	61	59	54	**78**	**78**	**73**	**74**
Predicted Insertion Loss, dB	0	0	1	2	1	1	1	1	1	3	1	3	3
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	0	0	0	0
12-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	60	59	**67**	**70**	**70**	62	60	59	54	**76**	**77**	**72**	**74**
Predicted Insertion Loss, dB	1	1	1	3	2	1	2	1	1	5	2	4	3
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	4	0	0	0
14-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	60	59	**67**	**69**	**69**	61	59	59	53	**75**	**76**	**72**	**73**
Predicted Insertion Loss, dB	1	1	1	4	3	2	3	1	2	6	3	4	4
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	4	0	0	0
16-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	60	59	**66**	**69**	**68**	61	59	58	52	**73**	**76**	**70**	**71**
Predicted Insertion Loss, dB	1	1	2	4	4	2	3	2	3	8	3	6	6
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	4	0	2	2
18-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	60	58	65	**68**	**67**	60	58	58	52	**71**	**74**	**69**	**70**
Predicted Insertion Loss, dB	1	2	3	5	5	3	4	2	3	10	5	7	7
Number of Benefited Receivers	0	0	0	2	4	0	0	0	0	4	2	2	2
20-Foot Barrier[b]													
Design Year Build Traffic Noise Level, dBA Leq(h)	59	57	64	**67**	**66**	59	57	57	51	**70**	**72**	**68**	**69**
Predicted Insertion Loss, dB	2	3	4	6	6	4	5	3	4	11	7	8	8
Number of Benefited Receivers	0	0	0	2	4	0	4	0	0	4	2	2	2
22-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	58	56	64	**66**	**66**	58	57	57	51	**69**	**71**	**67**	**68**
Predicted Insertion Loss, dB	3	4	4	7	6	5	5	3	4	12	8	9	9
Number of Benefited Receivers	0	0	0	2	4	4	4	0	0	4	2	2	2

Table C-9. Analysis of Noise Barrier NB235A1 - SB Mainline EOS

	Receivers[a]											Total Number of Benefited Receptors
	M04.73-3	M04.74-2	M04.75-3	M04.76	M04.77 / ST04.06	M04.78	M04.79	M04.80-2	M04.81	M04.82 / ST04.05	M04.83-2	
Number of Units Represented	1	2	1	3	1	2	2	2	2	2	2	--
Existing Traffic Noise Level, dBA L_{eq}(h)	**76**	**72**	**71**	**70**	**72**	60	57	**75**	**66**	64	**70**	--
Design Year Build Traffic Noise Level, dBA Leq(h)	**77**	**72**	**72**	**71**	**73**	60	57	**76**	**67**	65	**71**	--
Design Year Build - Existing Traffic Noise Level, dBA Leq(h)	1	0	1	1	1	0	0	1	1	1	1	--
6-Foot Barrier												
Design Year Build Traffic Noise Level, dBA Leq(h)	**77**	**72**	**71**	**70**	**72**	60	57	**75**	**66**	65	**70**	--
Predicted Insertion Loss, dB	0	0	1	1	1	0	0	1	1	0	1	--
Number of Benefited Receptors	0	0	0	0	0	0	0	0	0	0	0	0
8-Foot Barrier												
Design Year Build Traffic Noise Level, dBA Leq(h)	**76**	**71**	**70**	**69**	**71**	60	57	**74**	65	64	**69**	--
Predicted Insertion Loss, dB	1	1	2	2	2	0	0	2	2	1	2	--
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	0	0	3
10-Foot Barrier												
Design Year Build Traffic Noise Level, dBA Leq(h)	**76**	**71**	**69**	**68**	**70**	60	57	**73**	64	63	**69**	--
Predicted Insertion Loss, dB	1	1	3	3	3	0	0	3	3	2	2	--
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	0	0	17
12-Foot Barrier												
Design Year Build Traffic Noise Level, dBA Leq(h)	**75**	**70**	**69**	**67**	**69**	60	57	**72**	63	63	**67**	--
Predicted Insertion Loss, dB	2	2	3	4	4	0	0	4	4	2	4	--
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	0	0	26
14-Foot Barrier												
Design Year Build Traffic Noise Level, dBA Leq(h)	**74**	**69**	**68**	**66**	**70**	59	57	**69**	63	62	**66**	--
Predicted Insertion Loss, dB	3	3	4	5	3	1	0	7	4	3	5	--
Number of Benefited Receivers	0	0	0	3	0	0	0	2	0	0	2	38
16-Foot Barrier												
Design Year Build Traffic Noise Level, dBA Leq(h)	**74**	**67**	**67**	**66**	**69**	59	56	**69**	62	62	**66**	--
Predicted Insertion Loss, dB	3	5	5	5	4	1	1	7	5	3	5	--
Number of Benefited Receivers	0	2	1	3	0	0	0	2	2	0	2	59
18-Foot Barrier												
Design Year Build Traffic Noise Level, dBA Leq(h)	**73**	**66**	65	**66**	**68**	58	55	**67**	62	61	65	--
Predicted Insertion Loss, dB	4	6	7	5	5	2	2	9	5	4	6	--
Number of Benefited Receivers	0	2	1	3	1	0	0	2	2	0	2	70
20-Foot Barrier[b]												
Design Year Build Traffic Noise Level, dBA Leq(h)	**71**	**66**	64	**66**	**67**	57	54	**67**	62	60	65	--
Predicted Insertion Loss, dB	6	6	8	5	6	3	3	9	5	5	6	--
Number of Benefited Receivers	1	2	1	3	1	0	0	2	2	2	2	83
22-Foot Barrier												
Design Year Build Traffic Noise Level, dBA Leq(h)	**69**	65	64	**66**	**66**	56	54	**66**	61	60	64	--
Predicted Insertion Loss, dB	8	7	8	5	7	4	3	10	6	5	7	--
Number of Benefited Receivers	1	2	1	3	1	0	0	2	2	2	2	87

Table C-10. Analysis of Noise Barrier NB235A2 - SB Mainline EOS

	Receivers[a]												
	M04.01	**M04.02**	**M04.03**	**M04.04**	**M04.05**	**M04.06a**	**M04.06b**	**M04.06c**	**M04.07**	**M04.08**	**M04.09**	**M04.10**	**M04.11**
Number of Units Represented	1	1	1	1	1	2	1	1	2	2	2	2	2
Existing Traffic Noise Level, dBA L_{eq}(h)	64	62	61	45 #	64	59	68	66	59	59	51	58	55
Design Year Build Traffic Noise Level, dBA Leq(h)	**66**	**70**	**67**	**55 #**	**72**	61	69	68	60	61	54	60	57
Design Year Build - Existing Traffic Noise Level, dBA Leq(h)	2	8	6	10	8	2	1	2	1	2	3	2	2
6-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**66**	**68**	65	**51 #**	**69**	61	--	--	60	61	54	60	57
Predicted Insertion Loss, dB	0	2	2	4	3	0	--	--	0	0	0	0	0
Number of Benefited Receptors	0	0	0	0	0	0	--	--	0	0	0	0	0
8-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**66**	64	64	50 #	**69**	61	--	--	60	61	53	60	57
Predicted Insertion Loss, dB	0	6	3	5	3	0	--	--	0	0	1	0	0
Number of Benefited Receivers	0	1	0	1	0	0	--	--	0	0	0	0	0
10-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**66**	63	64	48 #	**67**	61	--	--	60	61	53	60	56
Predicted Insertion Loss, dB	0	7	3	7	5	0	--	--	0	0	1	0	1
Number of Benefited Receivers	0	1	0	1	1	0	--	--	0	0	0	0	0
12-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**66**	62	63	47 #	**66**	61	--	--	60	60	52	60	56
Predicted Insertion Loss, dB	0	8	4	8	6	0	--	--	0	1	2	0	1
Number of Benefited Receivers	0	1	0	1	1	0	--	--	0	0	0	0	0
14-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**66**	61	63	46 #	**66**	61	--	--	60	60	52	60	56
Predicted Insertion Loss, dB	0	9	4	9	6	0	--	--	0	1	2	0	1
Number of Benefited Receivers	0	1	0	1	1	0	--	--	0	0	0	0	0
16-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**66**	60	62	46 #	65	60	--	--	60	60	52	59	56
Predicted Insertion Loss, dB	0	10	5	9	7	1	--	--	0	1	2	1	1
Number of Benefited Receivers	0	1	1	1	1	0	--	--	0	0	0	0	0
18-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**66**	59	62	45 #	65	60	--	--	60	60	52	59	56
Predicted Insertion Loss, dB	0	11	5	10	7	1	--	--	0	1	2	1	1
Number of Benefited Receivers	0	1	1	1	1	0	--	--	0	0	0	0	0
20-Foot Barrier[b]													
Design Year Build Traffic Noise Level, dBA Leq(h)	65	59	62	44 #	64	60	--	--	60	60	52	59	56
Predicted Insertion Loss, dB	1	11	5	11	8	1	--	--	0	1	2	1	1
Number of Benefited Receivers	0	1	1	1	1	0	--	--	0	0	0	0	0
22-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	65	58	61	44 #	64	60	--	--	60	60	51	59	55
Predicted Insertion Loss, dB	1	12	6	11	8	1	--	--	0	1	3	1	2
Number of Benefited Receivers	0	1	1	1	1	0	--	--	0	0	0	0	0

[a] Traffic noise levels that approach or exceed the NAC are shown in bold.

[b] Minimum noise barrier height needed to block line-of-sight between an 11.5-foot truck exhaust stack and the first row of benefited receptors.

Table C-10. Analysis of Noise Barrier NB235A2 - SB Mainline EOS

	Receivers[a]												
	M04.12	**M04.13**	**M04.14 / ST04.03***	**M04.15**	**M04.16**	**M04.17**	**M04.18**	**M04.19**	**M04.20**	**M04.21**	**M04.22**	**M04.23-2**	**M04.24**
Number of Units Represented	4	2	0	2	2	2	2	2	2	4	2	4	4
Existing Traffic Noise Level, dBA L_{eq}(h)	52	58	58	52	58	53	58	60	59	57	61	**66**	55
Design Year Build Traffic Noise Level, dBA Leq(h)	53	61	61	54	62	55	63	65	64	60	65	**69**	56
Design Year Build - Existing Traffic Noise Level, dBA Leq(h)	1	3	3	2	4	2	5	5	5	3	4	3	1
6-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	53	60	--	54	61	55	62	63	62	59	63	**68**	56
Predicted Insertion Loss, dB	0	1	--	0	1	0	1	2	2	1	2	1	0
Number of Benefited Receptors	0	0	--	0	0	0	0	0	0	0	0	0	0
8-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	53	60	--	53	61	55	61	63	62	58	63	**67**	56
Predicted Insertion Loss, dB	0	1	--	1	1	0	2	2	2	2	2	2	0
Number of Benefited Receivers	0	0	--	0	0	0	0	0	0	0	0	0	0
10-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	53	60	--	53	60	54	60	62	61	58	62	**66**	56
Predicted Insertion Loss, dB	0	1	--	1	2	1	3	3	3	2	3	3	0
Number of Benefited Receivers	0	0	--	0	0	0	0	0	0	0	0	0	0
12-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	53	59	--	53	60	54	60	62	61	57	62	**66**	55
Predicted Insertion Loss, dB	0	2	--	1	2	1	3	3	3	3	3	3	1
Number of Benefited Receivers	0	0	--	0	0	0	0	0	0	0	0	0	0
14-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	53	59	--	53	60	54	60	62	60	57	61	65	55
Predicted Insertion Loss, dB	0	2	--	1	2	1	3	3	4	3	4	4	1
Number of Benefited Receivers	0	0	--	0	0	0	0	0	0	0	0	0	0
16-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	53	59	--	53	59	53	59	61	60	57	61	65	54
Predicted Insertion Loss, dB	0	2	--	1	3	2	4	4	4	3	4	4	2
Number of Benefited Receivers	0	0	--	0	0	0	0	0	0	0	0	0	0
18-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	53	59	--	52	59	53	59	61	60	57	61	65	54
Predicted Insertion Loss, dB	0	2	--	2	3	2	4	4	4	3	4	4	2
Number of Benefited Receivers	0	0	--	0	0	0	0	0	0	0	0	0	0
20-Foot Barrier[b]													
Design Year Build Traffic Noise Level, dBA Leq(h)	53	59	--	52	59	52	59	61	60	57	61	64	53
Predicted Insertion Loss, dB	0	2	--	2	3	3	4	4	4	3	4	5	3
Number of Benefited Receivers	0	0	--	0	0	0	0	0	0	0	0	4	0
22-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	53	58	--	52	59	52	59	61	60	56	61	64	53
Predicted Insertion Loss, dB	0	3	--	2	3	3	4	4	4	4	4	5	3
Number of Benefited Receivers	0	0	--	0	0	0	0	0	0	0	0	4	0

Table C-10. Analysis of Noise Barrier NB235A2 - SB Mainline EOS

	Receivers[a]												
	M04.25-3	**M04.26**	**M04.27-2**	**M04.28-2**	**M04.29-2**	**M04.30-3**	**M04.31-2**	**M04.32 / ST04.01**	**M04.33-2**	**M04.34**	**M04.35-2**	**M04.36**	**M04.37**
Number of Units Represented	1	2	1	2	1	1	2	1	1	4	4	2	1
Existing Traffic Noise Level, dBA L_{eq}(h)	**76**	54	**72**	61	**74**	**78**	**67**	65	**76**	57	**79**	**67**	68
Design Year Build Traffic Noise Level, dBA Leq(h)	**80**	55	**76**	62	**78**	**81**	**69**	**68**	**78**	58	**81**	**69**	70
Design Year Build - Existing Traffic Noise Level, dBA Leq(h)	4	1	4	1	4	3	2	3	2	1	2	2	2
6-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**78**	55	**73**	62	**74**	**80**	67	**66**	**77**	58	**79**	**68**	68
Predicted Insertion Loss, dB	2	0	3	0	4	1	2	2	1	0	2	1	2
Number of Benefited Receptors	0	0	0	0	0	0	0	0	0	0	0	0	0
8-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**77**	55	**72**	62	**72**	**79**	66	65	**75**	58	**77**	**67**	67
Predicted Insertion Loss, dB	3	0	4	0	6	2	3	3	3	0	4	2	3
Number of Benefited Receivers	0	0	0	0	1	0	0	0	0	0	0	0	0
10-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**75**	55	**70**	61	**71**	**78**	65	65	**73**	58	**75**	**66**	65
Predicted Insertion Loss, dB	5	0	6	1	7	3	4	3	5	0	6	3	5
Number of Benefited Receivers	1	0	1	0	1	0	0	0	1	0	4	0	1
12-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**74**	55	**69**	61	**70**	**76**	64	65	**71**	58	**74**	65	65
Predicted Insertion Loss, dB	6	0	7	1	8	5	5	3	7	0	7	4	5
Number of Benefited Receivers	1	0	1	0	1	1	2	0	1	0	4	0	1
14-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**72**	55	**69**	60	**69**	**74**	63	65	**70**	57	**73**	65	64
Predicted Insertion Loss, dB	8	0	7	2	9	7	6	3	8	1	8	4	6
Number of Benefited Receivers	1	0	1	0	1	1	2	0	1	0	4	0	1
16-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**71**	54	**68**	60	**69**	**73**	62	64	**70**	57	**72**	64	64
Predicted Insertion Loss, dB	9	1	8	2	9	8	7	4	8	1	9	5	6
Number of Benefited Receivers	1	0	1	0	1	1	2	0	1	0	4	2	1
18-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**70**	54	**67**	60	**68**	**72**	63	64	**69**	57	**71**	64	63
Predicted Insertion Loss, dB	10	1	9	2	10	9	6	4	9	1	10	5	7
Number of Benefited Receivers	1	0	1	0	1	1	2	0	1	0	4	2	1
20-Foot Barrier[b]													
Design Year Build Traffic Noise Level, dBA Leq(h)	**69**	53	**67**	59	**68**	**71**	63	64	**68**	56	**71**	64	64
Predicted Insertion Loss, dB	11	2	9	3	10	10	6	4	10	2	10	5	6
Number of Benefited Receivers	1	0	1	0	1	1	2	0	1	0	4	2	1
22-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	**69**	53	**66**	59	**67**	**70**	63	64	**68**	56	**70**	64	64
Predicted Insertion Loss, dB	11	2	10	3	11	11	6	4	10	2	11	5	6
Number of Benefited Receivers	1	0	1	0	1	1	2	0	1	0	4	2	1

Table C-10. Analysis of Noise Barrier NB235A2 - SB Mainline EOS

	Receivers[a]												
	M04.38	**M04.39**	**M04.40**	**M04.41-2**	**M04.42 / ST04.04**	**M04.43**	**M04.44-2**	**M04.45-2**	**M04.46**	**M04.47-2**	**M04.48**	**M04.49-2**	**M04.50-3**
Number of Units Represented	4	2	2	2	4	4	1	2	2	2	2	2	2
Existing Traffic Noise Level, dBA L_{eq}(h)	59	**68**	55	**79**	61	58	**78**	**78**	**68**	64	**67**	**76**	**78**
Design Year Build Traffic Noise Level, dBA Leq(h)	60	**69**	56	**81**	62	59	**79**	**79**	**69**	65	**68**	**77**	**79**
Design Year Build - Existing Traffic Noise Level, dBA Leq(h)	1	1	1	2	1	1	1	1	1	1	1	1	1
6-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	60	**68**	56	**79**	62	58	**78**	**78**	**69**	65	**67**	**76**	**78**
Predicted Insertion Loss, dB	0	1	0	2	0	1	1	1	0	0	1	1	1
Number of Benefited Receptors	0	0	0	0	0	0	0	0	0	0	0	0	0
8-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	60	**67**	56	**78**	61	58	**76**	**76**	**67**	64	**66**	**75**	**77**
Predicted Insertion Loss, dB	0	2	0	3	1	1	3	3	2	1	2	2	2
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	0	0	0	0
10-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	60	**66**	56	**76**	62	58	**74**	**74**	**66**	64	65	**73**	**77**
Predicted Insertion Loss, dB	0	3	0	5	0	1	5	5	3	1	3	4	2
Number of Benefited Receivers	0	0	0	2	0	0	1	2	0	0	0	0	0
12-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	60	**66**	55	**74**	61	58	**73**	**73**	**66**	63	64	**72**	**76**
Predicted Insertion Loss, dB	0	3	1	7	1	1	6	6	3	2	4	5	3
Number of Benefited Receivers	0	0	0	2	0	0	1	2	0	0	0	2	0
14-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	59	65	55	**74**	61	57	**72**	**72**	65	63	66	**71**	**75**
Predicted Insertion Loss, dB	1	4	1	7	1	2	7	7	4	2	2	6	4
Number of Benefited Receivers	0	0	0	2	0	0	1	2	0	0	0	2	0
16-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	58	64	55	**73**	60	57	**71**	**71**	65	63	67	**71**	**73**
Predicted Insertion Loss, dB	2	5	1	8	2	2	8	8	4	2	1	6	6
Number of Benefited Receivers	0	2	0	2	0	0	1	2	0	0	0	2	2
18-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	58	64	54	**72**	60	56	**71**	**70**	64	62	66	**70**	**72**
Predicted Insertion Loss, dB	2	5	2	9	2	3	8	9	5	3	2	7	7
Number of Benefited Receivers	0	2	0	2	0	0	1	2	2	0	0	2	2
20-Foot Barrier[b]													
Design Year Build Traffic Noise Level, dBA Leq(h)	57	64	54	**72**	59	56	**70**	**70**	64	62	66	**69**	**71**
Predicted Insertion Loss, dB	3	5	2	9	3	3	9	9	5	3	2	8	8
Number of Benefited Receivers	0	2	0	2	0	0	1	2	2	0	0	2	2
22-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	57	63	53	**71**	59	55	**69**	**69**	64	62	65	**68**	**70**
Predicted Insertion Loss, dB	3	6	3	10	3	4	10	10	5	3	3	9	9
Number of Benefited Receivers	0	2	0	2	0	0	1	2	2	0	0	2	2

Table C-10. Analysis of Noise Barrier NB235A2 - SB Mainline EOS

	Receivers[a]												
	M04.51	**M04.52**	**M04.53-2**	**M04.54**	**M04.55 / ST04.02**	**M04.56**	**M04.57-2a**	**M04.57b**	**M04.57c**	**M04.57d**	**M04.58-2**	**M04.59-3**	**M04.60**
Number of Units Represented	2	1	2	2	1	2	2	1	1	1	2	2	2
Existing Traffic Noise Level, dBA L_{eq}(h)	62	**67**	**78**	60	**68**	**68**	**72**	63	54	59	**67**	**69**	**66**
Design Year Build Traffic Noise Level, dBA Leq(h)	64	**68**	**78**	61	**69**	**69**	**72**	64	55	60	**67**	**69**	**67**
Design Year Build - Existing Traffic Noise Level, dBA Leq(h)	2	1	0	1	1	1	0	1	1	1	0	0	1
6-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	62	**67**	**78**	60	**68**	**67**	**71**	63	55	60	**66**	**68**	**66**
Predicted Insertion Loss, dB	2	1	0	1	1	2	1	1	0	0	1	1	1
Number of Benefited Receptors	0	0	0	0	0	0	0	0	0	0	0	0	0
8-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	61	**66**	**76**	59	**67**	**66**	**70**	62	55	59	65	**67**	65
Predicted Insertion Loss, dB	3	2	2	2	2	3	2	2	0	1	2	2	2
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	0	0	0	0
10-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	61	65	**75**	58	**66**	65	**69**	61	54	59	64	**66**	64
Predicted Insertion Loss, dB	3	3	3	3	3	4	3	3	1	1	3	3	3
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	0	0	0	0
12-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	60	64	**74**	60	65	65	**69**	61	54	59	64	65	63
Predicted Insertion Loss, dB	4	4	4	1	4	4	3	3	1	1	3	4	4
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	0	0	0	0
14-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	62	63	**73**	60	64	64	**68**	61	54	58	63	65	63
Predicted Insertion Loss, dB	2	5	5	1	5	5	4	3	1	2	4	4	4
Number of Benefited Receivers	0	1	2	0	1	2	0	0	0	0	0	0	0
16-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	62	63	**71**	59	63	64	**67**	61	53	58	62	64	63
Predicted Insertion Loss, dB	2	5	7	2	6	5	5	3	2	2	5	5	4
Number of Benefited Receivers	0	1	2	0	1	2	2	0	0	0	2	2	0
18-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	61	62	**71**	59	63	64	**66**	60	53	57	61	63	63
Predicted Insertion Loss, dB	3	6	7	2	6	5	6	4	2	3	6	6	4
Number of Benefited Receivers	0	1	2	0	1	2	2	0	0	0	2	2	0
20-Foot Barrier[b]													
Design Year Build Traffic Noise Level, dBA Leq(h)	61	62	**70**	58	63	63	65	60	53	57	61	63	63
Predicted Insertion Loss, dB	3	6	8	3	6	6	7	4	2	3	6	6	4
Number of Benefited Receivers	0	1	2	0	1	2	2	0	0	0	2	2	0
22-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	61	61	**69**	58	63	63	65	60	52	56	61	62	63
Predicted Insertion Loss, dB	3	7	9	3	6	6	7	4	3	4	6	7	4
Number of Benefited Receivers	0	1	2	0	1	2	2	0	0	0	2	2	0

Table C-10. Analysis of Noise Barrier NB235A2 - SB Mainline EOS

	Receivers[a]												
	M04.61	**M04.62-2**	**M04.63-3**	**M04.64**	**M04.65-2**	**M04.66-2**	**M04.67**	**M04.68-2a**	**M04.68b**	**M04.69-2**	**M04.70-3**	**M04.71-2**	**M04.72-2**
Number of Units Represented	4	2	2	2	4	4	4	2	2	4	2	2	2
Existing Traffic Noise Level, dBA L_{eq}(h)	60	59	**67**	**72**	**71**	62	61	59	54	**80**	**78**	**75**	**76**
Design Year Build Traffic Noise Level, dBA Leq(h)	61	60	**68**	**73**	**72**	63	62	60	55	**81**	**79**	**76**	**77**
Design Year Build - Existing Traffic Noise Level, dBA Leq(h)	1	1	1	1	1	1	1	1	1	1	1	1	1
6-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	61	60	**68**	**72**	**72**	63	61	60	55	**80**	**78**	**75**	**76**
Predicted Insertion Loss, dB	0	0	0	1	0	0	1	0	0	1	1	1	1
Number of Benefited Receptors	0	0	0	0	0	0	0	0	0	0	0	0	0
8-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	61	60	**68**	**71**	**71**	63	61	59	54	**79**	**78**	**74**	**75**
Predicted Insertion Loss, dB	0	0	0	2	1	0	1	1	1	2	1	2	2
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	0	0	0	0
10-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	61	60	**67**	**71**	**71**	62	61	59	54	**78**	**78**	**73**	**74**
Predicted Insertion Loss, dB	0	0	1	2	1	1	1	1	1	3	1	3	3
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	0	0	0	0
12-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	60	59	**67**	**70**	**70**	62	60	59	54	**76**	**77**	**72**	**74**
Predicted Insertion Loss, dB	1	1	1	3	2	1	2	1	1	5	2	4	3
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	4	0	0	0
14-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	60	59	**67**	**69**	**69**	61	59	59	53	**75**	**76**	**72**	**73**
Predicted Insertion Loss, dB	1	1	1	4	3	2	3	1	2	6	3	4	4
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	4	0	0	0
16-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	60	59	**66**	**69**	**68**	61	59	58	52	**73**	**76**	**70**	**71**
Predicted Insertion Loss, dB	1	1	2	4	4	2	3	2	3	8	3	6	6
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	4	0	2	2
18-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	60	58	65	**68**	**67**	60	58	58	52	**71**	**74**	**68**	**70**
Predicted Insertion Loss, dB	1	2	3	5	5	3	4	2	3	10	5	8	7
Number of Benefited Receivers	0	0	0	2	4	0	0	0	0	4	2	2	2
20-Foot Barrier[b]													
Design Year Build Traffic Noise Level, dBA Leq(h)	59	57	64	**67**	**66**	59	57	57	51	**70**	**72**	**68**	**69**
Predicted Insertion Loss, dB	2	3	4	6	6	4	5	3	4	11	7	8	8
Number of Benefited Receivers	0	0	0	2	4	0	4	0	0	4	2	2	2
22-Foot Barrier													
Design Year Build Traffic Noise Level, dBA Leq(h)	58	56	64	**66**	**66**	58	57	57	51	**69**	71	67	68
Predicted Insertion Loss, dB	3	4	4	7	6	5	5	3	4	12	8	9	9
Number of Benefited Receivers	0	0	0	2	4	4	4	0	0	4	2	2	2

Table C-10. Analysis of Noise Barrier NB235A2 - SB Mainline EOS

	Receivers[a]											Total Number of Benefited Receptors
	M04.73-3	M04.74-2	M04.75-3	M04.76	M04.77 / ST04.06	M04.78	M04.79	M04.80-2	M04.81	M04.82 / ST04.05	M04.83-2	
Number of Units Represented	1	2	1	3	1	2	2	2	2	2	2	--
Existing Traffic Noise Level, dBA L_{eq}(h)	**76**	**72**	**71**	**70**	**72**	60	57	**75**	**66**	64	**70**	--
Design Year Build Traffic Noise Level, dBA Leq(h)	**77**	**72**	**72**	**71**	**73**	60	57	**76**	**67**	65	**71**	--
Design Year Build - Existing Traffic Noise Level, dBA Leq(h)	1	0	1	1	1	0	0	1	1	1	1	--
6-Foot Barrier												
Design Year Build Traffic Noise Level, dBA Leq(h)	**77**	**72**	**71**	**70**	**72**	60	57	**75**	**66**	65	**70**	--
Predicted Insertion Loss, dB	0	0	1	1	1	0	0	1	1	0	1	--
Number of Benefited Receptors	0	0	0	0	0	0	0	0	0	0	0	0
8-Foot Barrier												
Design Year Build Traffic Noise Level, dBA Leq(h)	**76**	**71**	**70**	**69**	**71**	60	57	**74**	65	64	**69**	--
Predicted Insertion Loss, dB	1	1	2	2	2	0	0	2	2	1	2	--
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	0	0	3
10-Foot Barrier												
Design Year Build Traffic Noise Level, dBA Leq(h)	**76**	**71**	**69**	**68**	**70**	60	57	**73**	64	63	**69**	--
Predicted Insertion Loss, dB	1	1	3	3	3	0	0	3	3	2	2	--
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	0	0	17
12-Foot Barrier												
Design Year Build Traffic Noise Level, dBA Leq(h)	**75**	**70**	**69**	**67**	**69**	60	57	**72**	63	63	**67**	--
Predicted Insertion Loss, dB	2	2	3	4	4	0	0	4	4	2	4	--
Number of Benefited Receivers	0	0	0	0	0	0	0	0	0	0	0	26
14-Foot Barrier												
Design Year Build Traffic Noise Level, dBA Leq(h)	**74**	**69**	**68**	66	**70**	59	57	**69**	63	62	**66**	--
Predicted Insertion Loss, dB	3	3	4	5	3	1	0	7	4	3	5	--
Number of Benefited Receivers	0	0	0	3	0	0	0	2	0	0	2	39
16-Foot Barrier												
Design Year Build Traffic Noise Level, dBA Leq(h)	**74**	**67**	**67**	**66**	**69**	59	56	**69**	62	62	**66**	--
Predicted Insertion Loss, dB	3	5	5	5	4	1	1	7	5	3	5	--
Number of Benefited Receivers	0	2	1	3	0	0	0	2	2	0	2	61
18-Foot Barrier												
Design Year Build Traffic Noise Level, dBA Leq(h)	**73**	**66**	65	**66**	**68**	58	55	**67**	62	61	65	--
Predicted Insertion Loss, dB	4	6	7	5	5	2	2	9	5	4	6	--
Number of Benefited Receivers	0	2	1	3	1	0	0	2	2	0	2	72
20-Foot Barrier[b]												
Design Year Build Traffic Noise Level, dBA Leq(h)	**71**	**66**	64	**66**	**67**	57	54	**66**	62	60	65	--
Predicted Insertion Loss, dB	6	6	8	5	6	3	3	10	5	5	6	--
Number of Benefited Receivers	1	2	1	3	1	0	0	2	2	2	2	83
22-Foot Barrier												
Design Year Build Traffic Noise Level, dBA Leq(h)	69	65	64	66	66	56	54	**66**	61	60	64	--
Predicted Insertion Loss, dB	8	7	8	5	7	4	3	10	6	5	7	--
Number of Benefited Receivers	1	2	1	3	1	0	0	2	2	2	2	87

Table C-11. Analysis of Noise Barrier NB229A1 - Private Property

	Receivers[a]	Total Number of Benefited Receptors
	M04.01	
Number of Units Represented	1	--
Existing Traffic Noise Level, dBA L_{eq}(h)	64	--
Design Year Build Traffic Noise Level, dBA Leq(h)	**66**	--
Design Year Build - Existing Traffic Noise Level, dBA Leq(h)	2	--
6-Foot Barrier		
Design Year Build Traffic Noise Level, dBA Leq(h)	62	--
Predicted Insertion Loss, dB	4	--
Number of Benefited Receptors	0	0
8-Foot Barrier		
Design Year Build Traffic Noise Level, dBA Leq(h)	60	--
Predicted Insertion Loss, dB	6	--
Number of Benefited Receivers	1	1
10-Foot Barrier		
Design Year Build Traffic Noise Level, dBA Leq(h)	59	--
Predicted Insertion Loss, dB	7	--
Number of Benefited Receivers	1	1
12-Foot Barrier[b]		
Design Year Build Traffic Noise Level, dBA Leq(h)	59	--
Predicted Insertion Loss, dB	7	--
Number of Benefited Receivers	1	1
14-Foot Barrier		
Design Year Build Traffic Noise Level, dBA Leq(h)	58	--
Predicted Insertion Loss, dB	8	--
Number of Benefited Receivers	1	1
16-Foot Barrier		
Design Year Build Traffic Noise Level, dBA Leq(h)	58	--
Predicted Insertion Loss, dB	8	--
Number of Benefited Receivers	1	1
18-Foot Barrier		
Design Year Build Traffic Noise Level, dBA Leq(h)	58	--
Predicted Insertion Loss, dB	8	--
Number of Benefited Receivers	1	1
20-Foot Barrier		
Design Year Build Traffic Noise Level, dBA Leq(h)	58	--
Predicted Insertion Loss, dB	8	--
Number of Benefited Receivers	1	1
22-Foot Barrier		
Design Year Build Traffic Noise Level, dBA Leq(h)	58	--
Predicted Insertion Loss, dB	8	--
Number of Benefited Receivers	1	1

[a] Traffic noise levels that approach or exceed the NAC are shown in bold.

[b] Minimum noise barrier height needed to block line-of-sight between an 11.5-foot truck exhaust stack and the first row of benefited receptors.

Table C-12. Analysis of Noise Barrier NB229A2 - Private Property

	Receivers[a]	Total Number of Benefited Receptors
	M04.01	
Number of Units Represented	1	--
Existing Traffic Noise Level, dBA L_{eq}(h)	64	--
Design Year Build Traffic Noise Level, dBA Leq(h)	**66**	--
Design Year Build - Existing Traffic Noise Level, dBA Leq(h)	2	--
6-Foot Barrier		
Design Year Build Traffic Noise Level, dBA Leq(h)	61	--
Predicted Insertion Loss, dB	5	--
Number of Benefited Receptors	1	1
8-Foot Barrier		
Design Year Build Traffic Noise Level, dBA Leq(h)	60	--
Predicted Insertion Loss, dB	6	--
Number of Benefited Receivers	1	1
10-Foot Barrier		
Design Year Build Traffic Noise Level, dBA Leq(h)	59	--
Predicted Insertion Loss, dB	7	--
Number of Benefited Receivers	1	1
12-Foot Barrier[b]		
Design Year Build Traffic Noise Level, dBA Leq(h)	59	--
Predicted Insertion Loss, dB	7	--
Number of Benefited Receivers	1	1
14-Foot Barrier		
Design Year Build Traffic Noise Level, dBA Leq(h)	58	--
Predicted Insertion Loss, dB	8	--
Number of Benefited Receivers	1	1
16-Foot Barrier		
Design Year Build Traffic Noise Level, dBA Leq(h)	58	--
Predicted Insertion Loss, dB	8	--
Number of Benefited Receivers	1	1
18-Foot Barrier		
Design Year Build Traffic Noise Level, dBA Leq(h)	58	--
Predicted Insertion Loss, dB	8	--
Number of Benefited Receivers	1	1
20-Foot Barrier		
Design Year Build Traffic Noise Level, dBA Leq(h)	58	--
Predicted Insertion Loss, dB	8	--
Number of Benefited Receivers	1	1
22-Foot Barrier		
Design Year Build Traffic Noise Level, dBA Leq(h)	57	--
Predicted Insertion Loss, dB	9	--
Number of Benefited Receivers	1	1

[a] Traffic noise levels that approach or exceed the NAC are shown in bold.

[b] Minimum noise barrier height needed to block line-of-sight between an 11.5-foot truck exhaust stack and the first row of benefited receptors.

Appendix D Supplemental Data

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Appendix D-1 Field Noise Measurement Data Sheets

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FIELD NOISE MEASUREMENT DATA

PROJECT: I-5 EL TORO INTERCHANGE PROJ. #

SITE IDENTIFICATION: R-01.01 OBSERVER(S): P. HARDIE
ADDRESS: 24961 BRIDGER RD
START DATE / TIME: 12/3/24 END DATE / TIME:

METEROLOGICAL CONDITIONS:
TEMP: 62 °F HUMIDITY: %R.H. WIND: CALM LIGHT MODERATE VARIABLE
WINDSPEED: 0 MPH DIR: N NE E SE S SW W NW STEADY GUSTY
SKY: SUNNY CLEAR OVRCST PRTLY CLOUDY FOG RAIN OTHER:

ACOUSTIC MEASUREMENTS:
INSTRUMENT: L-T TYPE: 1 2 SERIAL #: 4075
CALIBRATOR: LD CAL 200 SERIAL #: 29116
CALIBRATION CHECK: PRE-TEST 114.06 dBA SPL POST-TEST 113.76 dBA SPL WINDSCREEN
SETTINGS: A-WEIGHTED SLOW FAST FRONTAL RANDOM ANSI OTHER:

REC #	START	END	L_{eq}	L_{max}	L_1	L_{10}	L_{25}	L_{50}	L_{90}	L_{99}	L_{min}
262	10:35	10:45	58.6	64.8	63.5	60.2	59.4	58.2	56.0	53.8	53.2
263	10:47	10:57	59.0	67.2	64.2	60.3	59.3	58.6	57.4	56.1	55.8	

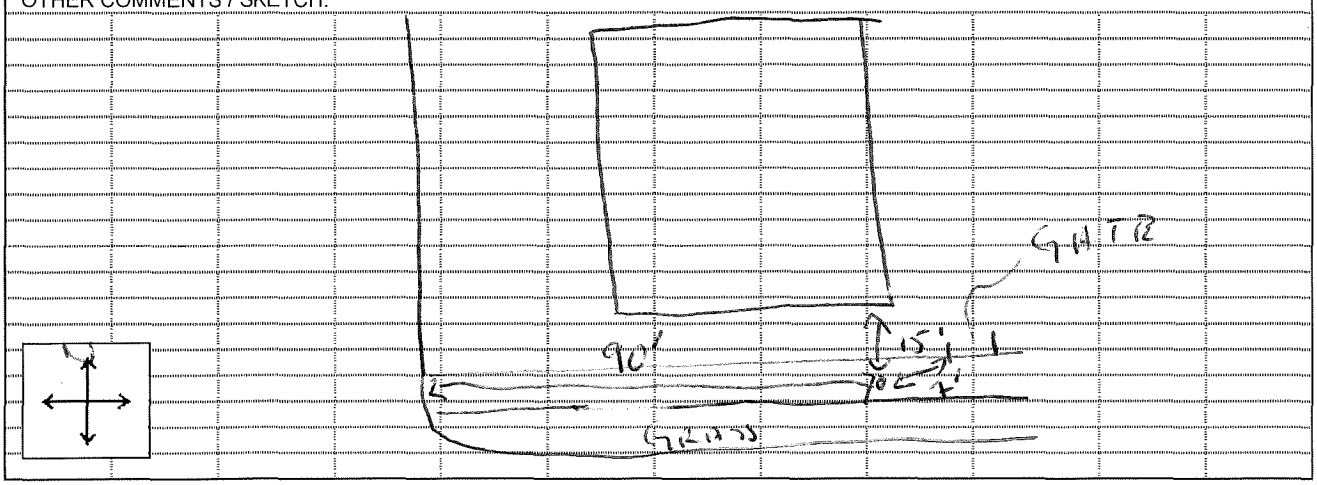
COMMENTS: MEASUREMENT LOC IS REPRESENTATIVE OF BACK YARD W/ CLEAR VIEW OF SOUND WALL

SOURCE INFO AND TRAFFIC COUNTS:
PRIMARY NOISE SOURCE: TRAFFIC AIRCRAFT RAIL INDUSTRIAL AMBIENT OTHER:
ROADWAY TYPE:
TRAFFIC COUNT DURATION: -MIN SPEED LANDVIEW #2 COUNT SPEED

	NB / EB	SB / WB	NB / EB	SB / WB	NB / EB	SB / WB	NB / EB	SB / WB
AUTOS:				11				1
MED. TRUCKS:								
HVY TRUCKS:								
BUSES:								
MOTORCYCLES:								

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER
OTHER SOURCES: DIST. AIRCRAFT / RUSTLING LEAVES / DIST. BARKING DOGS / BIRDS / DIST. INDUSTRIAL
DIST. CHILDREN PLAYING / DIST. TRAFFIC / DIST. LANDSCAPING ACTIVITIES / OTHER:

DESCRIPTION / SKETCH:
TERRAIN: HARD SOFT MIXED FLAT OTHER:
PHOTOS: 123 NEW W2
OTHER COMMENTS / SKETCH:



FIELD NOISE MEASUREMENT DATA

PROJECT: I-5 FL RD INTERCHANGE PROJ. #

SITE IDENTIFICATION: ST01.02 OBSERVER(S): P. HARDIE
ADDRESS: 2414 SILVER BAY DR
START DATE / TIME: 12/3/24 END DATE / TIME:

METEROLOGICAL CONDITIONS:
TEMP: °F HUMIDITY: %R.H. WIND: **CALM LIGHT MODERATE VARIABLE**
WINDSPEED: MPH DIR: **N NE E SE S SW W NW STEADY GUSTY**
SKY: **SUNNY CLEAR OVRCST PRTLY CLOUDY FOG RAIN OTHER:**

ACOUSTIC MEASUREMENTS:
INSTRUMENT: LD LXT TYPE 1 2 SERIAL #: 4005
CALIBRATOR: CAL 200 SERIAL #: 2916
CALIBRATION CHECK: PRE-TEST 113.76 dBA SPL POST-TEST 113.86 dBA SPL WINDSCREEN ✓
SETTINGS: **A-WEIGHTED SLOW FAST FRONTAL RANDOM ANSI** OTHER:

REC #	START	END	L_{eq}	L_{max}	L_1	L_{10}	L_{25}	L_{50}	L_{90}	L_{99}	L_{min}
0264	11:29	11:34	64.7	66.8	66.4	65.5	65.1	64.7	63.9	63.1	62.7
0265	11:36	11:46	61.7	70.6	64.0	63.0	62.4	61.3	60.0	58.4	57.9
0266	11:48	11:54	60.4	70.3	66.1	61.6	60.8	60.0	58.5	56.9	56.4

COMMENTS:

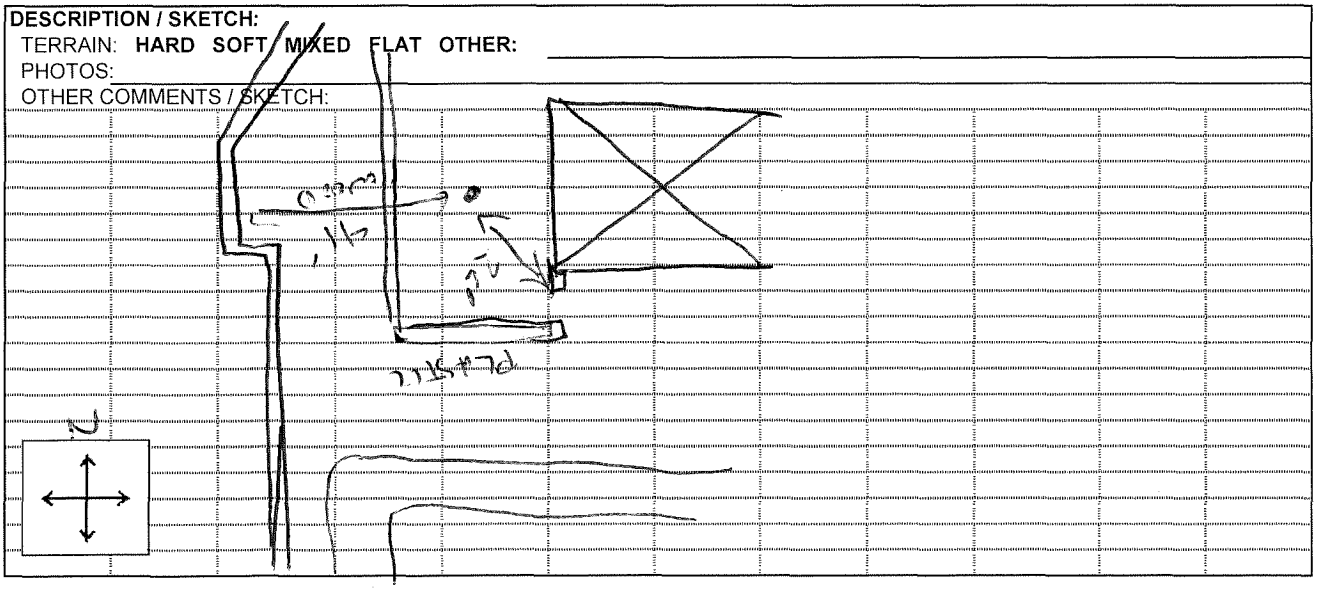
SOURCE INFO AND TRAFFIC COUNTS:
PRIMARY NOISE SOURCE: **TRAFFIC AIRCRAFT RAIL INDUSTRIAL AMBIENT OTHER:**
ROADWAY TYPE:
TRAFFIC COUNT DURATION: -MIN

	SPEED NB / EB	SPEED SB / WB	#2 COUNT NB / EB	#2 COUNT SB / WB	SPEED NB / EB	SPEED SB / WB
AUTOS:						
MED. TRUCKS:						
HVY TRUCKS:						
BUSES:						
MOTORCYCLES:						

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER SOURCES: **DIST. AIRCRAFT / RUSTLING LEAVES / DIST. BARKING DOGS / BIRDS / DIST. INDUSTRIAL DIST. CHILDREN PLAYING / DIST. TRAFFIC / DIST. LANDSCAPING ACTIVITIES / OTHER:**

DESCRIPTION / SKETCH:
TERRAIN: **HARD SOFT MIXED FLAT OTHER:**
PHOTOS:
OTHER COMMENTS / SKETCH:



FIELD NOISE MEASUREMENT DATA

PROJECT: I-5 / El Toro I.C. PROJ. #

SITE IDENTIFICATION: ST01.03 OBSERVER(S): JLH
ADDRESS: 24422 Highpine Road
START DATE / TIME: 12/3/24 10:34 AM END DATE / TIME: 12/3/24 10:57AM

METEROLOGICAL CONDITIONS:
TEMP: 64 °F HUMIDITY: 51 %R.H. WIND: (CALM) LIGHT MODERATE VARIABLE
WINDSPEED: 0-4 MPH DIR: N NE E SE (S) SW W NW STEADY GUSTY
SKY: (SUNNY) CLEAR OVRCST (PRTLY CLOUDY) FOG RAIN OTHER:

ACOUSTIC MEASUREMENTS:
INSTRUMENT: LD 831 TYPE: (1) 2 SERIAL #: 3786
CALIBRATOR: LD CAL200 SERIAL #: 6645
CALIBRATION CHECK: PRE-TEST 114.0 dBA SPL POST-TEST 114.15 dBA SPL WINDSCREEN
SETTINGS: (A-WEIGHTED) (SLOW) FAST FRONTAL (RANDOM) (ANSI) OTHER:

REC #	START	END	L_{eq}	L_{max}	L_1	L_{10}	L_{25}	L_{50}	L_{90}	L_{99}	L_{min}
495	10:35A	10:45A	54.5	59.4	57.6	56.3	55.3	54.2	52.0	50.2	49.7
496	10:47A	10:57A	53.6	57.6	56.1	54.9	54.3	53.5	51.7	50.9	50.5

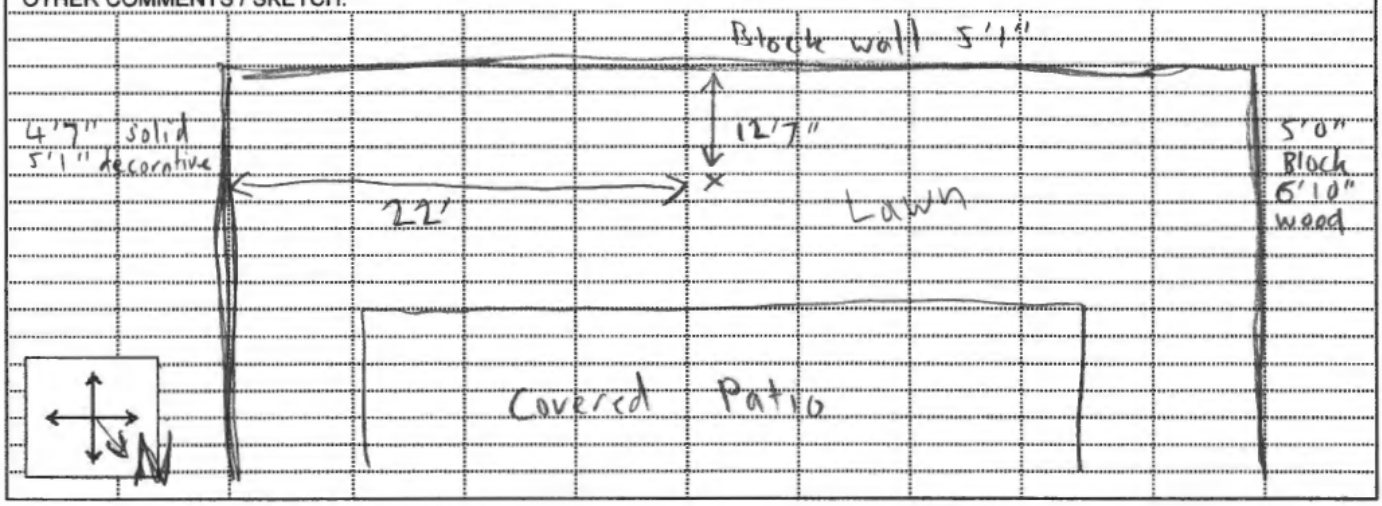
COMMENTS:

SOURCE INFO AND TRAFFIC COUNTS:
PRIMARY NOISE SOURCE: (TRAFFIC) AIRCRAFT RAIL INDUSTRIAL AMBIENT OTHER:
ROADWAY TYPE: I-5
TRAFFIC COUNT DURATION: ____-MIN

	SPEED NB / EB	SPEED SB / WB	#2 COUNT NB / EB	#2 COUNT SB / WB	SPEED NB / EB	SPEED SB / WB
AUTOS:						
MED. TRUCKS:						
HVY TRUCKS:						
BUSES:						
MOTORCYCLES:						

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER
OTHER SOURCES: DIST. AIRCRAFT / RUSTLING LEAVES / (DIST. BARKING DOGS) / (BIRDS) / DIST. INDUSTRIAL
DIST. CHILDREN PLAYING / DIST. TRAFFIC / DIST. LANDSCAPING ACTIVITIES / OTHER:
Music /radio audible. Yard work

DESCRIPTION / SKETCH:
TERRAIN: HARD SOFT (MIXED) FLAT OTHER:
PHOTOS: ✓
OTHER COMMENTS / SKETCH:



FIELD NOISE MEASUREMENT DATA

PROJECT: I-5 / El Toro I.C. PROJ. #

SITE IDENTIFICATION: ST01.04 OBSERVER(S): JLH
ADDRESS: 24382 Highpine Rd
START DATE / TIME: 12/3/24 11:24 AM END DATE / TIME: 12/3/24 11:58AM

METEROLOGICAL CONDITIONS:
TEMP: 66 °F HUMIDITY: 50 %R.H. WIND: (CALM) (LIGHT) MODERATE VARIABLE
WINDSPEED: (0-4) MPH DIR: N NE E SE (S) (SW) W NW STEADY GUSTY
SKY: (SUNNY) CLEAR OVRCST (PRTLY CLOUDY) FOG (RAIN) OTHER:

ACOUSTIC MEASUREMENTS:
INSTRUMENT: LD 831 TYPE: (1) 2 SERIAL #: 3786
CALIBRATOR: LD CAL206 SERIAL #: 6645
CALIBRATION CHECK: PRE-TEST 114.0 dBA SPL POST-TEST 113.9 dBA SPL WINDSCREEN ✓
SETTINGS: (A-WEIGHTED) (SLOW) FAST (FRONTAL) (RANDOM) (ANSI) OTHER:

REC #	START	END	L_{eq}	L_{max}	L_1	L_{10}	L_{25}	L_{50}	L_{90}	L_{99}	L_{min}
497	11:24A	11:34A	57.1	58.9	58.5	57.9	57.5	57.0	56.0	55.2	55.0
498	11:36A	11:46A	55.5	61.7	58.5	57.4	56.7	55.1	53.6	52.6	52.1
499	11:48A	11:58A	53.4	58.5	57.5	55.2	53.9	52.9	51.6	50.4	49.8

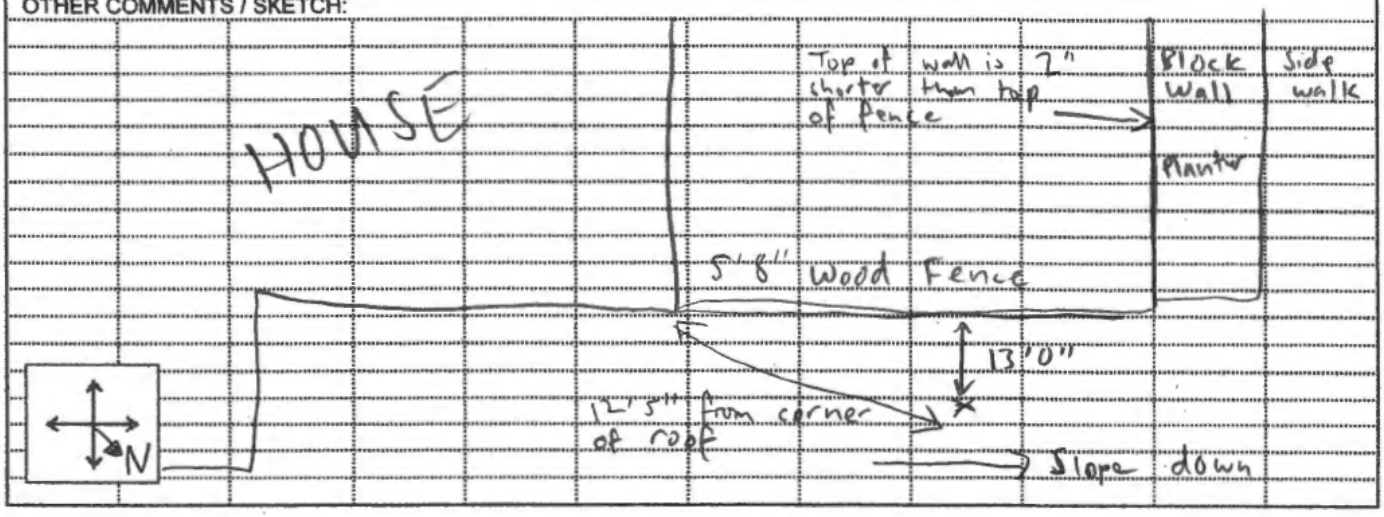
COMMENTS:

SOURCE INFO AND TRAFFIC COUNTS:
PRIMARY NOISE SOURCE: (TRAFFIC) AIRCRAFT RAIL INDUSTRIAL AMBIENT OTHER:
ROADWAY TYPE: I-5
TRAFFIC COUNT DURATION: ____-MIN

	SPEED NB / EB	SPEED SB / WB	#2 COUNT NB / EB	#2 COUNT SB / WB	SPEED NB / EB	SPEED SB / WB
AUTOS:						
MED. TRUCKS:						
HVY TRUCKS:						
BUSES:						
MOTORCYCLES:						

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER
OTHER SOURCES: DIST. AIRCRAFT / (RUSTLING LEAVES) / DIST. BARKING DOGS / (BIRDS) / DIST. INDUSTRIAL
DIST. CHILDREN PLAYING / DIST. TRAFFIC / DIST. LANDSCAPING ACTIVITIES / OTHER:

DESCRIPTION / SKETCH:
TERRAIN: HARD SOFT (MIXED) FLAT OTHER:
PHOTOS: ✓
OTHER COMMENTS / SKETCH:



FIELD NOISE MEASUREMENT DATA

PROJECT: I-5 EL TORO INTERCHANGE PROJ. #

SITE IDENTIFICATION: ST 01.05 OBSERVER(S): P. HANSON
ADDRESS: 24011 SILVER SPUR DR
START DATE / TIME: 12/3/24 END DATE / TIME:

METEROLOGICAL CONDITIONS:
TEMP: 69 °F HUMIDITY: %R.H. WIND: CALM LIGHT MODERATE VARIABLE
WINDSPEED: 0 MPH DIR: N NE E SE S SW W NW STEADY GUSTY
SKY: SUNNY CLEAR OVRCST PRTLY CLOUDY FOG RAIN OTHER:

ACOUSTIC MEASUREMENTS:
INSTRUMENT: LD LxT TYPE: (1) 2 SERIAL #: 4005
CALIBRATOR: CAL 200 SERIAL #: 3946
CALIBRATION CHECK: PRE-TEST 113.96 dBA SPL POST-TEST 114.09 dBA SPL WINDSCREEN ✓
SETTINGS: A-WEIGHTED SLOW FAST FRONTAL RANDOM ANSI OTHER:

REC #	START	END	L_{eq}	L_{max}	L_1	L_{10}	L_{25}	L_{50}	L_{90}	L_{99}	L_{min}
267	12:28	12:38	49.5	57.1	53.8	50.9	49.7	49.0	47.8	47.2	46.9
268	12:39	12:49	51.9	58.0	54.5	53.2	52.4	51.0	49.2	48.5	48.1

COMMENTS: DISTANT I-5 CAN BE HEARD

SOURCE INFO AND TRAFFIC COUNTS:
PRIMARY NOISE SOURCE: TRAFFIC AIRCRAFT RAIL INDUSTRIAL AMBIENT OTHER: POOL PUMPS CAR ENGINE SET CMN
ROADWAY TYPE:
TRAFFIC COUNT DURATION: ____-MIN SPEED #2 COUNT SPEED

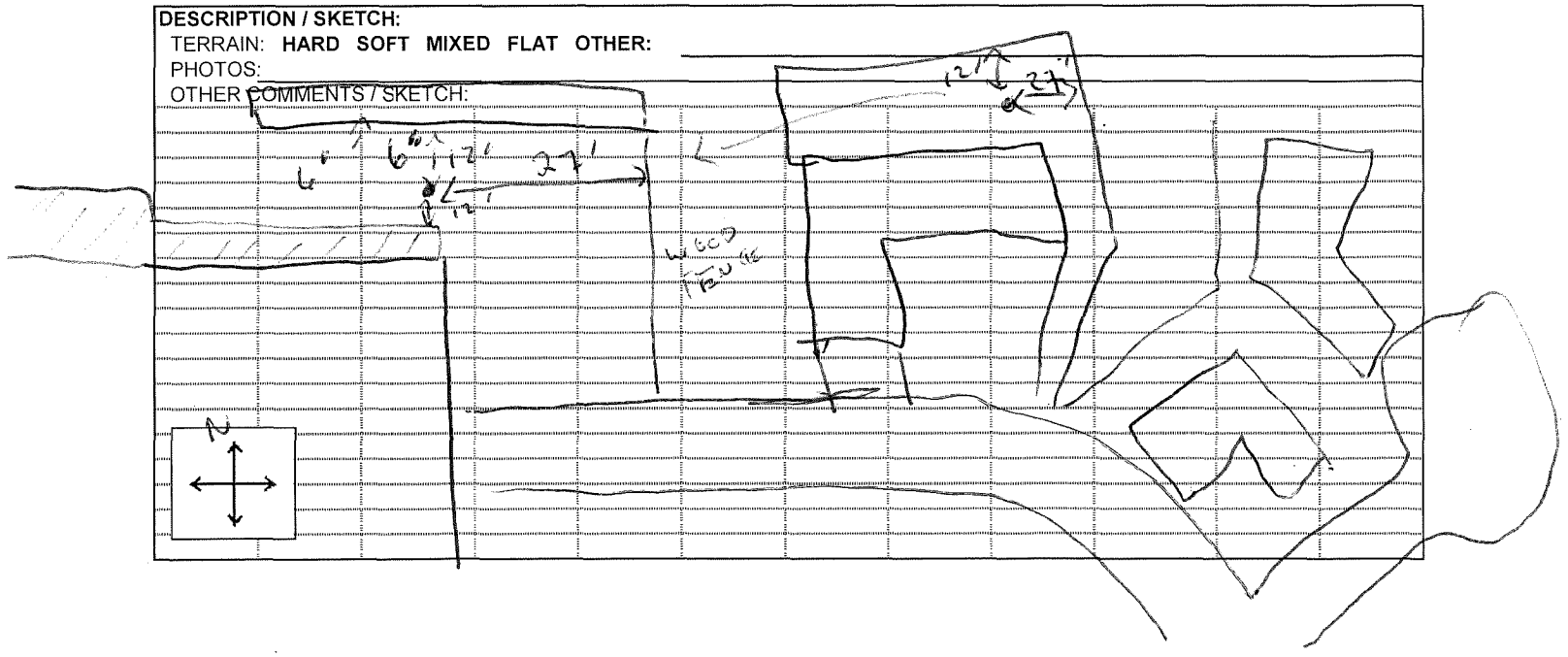
	NB / EB	SB / WB	NB / EB	SB / WB	NB / EB	SB / WB	NB / EB	SB / WB
AUTOS:								
MED. TRUCKS:								
HVY TRUCKS:								
BUSES:								
MOTORCYCLES:								

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER SOURCES: DIST. AIRCRAFT / RUSTLING LEAVES / DIST. BARKING DOGS / BIRDS / DIST. INDUSTRIAL
DIST. CHILDREN PLAYING / DIST. TRAFFIC / DIST. LANDSCAPING ACTIVITIES / OTHER:

N=SW

DESCRIPTION / SKETCH:
TERRAIN: HARD SOFT MIXED FLAT OTHER:
PHOTOS:
OTHER COMMENTS / SKETCH:



FIELD NOISE MEASUREMENT DATA

PROJECT: I-5 / EL TORO INTERCHANGE PROJ. # _____

SITE IDENTIFICATION: STOL. 06 OBSERVER(S): D HARDIN
ADDRESS: 24461 PERFIELD ST
START DATE / TIME: 12/3/24 END DATE / TIME: _____

METEROLOGICAL CONDITIONS:
TEMP: 64 °F HUMIDITY: _____ %R.H. WIND: **CALM LIGHT MODERATE VARIABLE**
WINDSPEED: 0-3 MPH DIR: **N NE E SE S SW W NW STEADY GUSTY**
SKY: **SUNNY CLEAR OVRCST PRTLY CLOUDY FOG RAIN OTHER:**

ACOUSTIC MEASUREMENTS:
INSTRUMENT: LDL,XT TYPE 1 2 SERIAL #: 4 05
CALIBRATOR: LD CAL200 SERIAL #: 2918
CALIBRATION CHECK: PRE-TEST 114.0 dBA SPL POST-TEST 113.97 dBA SPL WINDSCREEN ✓
SETTINGS: **A-WEIGHTED SLOW FAST FRONTAL RANDOM ANSI** OTHER: _____

REC #	START	END	L_{eq}	L_{max}	L_1	L_{10}	L_{25}	L_{50}	L_{90}	L_{99}	L_{min}
269	13:07	13:17	52.8	54.0	55.5	54.2	53.5	52.7	50.9	49.8	49.3
270	13:18	13:28	53.5	65.0	58.3	55.2	54.0	52.9	50.4	49.1	48.6

COMMENTS:

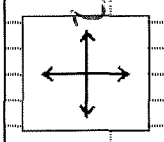
SOURCE INFO AND TRAFFIC COUNTS:
PRIMARY NOISE SOURCE: **TRAFFIC AIRCRAFT RAIL INDUSTRIAL AMBIENT OTHER:** _____
ROADWAY TYPE: _____
TRAFFIC COUNT DURATION: ____-MIN

	SPEED NB / EB	SPEED SB / WB	#2 COUNT NB / EB	#2 COUNT SB / WB	SPEED NB / EB	SPEED SB / WB
AUTOS:						
MED. TRUCKS:						
HVY TRUCKS:						
BUSES:						
MOTORCYCLES:						

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER SOURCES: **DIST. AIRCRAFT / RUSTLING LEAVES / DIST. BARKING DOGS / BIRDS / DIST. INDUSTRIAL**
DIST. CHILDREN PLAYING / DIST. TRAFFIC / DIST. LANDSCAPING ACTIVITIES / OTHER:

DESCRIPTION / SKETCH:
TERRAIN: **HARD SOFT MIXED FLAT OTHER:** _____
PHOTOS:
OTHER COMMENTS / SKETCH:



FIELD NOISE MEASUREMENT DATA

PROJECT: EL TORO I-5 IMP PROJ. # _____

SITE IDENTIFICATION: ST 3.01 OBSERVER(S): P. HARDER
ADDRESS: 24001 AVE 25 LA PAZ CALIFORNIA
START DATE / TIME: 12/18/24 END DATE / TIME: _____

METEROLOGICAL CONDITIONS:

TEMP: °F HUMIDITY: _____ %R.H. WIND: **CALM LIGHT MODERATE VARIABLE**
WINDSPEED: ____ MPH DIR: **N NE E SE S SW W NW STEADY GUSTY**
SKY: **SUNNY CLEAR OVRCST PRTLY CLOUDY FOG RAIN OTHER:**

ACOUSTIC MEASUREMENTS:

INSTRUMENT: LD LxT TYPE: **1** 2 SERIAL #: 4005
CALIBRATOR: CAL 200 SERIAL #: 8916
CALIBRATION CHECK: PRE-TEST 114.2 dBA SPL POST-TEST 113.9 dBA SPL WINDSCREEN ✓
SETTINGS: **A-WEIGHTED SLOW FAST FRONTAL RANDOM ANSI** OTHER: _____

REC #	START	END	L_{eq}	L_{max}	L_1	L_{10}	L_{25}	L_{50}	L_{90}	L_{99}	L_{min}
289	10:09	10:19	63.1	68.5	66.3	64.1	63.6	62.0	61.7	60.9	60.5
290	10:24	10:31	63.1	66.2	65.3	64.1	63.6	63.0	61.7	60.4	59.3

COMMENTS: SOME HOUSE THUMP INSIDE TEST

SOURCE INFO AND TRAFFIC COUNTS:

PRIMARY NOISE SOURCE: **TRAFFIC AIRCRAFT RAIL INDUSTRIAL AMBIENT** OTHER: _____
ROADWAY TYPE: _____
TRAFFIC COUNT DURATION: ____-MIN

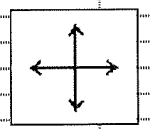
	SPEED				#2 COUNT		SPEED	
	NB / EB	**SB / WB**	**NB / EB**	**SB / WB**	**NB / EB**	**SB / WB**	**NB / EB**	**SB / WB**
AUTOS:								
MED. TRUCKS:								
HVY TRUCKS:								
BUSES:								
MOTORCYCLES:								

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER SOURCES: **DIST. AIRCRAFT / RUSTLING LEAVES / DIST. BARKING DOGS / BIRDS / DIST. INDUSTRIAL DIST. CHILDREN PLAYING / DIST. TRAFFIC / DIST. LANDSCAPING ACTIVITIES / OTHER:**

DESCRIPTION / SKETCH:

TERRAIN: **HARD SOFT MIXED FLAT OTHER:** _____
PHOTOS: _____
OTHER COMMENTS / SKETCH:



FIELD NOISE MEASUREMENT DATA

PROJECT: I-5 HILTON INT PROJ. #

SITE IDENTIFICATION: ST 22.02 OBSERVER(S): P. HANNIGAN
ADDRESS: 24126 AVE PACIFIC CANYON TOT
START DATE / TIME: 12/18/24 10:40 END DATE / TIME:

METEROLOGICAL CONDITIONS:
TEMP: °F HUMIDITY: %R.H. WIND: **CALM LIGHT MODERATE VARIABLE**
WINDSPEED: MPH DIR: **N NE E SE S SW W NW STEADY GUSTY**
SKY: **SUNNY CLEAR OVRCST PRTLY CLOUDY FOG RAIN OTHER:**

ACOUSTIC MEASUREMENTS:
INSTRUMENT: LD LxT TYPE: **1 2** SERIAL #: 4005
CALIBRATOR: CAL 200 SERIAL #: 2946
CALIBRATION CHECK: PRE-TEST 113.5 dBA SPL POST-TEST dBA SPL WINDSCREEN
SETTINGS: **A-WEIGHTED SLOW FAST FRONTAL RANDOM ANSI** OTHER:

REC #	START	END	L_{eq}	L_{max}	L_1	L_{10}	L_{25}	L_{50}	L_{90}	L_{99}	L_{min}
241	10:40	10:50	69.1	79.9	73.9	70.1	69.3	68.6	67.6	66.9	66.4
242	10:51	11:01	69.6	72.2	71.4	69.7	69.2	68.5	67.2	65.5	64.3
					72.1						

COMMENTS:

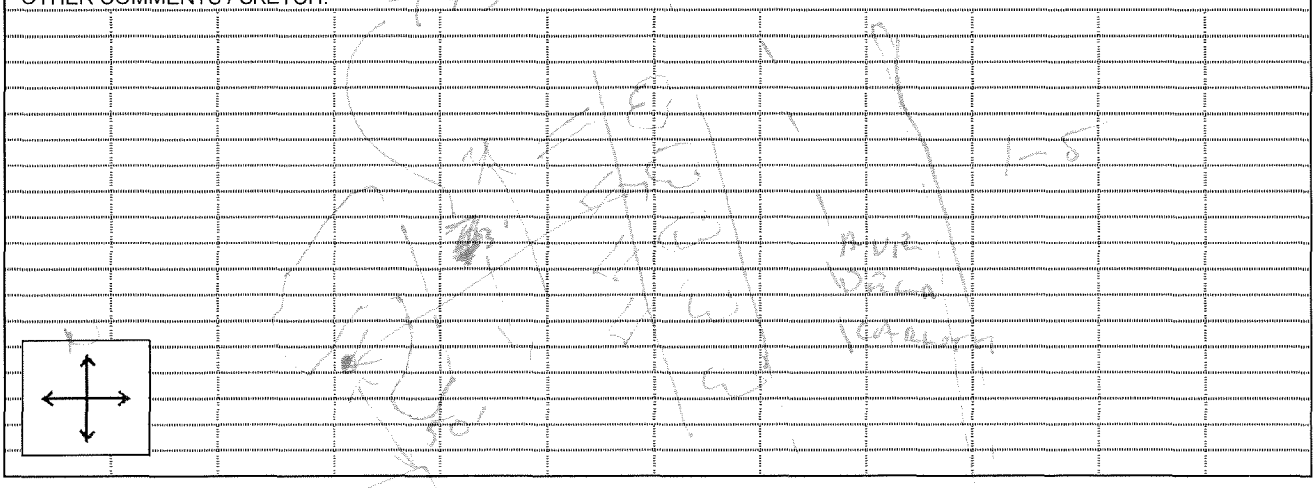
SOURCE INFO AND TRAFFIC COUNTS:
PRIMARY NOISE SOURCE: **TRAFFIC AIRCRAFT RAIL INDUSTRIAL AMBIENT** OTHER:
ROADWAY TYPE:
TRAFFIC COUNT DURATION: -MIN SPEED #2 COUNT SPEED

	NB / EB	SB / WB	NB / EB	SB / WB	NB / EB	SB / WB	NB / EB	SB / WB
AUTOS:								
MED. TRUCKS:								
HVY TRUCKS:								
BUSES:								
MOTORCYCLES:								

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER SOURCES: **DIST. AIRCRAFT / RUSTLING LEAVES / DIST. BARKING DOGS / BIRDS / DIST. INDUSTRIAL DIST. CHILDREN PLAYING / DIST. TRAFFIC / DIST. LANDSCAPING ACTIVITIES / OTHER:**

DESCRIPTION / SKETCH:
TERRAIN: **HARD SOFT MIXED FLAT OTHER:**
PHOTOS:
OTHER COMMENTS / SKETCH:



FIELD NOISE MEASUREMENT DATA

PROJECT: I-5/El Toro I.C. PROJ. #

SITE IDENTIFICATION: ST03.01 OBSERVER(S): JLH
ADDRESS: 23811 Bridger Rd (Next to Comic Quest)
START DATE / TIME: 12/5/24 END DATE / TIME: 12/5/24

METEROLOGICAL CONDITIONS:
TEMP: 63 °F HUMIDITY: 57 %R.H. WIND: (CALM) LIGHT MODERATE VARIABLE
WINDSPEED: 0-3 MPH DIR: N NE E SE S (SW) W NW STEADY GUSTY
SKY: SUNNY CLEAR (OVRCST) PRTLY CLOUDY FOG RAIN OTHER:

ACOUSTIC MEASUREMENTS:
INSTRUMENT: LD 831 TYPE: (1) 2 SERIAL #: 3786
CALIBRATOR: LD CAL200 SERIAL #: 6645
CALIBRATION CHECK: PRE-TEST 114.6 dBA SPL POST-TEST 113.90 dBA SPL WINDSCREEN ✓
SETTINGS: (A-WEIGHTED) (SLOW) FAST FRONTAL (RANDOM) (ANSI) OTHER:

REC #	START	END	L_{eq}	L_{max}	L_1	L_{10}	L_{25}	L_{50}	L_{90}	L_{99}	L_{min}	
S02	10:33A	10:43A	76.3	80.1	78.9	77.6	77.0	76.2	74.8	73.1	72.1	with ST.03.03
S03	10:48A	10:58A	76.1	80.6	79.6	77.7	76.9	75.8	74.1	72.6	71.6	
S04	11:29A	11:39A	75.7	81.9	79.8	77.1	76.3	75.4	73.9	72.7	72.2	with ST03.04
S05	11:44A	11:54A	76.5	80.6	79.1	77.9	77.2	76.3	74.6	73.5	72.7	

COMMENTS:

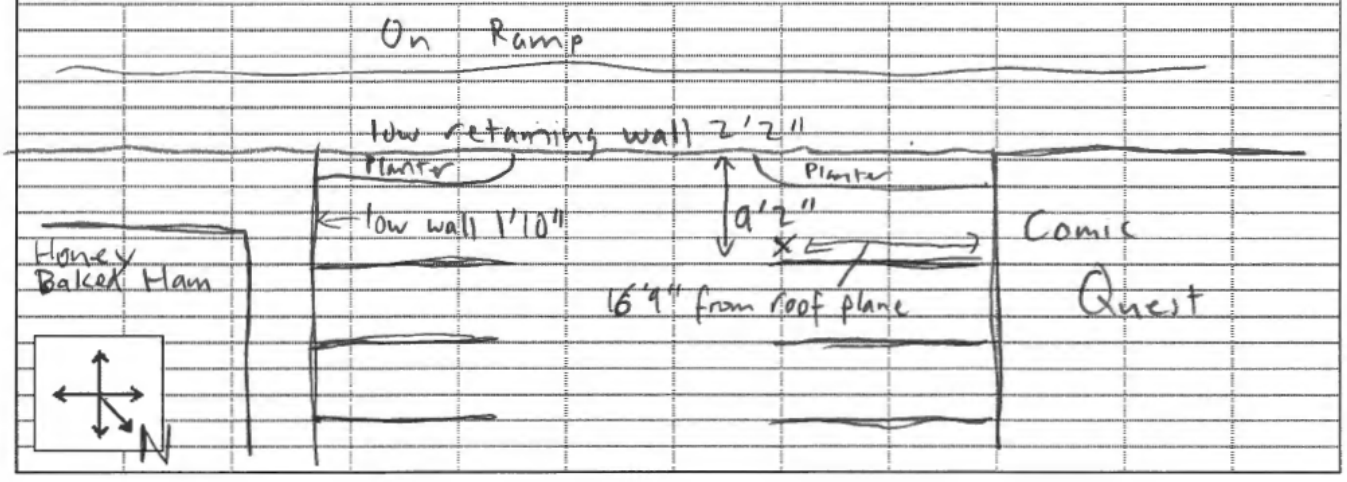
SOURCE INFO AND TRAFFIC COUNTS:
PRIMARY NOISE SOURCE: (TRAFFIC) AIRCRAFT RAIL INDUSTRIAL AMBIENT OTHER:
ROADWAY TYPE: I-5
TRAFFIC COUNT DURATION: ____-MIN

	#1 COUNT NB / EB	#1 COUNT SB / WB	#1 SPEED NB / EB	#1 SPEED SB / WB	#2 COUNT NB / EB	#2 COUNT SB / WB	#2 SPEED NB / EB	#2 SPEED SB / WB
AUTOS:								
MED. TRUCKS:								
HVY TRUCKS:								
BUSES:								
MOTORCYCLES:								

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER SOURCES: DIST. AIRCRAFT / RUSTLING LEAVES / DIST. BARKING DOGS / BIRDS / DIST. INDUSTRIAL
DIST. CHILDREN PLAYING / DIST. TRAFFIC / DIST. LANDSCAPING ACTIVITIES / OTHER:

DESCRIPTION / SKETCH:
TERRAIN: (HARD) SOFT MIXED FLAT OTHER:
PHOTOS:
OTHER COMMENTS / SKETCH:



FIELD NOISE MEASUREMENT DATA

PROJECT: I-5 / EL TORO INTERCHANGE PROJ. #

SITE IDENTIFICATION: ST03.02 OBSERVER(S): P. HARDIN
ADDRESS: LAKE FOREST PARK / PLAYGROUND
START DATE / TIME: 12/3/24 END DATE / TIME:

METEOROLOGICAL CONDITIONS:
TEMP: 60 °F HUMIDITY: %R.H. WIND: (CALM) LIGHT MODERATE VARIABLE
WINDSPEED: 0 MPH DIR: N NE E SE S SW W NW STEADY GUSTY
SKY: SUNNY CLEAR OVRCST (PRTLY CLOUDY) FOG RAIN OTHER:

ACOUSTIC MEASUREMENTS:
INSTRUMENT: LD L_XT TYPE: (1) 2 SERIAL #: 4005
CALIBRATOR: CAL 200 SERIAL #: 2016
CALIBRATION CHECK: PRE-TEST 113.9 dBA SPL POST-TEST 114.0 dBA SPL WINDSCREEN ✓
SETTINGS: (A-WEIGHTED) (SLOW) FAST FRONTAL ~~RANDOM~~ (ANSI) OTHER:

REC #	START	END	L_{eq}	L_{max}	L_1	L_{10}	L_{25}	L_{50}	L_{90}	L_{99}	L_{min}
273	15:13	15:23	66.0	69.4	67.7	66.9	66.3	66.0	65.4	64.9	64.9
274	15:27	15:34	66.2	68.8	67.7	66.8	66.5	66.1	65.4	64.9	64.5

COMMENTS:

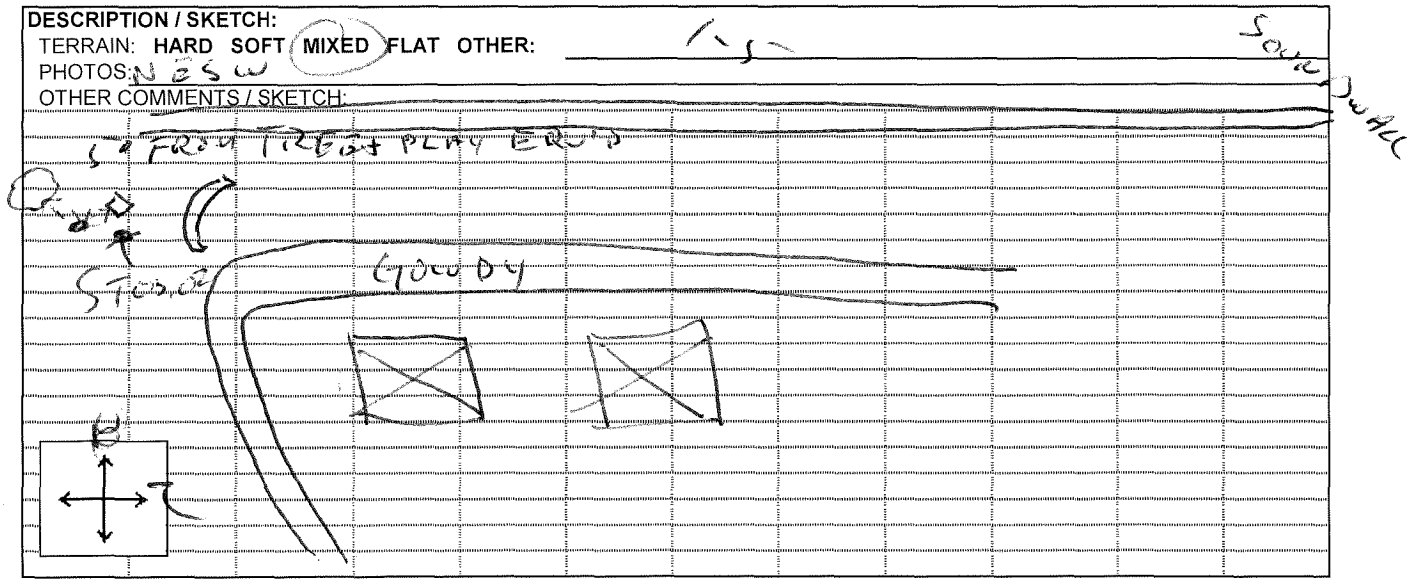
SOURCE INFO AND TRAFFIC COUNTS:
PRIMARY NOISE SOURCE: (TRAFFIC) AIRCRAFT RAIL INDUSTRIAL (AMBIENT) OTHER:
ROADWAY TYPE:
TRAFFIC COUNT DURATION: -MIN SPEED #2 COUNT SPEED

	NB / EB	SB / WB	NB / EB	SB / WB	NB / EB	SB / WB	NB / EB	SB / WB
AUTOS:								
MED. TRUCKS:								
HVY TRUCKS:								
BUSES:								
MOTORCYCLES:								

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER SOURCES: **DIST. AIRCRAFT / RUSTLING LEAVES / DIST. BARKING DOGS / BIRDS / DIST. INDUSTRIAL**
DIST. CHILDREN PLAYING / DIST. TRAFFIC / DIST. LANDSCAPING ACTIVITIES / OTHER:

DESCRIPTION / SKETCH:
TERRAIN: **HARD SOFT (MIXED) FLAT OTHER:**
PHOTOS: N E S W
OTHER COMMENTS / SKETCH:



FIELD NOISE MEASUREMENT DATA

PROJECT: I-5 EL TORO PROJ. #

SITE IDENTIFICATION: ST 03.03 OBSERVER(S): P. HARRIS
ADDRESS: 23979 GOOD AVE
START DATE / TIME: 12/5/24 END DATE / TIME:

METEROLOGICAL CONDITIONS:
TEMP: °F HUMIDITY: %R.H. WIND: **CALM LIGHT MODERATE VARIABLE**
WINDSPEED: MPH DIR: **N NE E SE S SW W NW STEADY GUSTY**
SKY: **SUNNY CLEAR OVRCST PRTLY CLOUDY FOG RAIN OTHER:**

ACOUSTIC MEASUREMENTS:
INSTRUMENT: LD LXT TYPE: **1 2** SERIAL #: 4109
CALIBRATOR: LXT 200 SERIAL #: 2916
CALIBRATION CHECK: PRE-TEST 114.0 dBA SPL POST-TEST 113.74 dBA SPL WINDSCREEN
SETTINGS: **A-WEIGHTED SLOW FAST FRONTAL RANDOM ANSI** OTHER:

REC #	START	END	L_{eq}	L_{max}	L_1	L_{10}	L_{25}	L_{50}	L_{90}	L_{99}	L_{min}
225	10:32	10:43	59.1	57.7	57.5	56.0	55.5	55.0	53.9	53.4	53.0
226	10:48	10:58	52.5	64.4	55.0	53.7	53.2	52.1	51.3	50.6	50.2

COMMENTS:

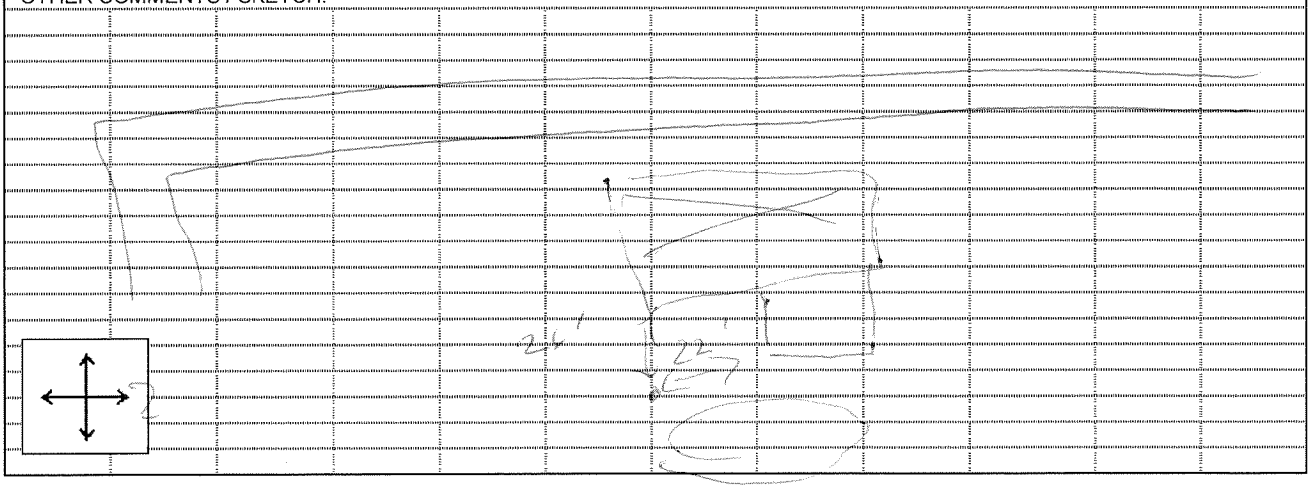
SOURCE INFO AND TRAFFIC COUNTS:
PRIMARY NOISE SOURCE: **TRAFFIC AIRCRAFT RAIL INDUSTRIAL AMBIENT OTHER:**
ROADWAY TYPE:
TRAFFIC COUNT DURATION: -MIN

	#1 COUNT NB / EB	#1 COUNT SB / WB	SPEED NB / EB	SPEED SB / WB	#2 COUNT NB / EB	#2 COUNT SB / WB	SPEED NB / EB	SPEED SB / WB
AUTOS:								
MED. TRUCKS:								
HVY TRUCKS:								
BUSES:								
MOTORCYCLES:								

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER SOURCES: **DIST. AIRCRAFT / RUSTLING LEAVES / DIST. BARKING DOGS / BIRDS / DIST. INDUSTRIAL DIST. CHILDREN PLAYING / DIST. TRAFFIC / DIST. LANDSCAPING ACTIVITIES / OTHER:**

DESCRIPTION / SKETCH:
TERRAIN: **HARD SOFT MIXED FLAT OTHER:**
PHOTOS:
OTHER COMMENTS / SKETCH:



FIELD NOISE MEASUREMENT DATA

PROJECT: I-5 EL TORO INTERCHANGE PROJ. #

SITE IDENTIFICATION: ST 03.04 OBSERVER(S): P. HARDIE
ADDRESS: 23611 DURYEA DRIVE
START DATE / TIME: 12/5/024 END DATE / TIME:

METEROLOGICAL CONDITIONS:
TEMP: °F HUMIDITY: %R.H. WIND: (CALM) LIGHT MODERATE VARIABLE
WINDSPEED: 5-2 MPH DIR: N NE E SE S SW W NW STEADY GUSTY
SKY: SUNNY CLEAR OVRCST PRTLY CLOUDY (FOG) RAIN OTHER:

ACOUSTIC MEASUREMENTS:
INSTRUMENT: LD LxT TYPE: (1) 2 SERIAL #: 4005
CALIBRATOR: LD CAL 200 SERIAL #: 2416
CALIBRATION CHECK: PRE-TEST 113.74 dBA SPL POST-TEST 114.0 dBA SPL WINDSCREEN
SETTINGS: (A-WEIGHTED) (SLOW) FAST FRONTAL (RANDOM) (ANSI) OTHER:

REC #	START	END	L_{eq}	L_{max}	L_1	L_{10}	L_{25}	L_{50}	L_{90}	L_{99}	L_{min}
027	11:29	11:39	64.1	67.3	66.5	65.4	64.3	63.8	62.1	62.6	62.3
028	11:41	11:51	64.4	67.1	65.7	65.2	64.9	64.5	63.3	62.4	62.2

COMMENTS:

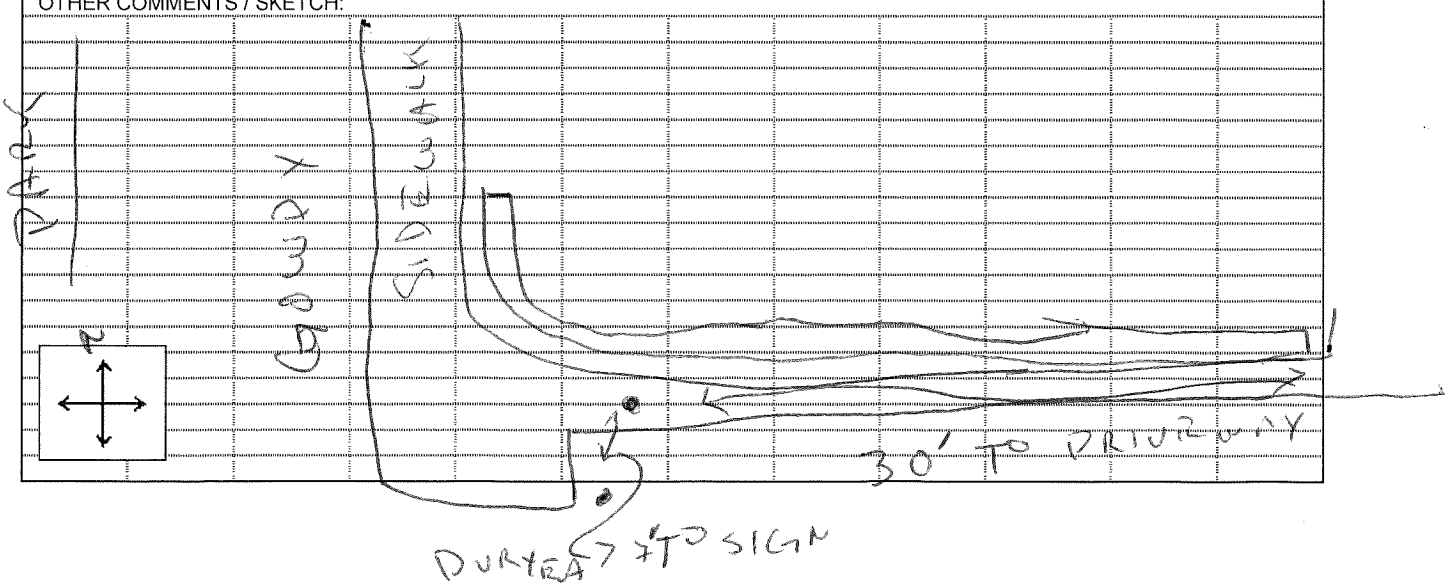
SOURCE INFO AND TRAFFIC COUNTS:
PRIMARY NOISE SOURCE: (TRAFFIC) AIRCRAFT RAIL INDUSTRIAL (AMBIENT) OTHER:
ROADWAY TYPE:
TRAFFIC COUNT DURATION: ____-MIN SPEED #2 COUNT SPEED

	NB / EB	SB / WB	NB / EB	SB / WB	NB / EB	SB / WB	NB / EB	SB / WB
AUTOS:								
MED. TRUCKS:								
HVY TRUCKS:								
BUSES:								
MOTORCYCLES:								

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER SOURCES: **DIST. AIRCRAFT / RUSTLING LEAVES / DIST. BARKING DOGS / BIRDS / DIST. INDUSTRIAL DIST. CHILDREN PLAYING / DIST. TRAFFIC / DIST. LANDSCAPING ACTIVITIES / OTHER:**

DESCRIPTION / SKETCH:
TERRAIN: (HARD) SOFT MIXED FLAT OTHER:
PHOTOS:
OTHER COMMENTS / SKETCH:



15'4"
7'7"

FIELD NOISE MEASUREMENT DATA

PROJECT: I-5/El Toro I.C. PROJ. #

SITE IDENTIFICATION: ST03.05 OBSERVER(S): JLH
ADDRESS: 23952 Swan Drive
START DATE / TIME: 12/3/24 END DATE / TIME: 12/3/24

METEOROLOGICAL CONDITIONS:
TEMP: 66 °F HUMIDITY: 59 %R.H. WIND: (CALM) LIGHT MODERATE VARIABLE
WINDSPEED: 0-4 MPH DIR: N NE E SE S (SW) W NW STEADY GUSTY
SKY: (SUNNY) CLEAR OVRCST (PRTLY CLOUDY) FOG RAIN OTHER:

ACOUSTIC MEASUREMENTS:
INSTRUMENT: LD 831 TYPE: (1) 2 SERIAL #: 3786
CALIBRATOR: LD CAL200 SERIAL #: 6645
CALIBRATION CHECK: PRE-TEST 114.0 dBA SPL POST-TEST 113.95 dBA SPL WINDSCREEN ✓
SETTINGS: (A-WEIGHTED) (SLOW) FAST FRONTAL (RANDOM) (ANSI) OTHER:

REC #	START	END	L_{eq}	L_{max}	L_1	L_{10}	L_{25}	L_{50}	L_{90}	L_{99}	L_{min}
500	2:32PM	2:42PM	66.8	70.6	68.0	67.4	67.1	66.8	66.1	65.5	65.1
501	2:44PM	2:54PM	66.5	68.0	67.5	67.0	66.8	66.4	65.8	64.9	64.2

COMMENTS: Ground and all surrounding surfaces are hard / concrete / brick / stucco / glass. See photos). House and rear wall <11' away due to narrow yard. Reflection / reverberation may increase measured noise.

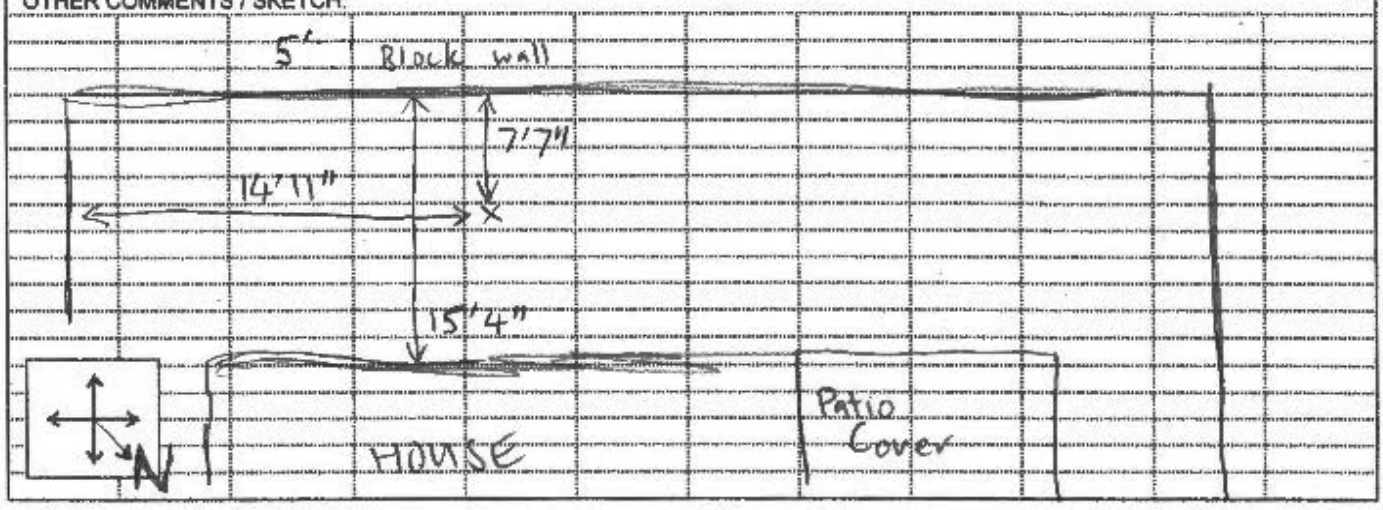
SOURCE INFO AND TRAFFIC COUNTS:
PRIMARY NOISE SOURCE: (TRAFFIC) AIRCRAFT RAIL INDUSTRIAL AMBIENT OTHER:
ROADWAY TYPE: I-5
TRAFFIC COUNT DURATION: ____-MIN

	COUNT NB / EB	COUNT SB / WB	SPEED NB / EB	SPEED SB / WB	#2 COUNT NB / EB	#2 COUNT SB / WB	SPEED NB / EB	SPEED SB / WB
AUTOS:								
MED. TRUCKS:								
HVY TRUCKS:								
BUSES:								
MOTORCYCLES:								

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER SOURCES: DIST. AIRCRAFT / RUSTLING LEAVES / DIST. BARKING DOGS / BIRDS / DIST. INDUSTRIAL
DIST. CHILDREN PLAYING / DIST. TRAFFIC / DIST. LANDSCAPING ACTIVITIES / OTHER:

DESCRIPTION / SKETCH:
TERRAIN: HARD SOFT (MIXED) FLAT OTHER:
PHOTOS: ✓
OTHER COMMENTS / SKETCH:



FIELD NOISE MEASUREMENT DATA

PROJECT: I-5 EL TORO INTERCHANGE PROJ. #

SITE IDENTIFICATION: ST03.06 OBSERVER(S): P. HARDIE
ADDRESS: CITY OF LAKE FOREST PARK
START DATE / TIME: 12/3/24 END DATE / TIME:

METEROLOGICAL CONDITIONS:
TEMP: °F HUMIDITY: %R.H. WIND: **CALM LIGHT MODERATE VARIABLE**
WINDSPEED: 6-9 MPH DIR: **N NE E SE S SW W NW** **STEADY GUSTY**
SKY: **SUNNY CLEAR OVRCST PRTLY CLOUDY FOG RAIN OTHER:**

ACOUSTIC MEASUREMENTS:
INSTRUMENT: LD LxT TYPE: **1 2** SERIAL #: 4005
CALIBRATOR: CAL 200 SERIAL #: 2916
CALIBRATION CHECK: ~~PRE-TEST~~ 113.9 dBA SPL POST-TEST 113.9 dBA SPL WINDSCREEN ✓
SETTINGS: **A-WEIGHTED SLOW FAST FRONTAL RANDOM ANSI** OTHER:

REC #	START	END	L_{eq}	L_{max}	L_1	L_{10}	L_{25}	L_{50}	L_{90}	L_{99}	L_{min}
271	14:32	14:42	68.2	70.4	70.0	69.0	68.6	68.1	67.3	66.9	66.1
272	14:44	14:54	67.5	69.2	68.8	68.2	67.8	67.4	66.9	66.5	65.9

COMMENTS:

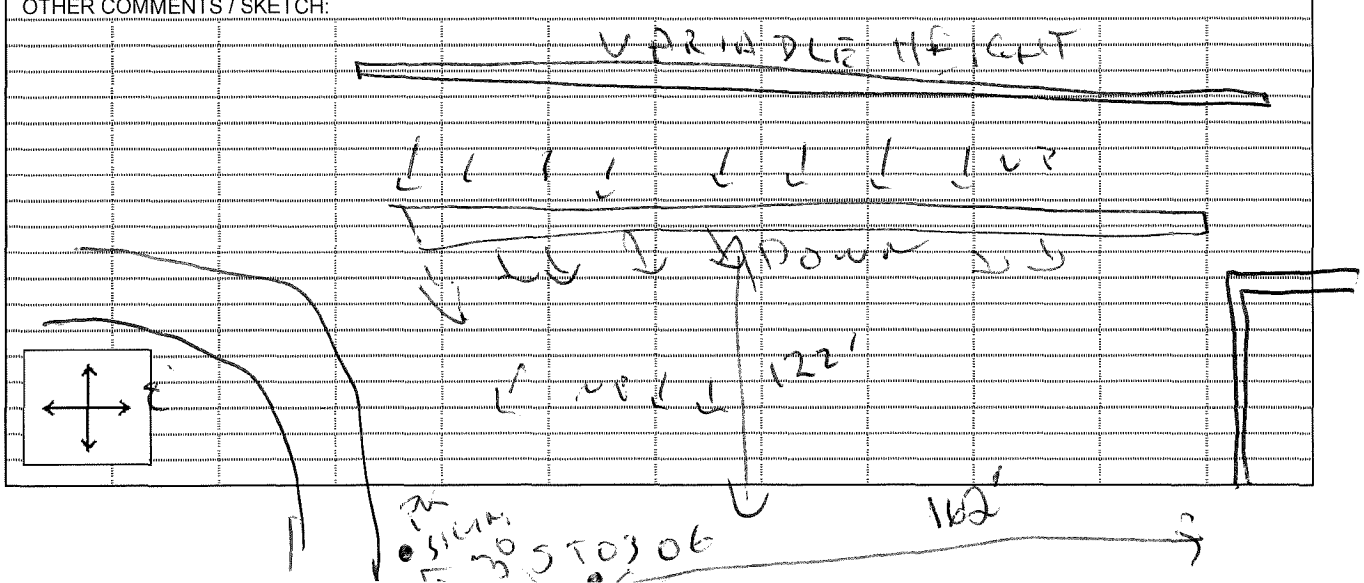
SOURCE INFO AND TRAFFIC COUNTS:
PRIMARY NOISE SOURCE: **TRAFFIC AIRCRAFT RAIL INDUSTRIAL AMBIENT OTHER:**
ROADWAY TYPE:
TRAFFIC COUNT DURATION: ____-MIN

	SPEED NB / EB	SPEED SB / WB	#2 COUNT NB / EB	#2 COUNT SB / WB	SPEED NB / EB	SPEED SB / WB
AUTOS:						
MED. TRUCKS:						
HVY TRUCKS:						
BUSES:						
MOTORCYCLES:						

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER SOURCES: **DIST. AIRCRAFT / RUSTLING LEAVES / DIST. BARKING DOGS / BIRDS / DIST. INDUSTRIAL**
DIST. CHILDREN PLAYING / DIST. TRAFFIC / DIST. LANDSCAPING ACTIVITIES / OTHER:

DESCRIPTION / SKETCH:
TERRAIN: **HARD SOFT MIXED FLAT OTHER:**
PHOTOS:
OTHER COMMENTS / SKETCH:



FIELD NOISE MEASUREMENT DATA

PROJECT: I-5/ EL TORO PROJ. #

SITE IDENTIFICATION: STO4.01 OBSERVER(S): P HARDIE
ADDRESS: 21 RODA GRANDA
START DATE / TIME: 12/5/24 END DATE / TIME:

METEROLOGICAL CONDITIONS:
TEMP: 62 °F HUMIDITY: 82 %R.H. WIND: (CALM) LIGHT MODERATE VARIABLE
WINDSPEED: ___ MPH DIR: N NE E SE S SW W NW STEADY GUSTY
SKY: (SUNNY) CLEAR OVRCST PRTLY CLOUDY FOG RAIN OTHER:

ACOUSTIC MEASUREMENTS:
INSTRUMENT: LD LXT TYPE: (1) 2 SERIAL #: 4005
CALIBRATOR: CAL 200 SERIAL #: 2916
CALIBRATION CHECK: PRE-TEST 114.0 dBA SPL POST-TEST 113.9 dBA SPL WINDSCREEN (Y)
SETTINGS: (A-WEIGHTED) (SLOW) FAST FRONTAL (RANDOM) (ANSI) OTHER:

REC #	START	END	L_{eq}	L_{max}	L_1	L_{10}	L_{25}	L_{50}	L_{90}	L_{99}	L_{min}
281	13:01	13:11	64.8	71.2	67.0	65.8	65.1	64.6	63.7	63.0	62.6
	~~13:17~~										
284	13:20	13:30	64.3	67.7	66.2	65.2	64.7	64.2	63.1	62.1	61.9

COMMENTS:

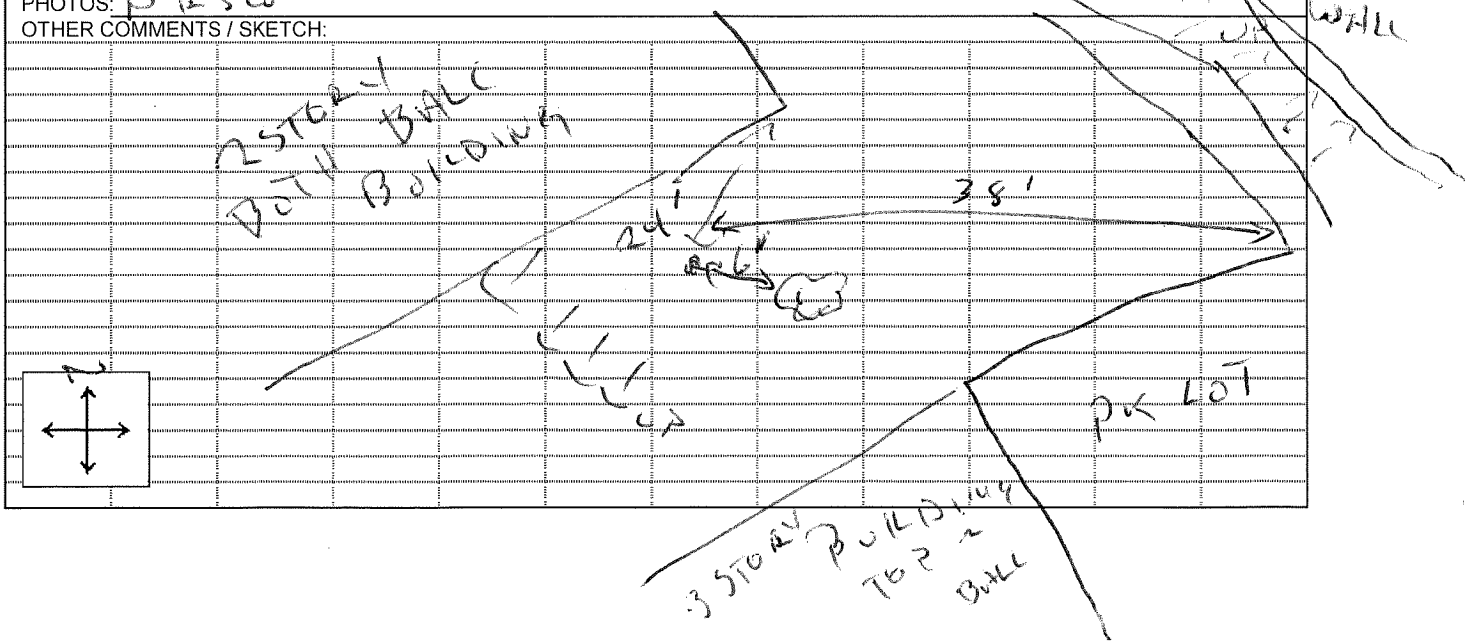
SOURCE INFO AND TRAFFIC COUNTS:
PRIMARY NOISE SOURCE: (TRAFFIC) AIRCRAFT RAIL INDUSTRIAL (AMBIENT) OTHER:
ROADWAY TYPE:
TRAFFIC COUNT DURATION: ____-MIN SPEED #2 COUNT SPEED

	NB / EB	SB / WB	NB / EB	SB / WB	NB / EB	SB / WB	NB / EB	SB / WB
AUTOS:								
MED. TRUCKS:								
HVY TRUCKS:								
BUSES:								
MOTORCYCLES:								

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER SOURCES: DIST. AIRCRAFT / RUSTLING LEAVES / DIST. BARKING DOGS / BIRDS / DIST. INDUSTRIAL
DIST. CHILDREN PLAYING / DIST. TRAFFIC / DIST. LANDSCAPING ACTIVITIES / OTHER:

DESCRIPTION / SKETCH:
TERRAIN: HARD SOFT (MIXED) FLAT OTHER:
PHOTOS: N E S W
OTHER COMMENTS / SKETCH:



FIELD NOISE MEASUREMENT DATA

PROJECT: I-5 EL TORO IN THE CANYON PROJ. #

SITE IDENTIFICATION: ST04.02 OBSERVER(S): P. HARDIE
ADDRESS: 215 VIA PUERTA
START DATE / TIME: 12/5/24 END DATE / TIME:

METEROLOGICAL CONDITIONS:
TEMP: 57 °F HUMIDITY: %R.H. WIND: CALM LIGHT MODERATE VARIABLE
WINDSPEED: MPH DIR: N NE E SE S SW W NW STEADY GUSTY
SKY: SUNNY CLEAR OVRCST PRTLY CLOUDY FOG RAIN OTHER:

ACOUSTIC MEASUREMENTS:
INSTRUMENT: LD LxT TYPE: 1 2 SERIAL #: 4005
CALIBRATOR: CAL 200 SERIAL #: 2916
CALIBRATION CHECK: PRE-TEST 113.98 dBA SPL POST-TEST dBA SPL WINDSCREEN
SETTINGS: A-WEIGHTED SLOW FAST FRONTAL RANDOM ANSI OTHER:

REC #	START	END	L_{eq}	L_{max}	L_1	L_{10}	L_{25}	L_{50}	L_{90}	L_{99}	L_{min}
0487	14:39	14:49	66.4	69.7	68.0	67.1	66.8	66.3	65.4	65.0	64.6
288	14:51	15:01	65.3	71.4	68.6	66.9	66.1	65.2	62.9	62.2	61.6											

COMMENTS:

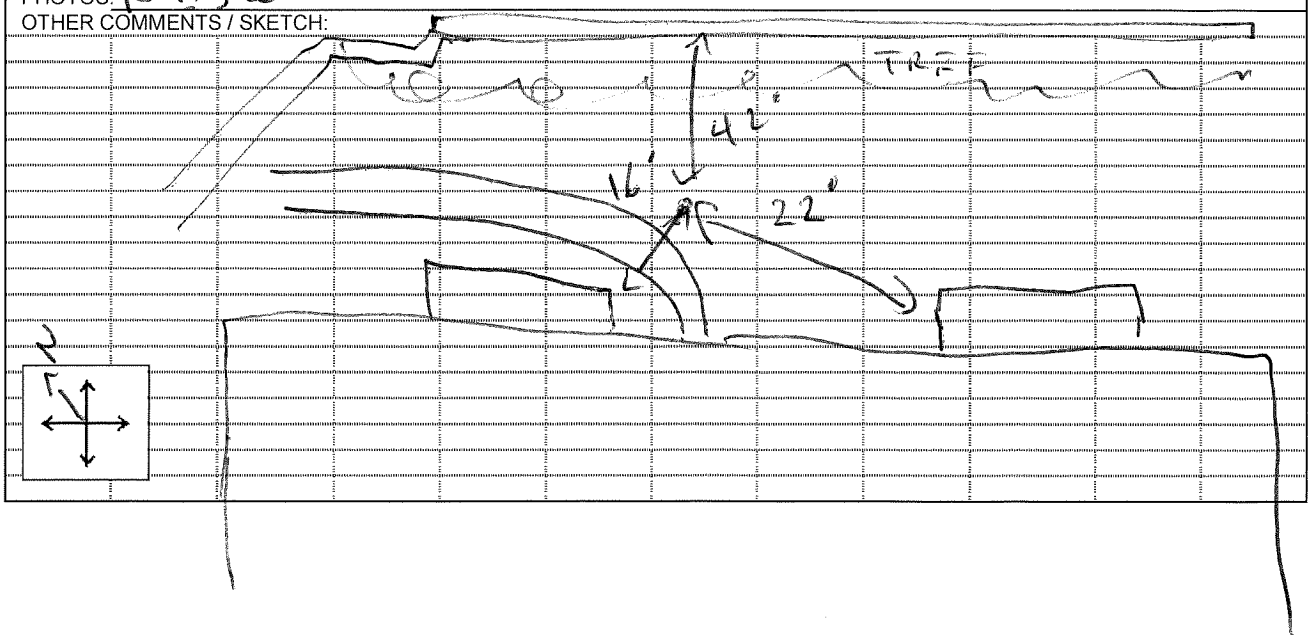
SOURCE INFO AND TRAFFIC COUNTS:
PRIMARY NOISE SOURCE: TRAFFIC AIRCRAFT RAIL INDUSTRIAL AMBIENT OTHER:
ROADWAY TYPE:
TRAFFIC COUNT DURATION: -MIN SPEED #2 COUNT SPEED

	NB / EB	SB / WB	NB / EB	SB / WB	NB / EB	SB / WB	NB / EB	SB / WB
AUTOS:								
MED. TRUCKS:								
HVY TRUCKS:								
BUSES:								
MOTORCYCLES:								

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER SOURCES: DIST. AIRCRAFT / RUSTLING LEAVES / DIST. BARKING DOGS / BIRDS / DIST. INDUSTRIAL
DIST. CHILDREN PLAYING / DIST. TRAFFIC / DIST. LANDSCAPING ACTIVITIES / OTHER:

DESCRIPTION / SKETCH:
TERRAIN: HARD SOFT MIXED FLAT OTHER:
PHOTOS: N E S W
OTHER COMMENTS / SKETCH:



FIELD NOISE MEASUREMENT DATA

PROJECT: I-5 EL TORO INTERCHANGE PROJ. #

SITE IDENTIFICATION: ST04.03 OBSERVER(S): P. HARDISE
ADDRESS: 2151 ROAD 7 92 AND 07
START DATE / TIME: 12/05/24 END DATE / TIME:

METEROLOGICAL CONDITIONS:
TEMP: 62 °F HUMIDITY: %R.H. WIND: CALM LIGHT MODERATE VARIABLE
WINDSPEED: 0 MPH DIR: N NE E SE S SW W NW STEADY GUSTY
SKY: SUNNY CLEAR OVRCST PRTLY CLOUDY FOG RAIN OTHER:

ACOUSTIC MEASUREMENTS:
INSTRUMENT: LD LxT TYPE: 0 2 SERIAL #: 4005
CALIBRATOR: CAL 200 SERIAL #: 8916
CALIBRATION CHECK: PRE-TEST 114.0 dBA SPL POST-TEST 114.1 dBA SPL WINDSCREEN
SETTINGS: A-WEIGHTED SLOW FAST FRONTAL RANDOM ANSI OTHER:

REC #	START	END	L_{eq}	L_{max}	L_1	L_{10}	L_{25}	L_{50}	L_{90}	L_{99}	L_{min}
279	1130	1240	55.9	62.2	59.7	58.1	57.1	55.3	53.0	52.2	51.7
280	12:40	12:53	55.5	63.5	60.2	58.4	56.4	54.3	51.8	51.0	50.7

COMMENTS:

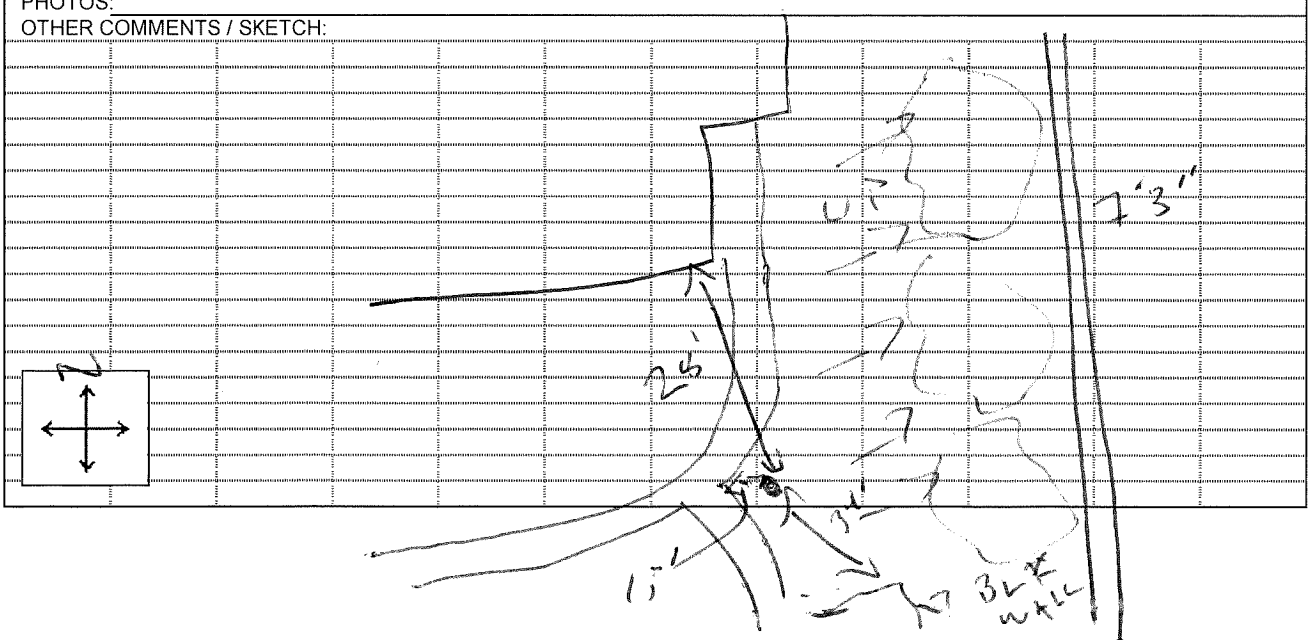
SOURCE INFO AND TRAFFIC COUNTS:
PRIMARY NOISE SOURCE: TRAFFIC AIRCRAFT RAIL INDUSTRIAL AMBIENT OTHER:
ROADWAY TYPE:
TRAFFIC COUNT DURATION: -MIN

	#1 COUNT NB / EB	#1 COUNT SB / WB	#1 SPEED NB / EB	#1 SPEED SB / WB	#2 COUNT NB / EB	#2 COUNT SB / WB	#2 SPEED NB / EB	#2 SPEED SB / WB
AUTOS:								
MED. TRUCKS:								
HVY TRUCKS:								
BUSES:								
MOTORCYCLES:								

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER SOURCES: DIST. AIRCRAFT / RUSTLING LEAVES / DIST. BARKING DOGS / BIRDS / DIST. INDUSTRIAL
DIST. CHILDREN PLAYING / DIST. TRAFFIC / DIST. LANDSCAPING ACTIVITIES / OTHER:

DESCRIPTION / SKETCH:
TERRAIN: HARD SOFT MIXED FLAT OTHER:
PHOTOS:
OTHER COMMENTS / SKETCH:



FIELD NOISE MEASUREMENT DATA

PROJECT: I-5 / El Toro J.C. PROJ. #

SITE IDENTIFICATION: ST04.04 OBSERVER(S): JLH
ADDRESS: 2126 Via Puerta
START DATE / TIME: 12/5/24 END DATE / TIME: 12/5/24

METEROLOGICAL CONDITIONS:
TEMP: 67 °F HUMIDITY: 56 %R.H. WIND: (CALM) LIGHT MODERATE VARIABLE
WINDSPEED: 0-4 MPH DIR: N NE E SE S SW (W) NW STEADY GUSTY
SKY: (SUNNY) (CLEAR) OVRCST PRTLY CLOUDY FOG RAIN OTHER:

ACOUSTIC MEASUREMENTS:
INSTRUMENT: LD 831 TYPE: (1) 2 SERIAL #: 3786
CALIBRATOR: LD CAL 200 SERIAL #: 6645
CALIBRATION CHECK: PRE-TEST 114.0 dBA SPL POST-TEST 114.04 dBA SPL WINDSCREEN ✓
SETTINGS: (A-WEIGHTED) (SLOW) FAST FRONTAL (RANDOM) (ANSI) OTHER:

REC #	START	END	L_{eq}	L_{max}	L_1	L_{10}	L_{25}	L_{50}	L_{90}	L_{99}	L_{min}
512	2:39pm	2:49pm	60.0	63.4	62.1	60.9	60.4	59.9	59.1	58.5	58.1
513	2:51pm	3:01pm	58.8	62.5	61.7	60.1	59.7	58.9	56.6	55.6	55.2	

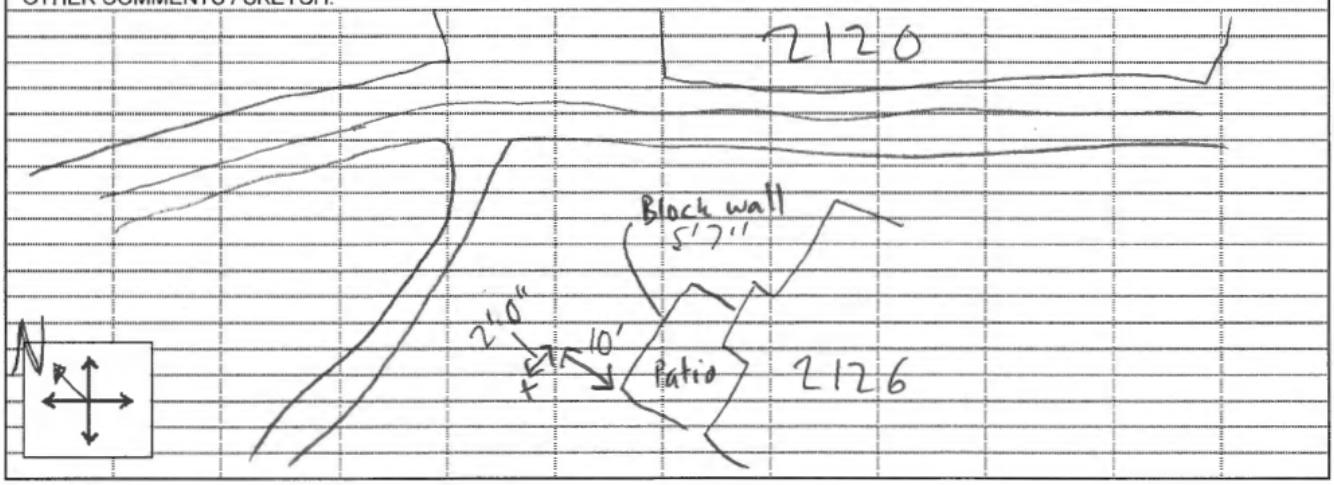
COMMENTS:

SOURCE INFO AND TRAFFIC COUNTS:
PRIMARY NOISE SOURCE: (TRAFFIC) AIRCRAFT RAIL INDUSTRIAL AMBIENT OTHER:
ROADWAY TYPE: I-5
TRAFFIC COUNT DURATION: ___-MIN

	SPEED NB / EB	SPEED SB / WB	#2 COUNT NB / EB	#2 COUNT SB / WB	SPEED NB / EB	SPEED SB / WB
AUTOS:						
MED. TRUCKS:						
HVY TRUCKS:						
BUSES:						
MOTORCYCLES:						

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER
OTHER SOURCES: DIST. AIRCRAFT / RUSTLING LEAVES / DIST. BARKING DOGS / (BIRDS) / DIST. INDUSTRIAL
DIST. CHILDREN PLAYING / DIST. TRAFFIC / DIST. LANDSCAPING ACTIVITIES / OTHER:

DESCRIPTION / SKETCH:
TERRAIN: HARD (SOFT) (MIXED) FLAT OTHER:
PHOTOS: ✓
OTHER COMMENTS / SKETCH:



FIELD NOISE MEASUREMENT DATA

PROJECT: I-5 EL TORO (N) PROJ. #

SITE IDENTIFICATION: ST04.05 OBSERVER(S): D. HARRIS
ADDRESS: 2231 VIA PUERTA
START DATE / TIME: 12/5/ 14 END DATE / TIME:

METEROLOGICAL CONDITIONS:
TEMP: 58 °F HUMIDITY: %R.H. WIND: **CALM LIGHT MODERATE VARIABLE**
WINDSPEED: MPH DIR: **N NE E SE S SW W NW STEADY GUSTY**
SKY: **SUNNY CLEAR OVRCST PRTLY CLOUDY FOG RAIN** OTHER:

ACOUSTIC MEASUREMENTS:
INSTRUMENT: LD LxT TYPE: **1 2** SERIAL #: 4005
CALIBRATOR: CAL 200 SERIAL #: 2916
CALIBRATION CHECK: PRE-TEST 113.78 dBA SPL POST-TEST 113.98 dBA SPL WINDSCREEN ✓
SETTINGS: **A-WEIGHTED SLOW FAST FRONTAL RANDOM ANSI** OTHER:

REC #	START	END	L_{eq}	L_{max}	L_1	L_{10}	L_{25}	L_{50}	L_{90}	L_{99}	L_{min}
285	14:09	14:11	63.4	66.3	65.2	64.5	64.0	63.3	62.3	61.6	61.0
286	14:12	14:22	63.3	65.4	64.7	64.0	63.7	63.3	62.5	62.1	61.5

COMMENTS:

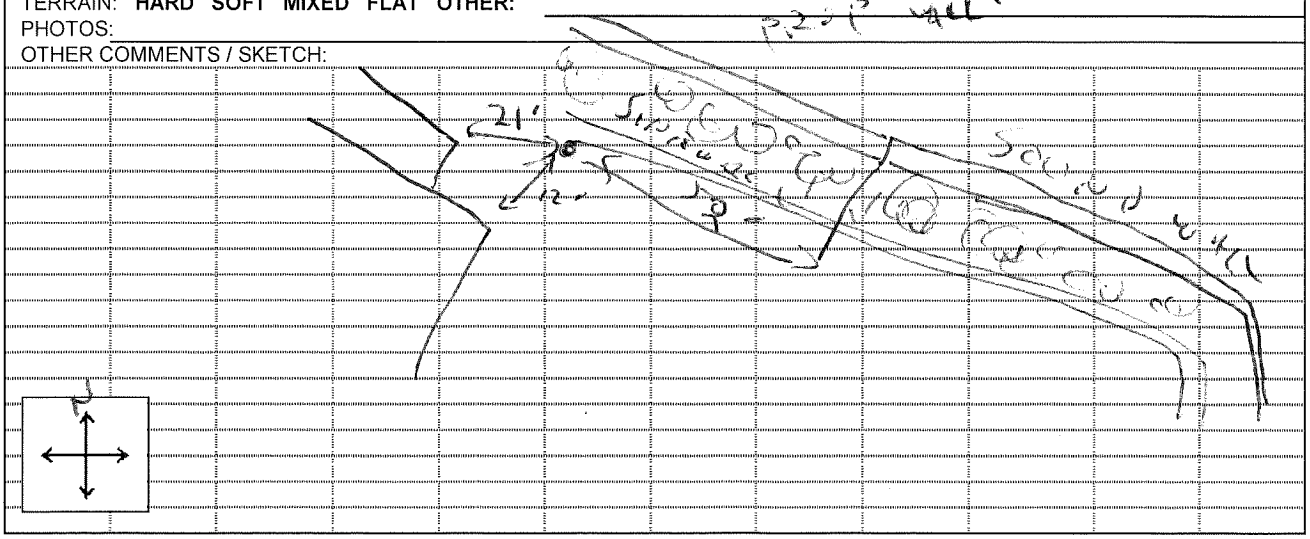
SOURCE INFO AND TRAFFIC COUNTS:
PRIMARY NOISE SOURCE: **TRAFFIC AIRCRAFT RAIL INDUSTRIAL AMBIENT OTHER:**
ROADWAY TYPE:

TRAFFIC COUNT DURATION: ___-MIN	SPEED				#2 COUNT		SPEED	
	NB / EB	**SB / WB**	**NB / EB**	**SB / WB**	**NB / EB**	**SB / WB**	**NB / EB**	**SB / WB**
AUTOS:								
MED. TRUCKS:								
HVY TRUCKS:								
BUSES:								
MOTORCYCLES:								

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER

OTHER SOURCES: **DIST. AIRCRAFT / RUSTLING LEAVES / DIST. BARKING DOGS / BIRDS / DIST. INDUSTRIAL DIST. CHILDREN PLAYING / DIST. TRAFFIC / DIST. LANDSCAPING ACTIVITIES / OTHER:**

DESCRIPTION / SKETCH:
TERRAIN: **HARD SOFT MIXED FLAT OTHER:**
PHOTOS:
OTHER COMMENTS / SKETCH:



FIELD NOISE MEASUREMENT DATA

PROJECT: I-5/El Toro I.C PROJ. #

SITE IDENTIFICATION: ST04.06 OBSERVER(S): JLH
ADDRESS: 2233A Via Puerta
START DATE / TIME: 12/5/24 END DATE / TIME: 12/5/24

METEROLOGICAL CONDITIONS:
TEMP: 68 °F HUMIDITY: 55 %R.H. WIND: (CALM) LIGHT MODERATE VARIABLE
WINDSPEED: 0-4 MPH DIR: N NE E SE S SW (W) NW STEADY GUSTY
SKY: (SUNNY) CLEAR OVRCST PRTLY CLOUDY FOG RAIN OTHER:

ACOUSTIC MEASUREMENTS:
INSTRUMENT: LD 831 TYPE: (1) 2 SERIAL #: 3786
CALIBRATOR: LD CAL 200 SERIAL #: 6645
CALIBRATION CHECK: PRE-TEST 114.0 dBA SPL POST-TEST 113.92 dBA SPL WINDSCREEN ✓
SETTINGS: (A-WEIGHTED) (SLOW) FAST FRONTAL (RANDOM) (ANSI) OTHER:

REC #	START	END	L_{eq}	L_{max}	L_1	L_{10}	L_{25}	L_{50}	L_{90}	L_{99}	L_{min}
510	2:01PM	2:11PM	71.0	73.0	72.5	71.9	71.5	70.9	70.2	69.4	69.0
511	2:11PM	2:22PM	71.1	74.2	72.4	71.8	71.5	71.1	70.3	69.8	69.5

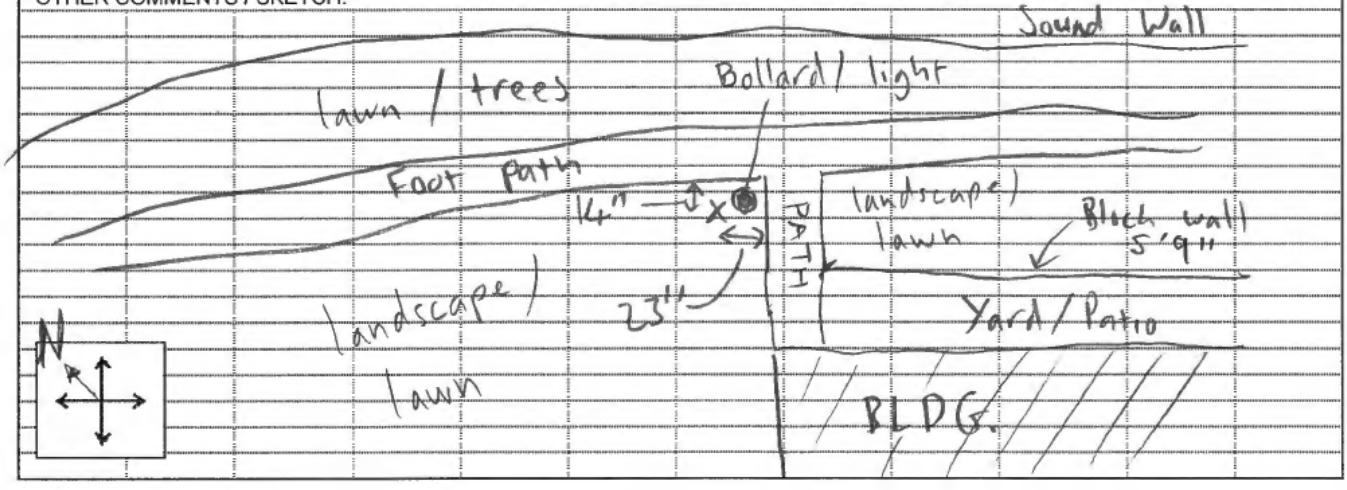
COMMENTS:
Wall = 8" blocks x 32 + cap

SOURCE INFO AND TRAFFIC COUNTS:
PRIMARY NOISE SOURCE: (TRAFFIC) AIRCRAFT RAIL INDUSTRIAL AMBIENT OTHER:
ROADWAY TYPE:
TRAFFIC COUNT DURATION: ____-MIN

	SPEED NB / EB	SPEED SB / WB	#2 COUNT NB / EB	#2 COUNT SB / WB	SPEED NB / EB	SPEED SB / WB
AUTOS:						
MED. TRUCKS:						
HVY TRUCKS:						
BUSES:						
MOTORCYCLES:						

SPEED ESTIMATED BY: RADAR / DRIVING / OBSERVER
OTHER SOURCES: DIST. AIRCRAFT / RUSTLING LEAVES / DIST. BARKING DOGS / BIRDS / DIST. INDUSTRIAL
DIST. CHILDREN PLAYING / DIST. TRAFFIC / DIST. LANDSCAPING ACTIVITIES / OTHER:

DESCRIPTION / SKETCH:
TERRAIN: HARD SOFT (MIXED) FLAT OTHER:
PHOTOS: ✓
OTHER COMMENTS / SKETCH:



Appendix D-2 Noise Measurement Photographs

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Noise Measurement Photographs



ST01.01 Looking West



ST01.01 Looking North



ST01.01 Looking East

Noise Measurement Photographs



ST01.02 Looking West



ST01.02 Looking North



ST01.02 Looking East



ST01.02 Looking South

Noise Measurement Photographs



ST01.03 Looking Southwest



ST01.03 Looking Northwest



ST01.03 Looking Northeast



ST01.03 Looking Southeast

Noise Measurement Photographs



ST01.04 Looking Southwest



ST01.04 Looking Northwest



ST01.04 Looking Northeast

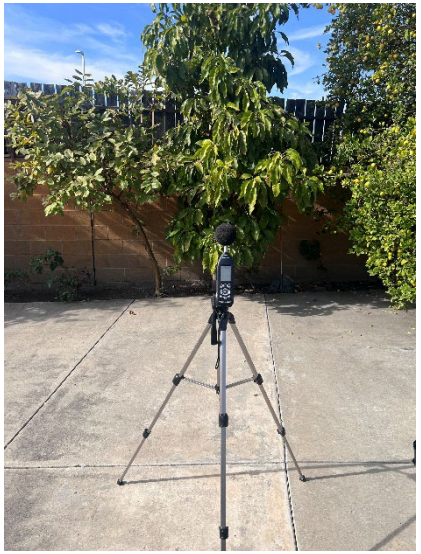


ST01.04 Looking Southeast

Noise Measurement Photographs



ST01.05 Looking West



ST01.05 Looking North



ST01.05 Looking East



ST01.05 Looking South

Noise Measurement Photographs



ST01.06 Looking West



ST01.06 Looking North

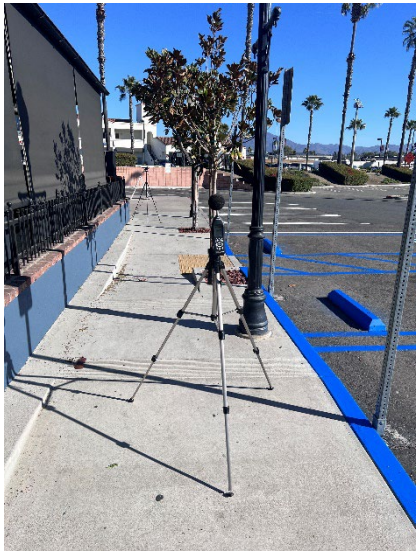


ST01.06 Looking East



ST01.06 Looking South

Noise Measurement Photographs



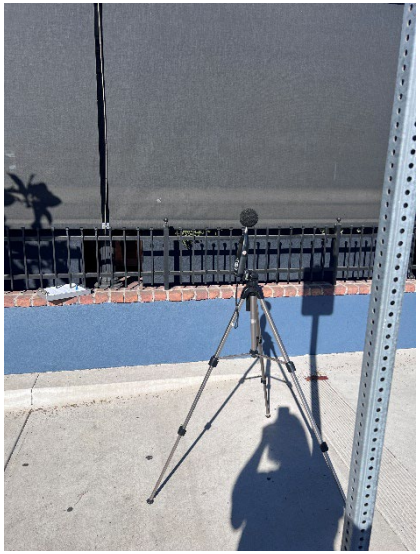
ST02.01 Looking East



ST02.01 Looking South



ST02.01 Looking West



ST02.01 Looking North

Noise Measurement Photographs



ST02.02 Looking East



ST02.02 Looking South



ST02.02 Looking West



ST02.02 Looking North

Noise Measurement Photographs



ST03.01 Looking Northeast



ST03.01 Looking Southeast



ST03.01 Looking Southwest



ST03.01 Looking Northwest

Noise Measurement Photographs



ST03.02 Looking East



ST03.02 Looking South



ST03.02 Looking West



ST03.02 Looking North

Noise Measurement Photographs



ST03.03 Looking East



ST03.03 Looking South



ST03.03 Looking West



ST03.03 Looking North

Noise Measurement Photographs



ST03.04 Looking East

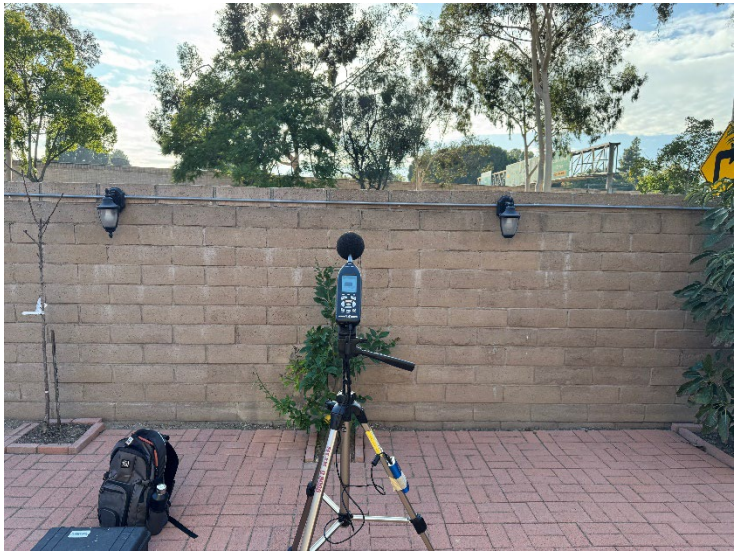


ST03.04 Looking West



ST03.04 Looking North

Noise Measurement Photographs



ST03.05 Looking Southwest



ST03.05 Looking Northwest



ST03.05 Looking Northeast



ST03.05 Looking Southeast

Noise Measurement Photographs



ST03.06 Looking West



ST03.06 Looking North



ST03.06 Looking East



ST03.06 Looking South

Noise Measurement Photographs



ST04.01 Looking East



ST04.01 Looking North



ST04.01 Looking West



ST04.01 Looking South

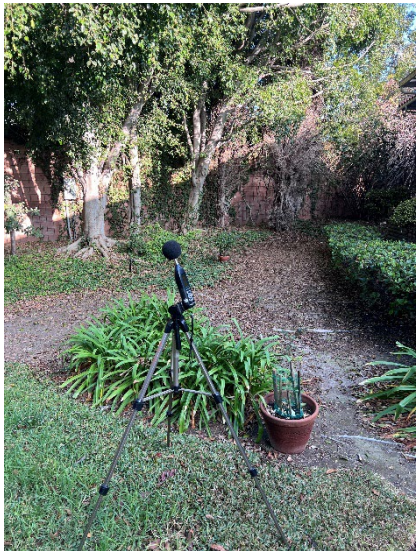
Noise Measurement Photographs



ST04.02 Looking West



ST04.02 Looking North



ST04.02 Looking East



ST04.02 Looking South

Noise Measurement Photographs



ST04.03 Looking West



ST04.03 Looking North



ST04.03 Looking East



ST04.03 Looking South

Noise Measurement Photographs



ST04.04 Looking Southwest



ST04.04 Looking Northwest



ST04.04 Looking Northeast



ST04.04 Looking Southeast

Noise Measurement Photographs



ST04.05 Looking West



ST04.05 Looking East



ST04.05 Looking South

Noise Measurement Photographs



ST04.06 Looking Southwest


ST04.06 Looking Northwest


ST04.06 Looking Northeast


ST04.06 Looking Southeast

Appendix D-3 Noise Measurement Equipment Calibration Certificates

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Calibration Certificate

Certificate Number 2024016127

Customer:

ICF
49 Discovery STE 250
Irvine, CA 92618

Model Number	831
Serial Number	0003786
Test Results	**Pass**
Initial Condition	AS RECEIVED same as shipped
Description	Larson Davis Model 831 Class 1 Sound Level Meter Firmware Revision: 2.403

Procedure Number	D0001.8384		
Technician	Jacob Cannon		
Calibration Date	2024-11-05		
Calibration Due	2025-11-05		
Temperature	23.74	°C	± 0.25 °C
Humidity	49.8	%RH	± 2.0 %RH
Static Pressure	85.94	kPa	± 0.13 kPa

Evaluation Method

Tested with:

Larson Davis CAL200. S/N 9079
PCB 377B02. S/N 312026
Larson Davis CAL291. S/N 0108
Larson Davis PRM831. S/N 029611

Data reported in dB re 20 µPa.

Compliance Standards

Compliant to Manufacturer Specifications and the following standards when combined with Calibration Certificate from procedure D0001.8378:

IEC 60651:2001 Type 1	ANSI S1.4-2014 Class 1
IEC 60804:2000 Type 1	ANSI S1.4 (R2006) Type 1
IEC 61252:2002	ANSI S1.11 (R2009) Class 1
IEC 61260:2001 Class 1	ANSI S1.25 (R2007)
IEC 61672:2013 Class 1	ANSI S1.43 (R2007) Type 1

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). The results documented in this certificate relate only to the item(s) calibrated or tested. It has been calibrated using measurement standards traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2017.
Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

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Correction data from Larson Davis Model 831 Sound Level Meter Manual, I831.01 Rev S, 2019-09-10

For 1/4" microphones, the Larson Davis ADP024 1/4" to 1/2" adaptor is used with the calibrators and the Larson Davis ADP043 1/4" to 1/2" adaptor is used with the preamplifier.

Calibration Certificate

Certificate Number 2024016387

Customer:
ICF
49 Discovery STE 250
Irvine, CA 92618

Model Number	CAL200	***Procedure Number***	D0001.8386		
Serial Number	2916	***Technician***	Scott Montgomery		
Test Results	**Pass**	***Calibration Date***	2024-11-08		
Initial Condition	Adjusted	***Calibration Due***	2025-11-08		
		Temperature	23	°C	± 0.3 °C
Description	Larson Davis CAL200 Acoustic Calibrator	***Humidity***	32	%RH	± 3 %RH
		Static Pressure	101.3	kPa	± 1 kPa

Evaluation Method The data is aquired by the insert voltage calibration method using the reference microphone's open circuit sensitivity. Data reported in dB re 20 µPa.

Compliance Standards Compliant to Manufacturer Specifications per D0001.8190 and the following standards:
IEC 60942:2017 ANSI S1.40-2006

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). The results documented in this certificate relate only to the item(s) calibrated or tested. It has been calibrated using measurement standards traceable to the SI through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2017.
Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

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Standards Used

Description	Cal Date	Cal Due	Cal Standard
Agilent 34401A DMM	2024-06-20	2025-06-20	001021
Larson Davis Model 2900 Real Time Analyzer	2024-04-01	2025-04-01	001051
Microphone Calibration System	2024-02-22	2025-02-22	005446
1/2" Preamplifier	2024-08-15	2025-08-15	006506
Larson Davis 1/2" Preamplifier 7-pin LEMO	2024-07-26	2025-07-26	006507
1/2 inch Microphone - Random Incidence - 200V	2024-02-12	2025-02-12	006510
Pressure Sensor	2024-02-28	2025-02-28	007825

Calibration Certificate

Certificate Number 2024016384

Customer:
ICF
49 Discovery STE 250
Irvine, CA 92618

Model Number	CAL200	***Procedure Number***	D0001.8386		
Serial Number	6645	***Technician***	Scott Montgomery		
Test Results	**Pass**	***Calibration Date***	2024-11-08		
Initial Condition	AS RECEIVED same as shipped	***Calibration Due***	2025-11-08		
Description	Larson Davis CAL200 Acoustic Calibrator	***Temperature***	23	°C	± 0.3 °C
		Humidity	31	%RH	± 3 %RH
		Static Pressure	101.1	kPa	± 1 kPa

Evaluation Method The data is aquired by the insert voltage calibration method using the reference microphone's open circuit sensitivity. Data reported in dB re 20 µPa.

Compliance Standards Compliant to Manufacturer Specifications per D0001.8190 and the following standards:
IEC 60942:2017 ANSI S1.40-2006

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). The results documented in this certificate relate only to the item(s) calibrated or tested. It has been calibrated using measurement standards traceable to the SI through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2017.
Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

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Standards Used

Description	Cal Date	Cal Due	Cal Standard
Agilent 34401A DMM	2024-06-20	2025-06-20	001021
Larson Davis Model 2900 Real Time Analyzer	2024-04-01	2025-04-01	001051
Microphone Calibration System	2024-02-22	2025-02-22	005446
1/2" Preamplifier	2024-08-15	2025-08-15	006506
Larson Davis 1/2" Preamplifier 7-pin LEMO	2024-07-26	2025-07-26	006507
1/2 inch Microphone - Random Incidence - 200V	2024-02-12	2025-02-12	006510
Pressure Sensor	2024-02-28	2025-02-28	007825

Calibration Certificate

Certificate Number 2024016124

Customer:

ICF
49 Discovery STE 250
Irvine, CA 92618

Model Number	LxT1	***Procedure Number***	D0001.8384		
Serial Number	0004005	***Technician***	Jacob Cannon		
Test Results	**Pass**	***Calibration Date***	2024-11-05		
Initial Condition	AS RECEIVED same as shipped	***Calibration Due***	2025-11-05		
		Temperature	23.54 °C		± 0.25 °C
Description	SoundTrack LxT Class 1 Class 1 Sound Level Meter Firmware Revision: 2.404	***Humidity***	48.4 %RH		± 2.0 %RH
		Static Pressure	85.95 kPa		± 0.13 kPa

Evaluation Method ***Tested with:*** ***Data reported in dB re 20 µPa.***

Larson Davis PRMLxT1L. S/N 029341
Larson Davis CAL200. S/N 9079
PCB 377B02. S/N 338663
Larson Davis CAL291. S/N 0108

Compliance Standards Compliant to Manufacturer Specifications and the following standards when combined with Calibration Certificate from procedure D0001.8378:

IEC 60651:2001 Type 1	ANSI S1.4-2014 Class 1
IEC 60804:2000 Type 1	ANSI S1.4 (R2006) Type 1
IEC 61252:2002	ANSI S1.11 (R2009) Class 1
IEC 61260:2001 Class 1	ANSI S1.25 (R2007)
IEC 61672:2013 Class 1	ANSI S1.43 (R2007) Type 1

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). The results documented in this certificate relate only to the item(s) calibrated or tested. It has been calibrated using measurement standards traceable to the International System of Units (SI) through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2017.
Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

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Correction data from Larson Davis LxT Manual for SoundTrack LxT & SoundExpert Lxt, I770.01 Rev O Supporting Firmware Version 4.0.5, 2019-09-10

For 1/4" microphones, the Larson Davis ADP024 1/4" to 1/2" adaptor is used with the calibrators and the Larson Davis ADP043 1/4" to

Scantek, Inc.
CALIBRATION LABORATORY

ISO 17025: 2017, ANSI/NCSL Z540:1994 Part 1
ACCREDITED by NVLAP (an ILAC MRA signatory)

NVLAP®
CALIBRATION
NVLAP Lab Code: 200625-0

Calibration Certificate No.52168

Instrument: **Sound Level Meter**
Model: **Piccolo II**
Manufacturer: **Soft dB**
Serial number: **P0222042804**
Tested with: **Microphone**

Type (class): **2**
Customer: **ICF International**
Tel/Fax: **949-333-6600 /**

Date Calibrated: **11/27/2024** *Cal Due:* **11/27/2026**

Status:	Received	Sent
In tolerance:	X	X
Out of tolerance:		
See comments:		

Contains non-accredited tests: __Yes _X_ No
Calibration service: __ Basic _X_ Standard
Address: **49 Discovery, Suite 250, Irvine, CA 92618**

Tested in accordance with the following procedures and standards:
Calibration of Sound Level Meters, Scantek Inc., Rev. 6/26/2015
SLM & Dosimeters – Acoustical Tests, Scantek Inc., Rev. 7/6/2011

Instrumentation used for calibration: Nor-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence Cal. Lab / Accreditation	Cal. Due
483B-Norsonic	SME Cal Unit	31061	Aug 15, 2024	Scantek, Inc./ NVLAP	Aug 15, 2025
DS-360-SRS	Function Generator	61646	Dec 21, 2022	ACR Env./ A2LA	Dec 21, 2024
34401A-Agilent	Digital Voltmeter	MY41022043	May 1, 2024	ACR Env./ A2LA	May 1, 2025
PTU300-Vaisala	Environment Monitor	P5011262	Sept 27, 2024	ACR Env./ A2LA	Sept 27, 2025
PC Program 1019 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
1251-Norsonic	Calibrator	30878	Oct 7, 2024	Scantek, Inc./ NVLAP	Oct 7, 2025
4226-Brüel&Kjær	Multifunction calibrator	2305103	Nov 11, 2024	Brüel&Kjær/ DANAK	Nov 11, 2025

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK).

Environmental conditions:

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
22.2	100.57	42.5

Calibrated by:	Lydon Dawkins	**Authorized signatory:**	Ed Okorn
Signature	Lydon Dawkins	Signature	Ed Okorn
Date	11/27/2024	Date	12-1-2024

Calibration Certificates or Test Reports shall not be reproduced, except in full, without written approval of the laboratory.
This Calibration Certificate or Test Reports shall not be used to claim product certification, approval or endorsement by NVLAP, NIST, or any agency of the federal government.

Scantek, Inc.
CALIBRATION LABORATORY

ISO 17025: 2017, ANSI/NCSL Z540:1994 Part 1
ACCREDITED by NVLAP (an ILAC MRA signatory)

NVLAP®
CALIBRATION
NVLAP Lab Code: 200625-0

Calibration Certificate No.52169

Instrument: **Sound Level Meter**
Model: **Piccolo II**
Manufacturer: **Soft dB**
Serial number: **P0222042805**
Tested with: **Microphone**

Type (class): **2**
Customer: **ICF International**
Tel/Fax: **949-333-6600 /**

Date Calibrated: **11/27/2024** *Cal Due:* **11/27/2026**

Status:	**Received**	**Sent**
In tolerance:	**X**	**X**
Out of tolerance:		
See comments:		

Contains non-accredited tests: __**Yes** **X** **No**
Calibration service: __ **Basic** **X** **Standard**
Address: **49 Discovery, Suite 250, Irvine, CA 92618**

Tested in accordance with the following procedures and standards:
Calibration of Sound Level Meters, Scantek Inc., Rev. 6/26/2015
SLM & Dosimeters – Acoustical Tests, Scantek Inc., Rev. 7/6/2011

Instrumentation used for calibration: Nor-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence Cal. Lab / Accreditation	Cal. Due
483B-Norsonic	SME Cal Unit	31061	Aug 15, 2024	Scantek, Inc./ NVLAP	Aug 15, 2025
DS-360-SRS	Function Generator	61646	Dec 21, 2022	ACR Env./ A2LA	Dec 21, 2024
34401A-Agilent	Digital Voltmeter	MY41022043	May 1, 2024	ACR Env./ A2LA	May 1, 2025
PTU300-Vaisala	Environment Monitor	P5011262	Sept 27, 2024	ACR Env./ A2LA	Sept 27, 2025
PC Program 1019 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
1251-Norsonic	Calibrator	30878	Oct 7, 2024	Scantek, Inc./ NVLAP	Oct 7, 2025
4226-Brüel&Kjær	Multifunction calibrator	2305103	Nov 11, 2024	Brüel&Kjær/ DANAK	Nov 11, 2025

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK).

Environmental conditions:

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
22.4	100.42	42.2

Calibrated by:	Lydon Dawkins	**Authorized signatory:**	Ed Okorn
Signature	Lydon Dawkins	Signature	Ed Okorn
Date	11/27/2024	Date	12-1-2024

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This Calibration Certificate or Test Reports shall not be used to claim product certification, approval or endorsement by NVLAP, NIST, or any agency of the federal government.

Appendix D-4 TNM Noise Modeling Files

(Available upon Request Only)

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Appendix D-5 City of Lake Forest Email Regarding the Proposed Noise Barriers at the Arbors, Located at the Corner of Rockfield Boulevard and El Toro Road

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From: Czaban, Emily <Emily.Czaban@icf.com>
Sent: Tuesday, September 16, 2025 8:25 AM
To: Rzeszutko, Jakob <Jakob.Rzeszutko@icf.com>; Hardie, Peter <Peter.Hardie@icf.com>
Subject: FW: I-5/El Toro Road - Soundwall Info for City of Lake Forest

Hi Jake – see below.

EMILY CZABAN, Environmental Planning, Principal
+1 949 333 6624 direct
+1 714 397 6121 mobile
icf.com | LinkedIn

From: Lindo, Jared@DOT <Jared.Lindo@dot.ca.gov>
Sent: Wednesday, September 10, 2025 10:23 PM
To: Czaban, Emily <Emily.Czaban@icf.com>; Duran, Gabriela@DOT <Gabriela.Duran@dot.ca.gov>; Deshpande, Smita R@DOT <smita.deshpande@dot.ca.gov>; Le, Christopher H@DOT <christopher.h.le@dot.ca.gov>; Nguyen, Steven@DOT <Steven.H.Nguyen@dot.ca.gov>; Caraig Jr, Ricardo R@DOT <ricardo.caraig@dot.ca.gov>
Subject: Fw: I-5/El Toro Road - Soundwall Info for City of Lake Forest

Please see below for your record.

Thank you

Jared Lindo, PE
Project Manager
Senior Transportation Engineer
Caltrans D12 Programming & Project Management
(657)328-6614 Office
(949)279-9367 Cell

From: Erdman, Douglas <derdman@lakeforestca.gov>
Sent: Wednesday, September 10, 2025 4:46:58 PM
To: Lindo, Jared@DOT <Jared.Lindo@dot.ca.gov>
Cc: Tran, Tran <TTran@lakeforestca.gov>
Subject: RE: I-5/El Toro Road - Soundwall Info for City of Lake Forest

EXTERNAL EMAIL. Links/attachments may not be safe.

Hi Jared,

After reviewing the information you provided with City management, we would ***not*** want Caltrans to install soundwalls at the Arbors, located at the corner of Rockfield Boulevard and El Toro Road. This is an important intersection in Lake Forest, acting as the gateway to the City and soundwalls would detract from this.

Douglas A. Erdman, P.E.
Director of Public Works/
City Engineer
Ph. (949) 282-5233
Fax (949) 461-3511
derdman@lakeforestca.gov
100 Civic Center Drive
Lake Forest, CA 92630
www.lakeforestca.gov

From: Lindo, Jared@DOT <Jared.Lindo@dot.ca.gov>
Sent: Tuesday, September 9, 2025 4:51 PM
To: Erdman, Douglas <derdman@lakeforestca.gov>
Cc: Tran, Tran <TTran@lakeforestca.gov>
Subject: FW: I-5/El Toro Road - Soundwall Info for City of Lake Forest

Good Evening Douglas,

The project team is currently preparing the Noise Study Report, which evaluates whether a wall is feasible. A proposed sound wall is considered feasible if it provides a minimum 5 dBA noise reduction at one o more impacted receptors. Two soundwalls – one on the north corner and one on the northeast corner of Rockfield and El Toro Road – were found to be feasible. Please see the attached and below exhibit for the two soundwall locations (NB33A1 and NB32A1) along with tables showing the projected noise levels and anticipated noise reductions for each wall. To be feasible and achieve the necessary sound reduction, any potential proposed soundwall would need to be a minimum 6ft to max 22ft high. City input is a key factor in whether these proposed soundwalls should be considered or not considered at these locations prior to moving forward. Thank you,



Jared Lindo, PE
Project Manager
Senior Transportation Engineer
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Appendix E Barrier Locations and Elevations

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Barrier Locations and Elevations - Alternative 1 - Noise Barrier 32A1

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
NB32A1 - 6 Foot Design	El Toro Rd and Rockfield Blvd Right of Way	STA04+00	383.0	6	389.0
		STA04+25	383.8	6	389.8
		STA04+50	384.5	6	390.5
		STA04+75	385.3	6	391.3
		STA05+00	386.0	6	392.0
		STA05+12	386.7	6	392.7
		STA05+24	387.3	6	393.3
		STA33+00	388.0	6	394.0
		STA33+25	388.0	6	394.0
		STA33+50	388.0	6	394.0
		STA33+75	388.0	6	394.0
		STA34+00	388.0	6	394.0
		STA34+25	388.0	6	394.0
	Approximate Length:		268.7		

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
NB32A1 - 8 Foot Design	El Toro Rd and Rockfield Blvd Right of Way	STA04+00	383.0	8	391.0
		STA04+25	383.8	8	391.8
		STA04+50	384.5	8	392.5
		STA04+75	385.3	8	393.3
		STA05+00	386.0	8	394.0
		STA05+12	386.7	8	394.7
		STA05+24	387.3	8	395.3
		STA33+00	388.0	8	396.0
		STA33+25	388.0	8	396.0
		STA33+50	388.0	8	396.0
		STA33+75	388.0	8	396.0
		STA34+00	388.0	8	396.0
		STA34+25	388.0	8	396.0
	Approximate Length:		268.7		

Barrier Locations and Elevations - Alternative 1 - Noise Barrier 32A1

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
NB32A1 - 10 Foot Design	El Toro Rd and Rockfield Blvd Right of Way	STA04+00	383.0	10	393.0
		STA04+25	383.8	10	393.8
		STA04+50	384.5	10	394.5
		STA04+75	385.3	10	395.3
		STA05+00	386.0	10	396.0
		STA05+12	386.7	10	396.7
		STA05+24	387.3	10	397.3
		STA33+00	388.0	10	398.0
		STA33+25	388.0	10	398.0
		STA33+50	388.0	10	398.0
		STA33+75	388.0	10	398.0
		STA34+00	388.0	10	398.0
		STA34+25	388.0	10	398.0
	Approximate Length:		268.7		

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
NB32A1 - 12 Foot Design	El Toro Rd and Rockfield Blvd Right of Way	STA04+00	383.0	12	395.0
		STA04+25	383.8	12	395.8
		STA04+50	384.5	12	396.5
		STA04+75	385.3	12	397.3
		STA05+00	386.0	12	398.0
		STA05+12	386.7	12	398.7
		STA05+24	387.3	12	399.3
		STA33+00	388.0	12	400.0
		STA33+25	388.0	12	400.0
		STA33+50	388.0	12	400.0
		STA33+75	388.0	12	400.0
		STA34+00	388.0	12	400.0
		STA34+25	388.0	12	400.0
	Approximate Length:		268.7		

Barrier Locations and Elevations - Alternative 1 - Noise Barrier 32A1

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
NB32A1 - 14 Foot Design	El Toro Rd and Rockfield Blvd Right of Way	STA04+00	383.0	14	397.0
		STA04+25	383.8	14	397.8
		STA04+50	384.5	14	398.5
		STA04+75	385.3	14	399.3
		STA05+00	386.0	14	400.0
		STA05+12	386.7	14	400.7
		STA05+24	387.3	14	401.3
		STA33+00	388.0	14	402.0
		STA33+25	388.0	14	402.0
		STA33+50	388.0	14	402.0
		STA33+75	388.0	14	402.0
		STA34+00	388.0	14	402.0
		STA34+25	388.0	14	402.0
	Approximate Length:		268.7		

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
NB32A1 - 16 Foot Design	El Toro Rd and Rockfield Blvd Right of Way	STA04+00	383.0	16	399.0
		STA04+25	383.8	16	399.8
		STA04+50	384.5	16	400.5
		STA04+75	385.3	16	401.3
		STA05+00	386.0	16	402.0
		STA05+12	386.7	16	402.7
		STA05+24	387.3	16	403.3
		STA33+00	388.0	16	404.0
		STA33+25	388.0	16	404.0
		STA33+50	388.0	16	404.0
		STA33+75	388.0	16	404.0
		STA34+00	388.0	16	404.0
		STA34+25	388.0	16	404.0
	Approximate Length:		268.7		

Barrier Locations and Elevations - Alternative 1 - Noise Barrier 32A1

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
NB32A1 - 18 Foot Design	El Toro Rd and Rockfield Blvd Right of Way	STA04+00	383.0	18	401.0
		STA04+25	383.8	18	401.8
		STA04+50	384.5	18	402.5
		STA04+75	385.3	18	403.3
		STA05+00	386.0	18	404.0
		STA05+12	386.7	18	404.7
		STA05+24	387.3	18	405.3
		STA33+00	388.0	18	406.0
		STA33+25	388.0	18	406.0
		STA33+50	388.0	18	406.0
		STA33+75	388.0	18	406.0
		STA34+00	388.0	18	406.0
		STA34+25	388.0	18	406.0
	Approximate Length:		268.7		

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
NB32A1 - 20 Foot Design	El Toro Rd and Rockfield Blvd Right of Way	STA04+00	383.0	20	403.0
		STA04+25	383.8	20	403.8
		STA04+50	384.5	20	404.5
		STA04+75	385.3	20	405.3
		STA05+00	386.0	20	406.0
		STA05+12	386.7	20	406.7
		STA05+24	387.3	20	407.3
		STA33+00	388.0	20	408.0
		STA33+25	388.0	20	408.0
		STA33+50	388.0	20	408.0
		STA33+75	388.0	20	408.0
		STA34+00	388.0	20	408.0
		STA34+25	388.0	20	408.0
	Approximate Length:		268.7		

Barrier Locations and Elevations - Alternative 1 - Noise Barrier 32A1

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
NB32A1 - 22 Foot Design	El Toro Rd and Rockfield Blvd Right of Way	STA04+00	383.0	22	405.0
		STA04+25	383.8	22	405.8
		STA04+50	384.5	22	406.5
		STA04+75	385.3	22	407.3
		STA05+00	386.0	22	408.0
		STA05+12	386.7	22	408.7
		STA05+24	387.3	22	409.3
		STA33+00	388.0	22	410.0
		STA33+25	388.0	22	410.0
		STA33+50	388.0	22	410.0
		STA33+75	388.0	22	410.0
		STA34+00	388.0	22	410.0
		STA34+25	388.0	22	410.0
	Approximate Length:		268.7		

Barrier Locations and Elevations - Alternative 2 - Noise Barrier 32A2

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
NB32A2 - 6 Foot Design	El Toro Rd and Rockfield Blvd Right of Way	STA03+75	382.3	6	388.3
		STA04+00	383.0	6	389.0
		STA04+25	383.8	6	389.8
		STA04+50	384.5	6	390.5
		STA04+75	385.3	6	391.3
		STA05+00	386.0	6	392.0
		STA05+12	386.7	6	392.7
		STA05+24	387.3	6	393.3
		STA33+00	388.0	6	394.0
		STA33+25	388.0	6	394.0
		STA33+50	388.0	6	394.0
		STA33+75	388.0	6	394.0
		STA34+00	388.0	6	394.0
	Approximate Length:		269.1		

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
NB32A2 - 8 Foot Design	El Toro Rd and Rockfield Blvd Right of Way	STA03+75	382.3	8	390.3
		STA04+00	383.0	8	391.0
		STA04+25	383.8	8	391.8
		STA04+50	384.5	8	392.5
		STA04+75	385.3	8	393.3
		STA05+00	386.0	8	394.0
		STA05+12	386.7	8	394.7
		STA05+24	387.3	8	395.3
		STA33+00	388.0	8	396.0
		STA33+25	388.0	8	396.0
		STA33+50	388.0	8	396.0
		STA33+75	388.0	8	396.0
		STA34+00	388.0	8	396.0
	Approximate Length:		269.1		

Barrier Locations and Elevations - Alternative 2 - Noise Barrier 32A2

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
NB32A2 - 10 Foot Design	El Toro Rd and Rockfield Blvd Right of Way	STA03+75	382.3	10	392.3
		STA04+00	383.0	10	393.0
		STA04+25	383.8	10	393.8
		STA04+50	384.5	10	394.5
		STA04+75	385.3	10	395.3
		STA05+00	386.0	10	396.0
		STA05+12	386.7	10	396.7
		STA05+24	387.3	10	397.3
		STA33+00	388.0	10	398.0
		STA33+25	388.0	10	398.0
		STA33+50	388.0	10	398.0
		STA33+75	388.0	10	398.0
		STA34+00	388.0	10	398.0
	Approximate Length:		269.1		

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
NB32A2 - 12 Foot Design	El Toro Rd and Rockfield Blvd Right of Way	STA03+75	382.3	12	394.3
		STA04+00	383.0	12	395.0
		STA04+25	383.8	12	395.8
		STA04+50	384.5	12	396.5
		STA04+75	385.3	12	397.3
		STA05+00	386.0	12	398.0
		STA05+12	386.7	12	398.7
		STA05+24	387.3	12	399.3
		STA33+00	388.0	12	400.0
		STA33+25	388.0	12	400.0
		STA33+50	388.0	12	400.0
		STA33+75	388.0	12	400.0
		STA34+00	388.0	12	400.0
	Approximate Length:		269.1		

Barrier Locations and Elevations - Alternative 2 - Noise Barrier 32A2

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
NB32A2 - 14 Foot Design	El Toro Rd and Rockfield Blvd Right of Way	STA03+75	382.3	14	396.3
		STA04+00	383.0	14	397.0
		STA04+25	383.8	14	397.8
		STA04+50	384.5	14	398.5
		STA04+75	385.3	14	399.3
		STA05+00	386.0	14	400.0
		STA05+12	386.7	14	400.7
		STA05+24	387.3	14	401.3
		STA33+00	388.0	14	402.0
		STA33+25	388.0	14	402.0
		STA33+50	388.0	14	402.0
		STA33+75	388.0	14	402.0
		STA34+00	388.0	14	402.0
	Approximate Length:		269.1		

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
NB32A2 - 16 Foot Design	El Toro Rd and Rockfield Blvd Right of Way	STA03+75	382.3	16	398.3
		STA04+00	383.0	16	399.0
		STA04+25	383.8	16	399.8
		STA04+50	384.5	16	400.5
		STA04+75	385.3	16	401.3
		STA05+00	386.0	16	402.0
		STA05+12	386.7	16	402.7
		STA05+24	387.3	16	403.3
		STA33+00	388.0	16	404.0
		STA33+25	388.0	16	404.0
		STA33+50	388.0	16	404.0
		STA33+75	388.0	16	404.0
		STA34+00	388.0	16	404.0
	Approximate Length:		269.1		

Barrier Locations and Elevations - Alternative 2 - Noise Barrier 32A2

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
NB32A2 - 18 Foot Design	El Toro Rd and Rockfield Blvd Right of Way	STA03+75	382.3	18	400.3
		STA04+00	383.0	18	401.0
		STA04+25	383.8	18	401.8
		STA04+50	384.5	18	402.5
		STA04+75	385.3	18	403.3
		STA05+00	386.0	18	404.0
		STA05+12	386.7	18	404.7
		STA05+24	387.3	18	405.3
		STA33+00	388.0	18	406.0
		STA33+25	388.0	18	406.0
		STA33+50	388.0	18	406.0
		STA33+75	388.0	18	406.0
		STA34+00	388.0	18	406.0
	Approximate Length:		269.1		

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
NB32A2 - 20 Foot Design	El Toro Rd and Rockfield Blvd Right of Way	STA03+75	382.3	20	402.3
		STA04+00	383.0	20	403.0
		STA04+25	383.8	20	403.8
		STA04+50	384.5	20	404.5
		STA04+75	385.3	20	405.3
		STA05+00	386.0	20	406.0
		STA05+12	386.7	20	406.7
		STA05+24	387.3	20	407.3
		STA33+00	388.0	20	408.0
		STA33+25	388.0	20	408.0
		STA33+50	388.0	20	408.0
		STA33+75	388.0	20	408.0
		STA34+00	388.0	20	408.0
	Approximate Length:		269.1		

Barrier Locations and Elevations - Alternative 2 - Noise Barrier 32A2

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
NB32A2 - 22 Foot Design	El Toro Rd and Rockfield Blvd Right of Way	STA03+75	382.3	22	404.3
		STA04+00	383.0	22	405.0
		STA04+25	383.8	22	405.8
		STA04+50	384.5	22	406.5
		STA04+75	385.3	22	407.3
		STA05+00	386.0	22	408.0
		STA05+12	386.7	22	408.7
		STA05+24	387.3	22	409.3
		STA33+00	388.0	22	410.0
		STA33+25	388.0	22	410.0
		STA33+50	388.0	22	410.0
		STA33+75	388.0	22	410.0
		STA34+00	388.0	22	410.0
	Approximate Length:		269.1		

Barrier Locations and Elevations - Alternative 1 - Noise Barrier 33A1

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
33A1 - 6 Foot Design	El Toro Rd and Rockfield Blvd Right of Way	STA33+50	388.0	6	394.0
		STA33+25	388.0	6	394.0
		STA33+00	388.0	6	394.0
		PT01	387.3	6	393.3
		PT02	386.7	6	392.7
		PT03	386.0	6	392.0
		PT04	386.3	6	392.3
		PT05	386.5	6	392.5
		PT06	386.8	6	392.8
	Approximate Length:		174.2		

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
33A1 - 8 Foot Design	El Toro Rd and Rockfield Blvd Right of Way	STA33+50	388.0	8	396.0
		STA33+25	388.0	8	396.0
		STA33+00	388.0	8	396.0
		PT01	387.3	8	395.3
		PT02	386.7	8	394.7
		PT03	386.0	8	394.0
		PT04	386.3	8	394.3
		PT05	386.5	8	394.5
		PT06	386.8	8	394.8
	Approximate Length:		174.2		

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
33A1 - 10 Foot Design	El Toro Rd and Rockfield Blvd Right of Way	STA33+50	388.0	10	398.0
		STA33+25	388.0	10	398.0
		STA33+00	388.0	10	398.0
		PT01	387.3	10	397.3
		PT02	386.7	10	396.7
		PT03	386.0	10	396.0
		PT04	386.3	10	396.3
		PT05	386.5	10	396.5
		PT06	386.8	10	396.8
	Approximate Length:		174.2		

Barrier Locations and Elevations - Alternative 1 - Noise Barrier 33A1

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
33A1 - 12 Foot Design	El Toro Rd and Rockfield Blvd Right of Way	STA33+50	388.0	12	400.0
		STA33+25	388.0	12	400.0
		STA33+00	388.0	12	400.0
		PT01	387.3	12	399.3
		PT02	386.7	12	398.7
		PT03	386.0	12	398.0
		PT04	386.3	12	398.3
		PT05	386.5	12	398.5
		PT06	386.8	12	398.8
	Approximate Length:		174.2		

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
33A1 - 14 Foot Design	El Toro Rd and Rockfield Blvd Right of Way	STA33+50	388.0	14	402.0
		STA33+25	388.0	14	402.0
		STA33+00	388.0	14	402.0
		PT01	387.3	14	401.3
		PT02	386.7	14	400.7
		PT03	386.0	14	400.0
		PT04	386.3	14	400.3
		PT05	386.5	14	400.5
		PT06	386.8	14	400.8
	Approximate Length:		174.2		

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
33A1 - 16 Foot Design	El Toro Rd and Rockfield Blvd Right of Way	STA33+50	388.0	16	404.0
		STA33+25	388.0	16	404.0
		STA33+00	388.0	16	404.0
		PT01	387.3	16	403.3
		PT02	386.7	16	402.7
		PT03	386.0	16	402.0
		PT04	386.3	16	402.3
		PT05	386.5	16	402.5
		PT06	386.8	16	402.8
	Approximate Length:		174.2		

Barrier Locations and Elevations - Alternative 1 - Noise Barrier 33A1

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
33A1 - 18 Foot Design	El Toro Rd and Rockfield Blvd Right of Way	STA33+50	388.0	18	406.0
		STA33+25	388.0	18	406.0
		STA33+00	388.0	18	406.0
		PT01	387.3	18	405.3
		PT02	386.7	18	404.7
		PT03	386.0	18	404.0
		PT04	386.3	18	404.3
		PT05	386.5	18	404.5
		PT06	386.8	18	404.8
	Approximate Length:		174.2		

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
33A1 - 20 Foot Design	El Toro Rd and Rockfield Blvd Right of Way	STA33+50	388.0	20	408.0
		STA33+25	388.0	20	408.0
		STA33+00	388.0	20	408.0
		PT01	387.3	20	407.3
		PT02	386.7	20	406.7
		PT03	386.0	20	406.0
		PT04	386.3	20	406.3
		PT05	386.5	20	406.5
		PT06	386.8	20	406.8
	Approximate Length:		174.2		

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
33A1 - 22 Foot Design	El Toro Rd and Rockfield Blvd Right of Way	STA33+50	388.0	22	410.0
		STA33+25	388.0	22	410.0
		STA33+00	388.0	22	410.0
		PT01	387.3	22	409.3
		PT02	386.7	22	408.7
		PT03	386.0	22	408.0
		PT04	386.3	22	408.3
		PT05	386.5	22	408.5
		PT06	386.8	22	408.8
	Approximate Length:		174.2		

Barrier Locations and Elevations - Alternative 2 - Noise Barrier 33A2

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
33A2 - 6 Foot Design	El Toro Rd and Rockfield Blvd Right of Way	STA33+50	388.0	6	394.0
		STA33+25	388.0	6	394.0
		STA33+00	388.0	6	394.0
		PT01	387.3	6	393.3
		PT02	386.7	6	392.7
		PT03	386.0	6	392.0
		PT04	386.3	6	392.3
		PT05	386.5	6	392.5
		PT06	386.8	6	392.8
	Approximate Length:		174.2		

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
33A2 - 8 Foot Design	El Toro Rd and Rockfield Blvd Right of Way	STA33+50	388.0	8	396.0
		STA33+25	388.0	8	396.0
		STA33+00	388.0	8	396.0
		PT01	387.3	8	395.3
		PT02	386.7	8	394.7
		PT03	386.0	8	394.0
		PT04	386.3	8	394.3
		PT05	386.5	8	394.5
		PT06	386.8	8	394.8
	Approximate Length:		174.2		

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
33A2 - 10 Foot Design	El Toro Rd and Rockfield Blvd Right of Way	STA33+50	388.0	10	398.0
		STA33+25	388.0	10	398.0
		STA33+00	388.0	10	398.0
		PT01	387.3	10	397.3
		PT02	386.7	10	396.7
		PT03	386.0	10	396.0
		PT04	386.3	10	396.3
		PT05	386.5	10	396.5
		PT06	386.8	10	396.8
	Approximate Length:		174.2		

Barrier Locations and Elevations - Alternative 2 - Noise Barrier 33A2

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
33A2 - 12 Foot Design	El Toro Rd and Rockfield Blvd Right of Way	STA33+50	388.0	12	400.0
		STA33+25	388.0	12	400.0
		STA33+00	388.0	12	400.0
		PT01	387.3	12	399.3
		PT02	386.7	12	398.7
		PT03	386.0	12	398.0
		PT04	386.3	12	398.3
		PT05	386.5	12	398.5
		PT06	386.8	12	398.8
	Approximate Length:		174.2		

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
33A2 - 14 Foot Design	El Toro Rd and Rockfield Blvd Right of Way	STA33+50	388.0	14	402.0
		STA33+25	388.0	14	402.0
		STA33+00	388.0	14	402.0
		PT01	387.3	14	401.3
		PT02	386.7	14	400.7
		PT03	386.0	14	400.0
		PT04	386.3	14	400.3
		PT05	386.5	14	400.5
		PT06	386.8	14	400.8
	Approximate Length:		174.2		

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
33A2 - 16 Foot Design	El Toro Rd and Rockfield Blvd Right of Way	STA33+50	388.0	16	404.0
		STA33+25	388.0	16	404.0
		STA33+00	388.0	16	404.0
		PT01	387.3	16	403.3
		PT02	386.7	16	402.7
		PT03	386.0	16	402.0
		PT04	386.3	16	402.3
		PT05	386.5	16	402.5
		PT06	386.8	16	402.8
	Approximate Length:		174.2		

Barrier Locations and Elevations - Alternative 2 - Noise Barrier 33A2

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
33A2 - 18 Foot Design	El Toro Rd and Rockfield Blvd Right of Way	STA33+50	388.0	18	406.0
		STA33+25	388.0	18	406.0
		STA33+00	388.0	18	406.0
		PT01	387.3	18	405.3
		PT02	386.7	18	404.7
		PT03	386.0	18	404.0
		PT04	386.3	18	404.3
		PT05	386.5	18	404.5
		PT06	386.8	18	404.8
	Approximate Length:		174.2		

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
33A2 - 20 Foot Design	El Toro Rd and Rockfield Blvd Right of Way	STA33+50	388.0	20	408.0
		STA33+25	388.0	20	408.0
		STA33+00	388.0	20	408.0
		PT01	387.3	20	407.3
		PT02	386.7	20	406.7
		PT03	386.0	20	406.0
		PT04	386.3	20	406.3
		PT05	386.5	20	406.5
		PT06	386.8	20	406.8
	Approximate Length:		174.2		

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
33A2 - 22 Foot Design	El Toro Rd and Rockfield Blvd Right of Way	STA33+50	388.0	22	410.0
		STA33+25	388.0	22	410.0
		STA33+00	388.0	22	410.0
		PT01	387.3	22	409.3
		PT02	386.7	22	408.7
		PT03	386.0	22	408.0
		PT04	386.3	22	408.3
		PT05	386.5	22	408.5
		PT06	386.8	22	408.8
	Approximate Length:		174.2		

Barrier Locations and Elevations - Alternative 1 - Noise Barrier 234A1

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
234A1 - 6 Foot Design	NB Mainline EOS	STA5+00	373.8	6	379.8
		STA6+00	376.2	6	382.2
		STA7+00	377.2	6	383.2
		STA8+00	378.2	6	384.2
		STA9+00	377.9	6	383.9
		STA10+00	377.5	6	383.5
		STA11+00	376.0	6	382.0
		STA12+00	374.5	6	380.5
		STA13+00	372.7	6	378.7
		STA14+00	370.9	6	376.9
		STA15+00	369.6	6	375.6
		STA16+00	368.2	6	374.2
		STA17+00	366.0	6	372.0
		STA18+00	363.8	6	369.8
		STA19+00	361.2	6	367.2
		STA20+00	358.5	6	364.5
		STA241+00	354.3	6	360.3
		STA242+00	350.0	6	356.0
		STA243+00	346.6	6	352.6
		STA244+00	343.2	6	349.2
		STA245+00	340.0	6	346.0
	Approximate Length:	1992.9			

Barrier Locations and Elevations - Alternative 1 - Noise Barrier 234A1

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
234A1 - 8 Foot Design	NB Mainline EOS	STA5+00	373.8	8	381.8
		STA6+00	376.2	8	384.2
		STA7+00	377.2	8	385.2
		STA8+00	378.2	8	386.2
		STA9+00	377.9	8	385.9
		STA10+00	377.5	8	385.5
		STA11+00	376.0	8	384.0
		STA12+00	374.5	8	382.5
		STA13+00	372.7	8	380.7
		STA14+00	370.9	8	378.9
		STA15+00	369.6	8	377.6
		STA16+00	368.2	8	376.2
		STA17+00	366.0	8	374.0
		STA18+00	363.8	8	371.8
		STA19+00	361.2	8	369.2
		STA20+00	358.5	8	366.5
		STA241+00	354.3	8	362.3
		STA242+00	350.0	8	358.0
		STA243+00	346.6	8	354.6
		STA244+00	343.2	8	351.2
		STA245+00	340.0	8	348.0
	Approximate Length:		1992.9		

Barrier Locations and Elevations - Alternative 1 - Noise Barrier 234A1

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
234A1 - 10 Foot Design	NB Mainline EOS	STA5+00	373.8	10	383.8
		STA6+00	376.2	10	386.2
		STA7+00	377.2	10	387.2
		STA8+00	378.2	10	388.2
		STA9+00	377.9	10	387.9
		STA10+00	377.5	10	387.5
		STA11+00	376.0	10	386.0
		STA12+00	374.5	10	384.5
		STA13+00	372.7	10	382.7
		STA14+00	370.9	10	380.9
		STA15+00	369.6	10	379.6
		STA16+00	368.2	10	378.2
		STA17+00	366.0	10	376.0
		STA18+00	363.8	10	373.8
		STA19+00	361.2	10	371.2
		STA20+00	358.5	10	368.5
		STA241+00	354.3	10	364.3
		STA242+00	350.0	10	360.0
		STA243+00	346.6	10	356.6
		STA244+00	343.2	10	353.2
		STA245+00	340.0	10	350.0
	Approximate Length:		1992.9		

Barrier Locations and Elevations - Alternative 1 - Noise Barrier 234A1

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
234A1 - 12 Foot Design	NB Mainline EOS	STA5+00	373.8	12	385.8
		STA6+00	376.2	12	388.2
		STA7+00	377.2	12	389.2
		STA8+00	378.2	12	390.2
		STA9+00	377.9	12	389.9
		STA10+00	377.5	12	389.5
		STA11+00	376.0	12	388.0
		STA12+00	374.5	12	386.5
		STA13+00	372.7	12	384.7
		STA14+00	370.9	12	382.9
		STA15+00	369.6	12	381.6
		STA16+00	368.2	12	380.2
		STA17+00	366.0	12	378.0
		STA18+00	363.8	12	375.8
		STA19+00	361.2	12	373.2
		STA20+00	358.5	12	370.5
		STA241+00	354.3	12	366.3
		STA242+00	350.0	12	362.0
		STA243+00	346.6	12	358.6
		STA244+00	343.2	12	355.2
		STA245+00	340.0	12	352.0
	Approximate Length:		1992.9		

Barrier Locations and Elevations - Alternative 1 - Noise Barrier 234A1

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
234A1 - 14 Foot Design	NB Mainline EOS	STA5+00	373.8	14	387.8
		STA6+00	376.2	14	390.2
		STA7+00	377.2	14	391.2
		STA8+00	378.2	14	392.2
		STA9+00	377.9	14	391.9
		STA10+00	377.5	14	391.5
		STA11+00	376.0	14	390.0
		STA12+00	374.5	14	388.5
		STA13+00	372.7	14	386.7
		STA14+00	370.9	14	384.9
		STA15+00	369.6	14	383.6
		STA16+00	368.2	14	382.2
		STA17+00	366.0	14	380.0
		STA18+00	363.8	14	377.8
		STA19+00	361.2	14	375.2
		STA20+00	358.5	14	372.5
		STA241+00	354.3	14	368.3
		STA242+00	350.0	14	364.0
		STA243+00	346.6	14	360.6
		STA244+00	343.2	14	357.2
		STA245+00	340.0	14	354.0
	Approximate Length:		1992.9		

Barrier Locations and Elevations - Alternative 1 - Noise Barrier 234A1

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
234A1 - 16 Foot Design	NB Mainline EOS	STA5+00	373.8	16	389.8
		STA6+00	376.2	16	392.2
		STA7+00	377.2	16	393.2
		STA8+00	378.2	16	394.2
		STA9+00	377.9	16	393.9
		STA10+00	377.5	16	393.5
		STA11+00	376.0	16	392.0
		STA12+00	374.5	16	390.5
		STA13+00	372.7	16	388.7
		STA14+00	370.9	16	386.9
		STA15+00	369.6	16	385.6
		STA16+00	368.2	16	384.2
		STA17+00	366.0	16	382.0
		STA18+00	363.8	16	379.8
		STA19+00	361.2	16	377.2
		STA20+00	358.5	16	374.5
		STA241+00	354.3	16	370.3
		STA242+00	350.0	16	366.0
		STA243+00	346.6	16	362.6
		STA244+00	343.2	16	359.2
		STA245+00	340.0	16	356.0
	Approximate Length:		1992.9		

Barrier Locations and Elevations - Alternative 1 - Noise Barrier 234A1

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
234A1 - 18 Foot Design	NB Mainline EOS	STA5+00	373.8	18	391.8
		STA6+00	376.2	18	394.2
		STA7+00	377.2	18	395.2
		STA8+00	378.2	18	396.2
		STA9+00	377.9	18	395.9
		STA10+00	377.5	18	395.5
		STA11+00	376.0	18	394.0
		STA12+00	374.5	18	392.5
		STA13+00	372.7	18	390.7
		STA14+00	370.9	18	388.9
		STA15+00	369.6	18	387.6
		STA16+00	368.2	18	386.2
		STA17+00	366.0	18	384.0
		STA18+00	363.8	18	381.8
		STA19+00	361.2	18	379.2
		STA20+00	358.5	18	376.5
		STA241+00	354.3	18	372.3
		STA242+00	350.0	18	368.0
		STA243+00	346.6	18	364.6
		STA244+00	343.2	18	361.2
		STA245+00	340.0	18	358.0
	Approximate Length:		1992.9		

Barrier Locations and Elevations - Alternative 1 - Noise Barrier 234A1

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
234A1 - 20 Foot Design	NB Mainline EOS	STA5+00	373.8	20	393.8
		STA6+00	376.2	20	396.2
		STA7+00	377.2	20	397.2
		STA8+00	378.2	20	398.2
		STA9+00	377.9	20	397.9
		STA10+00	377.5	20	397.5
		STA11+00	376.0	20	396.0
		STA12+00	374.5	20	394.5
		STA13+00	372.7	20	392.7
		STA14+00	370.9	20	390.9
		STA15+00	369.6	20	389.6
		STA16+00	368.2	20	388.2
		STA17+00	366.0	20	386.0
		STA18+00	363.8	20	383.8
		STA19+00	361.2	20	381.2
		STA20+00	358.5	20	378.5
		STA241+00	354.3	20	374.3
		STA242+00	350.0	20	370.0
		STA243+00	346.6	20	366.6
		STA244+00	343.2	20	363.2
		STA245+00	340.0	20	360.0
	Approximate Length:	1992.9			

Barrier Locations and Elevations - Alternative 1 - Noise Barrier 234A1

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
234A1 - 22 Foot Design	NB Mainline EOS	STA5+00	373.8	22	395.8
		STA6+00	376.2	22	398.2
		STA7+00	377.2	22	399.2
		STA8+00	378.2	22	400.2
		STA9+00	377.9	22	399.9
		STA10+00	377.5	22	399.5
		STA11+00	376.0	22	398.0
		STA12+00	374.5	22	396.5
		STA13+00	372.7	22	394.7
		STA14+00	370.9	22	392.9
		STA15+00	369.6	22	391.6
		STA16+00	368.2	22	390.2
		STA17+00	366.0	22	388.0
		STA18+00	363.8	22	385.8
		STA19+00	361.2	22	383.2
		STA20+00	358.5	22	380.5
		STA241+00	354.3	22	376.3
		STA242+00	350.0	22	372.0
		STA243+00	346.6	22	368.6
		STA244+00	343.2	22	365.2
		STA245+00	340.0	22	362.0
	Approximate Length:		1992.9		

Barrier Locations and Elevations - Alternative 2 - Noise Barrier 234A2

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
234A2 - 6 Foot Design	NB Mainline EOS	STA5+00	373.8	6	379.8
		STA6+00	376.2	6	382.2
		STA7+00	377.2	6	383.2
		STA8+00	378.2	6	384.2
		STA9+00	377.9	6	383.9
		STA10+00	377.5	6	383.5
		STA11+00	376.0	6	382.0
		STA12+00	374.5	6	380.5
		STA13+00	372.7	6	378.7
		STA14+00	370.9	6	376.9
		STA15+00	369.6	6	375.6
		STA16+00	368.2	6	374.2
		STA17+00	366.0	6	372.0
		STA18+00	363.8	6	369.8
		STA19+00	361.2	6	367.2
		STA20+00	358.5	6	364.5
		STA241+00	354.3	6	360.3
		STA242+00	350.0	6	356.0
		STA243+00	346.6	6	352.6
		STA244+00	343.2	6	349.2
		STA245+00	340.0	6	346.0
	Approximate Length:		1992.9		

Barrier Locations and Elevations - Alternative 2 - Noise Barrier 234A2

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
234A2 - 8 Foot Design	NB Mainline EOS	STA5+00	373.8	8	381.8
		STA6+00	376.2	8	384.2
		STA7+00	377.2	8	385.2
		STA8+00	378.2	8	386.2
		STA9+00	377.9	8	385.9
		STA10+00	377.5	8	385.5
		STA11+00	376.0	8	384.0
		STA12+00	374.5	8	382.5
		STA13+00	372.7	8	380.7
		STA14+00	370.9	8	378.9
		STA15+00	369.6	8	377.6
		STA16+00	368.2	8	376.2
		STA17+00	366.0	8	374.0
		STA18+00	363.8	8	371.8
		STA19+00	361.2	8	369.2
		STA20+00	358.5	8	366.5
		STA241+00	354.3	8	362.3
		STA242+00	350.0	8	358.0
		STA243+00	346.6	8	354.6
		STA244+00	343.2	8	351.2
		STA245+00	340.0	8	348.0
	Approximate Length:		1992.9		

Barrier Locations and Elevations - Alternative 2 - Noise Barrier 234A2

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
234A2 - 10 Foot Design	NB Mainline EOS	STA5+00	373.8	10	383.8
		STA6+00	376.2	10	386.2
		STA7+00	377.2	10	387.2
		STA8+00	378.2	10	388.2
		STA9+00	377.9	10	387.9
		STA10+00	377.5	10	387.5
		STA11+00	376.0	10	386.0
		STA12+00	374.5	10	384.5
		STA13+00	372.7	10	382.7
		STA14+00	370.9	10	380.9
		STA15+00	369.6	10	379.6
		STA16+00	368.2	10	378.2
		STA17+00	366.0	10	376.0
		STA18+00	363.8	10	373.8
		STA19+00	361.2	10	371.2
		STA20+00	358.5	10	368.5
		STA241+00	354.3	10	364.3
		STA242+00	350.0	10	360.0
		STA243+00	346.6	10	356.6
		STA244+00	343.2	10	353.2
		STA245+00	340.0	10	350.0
	Approximate Length:		1992.9		

Barrier Locations and Elevations - Alternative 2 - Noise Barrier 234A2

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
234A2 - 12 Foot Design	NB Mainline EOS	STA5+00	373.8	12	385.8
		STA6+00	376.2	12	388.2
		STA7+00	377.2	12	389.2
		STA8+00	378.2	12	390.2
		STA9+00	377.9	12	389.9
		STA10+00	377.5	12	389.5
		STA11+00	376.0	12	388.0
		STA12+00	374.5	12	386.5
		STA13+00	372.7	12	384.7
		STA14+00	370.9	12	382.9
		STA15+00	369.6	12	381.6
		STA16+00	368.2	12	380.2
		STA17+00	366.0	12	378.0
		STA18+00	363.8	12	375.8
		STA19+00	361.2	12	373.2
		STA20+00	358.5	12	370.5
		STA241+00	354.3	12	366.3
		STA242+00	350.0	12	362.0
		STA243+00	346.6	12	358.6
		STA244+00	343.2	12	355.2
		STA245+00	340.0	12	352.0
	Approximate Length:		1992.9		

Barrier Locations and Elevations - Alternative 2 - Noise Barrier 234A2

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
234A2 - 14 Foot Design	NB Mainline EOS	STA5+00	373.8	14	387.8
		STA6+00	376.2	14	390.2
		STA7+00	377.2	14	391.2
		STA8+00	378.2	14	392.2
		STA9+00	377.9	14	391.9
		STA10+00	377.5	14	391.5
		STA11+00	376.0	14	390.0
		STA12+00	374.5	14	388.5
		STA13+00	372.7	14	386.7
		STA14+00	370.9	14	384.9
		STA15+00	369.6	14	383.6
		STA16+00	368.2	14	382.2
		STA17+00	366.0	14	380.0
		STA18+00	363.8	14	377.8
		STA19+00	361.2	14	375.2
		STA20+00	358.5	14	372.5
		STA241+00	354.3	14	368.3
		STA242+00	350.0	14	364.0
		STA243+00	346.6	14	360.6
		STA244+00	343.2	14	357.2
		STA245+00	340.0	14	354.0
	Approximate Length:		1992.9		

Barrier Locations and Elevations - Alternative 2 - Noise Barrier 234A2

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
234A2 - 16 Foot Design	NB Mainline EOS	STA5+00	373.8	16	389.8
		STA6+00	376.2	16	392.2
		STA7+00	377.2	16	393.2
		STA8+00	378.2	16	394.2
		STA9+00	377.9	16	393.9
		STA10+00	377.5	16	393.5
		STA11+00	376.0	16	392.0
		STA12+00	374.5	16	390.5
		STA13+00	372.7	16	388.7
		STA14+00	370.9	16	386.9
		STA15+00	369.6	16	385.6
		STA16+00	368.2	16	384.2
		STA17+00	366.0	16	382.0
		STA18+00	363.8	16	379.8
		STA19+00	361.2	16	377.2
		STA20+00	358.5	16	374.5
		STA241+00	354.3	16	370.3
		STA242+00	350.0	16	366.0
		STA243+00	346.6	16	362.6
		STA244+00	343.2	16	359.2
		STA245+00	340.0	16	356.0
	Approximate Length:		1992.9		

Barrier Locations and Elevations - Alternative 2 - Noise Barrier 234A2

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
234A2 - 18 Foot Design	NB Mainline EOS	STA5+00	373.8	18	391.8
		STA6+00	376.2	18	394.2
		STA7+00	377.2	18	395.2
		STA8+00	378.2	18	396.2
		STA9+00	377.9	18	395.9
		STA10+00	377.5	18	395.5
		STA11+00	376.0	18	394.0
		STA12+00	374.5	18	392.5
		STA13+00	372.7	18	390.7
		STA14+00	370.9	18	388.9
		STA15+00	369.6	18	387.6
		STA16+00	368.2	18	386.2
		STA17+00	366.0	18	384.0
		STA18+00	363.8	18	381.8
		STA19+00	361.2	18	379.2
		STA20+00	358.5	18	376.5
		STA241+00	354.3	18	372.3
		STA242+00	350.0	18	368.0
		STA243+00	346.6	18	364.6
		STA244+00	343.2	18	361.2
		STA245+00	340.0	18	358.0
	Approximate Length:		1992.9		

Barrier Locations and Elevations - Alternative 2 - Noise Barrier 234A2

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
234A2 - 20 Foot Design	NB Mainline EOS	STA5+00	373.8	20	393.8
		STA6+00	376.2	20	396.2
		STA7+00	377.2	20	397.2
		STA8+00	378.2	20	398.2
		STA9+00	377.9	20	397.9
		STA10+00	377.5	20	397.5
		STA11+00	376.0	20	396.0
		STA12+00	374.5	20	394.5
		STA13+00	372.7	20	392.7
		STA14+00	370.9	20	390.9
		STA15+00	369.6	20	389.6
		STA16+00	368.2	20	388.2
		STA17+00	366.0	20	386.0
		STA18+00	363.8	20	383.8
		STA19+00	361.2	20	381.2
		STA20+00	358.5	20	378.5
		STA241+00	354.3	20	374.3
		STA242+00	350.0	20	370.0
		STA243+00	346.6	20	366.6
		STA244+00	343.2	20	363.2
		STA245+00	340.0	20	360.0
	Approximate Length:	1992.9			

Barrier Locations and Elevations - Alternative 2 - Noise Barrier 234A2

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
234A2 - 22 Foot Design	NB Mainline EOS	STA5+00	373.8	22	395.8
		STA6+00	376.2	22	398.2
		STA7+00	377.2	22	399.2
		STA8+00	378.2	22	400.2
		STA9+00	377.9	22	399.9
		STA10+00	377.5	22	399.5
		STA11+00	376.0	22	398.0
		STA12+00	374.5	22	396.5
		STA13+00	372.7	22	394.7
		STA14+00	370.9	22	392.9
		STA15+00	369.6	22	391.6
		STA16+00	368.2	22	390.2
		STA17+00	366.0	22	388.0
		STA18+00	363.8	22	385.8
		STA19+00	361.2	22	383.2
		STA20+00	358.5	22	380.5
		STA241+00	354.3	22	376.3
		STA242+00	350.0	22	372.0
		STA243+00	346.6	22	368.6
		STA244+00	343.2	22	365.2
		STA245+00	340.0	22	362.0
	Approximate Length:	1992.9			

Barrier Locations and Elevations - Alternative 1 - Noise Barrier 234A1 + 244A1

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
234A1 + 244A1 - 6 Foot Design	NB Mainline EOS	STA5+00	373.8	6	379.8
		STA6+00	376.2	6	382.2
		STA7+00	377.2	6	383.2
		STA8+00	378.2	6	384.2
		STA9+00	377.9	6	383.9
		STA10+00	377.5	6	383.5
		STA11+00	376.0	6	382.0
		STA12+00	374.5	6	380.5
		STA13+00	372.7	6	378.7
		STA14+00	370.9	6	376.9
		STA15+00	369.6	6	375.6
		STA16+00	368.2	6	374.2
		STA17+00	366.0	6	372.0
		STA18+00	363.8	6	369.8
		STA19+00	361.2	6	367.2
		STA20+00	358.5	6	364.5
		STA241+00	354.3	6	360.3
		STA242+00	350.0	6	356.0
		STA243+00	346.6	6	352.6
		STA244+00	343.2	6	349.2
		STA245+00	340.0	6	346.0
		STA245+00	340.0	6	346.0
		STA246+00	336.1	6	342.1
		STA247+00	334.8	6	340.8
		STA247+37	333.4	6	339.4
		STA248+00	330.9	6	336.9
		STA248+73	330.4	6	336.4
		STA249+00	329.1	6	335.1
		STA250+00	328.1	6	334.1
		STA251+00	327.0	6	333.0
		STA252+00	327.5	6	333.5
		STA253+00	327.8	6	333.8
		STA253+35	328.0	6	334.0
		STA253+35	328.7	6	334.7
		STA254+00	329.6	6	335.6
		STA256+23	342.9	6	348.9
	Approximate Length:	3125.2			

Barrier Locations and Elevations - Alternative 1 - Noise Barrier 234A1 + 244A1

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
234A1 + 244A1 - 8 Foot Design	NB Mainline EOS	STA5+00	373.8	8	381.8
		STA6+00	376.2	8	384.2
		STA7+00	377.2	8	385.2
		STA8+00	378.2	8	386.2
		STA9+00	377.9	8	385.9
		STA10+00	377.5	8	385.5
		STA11+00	376.0	8	384.0
		STA12+00	374.5	8	382.5
		STA13+00	372.7	8	380.7
		STA14+00	370.9	8	378.9
		STA15+00	369.6	8	377.6
		STA16+00	368.2	8	376.2
		STA17+00	366.0	8	374.0
		STA18+00	363.8	8	371.8
		STA19+00	361.2	8	369.2
		STA20+00	358.5	8	366.5
		STA241+00	354.3	8	362.3
		STA242+00	350.0	8	358.0
		STA243+00	346.6	8	354.6
		STA244+00	343.2	8	351.2
		STA245+00	340.0	8	348.0
		STA245+00	340.0	8	348.0
		STA246+00	336.1	8	344.1
		STA247+00	334.8	8	342.8
		STA247+37	333.4	8	341.4
		STA248+00	330.9	8	338.9
		STA248+73	330.4	8	338.4
		STA249+00	329.1	8	337.1
		STA250+00	328.1	8	336.1
		STA251+00	327.0	8	335.0
		STA252+00	327.5	8	335.5
		STA253+00	327.8	8	335.8
		STA253+35	328.0	8	336.0
		STA253+35	328.7	8	336.7
		STA254+00	329.6	8	337.6
		STA256+23	342.9	8	350.9
	Approximate Length:		3125.2		

Barrier Locations and Elevations - Alternative 1 - Noise Barrier 234A1 + 244A1

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
234A1 + 244A1 - 10 Foot Design	NB Mainline EOS	STA5+00	373.8	10	383.8
		STA6+00	376.2	10	386.2
		STA7+00	377.2	10	387.2
		STA8+00	378.2	10	388.2
		STA9+00	377.9	10	387.9
		STA10+00	377.5	10	387.5
		STA11+00	376.0	10	386.0
		STA12+00	374.5	10	384.5
		STA13+00	372.7	10	382.7
		STA14+00	370.9	10	380.9
		STA15+00	369.6	10	379.6
		STA16+00	368.2	10	378.2
		STA17+00	366.0	10	376.0
		STA18+00	363.8	10	373.8
		STA19+00	361.2	10	371.2
		STA20+00	358.5	10	368.5
		STA241+00	354.3	10	364.3
		STA242+00	350.0	10	360.0
		STA243+00	346.6	10	356.6
		STA244+00	343.2	10	353.2
		STA245+00	340.0	10	350.0
		STA245+00	340.0	10	350.0
		STA246+00	336.1	10	346.1
		STA247+00	334.8	10	344.8
		STA247+37	333.4	10	343.4
		STA248+00	330.9	10	340.9
		STA248+73	330.4	10	340.4
		STA249+00	329.1	10	339.1
		STA250+00	328.1	10	338.1
		STA251+00	327.0	10	337.0
		STA252+00	327.5	10	337.5
		STA253+00	327.8	10	337.8
		STA253+35	328.0	10	338.0
		STA253+35	328.7	10	338.7
		STA254+00	329.6	10	339.6
		STA256+23	342.9	10	352.9
	Approximate Length:		3125.2		

Barrier Locations and Elevations - Alternative 1 - Noise Barrier 234A1 + 244A1

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
234A1 + 244A1 - 12 Foot Design	NB Mainline EOS	STA5+00	373.8	12	385.8
		STA6+00	376.2	12	388.2
		STA7+00	377.2	12	389.2
		STA8+00	378.2	12	390.2
		STA9+00	377.9	12	389.9
		STA10+00	377.5	12	389.5
		STA11+00	376.0	12	388.0
		STA12+00	374.5	12	386.5
		STA13+00	372.7	12	384.7
		STA14+00	370.9	12	382.9
		STA15+00	369.6	12	381.6
		STA16+00	368.2	12	380.2
		STA17+00	366.0	12	378.0
		STA18+00	363.8	12	375.8
		STA19+00	361.2	12	373.2
		STA20+00	358.5	12	370.5
		STA241+00	354.3	12	366.3
		STA242+00	350.0	12	362.0
		STA243+00	346.6	12	358.6
		STA244+00	343.2	12	355.2
		STA245+00	340.0	12	352.0
		STA245+00	340.0	12	352.0
		STA246+00	336.1	12	348.1
		STA247+00	334.8	12	346.8
		STA247+37	333.4	12	345.4
		STA248+00	330.9	12	342.9
		STA248+73	330.4	12	342.4
		STA249+00	329.1	12	341.1
		STA250+00	328.1	12	340.1
		STA251+00	327.0	12	339.0
		STA252+00	327.5	12	339.5
		STA253+00	327.8	12	339.8
		STA253+35	328.0	12	340.0
		STA253+35	328.7	12	340.7
		STA254+00	329.6	12	341.6
		STA256+23	342.9	12	354.9
	Approximate Length:	3125.2			

Barrier Locations and Elevations - Alternative 1 - Noise Barrier 234A1 + 244A1

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
234A1 + 244A1 - 14 Foot Design	NB Mainline EOS	STA5+00	373.8	14	387.8
		STA6+00	376.2	14	390.2
		STA7+00	377.2	14	391.2
		STA8+00	378.2	14	392.2
		STA9+00	377.9	14	391.9
		STA10+00	377.5	14	391.5
		STA11+00	376.0	14	390.0
		STA12+00	374.5	14	388.5
		STA13+00	372.7	14	386.7
		STA14+00	370.9	14	384.9
		STA15+00	369.6	14	383.6
		STA16+00	368.2	14	382.2
		STA17+00	366.0	14	380.0
		STA18+00	363.8	14	377.8
		STA19+00	361.2	14	375.2
		STA20+00	358.5	14	372.5
		STA241+00	354.3	14	368.3
		STA242+00	350.0	14	364.0
		STA243+00	346.6	14	360.6
		STA244+00	343.2	14	357.2
		STA245+00	340.0	14	354.0
		STA245+00	340.0	14	354.0
		STA246+00	336.1	14	350.1
		STA247+00	334.8	14	348.8
		STA247+37	333.4	14	347.4
		STA248+00	330.9	14	344.9
		STA248+73	330.4	14	344.4
		STA249+00	329.1	14	343.1
		STA250+00	328.1	14	342.1
		STA251+00	327.0	14	341.0
		STA252+00	327.5	14	341.5
		STA253+00	327.8	14	341.8
		STA253+35	328.0	14	342.0
		STA253+35	328.7	14	342.7
		STA254+00	329.6	14	343.6
		STA256+23	342.9	14	356.9
	Approximate Length:		3125.2		

Barrier Locations and Elevations - Alternative 1 - Noise Barrier 234A1 + 244A1

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
234A1 + 244A1 - 16 Foot Design	NB Mainline EOS	STA5+00	373.8	16	389.8
		STA6+00	376.2	16	392.2
		STA7+00	377.2	16	393.2
		STA8+00	378.2	16	394.2
		STA9+00	377.9	16	393.9
		STA10+00	377.5	16	393.5
		STA11+00	376.0	16	392.0
		STA12+00	374.5	16	390.5
		STA13+00	372.7	16	388.7
		STA14+00	370.9	16	386.9
		STA15+00	369.6	16	385.6
		STA16+00	368.2	16	384.2
		STA17+00	366.0	16	382.0
		STA18+00	363.8	16	379.8
		STA19+00	361.2	16	377.2
		STA20+00	358.5	16	374.5
		STA241+00	354.3	16	370.3
		STA242+00	350.0	16	366.0
		STA243+00	346.6	16	362.6
		STA244+00	343.2	16	359.2
		STA245+00	340.0	16	356.0
		STA245+00	340.0	16	356.0
		STA246+00	336.1	16	352.1
		STA247+00	334.8	16	350.8
		STA247+37	333.4	16	349.4
		STA248+00	330.9	16	346.9
		STA248+73	330.4	16	346.4
		STA249+00	329.1	16	345.1
		STA250+00	328.1	16	344.1
		STA251+00	327.0	16	343.0
		STA252+00	327.5	16	343.5
		STA253+00	327.8	16	343.8
		STA253+35	328.0	16	344.0
		STA253+35	328.7	16	344.7
		STA254+00	329.6	16	345.6
		STA256+23	342.9	16	358.9
	Approximate Length:	3125.2			

Barrier Locations and Elevations - Alternative 1 - Noise Barrier 234A1 + 244A1

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
234A1 + 244A1 - 18 Foot Design	NB Mainline EOS	STA5+00	373.8	18	391.8
		STA6+00	376.2	18	394.2
		STA7+00	377.2	18	395.2
		STA8+00	378.2	18	396.2
		STA9+00	377.9	18	395.9
		STA10+00	377.5	18	395.5
		STA11+00	376.0	18	394.0
		STA12+00	374.5	18	392.5
		STA13+00	372.7	18	390.7
		STA14+00	370.9	18	388.9
		STA15+00	369.6	18	387.6
		STA16+00	368.2	18	386.2
		STA17+00	366.0	18	384.0
		STA18+00	363.8	18	381.8
		STA19+00	361.2	18	379.2
		STA20+00	358.5	18	376.5
		STA241+00	354.3	18	372.3
		STA242+00	350.0	18	368.0
		STA243+00	346.6	18	364.6
		STA244+00	343.2	18	361.2
		STA245+00	340.0	18	358.0
		STA245+00	340.0	18	358.0
		STA246+00	336.1	18	354.1
		STA247+00	334.8	18	352.8
		STA247+37	333.4	18	351.4
		STA248+00	330.9	18	348.9
		STA248+73	330.4	18	348.4
		STA249+00	329.1	18	347.1
		STA250+00	328.1	18	346.1
		STA251+00	327.0	18	345.0
		STA252+00	327.5	18	345.5
		STA253+00	327.8	18	345.8
		STA253+35	328.0	18	346.0
		STA253+35	328.7	18	346.7
		STA254+00	329.6	18	347.6
		STA256+23	342.9	18	360.9
	Approximate Length:	3125.2			

Barrier Locations and Elevations - Alternative 1 - Noise Barrier 234A1 + 244A1

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
234A1 + 244A1 - 20 Foot Design	NB Mainline EOS	STA5+00	373.8	20	393.8
		STA6+00	376.2	20	396.2
		STA7+00	377.2	20	397.2
		STA8+00	378.2	20	398.2
		STA9+00	377.9	20	397.9
		STA10+00	377.5	20	397.5
		STA11+00	376.0	20	396.0
		STA12+00	374.5	20	394.5
		STA13+00	372.7	20	392.7
		STA14+00	370.9	20	390.9
		STA15+00	369.6	20	389.6
		STA16+00	368.2	20	388.2
		STA17+00	366.0	20	386.0
		STA18+00	363.8	20	383.8
		STA19+00	361.2	20	381.2
		STA20+00	358.5	20	378.5
		STA241+00	354.3	20	374.3
		STA242+00	350.0	20	370.0
		STA243+00	346.6	20	366.6
		STA244+00	343.2	20	363.2
		STA245+00	340.0	20	360.0
		STA245+00	340.0	20	360.0
		STA246+00	336.1	20	356.1
		STA247+00	334.8	20	354.8
		STA247+37	333.4	20	353.4
		STA248+00	330.9	20	350.9
		STA248+73	330.4	20	350.4
		STA249+00	329.1	20	349.1
		STA250+00	328.1	20	348.1
		STA251+00	327.0	20	347.0
		STA252+00	327.5	20	347.5
		STA253+00	327.8	20	347.8
		STA253+35	328.0	20	348.0
		STA253+35	328.7	20	348.7
		STA254+00	329.6	20	349.6
		STA256+23	342.9	20	362.9
	Approximate Length:	3125.2			

Barrier Locations and Elevations - Alternative 1 - Noise Barrier 234A1 + 244A1

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
234A1 + 244A1 - 22 Foot Design	NB Mainline EOS	STA5+00	373.8	22	395.8
		STA6+00	376.2	22	398.2
		STA7+00	377.2	22	399.2
		STA8+00	378.2	22	400.2
		STA9+00	377.9	22	399.9
		STA10+00	377.5	22	399.5
		STA11+00	376.0	22	398.0
		STA12+00	374.5	22	396.5
		STA13+00	372.7	22	394.7
		STA14+00	370.9	22	392.9
		STA15+00	369.6	22	391.6
		STA16+00	368.2	22	390.2
		STA17+00	366.0	22	388.0
		STA18+00	363.8	22	385.8
		STA19+00	361.2	22	383.2
		STA20+00	358.5	22	380.5
		STA241+00	354.3	22	376.3
		STA242+00	350.0	22	372.0
		STA243+00	346.6	22	368.6
		STA244+00	343.2	22	365.2
		STA245+00	340.0	22	362.0
		STA245+00	340.0	22	362.0
		STA246+00	336.1	22	358.1
		STA247+00	334.8	22	356.8
		STA247+37	333.4	22	355.4
		STA248+00	330.9	22	352.9
		STA248+73	330.4	22	352.4
		STA249+00	329.1	22	351.1
		STA250+00	328.1	22	350.1
		STA251+00	327.0	22	349.0
		STA252+00	327.5	22	349.5
		STA253+00	327.8	22	349.8
		STA253+35	328.0	22	350.0
		STA253+35	328.7	22	350.7
		STA254+00	329.6	22	351.6
		STA256+23	342.9	22	364.9
	Approximate Length:	3125.2			

Barrier Locations and Elevations - Alternative 2 - Noise Barrier 234A2 + 244A2

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
234A2 + 244A2 - 6 Foot Design	NB Mainline EOS	STA5+00	373.8	6	379.8
		STA6+00	376.2	6	382.2
		STA7+00	377.2	6	383.2
		STA8+00	378.2	6	384.2
		STA9+00	377.9	6	383.9
		STA10+00	377.5	6	383.5
		STA11+00	376.0	6	382.0
		STA12+00	374.5	6	380.5
		STA13+00	372.7	6	378.7
		STA14+00	370.9	6	376.9
		STA15+00	369.6	6	375.6
		STA16+00	368.2	6	374.2
		STA17+00	366.0	6	372.0
		STA18+00	363.8	6	369.8
		STA19+00	361.2	6	367.2
		STA20+00	358.5	6	364.5
		STA241+00	354.3	6	360.3
		STA242+00	350.0	6	356.0
		STA243+00	346.6	6	352.6
		STA244+00	343.2	6	349.2
		STA245+00	340.0	6	346.0
		STA245+00	340.0	6	346.0
		STA246+00	336.1	6	342.1
		STA247+00	334.8	6	340.8
		STA247+37	333.4	6	339.4
		STA248+00	330.9	6	336.9
		STA248+73	330.4	6	336.4
		STA249+00	329.1	6	335.1
		STA250+00	328.1	6	334.1
		STA251+00	327.0	6	333.0
		STA252+00	327.5	6	333.5
		STA253+00	327.8	6	333.8
		STA253+35	328.0	6	334.0
		STA253+35	328.7	6	334.7
		STA254+00	329.6	6	335.6
		STA256+23	342.9	6	348.9
	Approximate Length:	3125.2			

Barrier Locations and Elevations - Alternative 2 - Noise Barrier 234A2 + 244A2

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
234A2 + 244A2 - 8 Foot Design	NB Mainline EOS	STA5+00	373.8	8	381.8
		STA6+00	376.2	8	384.2
		STA7+00	377.2	8	385.2
		STA8+00	378.2	8	386.2
		STA9+00	377.9	8	385.9
		STA10+00	377.5	8	385.5
		STA11+00	376.0	8	384.0
		STA12+00	374.5	8	382.5
		STA13+00	372.7	8	380.7
		STA14+00	370.9	8	378.9
		STA15+00	369.6	8	377.6
		STA16+00	368.2	8	376.2
		STA17+00	366.0	8	374.0
		STA18+00	363.8	8	371.8
		STA19+00	361.2	8	369.2
		STA20+00	358.5	8	366.5
		STA241+00	354.3	8	362.3
		STA242+00	350.0	8	358.0
		STA243+00	346.6	8	354.6
		STA244+00	343.2	8	351.2
		STA245+00	340.0	8	348.0
		STA245+00	340.0	8	348.0
		STA246+00	336.1	8	344.1
		STA247+00	334.8	8	342.8
		STA247+37	333.4	8	341.4
		STA248+00	330.9	8	338.9
		STA248+73	330.4	8	338.4
		STA249+00	329.1	8	337.1
		STA250+00	328.1	8	336.1
		STA251+00	327.0	8	335.0
		STA252+00	327.5	8	335.5
		STA253+00	327.8	8	335.8
		STA253+35	328.0	8	336.0
		STA253+35	328.7	8	336.7
		STA254+00	329.6	8	337.6
		STA256+23	342.9	8	350.9
	Approximate Length:		3125.2		

Barrier Locations and Elevations - Alternative 2 - Noise Barrier 234A2 + 244A2

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
234A2 + 244A2 - 10 Foot Design	NB Mainline EOS	STA5+00	373.8	10	383.8
		STA6+00	376.2	10	386.2
		STA7+00	377.2	10	387.2
		STA8+00	378.2	10	388.2
		STA9+00	377.9	10	387.9
		STA10+00	377.5	10	387.5
		STA11+00	376.0	10	386.0
		STA12+00	374.5	10	384.5
		STA13+00	372.7	10	382.7
		STA14+00	370.9	10	380.9
		STA15+00	369.6	10	379.6
		STA16+00	368.2	10	378.2
		STA17+00	366.0	10	376.0
		STA18+00	363.8	10	373.8
		STA19+00	361.2	10	371.2
		STA20+00	358.5	10	368.5
		STA241+00	354.3	10	364.3
		STA242+00	350.0	10	360.0
		STA243+00	346.6	10	356.6
		STA244+00	343.2	10	353.2
		STA245+00	340.0	10	350.0
		STA245+00	340.0	10	350.0
		STA246+00	336.1	10	346.1
		STA247+00	334.8	10	344.8
		STA247+37	333.4	10	343.4
		STA248+00	330.9	10	340.9
		STA248+73	330.4	10	340.4
		STA249+00	329.1	10	339.1
		STA250+00	328.1	10	338.1
		STA251+00	327.0	10	337.0
		STA252+00	327.5	10	337.5
		STA253+00	327.8	10	337.8
		STA253+35	328.0	10	338.0
		STA253+35	328.7	10	338.7
		STA254+00	329.6	10	339.6
		STA256+23	342.9	10	352.9
	Approximate Length:		3125.2		

Barrier Locations and Elevations - Alternative 2 - Noise Barrier 234A2 + 244A2

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
234A2 + 244A2 - 12 Foot Design	NB Mainline EOS	STA5+00	373.8	12	385.8
		STA6+00	376.2	12	388.2
		STA7+00	377.2	12	389.2
		STA8+00	378.2	12	390.2
		STA9+00	377.9	12	389.9
		STA10+00	377.5	12	389.5
		STA11+00	376.0	12	388.0
		STA12+00	374.5	12	386.5
		STA13+00	372.7	12	384.7
		STA14+00	370.9	12	382.9
		STA15+00	369.6	12	381.6
		STA16+00	368.2	12	380.2
		STA17+00	366.0	12	378.0
		STA18+00	363.8	12	375.8
		STA19+00	361.2	12	373.2
		STA20+00	358.5	12	370.5
		STA241+00	354.3	12	366.3
		STA242+00	350.0	12	362.0
		STA243+00	346.6	12	358.6
		STA244+00	343.2	12	355.2
		STA245+00	340.0	12	352.0
		STA245+00	340.0	12	352.0
		STA246+00	336.1	12	348.1
		STA247+00	334.8	12	346.8
		STA247+37	333.4	12	345.4
		STA248+00	330.9	12	342.9
		STA248+73	330.4	12	342.4
		STA249+00	329.1	12	341.1
		STA250+00	328.1	12	340.1
		STA251+00	327.0	12	339.0
		STA252+00	327.5	12	339.5
		STA253+00	327.8	12	339.8
		STA253+35	328.0	12	340.0
		STA253+35	328.7	12	340.7
		STA254+00	329.6	12	341.6
		STA256+23	342.9	12	354.9
	Approximate Length:	3125.2			

Barrier Locations and Elevations - Alternative 2 - Noise Barrier 234A2 + 244A2

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
234A2 + 244A2 - 14 Foot Design	NB Mainline EOS	STA5+00	373.8	14	387.8
		STA6+00	376.2	14	390.2
		STA7+00	377.2	14	391.2
		STA8+00	378.2	14	392.2
		STA9+00	377.9	14	391.9
		STA10+00	377.5	14	391.5
		STA11+00	376.0	14	390.0
		STA12+00	374.5	14	388.5
		STA13+00	372.7	14	386.7
		STA14+00	370.9	14	384.9
		STA15+00	369.6	14	383.6
		STA16+00	368.2	14	382.2
		STA17+00	366.0	14	380.0
		STA18+00	363.8	14	377.8
		STA19+00	361.2	14	375.2
		STA20+00	358.5	14	372.5
		STA241+00	354.3	14	368.3
		STA242+00	350.0	14	364.0
		STA243+00	346.6	14	360.6
		STA244+00	343.2	14	357.2
		STA245+00	340.0	14	354.0
		STA245+00	340.0	14	354.0
		STA246+00	336.1	14	350.1
		STA247+00	334.8	14	348.8
		STA247+37	333.4	14	347.4
		STA248+00	330.9	14	344.9
		STA248+73	330.4	14	344.4
		STA249+00	329.1	14	343.1
		STA250+00	328.1	14	342.1
		STA251+00	327.0	14	341.0
		STA252+00	327.5	14	341.5
		STA253+00	327.8	14	341.8
		STA253+35	328.0	14	342.0
		STA253+35	328.7	14	342.7
		STA254+00	329.6	14	343.6
		STA256+23	342.9	14	356.9
	Approximate Length:		3125.2		

Barrier Locations and Elevations - Alternative 2 - Noise Barrier 234A2 + 244A2

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
234A2 + 244A2 - 16 Foot Design	NB Mainline EOS	STA5+00	373.8	16	389.8
		STA6+00	376.2	16	392.2
		STA7+00	377.2	16	393.2
		STA8+00	378.2	16	394.2
		STA9+00	377.9	16	393.9
		STA10+00	377.5	16	393.5
		STA11+00	376.0	16	392.0
		STA12+00	374.5	16	390.5
		STA13+00	372.7	16	388.7
		STA14+00	370.9	16	386.9
		STA15+00	369.6	16	385.6
		STA16+00	368.2	16	384.2
		STA17+00	366.0	16	382.0
		STA18+00	363.8	16	379.8
		STA19+00	361.2	16	377.2
		STA20+00	358.5	16	374.5
		STA241+00	354.3	16	370.3
		STA242+00	350.0	16	366.0
		STA243+00	346.6	16	362.6
		STA244+00	343.2	16	359.2
		STA245+00	340.0	16	356.0
		STA245+00	340.0	16	356.0
		STA246+00	336.1	16	352.1
		STA247+00	334.8	16	350.8
		STA247+37	333.4	16	349.4
		STA248+00	330.9	16	346.9
		STA248+73	330.4	16	346.4
		STA249+00	329.1	16	345.1
		STA250+00	328.1	16	344.1
		STA251+00	327.0	16	343.0
		STA252+00	327.5	16	343.5
		STA253+00	327.8	16	343.8
		STA253+35	328.0	16	344.0
		STA253+35	328.7	16	344.7
		STA254+00	329.6	16	345.6
		STA256+23	342.9	16	358.9
	Approximate Length:	3125.2			

Barrier Locations and Elevations - Alternative 2 - Noise Barrier 234A2 + 244A2

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
234A2 + 244A2 - 18 Foot Design	NB Mainline EOS	STA5+00	373.8	18	391.8
		STA6+00	376.2	18	394.2
		STA7+00	377.2	18	395.2
		STA8+00	378.2	18	396.2
		STA9+00	377.9	18	395.9
		STA10+00	377.5	18	395.5
		STA11+00	376.0	18	394.0
		STA12+00	374.5	18	392.5
		STA13+00	372.7	18	390.7
		STA14+00	370.9	18	388.9
		STA15+00	369.6	18	387.6
		STA16+00	368.2	18	386.2
		STA17+00	366.0	18	384.0
		STA18+00	363.8	18	381.8
		STA19+00	361.2	18	379.2
		STA20+00	358.5	18	376.5
		STA241+00	354.3	18	372.3
		STA242+00	350.0	18	368.0
		STA243+00	346.6	18	364.6
		STA244+00	343.2	18	361.2
		STA245+00	340.0	18	358.0
		STA245+00	340.0	18	358.0
		STA246+00	336.1	18	354.1
		STA247+00	334.8	18	352.8
		STA247+37	333.4	18	351.4
		STA248+00	330.9	18	348.9
		STA248+73	330.4	18	348.4
		STA249+00	329.1	18	347.1
		STA250+00	328.1	18	346.1
		STA251+00	327.0	18	345.0
		STA252+00	327.5	18	345.5
		STA253+00	327.8	18	345.8
		STA253+35	328.0	18	346.0
		STA253+35	328.7	18	346.7
		STA254+00	329.6	18	347.6
		STA256+23	342.9	18	360.9
	Approximate Length:	3125.2			

Barrier Locations and Elevations - Alternative 2 - Noise Barrier 234A2 + 244A2

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
234A2 + 244A2 - 20 Foot Design	NB Mainline EOS	STA5+00	373.8	20	393.8
		STA6+00	376.2	20	396.2
		STA7+00	377.2	20	397.2
		STA8+00	378.2	20	398.2
		STA9+00	377.9	20	397.9
		STA10+00	377.5	20	397.5
		STA11+00	376.0	20	396.0
		STA12+00	374.5	20	394.5
		STA13+00	372.7	20	392.7
		STA14+00	370.9	20	390.9
		STA15+00	369.6	20	389.6
		STA16+00	368.2	20	388.2
		STA17+00	366.0	20	386.0
		STA18+00	363.8	20	383.8
		STA19+00	361.2	20	381.2
		STA20+00	358.5	20	378.5
		STA241+00	354.3	20	374.3
		STA242+00	350.0	20	370.0
		STA243+00	346.6	20	366.6
		STA244+00	343.2	20	363.2
		STA245+00	340.0	20	360.0
		STA245+00	340.0	20	360.0
		STA246+00	336.1	20	356.1
		STA247+00	334.8	20	354.8
		STA247+37	333.4	20	353.4
		STA248+00	330.9	20	350.9
		STA248+73	330.4	20	350.4
		STA249+00	329.1	20	349.1
		STA250+00	328.1	20	348.1
		STA251+00	327.0	20	347.0
		STA252+00	327.5	20	347.5
		STA253+00	327.8	20	347.8
		STA253+35	328.0	20	348.0
		STA253+35	328.7	20	348.7
		STA254+00	329.6	20	349.6
		STA256+23	342.9	20	362.9
	Approximate Length:	3125.2			

Barrier Locations and Elevations - Alternative 2 - Noise Barrier 234A2 + 244A2

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
234A2 + 244A2 - 22 Foot Design	NB Mainline EOS	STA5+00	373.8	22	395.8
		STA6+00	376.2	22	398.2
		STA7+00	377.2	22	399.2
		STA8+00	378.2	22	400.2
		STA9+00	377.9	22	399.9
		STA10+00	377.5	22	399.5
		STA11+00	376.0	22	398.0
		STA12+00	374.5	22	396.5
		STA13+00	372.7	22	394.7
		STA14+00	370.9	22	392.9
		STA15+00	369.6	22	391.6
		STA16+00	368.2	22	390.2
		STA17+00	366.0	22	388.0
		STA18+00	363.8	22	385.8
		STA19+00	361.2	22	383.2
		STA20+00	358.5	22	380.5
		STA241+00	354.3	22	376.3
		STA242+00	350.0	22	372.0
		STA243+00	346.6	22	368.6
		STA244+00	343.2	22	365.2
		STA245+00	340.0	22	362.0
		STA245+00	340.0	22	362.0
		STA246+00	336.1	22	358.1
		STA247+00	334.8	22	356.8
		STA247+37	333.4	22	355.4
		STA248+00	330.9	22	352.9
		STA248+73	330.4	22	352.4
		STA249+00	329.1	22	351.1
		STA250+00	328.1	22	350.1
		STA251+00	327.0	22	349.0
		STA252+00	327.5	22	349.5
		STA253+00	327.8	22	349.8
		STA253+35	328.0	22	350.0
		STA253+35	328.7	22	350.7
		STA254+00	329.6	22	351.6
		STA256+23	342.9	22	364.9
	Approximate Length:	3125.2			

Barrier Locations and Elevations - Alternative 1 - Noise Barrier 235A1

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
235A1 - 6 Foot Design	SB Mainline EOS	STA262+00	338.0	6	344.0
		STA260+00	338.0	6	344.0
		STA258+00	336.1	6	342.1
		STA256+00	332.3	6	338.3
		STA254+00	329.0	6	335.0
		STA252+00	327.0	6	333.0
		STA250+00	329.0	6	335.0
		STA248+00	335.0	6	341.0
		STA246+00	345.0	6	351.0
		STA244+00	354.6	6	360.6
		STA242+00	362.0	6	368.0
		STA240+00	369.1	6	375.1
		STA239+66	369.0	6	375.0
		STA24+00	372.5	6	378.5
		STA23+00	374.0	6	380.0
		STA22+00	376.0	6	382.0
		STA21+00	376.0	6	382.0
		STA20+00	374.0	6	380.0
		STA08+00	374.5	6	380.5
		STA06+00	375.8	6	381.8
		STA05+00	377.8	6	383.8
		STA04+77	378.0	6	384.0
		STA04+00	376.0	6	382.0
		STA03+00	375.7	6	381.7
		STA02+00	376.6	6	382.6
	Approximate Length: 3483.7				

Barrier Locations and Elevations - Alternative 1 - Noise Barrier 235A1

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
235A1 - 8 Foot Design	SB Mainline EOS	STA262+00	338.0	8	346.0
		STA260+00	338.0	8	346.0
		STA258+00	336.1	8	344.1
		STA256+00	332.3	8	340.3
		STA254+00	329.0	8	337.0
		STA252+00	327.0	8	335.0
		STA250+00	329.0	8	337.0
		STA248+00	335.0	8	343.0
		STA246+00	345.0	8	353.0
		STA244+00	354.6	8	362.6
		STA242+00	362.0	8	370.0
		STA240+00	369.1	8	377.1
		STA239+66	369.0	8	377.0
		STA24+00	372.5	8	380.5
		STA23+00	374.0	8	382.0
		STA22+00	376.0	8	384.0
		STA21+00	376.0	8	384.0
		STA20+00	374.0	8	382.0
		STA08+00	374.5	8	382.5
		STA06+00	375.8	8	383.8
		STA05+00	377.8	8	385.8
		STA04+77	378.0	8	386.0
		STA04+00	376.0	8	384.0
		STA03+00	375.7	8	383.7
		STA02+00	376.6	8	384.6
	Approximate Length: 3483.7				

Barrier Locations and Elevations - Alternative 1 - Noise Barrier 235A1

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
235A1 - 10 Foot Design	SB Mainline EOS	STA262+00	338.0	10	348.0
		STA260+00	338.0	10	348.0
		STA258+00	336.1	10	346.1
		STA256+00	332.3	10	342.3
		STA254+00	329.0	10	339.0
		STA252+00	327.0	10	337.0
		STA250+00	329.0	10	339.0
		STA248+00	335.0	10	345.0
		STA246+00	345.0	10	355.0
		STA244+00	354.6	10	364.6
		STA242+00	362.0	10	372.0
		STA240+00	369.1	10	379.1
		STA239+66	369.0	10	379.0
		STA24+00	372.5	10	382.5
		STA23+00	374.0	10	384.0
		STA22+00	376.0	10	386.0
		STA21+00	376.0	10	386.0
		STA20+00	374.0	10	384.0
		STA08+00	374.5	10	384.5
		STA06+00	375.8	10	385.8
		STA05+00	377.8	10	387.8
		STA04+77	378.0	10	388.0
		STA04+00	376.0	10	386.0
		STA03+00	375.7	10	385.7
		STA02+00	376.6	10	386.6
	Approximate Length: 3483.7				

Barrier Locations and Elevations - Alternative 1 - Noise Barrier 235A1

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
235A1 - 12 Foot Design	SB Mainline EOS	STA262+00	338.0	12	350.0
		STA260+00	338.0	12	350.0
		STA258+00	336.1	12	348.1
		STA256+00	332.3	12	344.3
		STA254+00	329.0	12	341.0
		STA252+00	327.0	12	339.0
		STA250+00	329.0	12	341.0
		STA248+00	335.0	12	347.0
		STA246+00	345.0	12	357.0
		STA244+00	354.6	12	366.6
		STA242+00	362.0	12	374.0
		STA240+00	369.1	12	381.1
		STA239+66	369.0	12	381.0
		STA24+00	372.5	12	384.5
		STA23+00	374.0	12	386.0
		STA22+00	376.0	12	388.0
		STA21+00	376.0	12	388.0
		STA20+00	374.0	12	386.0
		STA08+00	374.5	12	386.5
		STA06+00	375.8	12	387.8
		STA05+00	377.8	12	389.8
		STA04+77	378.0	12	390.0
		STA04+00	376.0	12	388.0
		STA03+00	375.7	12	387.7
		STA02+00	376.6	12	388.6
	Approximate Length: 3483.7				

Barrier Locations and Elevations - Alternative 1 - Noise Barrier 235A1

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
235A1 - 14 Foot Design	SB Mainline EOS	STA262+00	338.0	14	352.0
		STA260+00	338.0	14	352.0
		STA258+00	336.1	14	350.1
		STA256+00	332.3	14	346.3
		STA254+00	329.0	14	343.0
		STA252+00	327.0	14	341.0
		STA250+00	329.0	14	343.0
		STA248+00	335.0	14	349.0
		STA246+00	345.0	14	359.0
		STA244+00	354.6	14	368.6
		STA242+00	362.0	14	376.0
		STA240+00	369.1	14	383.1
		STA239+66	369.0	14	383.0
		STA24+00	372.5	14	386.5
		STA23+00	374.0	14	388.0
		STA22+00	376.0	14	390.0
		STA21+00	376.0	14	390.0
		STA20+00	374.0	14	388.0
		STA08+00	374.5	14	388.5
		STA06+00	375.8	14	389.8
		STA05+00	377.8	14	391.8
		STA04+77	378.0	14	392.0
		STA04+00	376.0	14	390.0
		STA03+00	375.7	14	389.7
		STA02+00	376.6	14	390.6
	Approximate Length: 3483.7				

Barrier Locations and Elevations - Alternative 1 - Noise Barrier 235A1

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
235A1 - 16 Foot Design	SB Mainline EOS	STA262+00	338.0	16	354.0
		STA260+00	338.0	16	354.0
		STA258+00	336.1	16	352.1
		STA256+00	332.3	16	348.3
		STA254+00	329.0	16	345.0
		STA252+00	327.0	16	343.0
		STA250+00	329.0	16	345.0
		STA248+00	335.0	16	351.0
		STA246+00	345.0	16	361.0
		STA244+00	354.6	16	370.6
		STA242+00	362.0	16	378.0
		STA240+00	369.1	16	385.1
		STA239+66	369.0	16	385.0
		STA24+00	372.5	16	388.5
		STA23+00	374.0	16	390.0
		STA22+00	376.0	16	392.0
		STA21+00	376.0	16	392.0
		STA20+00	374.0	16	390.0
		STA08+00	374.5	16	390.5
		STA06+00	375.8	16	391.8
		STA05+00	377.8	16	393.8
		STA04+77	378.0	16	394.0
		STA04+00	376.0	16	392.0
		STA03+00	375.7	16	391.7
		STA02+00	376.6	16	392.6
	Approximate Length: 3483.7				

Barrier Locations and Elevations - Alternative 1 - Noise Barrier 235A1

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
235A1 - 18 Foot Design	SB Mainline EOS	STA262+00	338.0	18	356.0
		STA260+00	338.0	18	356.0
		STA258+00	336.1	18	354.1
		STA256+00	332.3	18	350.3
		STA254+00	329.0	18	347.0
		STA252+00	327.0	18	345.0
		STA250+00	329.0	18	347.0
		STA248+00	335.0	18	353.0
		STA246+00	345.0	18	363.0
		STA244+00	354.6	18	372.6
		STA242+00	362.0	18	380.0
		STA240+00	369.1	18	387.1
		STA239+66	369.0	18	387.0
		STA24+00	372.5	18	390.5
		STA23+00	374.0	18	392.0
		STA22+00	376.0	18	394.0
		STA21+00	376.0	18	394.0
		STA20+00	374.0	18	392.0
		STA08+00	374.5	18	392.5
		STA06+00	375.8	18	393.8
		STA05+00	377.8	18	395.8
		STA04+77	378.0	18	396.0
		STA04+00	376.0	18	394.0
		STA03+00	375.7	18	393.7
		STA02+00	376.6	18	394.6
	Approximate Length: 3483.7				

Barrier Locations and Elevations - Alternative 1 - Noise Barrier 235A1

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
235A1 - 20 Foot Design	SB Mainline EOS	STA262+00	338.0	20	358.0
		STA260+00	338.0	20	358.0
		STA258+00	336.1	20	356.1
		STA256+00	332.3	20	352.3
		STA254+00	329.0	20	349.0
		STA252+00	327.0	20	347.0
		STA250+00	329.0	20	349.0
		STA248+00	335.0	20	355.0
		STA246+00	345.0	20	365.0
		STA244+00	354.6	20	374.6
		STA242+00	362.0	20	382.0
		STA240+00	369.1	20	389.1
		STA239+66	369.0	20	389.0
		STA24+00	372.5	20	392.5
		STA23+00	374.0	20	394.0
		STA22+00	376.0	20	396.0
		STA21+00	376.0	20	396.0
		STA20+00	374.0	20	394.0
		STA08+00	374.5	20	394.5
		STA06+00	375.8	20	395.8
		STA05+00	377.8	20	397.8
		STA04+77	378.0	20	398.0
		STA04+00	376.0	20	396.0
		STA03+00	375.7	20	395.7
		STA02+00	376.6	20	396.6
	Approximate Length: 3483.7				

Barrier Locations and Elevations - Alternative 1 - Noise Barrier 235A1

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
235A1 - 22 Foot Design	SB Mainline EOS	STA262+00	338.0	22	360.0
		STA260+00	338.0	22	360.0
		STA258+00	336.1	22	358.1
		STA256+00	332.3	22	354.3
		STA254+00	329.0	22	351.0
		STA252+00	327.0	22	349.0
		STA250+00	329.0	22	351.0
		STA248+00	335.0	22	357.0
		STA246+00	345.0	22	367.0
		STA244+00	354.6	22	376.6
		STA242+00	362.0	22	384.0
		STA240+00	369.1	22	391.1
		STA239+66	369.0	22	391.0
		STA24+00	372.5	22	394.5
		STA23+00	374.0	22	396.0
		STA22+00	376.0	22	398.0
		STA21+00	376.0	22	398.0
		STA20+00	374.0	22	396.0
		STA08+00	374.5	22	396.5
		STA06+00	375.8	22	397.8
		STA05+00	377.8	22	399.8
		STA04+77	378.0	22	400.0
		STA04+00	376.0	22	398.0
		STA03+00	375.7	22	397.7
		STA02+00	376.6	22	398.6
	Approximate Length:	3483.7			

Barrier Locations and Elevations - Alternative 2 - Noise Barrier 235A2

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
235A2 - 6 Foot Design	SB Mainline EOS	STA262+00	338.0	6	344.0
		STA260+00	338.0	6	344.0
		STA258+00	336.1	6	342.1
		STA256+00	332.3	6	338.3
		STA254+00	329.0	6	335.0
		STA252+00	327.0	6	333.0
		STA250+00	329.0	6	335.0
		STA248+00	335.0	6	341.0
		STA246+00	345.0	6	351.0
		STA244+00	354.6	6	360.6
		STA242+00	362.0	6	368.0
		STA240+00	369.1	6	375.1
		STA239+66	369.0	6	375.0
		STA24+00	372.5	6	378.5
		STA23+00	374.0	6	380.0
		STA22+00	376.0	6	382.0
		STA21+00	376.0	6	382.0
		STA20+00	374.0	6	380.0
		STA08+00	374.5	6	380.5
		STA06+00	375.8	6	381.8
		STA05+00	377.8	6	383.8
		STA04+77	378.0	6	384.0
		STA04+00	376.0	6	382.0
		STA03+00	375.7	6	381.7
		STA02+00	376.6	6	382.6
	Approximate Length: 3483.7				

Barrier Locations and Elevations - Alternative 2 - Noise Barrier 235A2

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
235A2 - 8 Foot Design	SB Mainline EOS	STA262+00	338.0	8	346.0
		STA260+00	338.0	8	346.0
		STA258+00	336.1	8	344.1
		STA256+00	332.3	8	340.3
		STA254+00	329.0	8	337.0
		STA252+00	327.0	8	335.0
		STA250+00	329.0	8	337.0
		STA248+00	335.0	8	343.0
		STA246+00	345.0	8	353.0
		STA244+00	354.6	8	362.6
		STA242+00	362.0	8	370.0
		STA240+00	369.1	8	377.1
		STA239+66	369.0	8	377.0
		STA24+00	372.5	8	380.5
		STA23+00	374.0	8	382.0
		STA22+00	376.0	8	384.0
		STA21+00	376.0	8	384.0
		STA20+00	374.0	8	382.0
		STA08+00	374.5	8	382.5
		STA06+00	375.8	8	383.8
		STA05+00	377.8	8	385.8
		STA04+77	378.0	8	386.0
		STA04+00	376.0	8	384.0
		STA03+00	375.7	8	383.7
		STA02+00	376.6	8	384.6
	Approximate Length: 3483.7				

Barrier Locations and Elevations - Alternative 2 - Noise Barrier 235A2

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
235A2 - 10 Foot Design	SB Mainline EOS	STA262+00	338.0	10	348.0
		STA260+00	338.0	10	348.0
		STA258+00	336.1	10	346.1
		STA256+00	332.3	10	342.3
		STA254+00	329.0	10	339.0
		STA252+00	327.0	10	337.0
		STA250+00	329.0	10	339.0
		STA248+00	335.0	10	345.0
		STA246+00	345.0	10	355.0
		STA244+00	354.6	10	364.6
		STA242+00	362.0	10	372.0
		STA240+00	369.1	10	379.1
		STA239+66	369.0	10	379.0
		STA24+00	372.5	10	382.5
		STA23+00	374.0	10	384.0
		STA22+00	376.0	10	386.0
		STA21+00	376.0	10	386.0
		STA20+00	374.0	10	384.0
		STA08+00	374.5	10	384.5
		STA06+00	375.8	10	385.8
		STA05+00	377.8	10	387.8
		STA04+77	378.0	10	388.0
		STA04+00	376.0	10	386.0
		STA03+00	375.7	10	385.7
		STA02+00	376.6	10	386.6
	Approximate Length: 3483.7				

Barrier Locations and Elevations - Alternative 2 - Noise Barrier 235A2

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
235A2 - 12 Foot Design	SB Mainline EOS	STA262+00	338.0	12	350.0
		STA260+00	338.0	12	350.0
		STA258+00	336.1	12	348.1
		STA256+00	332.3	12	344.3
		STA254+00	329.0	12	341.0
		STA252+00	327.0	12	339.0
		STA250+00	329.0	12	341.0
		STA248+00	335.0	12	347.0
		STA246+00	345.0	12	357.0
		STA244+00	354.6	12	366.6
		STA242+00	362.0	12	374.0
		STA240+00	369.1	12	381.1
		STA239+66	369.0	12	381.0
		STA24+00	372.5	12	384.5
		STA23+00	374.0	12	386.0
		STA22+00	376.0	12	388.0
		STA21+00	376.0	12	388.0
		STA20+00	374.0	12	386.0
		STA08+00	374.5	12	386.5
		STA06+00	375.8	12	387.8
		STA05+00	377.8	12	389.8
		STA04+77	378.0	12	390.0
		STA04+00	376.0	12	388.0
		STA03+00	375.7	12	387.7
		STA02+00	376.6	12	388.6
	Approximate Length: 3483.7				

Barrier Locations and Elevations - Alternative 2 - Noise Barrier 235A2

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
235A2 - 14 Foot Design	SB Mainline EOS	STA262+00	338.0	14	352.0
		STA260+00	338.0	14	352.0
		STA258+00	336.1	14	350.1
		STA256+00	332.3	14	346.3
		STA254+00	329.0	14	343.0
		STA252+00	327.0	14	341.0
		STA250+00	329.0	14	343.0
		STA248+00	335.0	14	349.0
		STA246+00	345.0	14	359.0
		STA244+00	354.6	14	368.6
		STA242+00	362.0	14	376.0
		STA240+00	369.1	14	383.1
		STA239+66	369.0	14	383.0
		STA24+00	372.5	14	386.5
		STA23+00	374.0	14	388.0
		STA22+00	376.0	14	390.0
		STA21+00	376.0	14	390.0
		STA20+00	374.0	14	388.0
		STA08+00	374.5	14	388.5
		STA06+00	375.8	14	389.8
		STA05+00	377.8	14	391.8
		STA04+77	378.0	14	392.0
		STA04+00	376.0	14	390.0
		STA03+00	375.7	14	389.7
		STA02+00	376.6	14	390.6
	Approximate Length: 3483.7				

Barrier Locations and Elevations - Alternative 2 - Noise Barrier 235A2

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
235A2 - 16 Foot Design	SB Mainline EOS	STA262+00	338.0	16	354.0
		STA260+00	338.0	16	354.0
		STA258+00	336.1	16	352.1
		STA256+00	332.3	16	348.3
		STA254+00	329.0	16	345.0
		STA252+00	327.0	16	343.0
		STA250+00	329.0	16	345.0
		STA248+00	335.0	16	351.0
		STA246+00	345.0	16	361.0
		STA244+00	354.6	16	370.6
		STA242+00	362.0	16	378.0
		STA240+00	369.1	16	385.1
		STA239+66	369.0	16	385.0
		STA24+00	372.5	16	388.5
		STA23+00	374.0	16	390.0
		STA22+00	376.0	16	392.0
		STA21+00	376.0	16	392.0
		STA20+00	374.0	16	390.0
		STA08+00	374.5	16	390.5
		STA06+00	375.8	16	391.8
		STA05+00	377.8	16	393.8
		STA04+77	378.0	16	394.0
		STA04+00	376.0	16	392.0
		STA03+00	375.7	16	391.7
		STA02+00	376.6	16	392.6
	Approximate Length: 3483.7				

Barrier Locations and Elevations - Alternative 2 - Noise Barrier 235A2

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
235A2 - 18 Foot Design	SB Mainline EOS	STA262+00	338.0	18	356.0
		STA260+00	338.0	18	356.0
		STA258+00	336.1	18	354.1
		STA256+00	332.3	18	350.3
		STA254+00	329.0	18	347.0
		STA252+00	327.0	18	345.0
		STA250+00	329.0	18	347.0
		STA248+00	335.0	18	353.0
		STA246+00	345.0	18	363.0
		STA244+00	354.6	18	372.6
		STA242+00	362.0	18	380.0
		STA240+00	369.1	18	387.1
		STA239+66	369.0	18	387.0
		STA24+00	372.5	18	390.5
		STA23+00	374.0	18	392.0
		STA22+00	376.0	18	394.0
		STA21+00	376.0	18	394.0
		STA20+00	374.0	18	392.0
		STA08+00	374.5	18	392.5
		STA06+00	375.8	18	393.8
		STA05+00	377.8	18	395.8
		STA04+77	378.0	18	396.0
		STA04+00	376.0	18	394.0
		STA03+00	375.7	18	393.7
		STA02+00	376.6	18	394.6
	Approximate Length: 3483.7				

Barrier Locations and Elevations - Alternative 2 - Noise Barrier 235A2

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
235A2 - 20 Foot Design	SB Mainline EOS	STA262+00	338.0	20	358.0
		STA260+00	338.0	20	358.0
		STA258+00	336.1	20	356.1
		STA256+00	332.3	20	352.3
		STA254+00	329.0	20	349.0
		STA252+00	327.0	20	347.0
		STA250+00	329.0	20	349.0
		STA248+00	335.0	20	355.0
		STA246+00	345.0	20	365.0
		STA244+00	354.6	20	374.6
		STA242+00	362.0	20	382.0
		STA240+00	369.1	20	389.1
		STA239+66	369.0	20	389.0
		STA24+00	372.5	20	392.5
		STA23+00	374.0	20	394.0
		STA22+00	376.0	20	396.0
		STA21+00	376.0	20	396.0
		STA20+00	374.0	20	394.0
		STA08+00	374.5	20	394.5
		STA06+00	375.8	20	395.8
		STA05+00	377.8	20	397.8
		STA04+77	378.0	20	398.0
		STA04+00	376.0	20	396.0
		STA03+00	375.7	20	395.7
		STA02+00	376.6	20	396.6
	Approximate Length: 3483.7				

Barrier Locations and Elevations - Alternative 2 - Noise Barrier 235A2

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
235A2 - 22 Foot Design	SB Mainline EOS	STA262+00	338.0	22	360.0
		STA260+00	338.0	22	360.0
		STA258+00	336.1	22	358.1
		STA256+00	332.3	22	354.3
		STA254+00	329.0	22	351.0
		STA252+00	327.0	22	349.0
		STA250+00	329.0	22	351.0
		STA248+00	335.0	22	357.0
		STA246+00	345.0	22	367.0
		STA244+00	354.6	22	376.6
		STA242+00	362.0	22	384.0
		STA240+00	369.1	22	391.1
		STA239+66	369.0	22	391.0
		STA24+00	372.5	22	394.5
		STA23+00	374.0	22	396.0
		STA22+00	376.0	22	398.0
		STA21+00	376.0	22	398.0
		STA20+00	374.0	22	396.0
		STA08+00	374.5	22	396.5
		STA06+00	375.8	22	397.8
		STA05+00	377.8	22	399.8
		STA04+77	378.0	22	400.0
		STA04+00	376.0	22	398.0
		STA03+00	375.7	22	397.7
		STA02+00	376.6	22	398.6
	Approximate Length: 3483.7				

Barrier Locations and Elevations - Alternative 1 - Noise Barrier 229A1

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
229A1 - 6 Foot Design	Private Property Along Avenida De La Carlota	PT01	374.0	6	380.0
		PT02	373.0	6	379.0
		PT03	373.5	6	379.5
		PT04	374.0	6	380.0
		PT05	374.0	6	380.0
		PT06	375.0	6	381.0
	Approximate Length:		290.2		

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
229A1 - 8 Foot Design	Private Property Along Avenida De La Carlota	PT01	374.0	8	382.0
		PT02	373.0	8	381.0
		PT03	373.5	8	381.5
		PT04	374.0	8	382.0
		PT05	374.0	8	382.0
		PT06	375.0	8	383.0
	Approximate Length:		290.2		

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
229A1 - 10 Foot Design	Private Property Along Avenida De La Carlota	PT01	374.0	10	384.0
		PT02	373.0	10	383.0
		PT03	373.5	10	383.5
		PT04	374.0	10	384.0
		PT05	374.0	10	384.0
		PT06	375.0	10	385.0
	Approximate Length:		290.2		

Barrier Locations and Elevations - Alternative 1 - Noise Barrier 229A1

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
229A1 - 12 Foot Design	Private Property Along Avenida De La Carlota	PT01	374.0	12	386.0
		PT02	373.0	12	385.0
		PT03	373.5	12	385.5
		PT04	374.0	12	386.0
		PT05	374.0	12	386.0
		PT06	375.0	12	387.0
	Approximate Length:		290.2		

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
229A1 - 14 Foot Design	Private Property Along Avenida De La Carlota	PT01	374.0	14	388.0
		PT02	373.0	14	387.0
		PT03	373.5	14	387.5
		PT04	374.0	14	388.0
		PT05	374.0	14	388.0
		PT06	375.0	14	389.0
	Approximate Length:		290.2		

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
229A1 - 16 Foot Design	Private Property Along Avenida De La Carlota	PT01	374.0	16	390.0
		PT02	373.0	16	389.0
		PT03	373.5	16	389.5
		PT04	374.0	16	390.0
		PT05	374.0	16	390.0
		PT06	375.0	16	391.0
	Approximate Length:		290.2		

Barrier Locations and Elevations - Alternative 1 - Noise Barrier 229A1

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
229A1 - 18 Foot Design	Private Property Along Avenida De La Carlota	PT01	374.0	18	392.0
		PT02	373.0	18	391.0
		PT03	373.5	18	391.5
		PT04	374.0	18	392.0
		PT05	374.0	18	392.0
		PT06	375.0	18	393.0
	Approximate Length:		290.2		

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
229A1 - 20 Foot Design	Private Property Along Avenida De La Carlota	PT01	374.0	20	394.0
		PT02	373.0	20	393.0
		PT03	373.5	20	393.5
		PT04	374.0	20	394.0
		PT05	374.0	20	394.0
		PT06	375.0	20	395.0
	Approximate Length:		290.2		

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
229A1 - 22 Foot Design	Private Property Along Avenida De La Carlota	PT01	374.0	22	396.0
		PT02	373.0	22	395.0
		PT03	373.5	22	395.5
		PT04	374.0	22	396.0
		PT05	374.0	22	396.0
		PT06	375.0	22	397.0
	Approximate Length:		290.2		

Barrier Locations and Elevations - Alternative 2 - Noise Barrier 229A2

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
229A2 - 6 Foot Design	Private Property Along Avenida De La Carlota	PT01	374.0	6	380.0
		PT02	373.0	6	379.0
		PT03	373.5	6	379.5
		PT04	374.0	6	380.0
		PT05	374.0	6	380.0
		PT06	375.0	6	381.0
	Approximate Length:		290.2		

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
229A2 - 8 Foot Design	Private Property Along Avenida De La Carlota	PT01	374.0	8	382.0
		PT02	373.0	8	381.0
		PT03	373.5	8	381.5
		PT04	374.0	8	382.0
		PT05	374.0	8	382.0
		PT06	375.0	8	383.0
	Approximate Length:		290.2		

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
229A2 - 10 Foot Design	Private Property Along Avenida De La Carlota	PT01	374.0	10	384.0
		PT02	373.0	10	383.0
		PT03	373.5	10	383.5
		PT04	374.0	10	384.0
		PT05	374.0	10	384.0
		PT06	375.0	10	385.0
	Approximate Length:		290.2		

Barrier Locations and Elevations - Alternative 2 - Noise Barrier 229A2

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
229A2 - 12 Foot Design	Private Property Along Avenida De La Carlota	PT01	374.0	12	386.0
		PT02	373.0	12	385.0
		PT03	373.5	12	385.5
		PT04	374.0	12	386.0
		PT05	374.0	12	386.0
		PT06	375.0	12	387.0
	Approximate Length:		290.2		

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
229A2 - 14 Foot Design	Private Property Along Avenida De La Carlota	PT01	374.0	14	388.0
		PT02	373.0	14	387.0
		PT03	373.5	14	387.5
		PT04	374.0	14	388.0
		PT05	374.0	14	388.0
		PT06	375.0	14	389.0
	Approximate Length:		290.2		

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
229A2 - 16 Foot Design	Private Property Along Avenida De La Carlota	PT01	374.0	16	390.0
		PT02	373.0	16	389.0
		PT03	373.5	16	389.5
		PT04	374.0	16	390.0
		PT05	374.0	16	390.0
		PT06	375.0	16	391.0
	Approximate Length:		290.2		

Barrier Locations and Elevations - Alternative 2 - Noise Barrier 229A2

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
229A2 - 18 Foot Design	Private Property Along Avenida De La Carlota	PT01	374.0	18	392.0
		PT02	373.0	18	391.0
		PT03	373.5	18	391.5
		PT04	374.0	18	392.0
		PT05	374.0	18	392.0
		PT06	375.0	18	393.0
	Approximate Length:		290.2		

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
229A2 - 20 Foot Design	Private Property Along Avenida De La Carlota	PT01	374.0	20	394.0
		PT02	373.0	20	393.0
		PT03	373.5	20	393.5
		PT04	374.0	20	394.0
		PT05	374.0	20	394.0
		PT06	375.0	20	395.0
	Approximate Length:		290.2		

Barrier ID	Barrier Location	Approximate Start and End Station	Barrier Base Elevation, ft	Barrier Height, ft	Top of Barrier Elevation, ft
229A2 - 22 Foot Design	Private Property Along Avenida De La Carlota	PT01	374.0	22	396.0
		PT02	373.0	22	395.0
		PT03	373.5	22	395.5
		PT04	374.0	22	396.0
		PT05	374.0	22	396.0
		PT06	375.0	22	397.0
	Approximate Length:		290.2		