



Supplemental Noise Abatement Decision Report

Reference: Interstate 5 / El Toro Road Interchange Project Supplemental Noise
Study Report

Cities of Lake Forest, Laguna Woods, and Laguna Hills

Orange County, California

12-ORA-5-PM 17.8/19.7

EA 12-0M980 / ID 1213000084

July 2026



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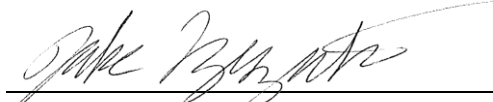
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Prepared By:



Date: 7/17/2026

Jakob Rzeszutko, INCE
Noise Analyst
ICF
949-333-6639

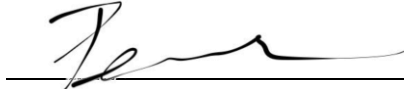
Prepared By:



Date: 7/17/2026

Terence Tong, P.E.
Caltrans District 12
Design Branch B
949-795-7387

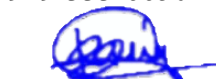
QA/QC By:



Date: 7/17/2026

Peter Hardie, INCE
Senior Noise Analyst
ICF
949-333-6650

Approved By:



Date:

Ricardo Caraig, PE
Branch Chief, Environmental Engineering
Caltrans District 12
949-697-3500

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List of Abbreviated Terms

Term	Definition
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
dB	decibel
dBA	A-weighted decibels
DES	Caltrans Division of Engineering Services
ED	Environmental Document
EOS	edge of shoulder
FHWA	Federal Highway Administration
I-5	Interstate 5
NAA	Noise Analysis Area
NAC	Noise Abatement Criteria
NB	northbound
NEPA	National Environmental Policy Act
OCTA	Orange County Transportation Authority
PM	postmile
Project	Interstate 5/El Toro Road Interchange Project
Protocol	Caltrans Traffic Noise Analysis Protocol
ROW	right of way
SB	southbound
SNADR	Supplemental Noise Abatement Decision Report
SNSR	Supplemental Noise Study Report
TDM	Transportation Demand Management
TSM	Transportation System Management

1. Introduction

The Supplemental Noise Abatement Decision Report (SNADR) presents the preliminary noise abatement decision, as defined in the California Department of Transportation (Caltrans) Traffic Noise Analysis Protocol (Protocol). This report has been prepared by a California-licensed professional civil engineer. The project-level Supplemental Noise Study Report (SNSR) for the Interstate 5 (I-5)/El Toro Road Interchange Project (Project), dated January 9, 2026, is hereby incorporated by reference.

1.1. Noise Abatement Assessment Requirements

Title 23, Code of Federal Regulations (CFR), Part 772 of the Federal Highway Administration (FHWA) standards (23 CFR 772), and the Protocol require that noise abatement be considered for projects that are predicted to result in traffic noise impacts. A traffic noise impact is considered to occur when future predicted design-year noise levels with the project “approach or exceed” Noise Abatement Criteria (NAC), as defined in 23 CFR 772, or when the predicted design-year noise levels with the project substantially exceed existing noise levels. A predicted design-year noise level is considered to “approach” the NAC when it is within 1 decibel (dB) of the NAC. A substantial increase is defined as a 12 dB increase above existing conditions. Furthermore, 23 CFR 772 requires noise abatement measures that are reasonable and feasible and likely to be incorporated into the project to be identified before adoption of the final Environmental Document (ED).

The Protocol establishes a process for assessing the reasonableness and feasibility of noise abatement. Before publication of the draft ED, a *preliminary noise abatement decision* is made. The preliminary noise abatement decision is based on the *feasibility* of evaluated abatement and the *preliminary reasonableness determination*. Noise abatement is considered to be acoustically feasible if it is predicted to reduce noise by at least 5 A-weighted decibels (dBA) at an affected receptor. A receptor that is predicted to receive a noise reduction of at least 5 dBA from the proposed abatement measure is a *benefited receptor*. Other non-acoustical factors related to geometric standards (e.g., sight distances), safety, maintenance, and security can also affect feasibility.

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

- The viewpoints of benefited receptors,
- The cost of noise abatement, and
- The noise reduction design goal.

The preliminary reasonableness determination reported in this document is based on the noise reduction design goal and the cost of abatement. The viewpoints of benefited receptors are determined from a survey, which is normally conducted during the public review period for the project ED.

Under Caltrans' noise reduction design goals, a barrier must be predicted to provide at least 7 dB of noise reduction at one or more benefited receptors. The cost reasonableness of abatement is determined by calculating a cost allowance, which is considered to be a reasonable amount of money to spend on abatement. This reasonable allowance is then compared to the engineer's cost estimate for the abatement. If the engineer's cost estimate is less than the allowance, and the abatement will provide at least 7 dB of noise reduction at one or more benefited receptors, then the preliminary determination is that the abatement is reasonable. If the cost estimate is higher than the allowance, or if the design goal cannot be achieved, then the preliminary determination is that abatement is not reasonable.

The SNADR presents the preliminary noise abatement decision, based on acoustical and non-acoustical feasibility factors, the design goal, and the relationship between noise abatement allowances and the engineer's cost estimate. The SNADR does not present the final decision regarding noise abatement; rather, it presents key information on abatement to be considered throughout the environmental review process, based on the best available information at the time the draft ED is published. The final overall reasonableness decision will take this information into account, along with the results of the survey of benefited receptors conducted during the environmental review process.

At the end of the public review process for the ED, the final noise abatement decision is made and presented in the final ED. The preliminary noise abatement decision will become the final noise abatement decision, unless compelling information received during the environmental review process indicates that it should be changed.

1.2. Purpose of the Noise Abatement Decision Report

The purpose of the SNADR is to accomplish the following:

- Summarize the conclusions of the SNSR related to acoustical feasibility, the design goal, and the reasonable allowances for the abatement evaluated;
- Present the project engineer's cost estimate for evaluated abatement;
- Present the engineer's evaluation of non-acoustical feasibility issues;
- Present the preliminary noise abatement decision; and

- Present preliminary information on secondary effects of abatement (e.g., impacts on cultural resources, scenic views, hazardous materials, biology).

The SNADR does not address issues related to noise barriers or other noise-reducing treatments required as mitigation for significant adverse environmental effects, as identified under the California Environmental Quality Act (CEQA).

1.3. Project Description

Caltrans, in partnership with the Orange County Transportation Authority (OCTA), proposes to modify and improve the existing I-5/El Toro Road interchange between postmile (PM) 17.8 and PM 19.7, located within the cities of Lake Forest, Laguna Woods, and Laguna Hills in Orange County, California. Caltrans, as assigned by the FHWA, is the Lead Agency under the National Environmental Policy Act (NEPA) and CEQA. The proposed alternatives are: Build Alternative 1 (Southbound I-5 Hook Ramps), Build Alternative 3 (Transportation System Management [TSM]/Transportation Demand Management [TDM]), and the No-Build Alternative (see Section 1.3.1 for more details)¹.

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, and Bridger Road. 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).

1.3.1. Project Alternatives

1.3.1.1. Build Alternative 1 – Southbound I-5 Hook Ramps

Build Alternative 1 proposes an additional I-5 southbound (SB) off-ramp to independently serve El Toro Road to the east and to the west. This would be accomplished with a new two-lane SB 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

¹ During project development, an additional build alternative (Build Alternative 2) was proposed that included a new flyover off-ramp from southbound I-5 that connected to a new roundabout that would provide access to eastbound El Toro Road and Rockfield Boulevard, a two-lane I-5 southbound off-ramp 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, and an extension of the northbound I-5 on-ramp from westbound El Toro Road. Through continued coordination with Caltrans and local jurisdictions, it was determined that Build Alternative 2 did not meet Caltrans policy under its Project Development Procedures Manual Chapter 27, Article 3 and the revised configuration was not supported by local jurisdictions. As a result, Build Alternative 2 was determined to be non-viable and was eliminated from further consideration.

new El Toro Road east off-ramp. The new El Toro Road east off-ramp bridge would cross over the existing SB I-5 hook on-ramp and El Toro Road and connect to Avenida De La Carlota south of El Toro Road. A new SB I-5 hook on-ramp would be provided along the realigned Avenida De La Carlota, south of El Toro Road. The existing SB direct on-ramp from El Toro Road would be eliminated, while the existing access provided by the SB ramps, opposite Paseo De Valencia, would be maintained. The northbound (NB) I-5 on-ramp from westbound El Toro Road is a two-lane on-ramp. The Project would lengthen this ramp, merging with the NB I-5 mainline approximately 0.15 mile north of the existing merge point. The NB 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). TSM/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 at each of the intersections, along 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 a new public street entering the Village of Laguna Hills development at the new SB 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 SB I-5 and Avenida De La Carlota ramp. The design variation (Build Alternative 1a) is not expected to cause considerable differences in predicted traffic noise levels compared to Build Alternative 1. Therefore, only Build Alternative 1 was evaluated in the noise analysis and the results are also applicable to Build Alternative 1a, which differs only by a minor design feature.

1.3.1.2. 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 Alternative 3. Because there are no substantial physical alterations proposed, Alternative 3 is not categorized as a Type 1 Project, and a detailed noise analysis is not required.

1.3.1.3. No-Build 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.

1.4. Affected Land Uses

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 consist primarily of single-family and multi-family residential (Activity Category B); a place of worship, a park, and a playground (Activity Category C); restaurants and bars with outdoor seating (Activity Category E); and retail (Activity Category F).

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2. Results of the Noise Study Report

The SNSR for this project was prepared by Jakob Rzeszutko, INCE, on December 10, 2025, and approved by Ricardo Caraig, P.E. (Caltrans Branch Chief Environmental Engineering), on January 09, 2026.

FHWA Traffic Noise Model 2.5 was used to model future noise levels. As stated in the Protocol, noise abatement measures are considered when predicted noise levels in the design year approach or exceed the NAC or when a predicted noise level includes a substantial increase (i.e., 12 dBA or more). A total of 177 representative receivers were used to model existing and future land uses in the study area for the design year Build Alternative 1.² Modeled locations are representative of Activity Category B, C, D, E, and F land uses along the Project alignment, as shown on Figure 1 in Appendix A.

Land uses in the project area were grouped into a series of Noise Analysis Areas (NAAs), as outlined below.

- **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 (ROW) 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 and/or E land uses (see Section 6.2 in the SNSR 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 parks (Activity Category C); outdoor seating areas (Activity Category E), and retail (Activity Category

² There are three proposed alternatives for the Project: Build Alternatives 1 (which includes the design variant Alternative 1a) and 3, and the No-Build Alternative. A second alternative (Build Alternative 2) was analyzed and subsequently removed from consideration due to ROW issues with the design. The design variation (Build Alternative 1a) is not expected to cause considerable differences in predicted traffic noise levels compared to Build Alternative 1. Therefore, only Build Alternative 1 was evaluated in the noise analysis. Build Alternative 3 would not result in any ground disturbance or other activities. Because there are no substantial physical alterations proposed, Alternative 3 is not categorized as a Type 1 Project, and a detailed noise analysis is not required.

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 ROW 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 Categories 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 ROW and several existing block walls on private property provide shielding from I-5 at the residences.

When traffic noise impacts are identified, noise abatement measures must be considered. Noise impacts occur when a substantial noise increase³ is predicted or when predicted noise levels under future build conditions come within 1 dB of or exceed the NAC.

The predicted traffic noise levels under the Design-Year conditions were found to approach or exceed the NAC of 67 dBA for Activity Categories B and C, the NAC of 72 dBA for Activity Category E, and the NAC of 52 dBA for Activity Category D land uses at 61 of the 177 representative modeled locations, representing 110 of the 322 total benefited receptors. Noise levels are also predicted to substantially increase in the Design-Year Build condition compared to the Existing condition for one receiver, M03.04. This is due to the Project improvements reducing the distance between the freeway and the receiver location. Modeled receptors are shown on Figure 1 (included as Appendix A to this SNADR).

Six noise barrier options were analyzed in the SNSR: NB32A1 (ROW), NB33A1 (ROW), NB234A1 (edge of shoulder [EOS]), NB234A1 and NB244A1 (EOS), NB235A1 (EOS), and NB229A1 (private property). The evaluated noise barriers are shown on Figure 1 (Appendix A). Wall heights in the range of 6 to 22 feet were analyzed. All evaluated barriers were found to meet the 5 dB acoustical feasibility requirement and meet the design goal criteria (7 dB reduction). All six barrier options are shown in Table 2-1, below.

An additional analysis, in accordance with the supplemental guidance provided in Appendix E of the Protocol, was completed for three existing noise barriers. Of these, only the existing private property barrier along Avenida De La Carlota in NAA 4, ranging from 8 to 12 feet in height, met the 5 dB feasibility requirement and the 7 dB design goal. Although the existing noise barrier would satisfy the Protocol requirements, abatement in NAA 4 was still

³ “Substantial increase” is defined in the Protocol as future noise levels with the project that exceed existing noise levels by 12 dB.

considered to benefit affected first-story receivers, as well as second- and third-story receivers that currently do not receive any benefit from the existing private property barrier.

For noise-sensitive receptors where traffic noise levels would approach or exceed the NAC, noise abatement in the form of noise barriers was considered. According to the NAC adopted in the Protocol, for a proposed noise abatement to be considered feasible, it must be designed to provide a minimum of 5 dBA of noise reduction at affected receptors. In addition to meeting the feasibility criteria, the proposed noise abatement must meet the design goal (i.e., 7 dBA insertion loss at a minimum of one benefited receptor) and be reasonable from a cost perspective. Proposed noise abatement should also have the ability to break the line of sight of an 11.5-foot truck stack. Table 2-1, below, provides a summary of barrier evaluations, including locations, heights, and calculated reasonable allowances for the modeled barriers.

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Table 2-1. Summary of Barrier Evaluation from Noise Study Report

Barrier	Location	Station	Height (feet)	Acoustically Feasible?	Number of Benefited Receptors	Design Goal Achieved?	Reasonable Allowance per Residence ^a	Total Reasonable Allowance ^a
NB32A1 ^b	ROW	STA04+00 to STA05+24 ^c and STA33+00 to STA34+25 ^d	6	Yes	1	Yes	\$170,000	\$170,000
			8	Yes	3	Yes	\$170,000	\$510,000
			10	Yes	3	Yes	\$170,000	\$510,000
			12	Yes	3	Yes	\$170,000	\$510,000
			14	Yes	3	Yes	\$170,000	\$510,000
			16	Yes	3	Yes	\$170,000	\$510,000
			18	Yes	3	Yes	\$170,000	\$510,000
			20	Yes	3	Yes	\$170,000	\$510,000
			22	Yes	3	Yes	\$170,000	\$510,000
NB33A1 ^b	ROW	STA33+50 to STA33+00 ^d and STA06+60 to STA07+55 ^c	6	Yes	1	No	\$170,000	\$170,000
			8	Yes	1	Yes	\$170,000	\$170,000
			10	Yes	1	Yes	\$170,000	\$170,000
			12	Yes	1	Yes	\$170,000	\$170,000
			14	Yes	1	Yes	\$170,000	\$170,000
			16	Yes	1	Yes	\$170,000	\$170,000
			18	Yes	1	Yes	\$170,000	\$170,000
			20	Yes	1	Yes	\$170,000	\$170,000
			22	Yes	1	Yes	\$170,000	\$170,000
NB234A1	EOS	STA5+00 to SAT20+00 ^e and STA241+00 to STA245+00 ^f	6	No	0	No	—	—
			8	Yes	2	No	\$170,000	\$340,000
			10	Yes	5	Yes	\$170,000	\$850,000
			12	Yes	8	Yes	\$170,000	\$1,360,000
			14	Yes	8	Yes	\$170,000	\$1,360,000
			16	Yes	10	Yes	\$170,000	\$1,700,000
			18	Yes	14	Yes	\$170,000	\$2,380,000
			20	Yes	14	Yes	\$170,000	\$2,380,000
			22	Yes	20	Yes	\$170,000	\$3,400,000
NB234A1 and NB244A1	EOS	STA5+00 to SAT20+00 ^e and STA241+00 to STA256+23 ^f	6	No	0	No	—	—
			8	Yes	2	No	\$170,000	\$340,000
			10	Yes	5	Yes	\$170,000	\$850,000
			12	Yes	8	Yes	\$170,000	\$1,360,000
			14	Yes	8	Yes	\$170,000	\$1,360,000
			16	Yes	11	Yes	\$170,000	\$1,870,000
			18	Yes	20	Yes	\$170,000	\$3,400,000
			20	Yes	27	Yes	\$170,000	\$4,590,000
			22	Yes	33	Yes	\$170,000	\$5,610,000
NB235A1	EOS	STA262+00 to STA239+66 ^f and STA24+00 to STA2+00 ^g	6	No	0	No	—	—
			8	Yes	3	Yes	\$170,000	\$510,000
			10	Yes	17	Yes	\$170,000	\$2,890,000
			12	Yes	26	Yes	\$170,000	\$4,420,000
			14	Yes	38	Yes	\$170,000	\$6,460,000
			16	Yes	59	Yes	\$170,000	\$10,030,000
			18	Yes	70	Yes	\$170,000	\$11,900,000
			20	Yes	83	Yes	\$170,000	\$14,110,000
			22	Yes	87	Yes	\$170,000	\$14,790,000
NB229A1	Private Property	STA227+15 to STA229+50 ^h	6	No	0	No	—	—
			8	Yes	1	No	\$170,000	\$170,000
			10	Yes	1	Yes	\$170,000	\$170,000
			12	Yes	1	Yes	\$170,000	\$170,000
			14	Yes	1	Yes	\$170,000	\$170,000
			16	Yes	1	Yes	\$170,000	\$170,000
			18	Yes	1	Yes	\$170,000	\$170,000

Barrier	Location	Station	Height (feet)	Acoustically Feasible?	Number of Benefited Receptors	Design Goal Achieved?	Reasonable Allowance per Residence ^a	Total Reasonable Allowance ^a
			20	Yes	1	Yes	\$170,000	\$170,000
			22	Yes	1	Yes	\$170,000	\$170,000

Notes:
All noise barriers were also evaluated as part of Alternative 2. Because Alternative 2 is no longer under consideration, the corresponding results have been removed from this table.

^a Reasonableness allowance is based on the 2025 Construction Price Index.
^b The City of Lake Forest does not support the construction of this noise barrier; it is included for informational purposes only.
^c Station line is the centerline for Rockfield Boulevard.
^d Station line is the centerline for El Toro Road.
^e Station line is the centerline for the El Toro Road NB on-ramp.
^f Station line is the centerline for the I-5 mainline.
^g Station line is the centerline for the El Toro Road SB off-ramp.
^h Approximate station numbering was assigned in place of absent stationing on Avenida de la Carlota, north of Paseo de Valencia.

3. Preliminary Noise Abatement Decision

3.1. Summary of Key Information

The preliminary noise abatement decision is based on the *Interstate 5/El Toro Road Interchange Project Supplemental Noise Study Report* (ICF 2025). In the SNSR, two of the six analyzed noise barriers (NB32A1 and NB33A1) were found to be feasible at wall heights ranging from 6 to 22 feet, providing a minimum reduction of 5 dB. The other four noise barriers (NB234A1, NB234A1 and NB244A1, NB235A1, and NB229A1) were found to be feasible at wall heights from 8 to 22 feet. The design objective of achieving 7 dB noise reduction is expected to be met at all six noise barriers within the following wall height ranges: 6 to 22 feet for NB32A1; 8 to 22 feet for NB33A1, and NB235A1; and 10 to 22 feet for NB234A1, NB234A1 and NB244A1, and NB229A1. The cost estimates were based on anticipated structural requirements and contingencies. The noise barriers were assumed to be constructed of masonry block, in accordance with Caltrans Standard Plans and Specifications.

Table 3-1 summarizes the acoustical feasibility of the noise barriers, the estimated cost of construction compared to the reasonable allowance cost for each noise barrier height, the number of benefited receptors, and the barrier heights for which the line-of-sight criteria would be met.⁴ Appendix B includes a cost estimate for each wall height. The estimated costs of construction were prepared by the project engineer, Terence Tong, P.E. (Caltrans 2026).

Costs associated with the mitigation of secondary effects from abatement were not available at the time this SNADR was written and, therefore, were not included in the abatement construction cost estimate. Should secondary effects be identified, the cost to construct may need to be updated. The types of mitigation include the following:

- Mitigation of effects related to hazardous materials (i.e., removal of materials),
- Mitigation of effects on cultural resources (i.e., removal of buried artifacts), and
- Relocation of utilities.

⁴ Although blocking the line of sight to a truck stack is not required, this criterion is met when a noise barrier intercepts the line of sight between the exhaust stack of a truck and the first row of benefited receptors.

Table 3-1. Summary of Abatement Key Information

Barrier	Height (feet)	Acoustically Feasible?	Number of Benefited Residences	Design Goal Achieved?	Total Reasonable Allowance ^a	Estimated Construction Cost	Cost Less than Allowance?
NB32A1 – ROW ^b	6	Yes	1	Yes	\$170,000	N/A	N/A
	8	Yes	3	Yes	\$510,000	N/A	N/A
	10	Yes	3	Yes	\$510,000	N/A	N/A
	12 ^c	Yes	3	Yes	\$510,000	N/A	N/A
	14	Yes	3	Yes	\$510,000	N/A	N/A
	16	Yes	3	Yes	\$510,000	N/A	N/A
	18	Yes	3	Yes	\$510,000	N/A	N/A
	20	Yes	3	Yes	\$510,000	N/A	N/A
NB33A1 – ROW ^b	6	Yes	1	No	—	N/A	N/A
	8	Yes	1	Yes	\$170,000	N/A	N/A
	10	Yes	1	Yes	\$170,000	N/A	N/A
	12 ^c	Yes	1	Yes	\$170,000	N/A	N/A
	14	Yes	1	Yes	\$170,000	N/A	N/A
	16	Yes	1	Yes	\$170,000	N/A	N/A
	18	Yes	1	Yes	\$170,000	N/A	N/A
	20	Yes	1	Yes	\$170,000	N/A	N/A
NB234A1 – Mainline EOS	6	No	0	No	—	--	--
	8	Yes	2	No	—	--	--
	10	Yes	5	Yes	\$850,000	\$1,560,381	No
	12	Yes	8	Yes	\$1,360,000	\$1,733,757	No
	14	Yes	8	Yes	\$1,360,000	\$1,926,397	No
	16 ^c	Yes	10	Yes	\$1,700,000	\$2,140,441	No
	18	Yes	14	Yes	\$2,380,000	\$2,378,268	Yes
	20	Yes	14	Yes	\$2,380,000	\$2,617,291	No
NB234A1 and 244A1 – Mainline EOS	22	Yes	20	Yes	\$3,400,000	\$2,850,070	Yes
	6	No	0	No	—	--	--
	8	Yes	2	No	—	--	--
	10	Yes	5	Yes	\$850,000	\$4,880,294	No
	12	Yes	8	Yes	\$1,360,000	\$5,371,995	No
	14	Yes	8	Yes	\$1,360,000	\$5,906,596	No
	16 ^c	Yes	11	Yes	\$1,870,000	\$6,488,864	No
	18	Yes	20	Yes	\$3,400,000	\$7,124,095	No
	20	Yes	27	Yes	\$4,590,000	\$8,036,292	No

Barrier	Height (feet)	Acoustically Feasible?	Number of Benefited Residences	Design Goal Achieved?	Total Reasonable Allowance ^a	Estimated Construction Cost	Cost Less than Allowance?
NB235A1 – Mainline EOS	22	Yes	33	Yes	\$5,610,000	\$9,054,882	No
	6	No	0	No	—	--	--
	8	Yes	3	Yes	\$510,000	\$6,209,303	No
	10	Yes	17	Yes	\$2,890,000	\$6,870,181	No
	12	Yes	26	Yes	\$4,420,000	\$7,592,176	No
	14	Yes	38	Yes	\$6,460,000	\$8,369,410	No
	16	Yes	59	Yes	\$10,030,000	\$9,206,157	Yes
	18	Yes	70	Yes	\$11,900,000	\$10,119,293	Yes
	20 ^c	Yes	83	Yes	\$14,110,000	\$11,300,069	Yes
NB229A1 – Private Property	22	Yes	87	Yes	\$14,790,000	\$12,596,750	Yes
	6	No	0	No	—	--	--
	8	Yes	1	No	—	--	--
	10	Yes	1	Yes	\$170,000	\$435,000	No
	12 ^c	Yes	1	Yes	\$170,000	\$481,000	No
	14	Yes	1	Yes	\$170,000	\$530,000	No
	16	Yes	1	Yes	\$170,000	\$583,000	No
	18	Yes	1	Yes	\$170,000	\$866,494	No
	20	Yes	1	Yes	\$170,000	\$894,830	No
	22	Yes	1	Yes	\$170,000	\$913,717	No

Notes:

All noise barriers were also evaluated as part of Alternative 2. Because Alternative 2 is no longer under consideration, the corresponding results have been removed from this table.

^a Reasonableness allowance is based on the 2025 Construction Price Index.

^b The City of Lake Forest does not support the construction of this noise barrier; therefore, estimated construction costs have not been included.

^c Minimum height required to break the line of sight to an 11.5-foot truck stack.

The reasonableness of a noise barrier was determined by comparing the estimated construction cost of the noise barrier to the total reasonable allowance. The total reasonable allowance was based on the number of benefited residences or, in this case, benefited receptors multiplied by the reasonable allowance per benefited receptor. If the estimated noise barrier construction cost exceeds the total reasonable allowance, then the noise barrier is determined to be not reasonable.

3.2. Non-Acoustical Factors Related to Feasibility

The non-acoustical factors considered are geometric standards (e.g., sight distances); safety, maintenance, security, and geotechnical issues; utility relocations; and aesthetics. Some of these non-acoustical factors, including geotechnical issues, will be investigated during the final design phase.

Based on preliminary project and abatement designs, no non-acoustical factors related to feasibility have been identified that would be considered out of the ordinary for noise barrier construction.

3.3. Preliminary Recommendation and Decision

This noise barrier discussion applies only to Build Alternative 1 and the Design Variation (Build Alternative 1a). Noise barriers were previously evaluated for Build Alternative 2; however, because that alternative is no longer under consideration, the associated results have been omitted from the discussion below.

3.3.1. NB32A1 and NB33A1 – El Toro Road/Rockfield Boulevard

NB32A1 and NB33A1 were found to be acoustically feasible and meet the design goal of 7 dB. These barriers would be constructed along the City of Lake Forest ROW at the northeastern and southeastern quadrants of the El Toro Road and Rockfield Boulevard intersection.

During the process of preparing the SNSR, the Project team coordinated with the City of Lake Forest and received confirmation that the City of Lake Forest does not support the construction of noise barriers at this location. Therefore, these noise barriers do not meet the Caltrans reasonableness criteria and are not recommended for abatement as part of the Project.

3.3.2. NB234A1 – Northbound On-ramp/Mainline EOS

NB234A1 was found to be acoustically feasible if constructed at heights ranging from 8 to 22 feet but would meet the design goal of 7 dB insertion loss only at barrier heights of 10 to 22

feet with a length of approximately 1,993 feet. NB234A1 would be constructed along the NB on-ramp and mainline EOS. Barrier heights of 16 through 22 feet would block the line of sight to an 11.5-foot truck stack at the first row of benefited receptors. The evaluated noise barrier is shown on Figure 1 in Appendix A.

NB234A1 would provide benefit for five to 20 receptors (Activity Category B and C land uses) and have a total reasonable allowance of \$850,000 to \$3,400,000 at barrier heights of 10 and 22 feet versus a construction cost of \$1,560,381 at 10 feet, \$1,733,757 at 12 feet, \$1,926,397 at 14 feet, \$2,140,441 at 16 feet, \$2,378,268 at 18 feet, \$2,617,291 at 20 feet, and \$2,850,070 at 22 feet..

Barrier heights of 18 feet and 22 feet were found to be reasonable from a cost perspective. A noise barrier height of 18 feet is predicted to provide 5 to 14 dB of insertion loss and benefit 14 receptors, and a noise barrier height of 22 feet is predicted to provide 5 to 16 dB of insertion loss and benefit 20 receptors.

Although a noise barrier height of 22 feet would increase the number of benefited receptors, the predicted levels of insertion loss would be similar. The increase in benefited receptors is not considered sufficient to justify the additional construction costs. Therefore, considering both cost-effectiveness and the number of benefited receptors, a noise barrier height of 18 feet is recommended for NB234A1.

3.3.3. Noise Barrier System 234A1 and 244A1 – Northbound On-ramp/Mainline EOS

Noise Barrier System 234A1 and 244A1 consists of the previously analyzed NB234A1 in combination with NB244A1. NB244A1 represents the segment of the existing NB noise barrier, north of the EL Toro Road interchange, that is not proposed for demolition as a result of Project improvements. The analysis of this Noise Barrier System evaluates the potential additional benefit that could be gained by increasing the height of this existing barrier segment above 16 feet. Noise Barrier System 234A1 and 244A1 was found to be acoustically feasible if constructed at heights ranging from 8 to 22 feet but would meet the design goal of 7 dB insertion loss only at barrier heights of 10 to 22 feet with a length of approximately 3,125 feet. Noise Barrier System 234A1 and 244A1 would be constructed along the NB on-ramp and mainline EOS. Barrier heights of 16 through 22 feet would block the line of sight to an 11.5-foot truck stack at the first row of benefited receptors. The evaluated noise barrier is shown on Figure 1 in Appendix A.

Noise Barrier System 234A1 and 244A1 would provide benefit for five to 33 receptors (Activity Category B and C land uses) and have a total reasonable allowance of \$850,000 to \$5,610,000 at barrier heights of 10 and 22 feet versus a construction cost of \$4,880,294 at 10

feet, \$5,371,995 at 12 feet, \$5,906,596 at 14 feet, \$6,488,864 at 16 feet, \$7,124,095 at 18 feet, \$8,036,292 at 20 feet, \$9,054,882 at 22 feet.

None of the noise barrier heights were found to be reasonable from a cost perspective. Therefore, this barrier is not recommended and will not be considered as abatement as part of the Project.

3.3.4. NB235A1 – Southbound Mainline/Off-ramp EOS

NB235A1 was found to be acoustically feasible if constructed at heights ranging from 8 to 22 feet but would meet the design goal of 7 dB insertion loss only at barrier heights of 8 to 22 feet with a length of approximately 3,484 feet. NB235A1 would be constructed along the SB mainline EOS and off-ramp. Barrier heights of 20 to 22 feet would block the line of sight to an 11.5-foot truck stack at the first row of benefited receptors. A portion of this barrier was intended to replace an existing 16-foot noise barrier that extends from approximately STA 227+50 to STA 236+00. This segment would be redesigned with the same dimension (height and extent) regardless of cost should the barrier be found not to be feasible or reasonable. The evaluated noise barrier is shown on Figure 1 in Appendix A.

NB235A1 would provide benefit for three to 87 receptors (Activity Category B, C, and D land uses) and have a total reasonable allowance of \$510,000 to \$14,790,000 at barrier heights of 8 and 22 feet versus a construction cost of \$6,209,303 at 8 feet, \$6,870,181 at 10 feet, \$7,592,176 at 12 feet, \$8,369,410 at 14 feet, \$9,206,157 at 16 feet, \$10,119,293 at 18 feet, \$11,300,069 at 20 feet, \$12,596,750 at 22 feet.

Barrier heights of 16 feet to 22 feet were found to be reasonable from a cost perspective. A noise barrier height of 16 feet is predicted to provide 5 to 12 dB of insertion loss and benefit 59 receptors, a noise barrier height of 18 feet is predicted to provide 5 to 12 dB of insertion loss and benefit 70 receptors, a noise barrier height of 20 feet is predicted to provide 5 to 13 dB of insertion loss and benefit 83 receptors, and a noise barrier height of 22 feet is predicted to provide 5 to 13 dB of insertion loss and benefit 87 receptors.

Considering both cost-effectiveness and the number of benefited receptors, noise barrier heights of 16, 18, and 20 feet are recommended for NB235A1. The preferred barrier height will be determined based on the viewpoints of the benefited receptors through a survey conducted during the public review period for the project ED. At the end of the public review process, the final noise abatement decision will be made and presented in the final ED.

3.3.5. NB229A1 – Avenida De La Carlota, North of Paseo De Valencia Private Property

NB229A1 was found to be acoustically feasible if constructed at heights ranging from 8 to 22 feet but would meet the design goal of 7 dB insertion loss only at barrier heights of 10 to 22 feet with a length of approximately 290 feet. NB229A1 would be constructed along the private property line along NB Avenida De La Carlota, north of Paseo De Valencia. Barrier heights of 12 through 22 feet would block the line of sight to an 11.5-foot truck stack at the single benefited receptor. The evaluated noise barrier is shown on Figure 1 in Appendix A.

NB229A1 would provide benefit for one receptor (Activity Category C land use) and have a total reasonable allowance of \$170,000 at barrier heights of 8 and 22 feet versus a construction cost of \$435,000 at 10 feet, \$481,000 at 12 feet, \$530,000 at 14 feet, \$538,000 at 16 feet, \$866,494 at 18 feet, \$894,830 at 20 feet, and \$913,717 at 22 feet.

None of the noise barrier heights were found to be reasonable from a cost perspective. Therefore, this barrier is not recommended and will not be considered as abatement as part of the Project.

3.3.6. Summary of Abatement Decision

The preliminary noise abatement decision presented in this report is based on preliminary project alignments and profiles, which may be subject to change (Table 3-2). As such, the physical characteristics of noise abatement described herein also may be subject to change. If pertinent parameters change substantially during final Project design, the preliminary noise abatement decision may be changed or eliminated from the final Project design. A final decision to construct noise abatement will be made on completion of the Project design.

The preliminary noise abatement decision presented here will be included in the draft ED, which will be circulated for public review.

Table 3-2. Summary of Abatement Decision

Noise Barrier Name	Noise Barrier Height (feet)	Number of Benefited Receptors	Total Reasonable Allowance	Estimated Construction Cost ^a	Feasible?	Reasonable?
NB32A1 ^a	6–22	1–3	\$170,000–\$510,000	N/A	Yes	No
NB33A1 ^a	8–22	1	\$170,000	N/A	Yes	No
NB234A1	10–22	5–20	\$850,000– \$3,400,000	\$1,560,381– \$2,850,070	Yes	Yes
NB234A1 and NB244A1	10–22	5–33	\$850,000– \$5,610,000	\$4,880,294– \$9,054,882	Yes	No
NB235A1	8–22	3–87	\$510,000– \$14,790,000	\$6,209,303 – \$12,596,750	Yes	Yes
NB229A1	10–22	0–1	\$170,000	\$435,000–\$913,717	Yes	No

Notes:

See Section 3.3 for more detailed discussion.

All noise barriers were also evaluated as part of Alternative 2. Because Alternative 2 is no longer under consideration, the corresponding results have been removed from this table.

^a. The City of Lake Forest does not support the construction of this noise barrier; it is included for informational purposes only.

4. Secondary Effects of Abatement

The noise abatement recommended in the preliminary noise abatement decision may have the potential to result in secondary effects on cultural resources, scenic views, hazardous materials, biological resources, or other resources. As discussed above, the noise barriers discussed in this report would be located along the EOS, ROW, or private property lines to provide abatement for noise-sensitive receptors along the Project alignment. Although secondary effects related to biological, cultural, or any other resources are not anticipated, it is possible that secondary effects could result in additional costs if these secondary effects are identified—specifically, at the private property lines. Therefore, costs associated with secondary effects may result in changes to the reasonableness determination. These costs will be determined during final design.

The proposed noise barriers were evaluated for potential noise reflection effects in accordance with the Protocol. Proposed barriers that are parallel and within a 15:1 or less ratio of height to distance between or that have receptors on the far side of the facility and have direct line of sight from an area of frequent human use should be considered for reflections.

The evaluation determined that the above criteria would be met between the two proposed mainline noise barriers, NB234A1 and NB235A1, and between the existing property line barrier along Avenida De La Carlota and NB235A1. Under these conditions, noise reflected between parallel barriers could reduce barrier effectiveness or result in unintended noise increases in areas not protected by the noise barriers.

To minimize reflected-noise effects, NB234A1 and NB235A1 will incorporate an acoustically absorptive surface with a noise reduction coefficient of 0.80 or greater, consistent with Caltrans guidance. Because the absorptive treatment is required to address potential reflected-noise effects associated with the barrier configuration, the cost of the absorptive treatment is not included in the estimated construction costs. Therefore, the inclusion of absorptive treatment does not affect the reasonableness determination for the proposed noise barriers.

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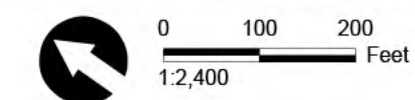
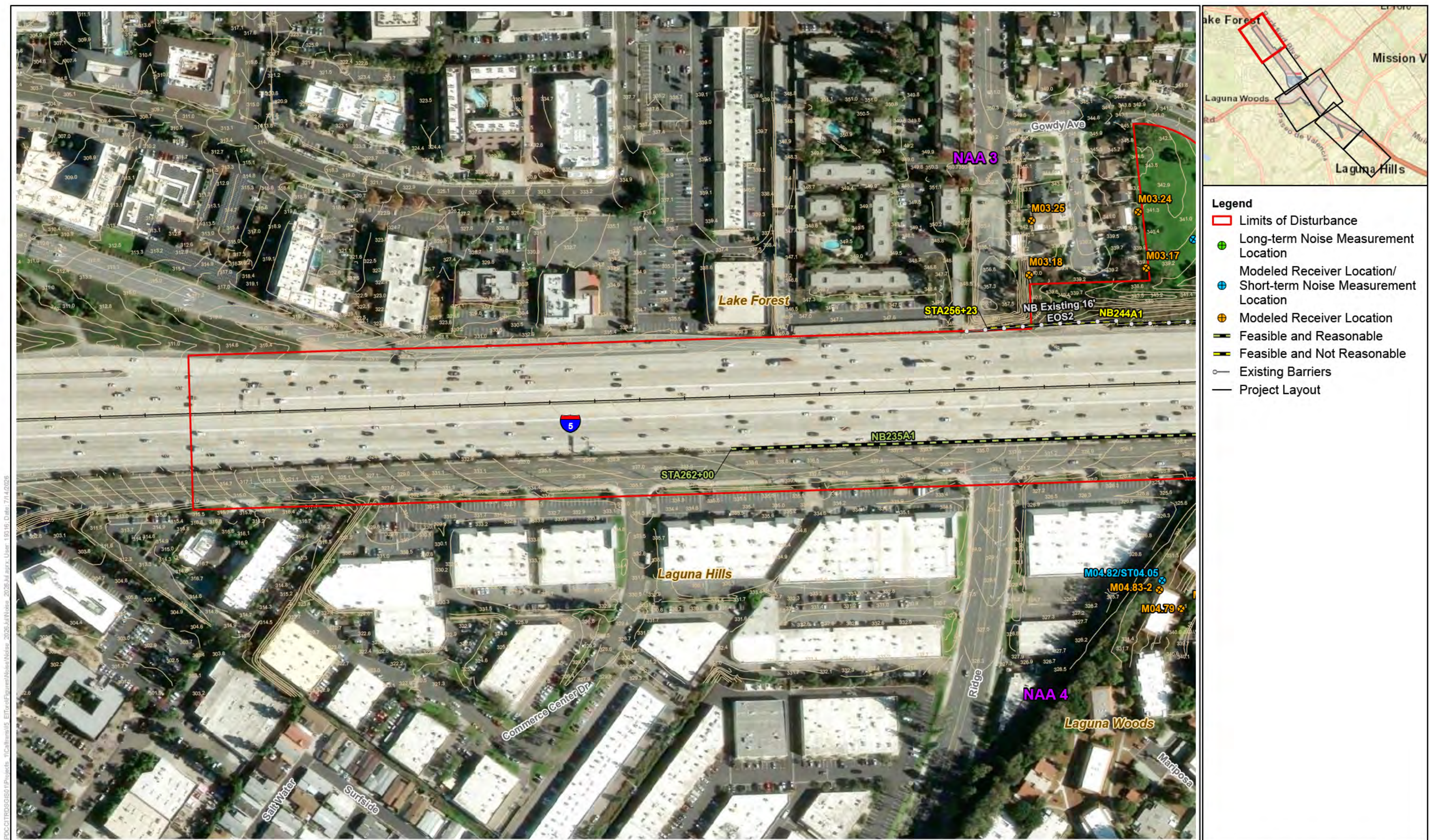
5. References

California Department of Transportation (Caltrans). 2026. *I-5/El Toro Rd Interchange Reconfiguration (PA/ED) Noise Barrier Cost Estimate*. June.

ICF 2025. *Interstate 5 / El Toro Road Interchange Project Supplemental Noise Study Report*. December.

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Appendix A Noise Measurement and Modeling Locations, and Evaluated Noise Barriers



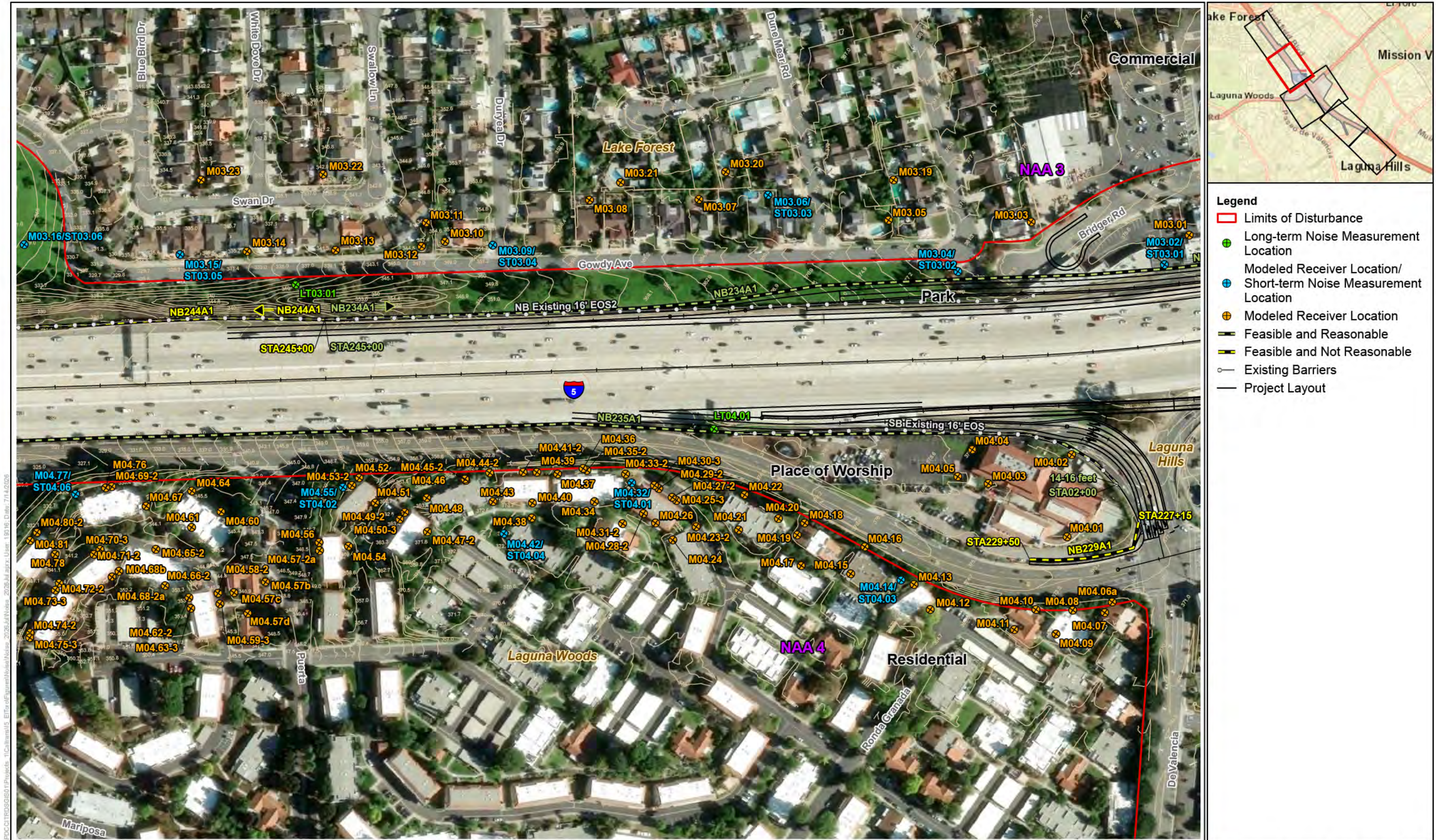


Figure 1, Sheet 2 of 6
Noise Measurement and Modeling Locations,
and Evaluated Noise Barriers - Alternative 1
Interstate 5 El Toro Road Interchange Project



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



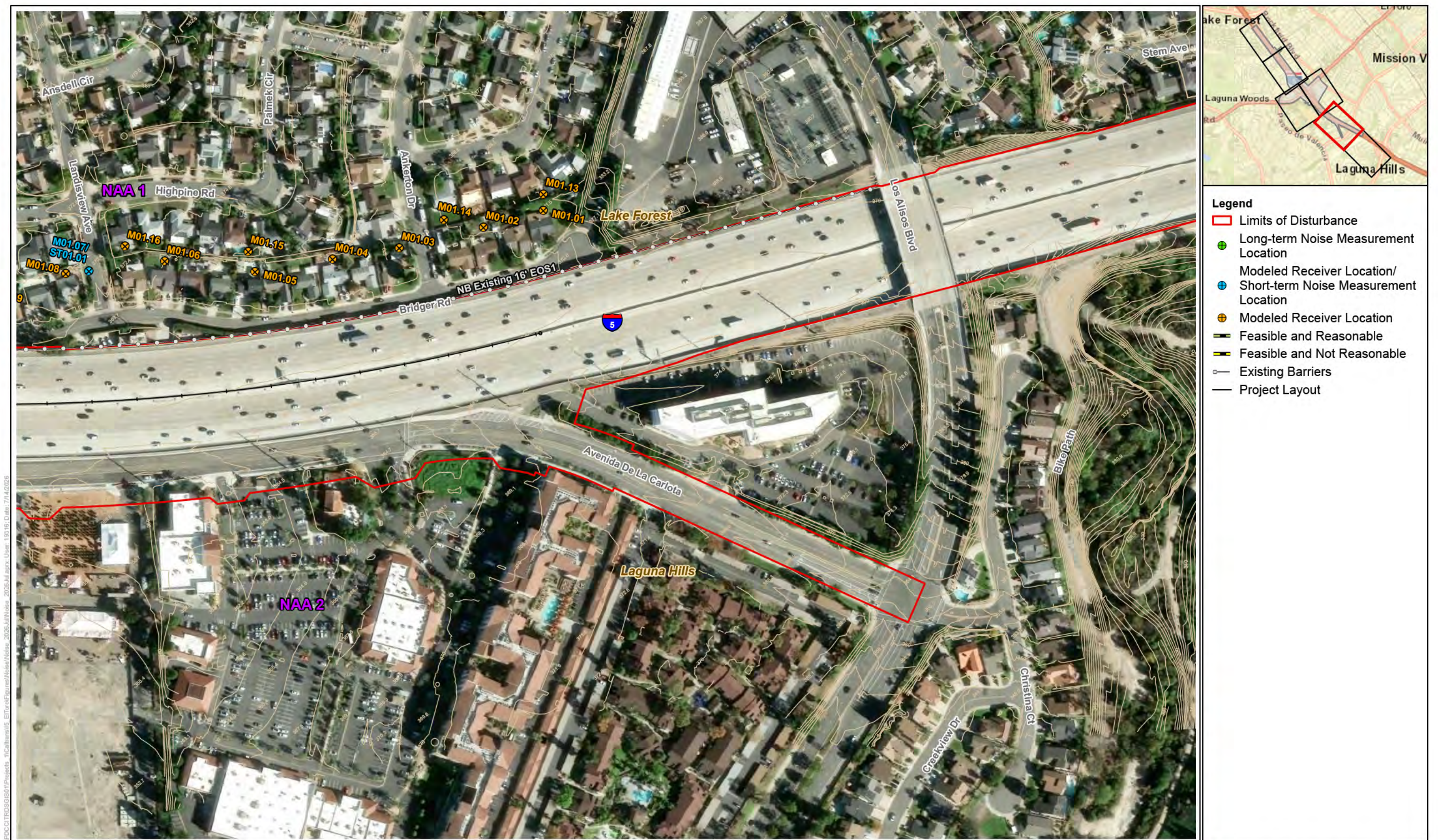


Figure 1, Sheet 5 of 6
Noise Measurement and Modeling Locations,
and Evaluated Noise Barriers - Alternative 1
Interstate 5 El Toro Road Interchange Project

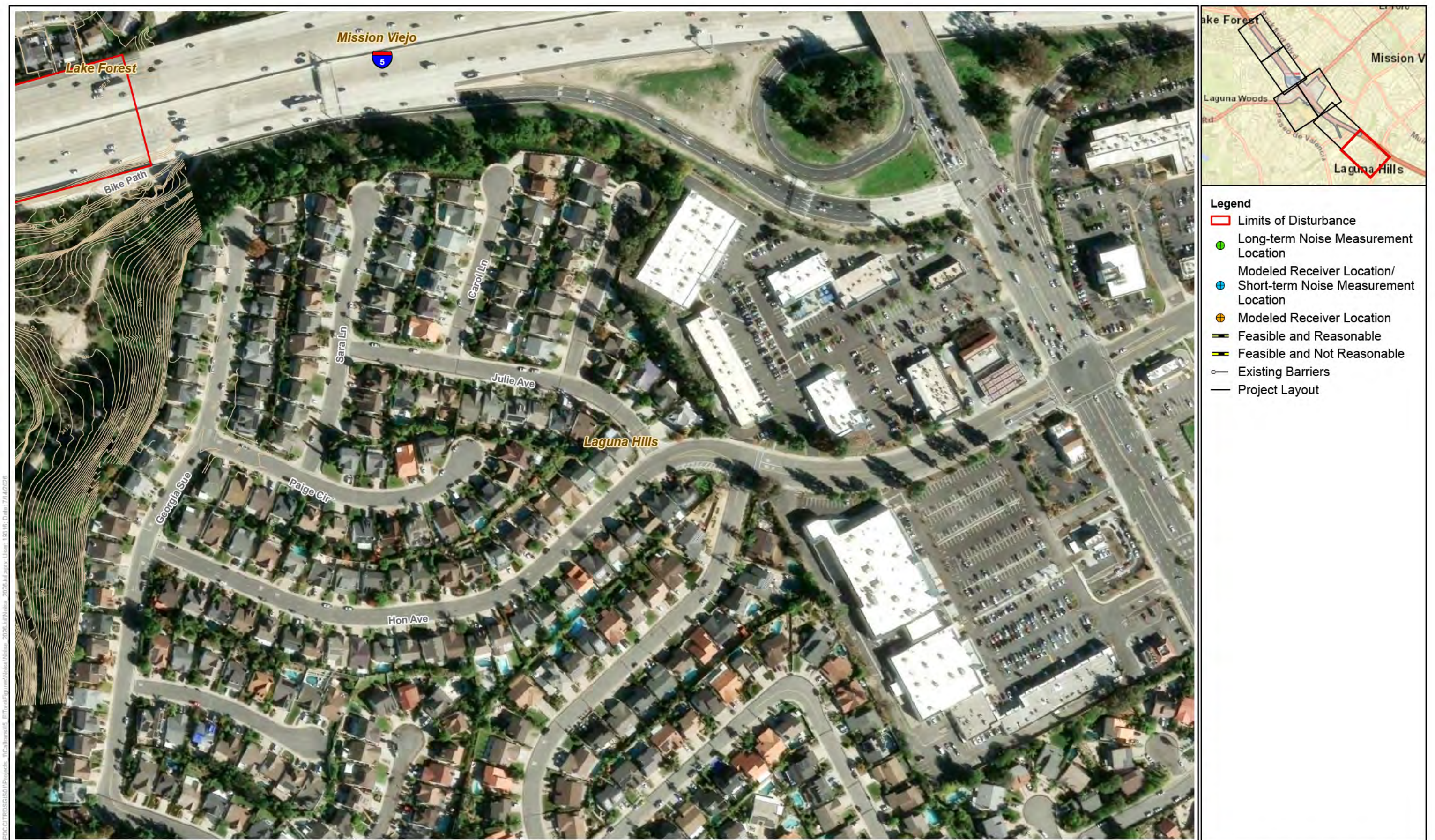


Figure 1, Sheet 6 of 6
Noise Measurement and Modeling Locations,
and Evaluated Noise Barriers - Alternative 1
Interstate 5 El Toro Road Interchange Project

Appendix B Engineer's Cost Estimate

The following cost estimates for all noise barriers were provided by Caltrans.

NB234A1

6'	\$1,263,909
8'	\$1,404,343
10'	\$1,560,381
12'	\$1,733,757
14'	\$1,926,397
16'	\$2,140,441
18'	\$2,378,268
20'	\$2,617,291
22'	\$2,850,070

NB234A1 & NB244A1 Combined

6'	\$4,008,862
8'	\$4,427,203
10'	\$4,880,294
12'	\$5,371,995
14'	\$5,906,596
16'	\$6,488,864
18'	\$7,124,095
20'	\$8,036,292
22'	\$9,054,882

NB244A1

6'	\$2,744,953
8'	\$3,022,860
10'	\$3,319,913
12'	\$3,638,238
14'	\$3,980,199
16'	\$4,348,423
18'	\$4,745,827
20'	\$5,419,001
22'	\$6,204,813

NB229A1

6'	\$350,000
8'	\$378,000
10'	\$435,000
12'	\$481,000
14'	\$530,000
16'	\$583,000
18'	\$866,494
20'	\$894,830
22'	\$913,717

NB235A1

6'	\$6,208,394
8'	\$6,209,303
10'	\$6,870,181
12'	\$7,592,176
14'	\$8,369,410
16'	\$9,206,157
18'	\$10,119,293
20'	\$11,300,069
22'	\$12,596,750