*State Highway Route 1 Auxiliary Lanes and Bus-on-Shoulder Improvements - Freedom Boulevard to State Park Drive – and Coastal Rail Trail Segment 12* *FNADR*

# Focused Noise Abatement Decision Report

05-SC-01-PM 8.1 – 10.7

(Original Project: PM 7.24 – 16.13)

Santa Cruz County, California

Federal Project ID 05-1800-0116

**October 2022**

Caltrans
CALIFORNIA DEPARTMENT OF TRANSPORTATION

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State Highway Route 1 Auxiliary Lanes and Bus-on-Shoulder Improvements—Freedom Boulevard to State Park Drive—and Coastal Rail Trail Segment 12

Santa Cruz County, California

EA 05-0C734 / 0520000083

**October 2022**

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This Noise Abatement Decision Report has been prepared under the direction of the following registered civil engineer. The civil engineer attests to the technical information contained herein and the engineering data upon which recommendations, conclusions, and decisions are based.

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8-29-2022

Date

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# List of Abbreviated Terms

| | |
|---|---|
| 23 CFR 772 | Title 23, Code of Federal Regulations, Part 772 |
| Caltrans | California Department of Transportation |
| CEQA | California Environmental Quality Act |
| County | Santa Cruz County |
| dB | decibels |
| dBA | A-weighted decibels |
| ED | Environmental Document |
| FHWA | Federal Highway Administration |
| ft | foot/feet |
| FNADR | Focused Noise Abatement Decision Report |
| FNSR | Focused Noise Study Report |
| HOV | high-occupancy vehicle |
| IS/EA | Initial Study/Environmental Assessment |
| $L_{eq}$ | equivalent continuous sound level |
| LOS | level(s) of service |
| LSA | LSA Associates, Inc. |
| mi | mile/miles |
| NAC | Noise Abatement Criteria |
| NADR | Noise Abatement Decision Report |
| NB | Noise Barrier |
| NSR | Noise Study Report |
| PDT | Project Development Team |
| Protocol | Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects |
| RTP | Regional Transportation Plan |
| SCCRTC | Santa Cruz County Regional Transportation Commission |
| SPL | sound pressure level |
| TeNS | Technical Noise Supplement |
| TNM | Traffic Noise Model |
| vplph | vehicles per lane per hour |

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# Chapter 1. Introduction

The Focused Noise Abatement Decision Report (FNADR) presents the preliminary noise abatement decision as defined in the California Department of Transportation (Caltrans) *Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects* (Protocol). This report has been approved by a California licensed professional civil engineer. The Focused Noise Study Report (FNSR) for the State Highway Route 1 Auxiliary Lanes and Bus-on-Shoulder (BOS) Improvements Project from Freedom Boulevard to State Park Drive, and Coastal Rail Trail Segment 12, which was prepared by LSA Associates, Inc. (LSA) in June 2022, is hereby incorporated by reference.

## 1.1. Noise Abatement Assessment Requirements

Title 23, Code of Federal Regulations, Part 772 (23 CFR 772) of the Federal Highway Administration (FHWA) standards 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" the Noise Abatement Criteria (NAC) 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 being 12 A-weighted decibels (dBA) or more over the corresponding existing noise level.

The FHWA standards (23 CFR 772) require that noise abatement measures that are reasonable and feasible and are likely to be incorporated into the project 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 provides a noise reduction of 5 dBA or more at receptors subject to noise impacts. Other nonacoustical factors relating to geometric standards (e.g., sight distances), safety, maintenance, and security can also affect feasibility.

For a noise barrier to be considered reasonable, the noise level reduction design goal of 7 dBA must be achieved at one or more benefited receptors. Once it is determined that one or more receptors satisfy the minimum noise reduction required, the preliminary reasonableness determination is made by calculating an allowance that is considered to be a reasonable amount of money, per benefited residence, 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, the preliminary determination is that the abatement is reasonable. If the cost estimate is higher than the allowance, the preliminary determination is that abatement is not reasonable.

The FNADR presents the preliminary noise abatement decision based on acoustical and non-acoustical feasibility factors and the relationship between noise abatement allowances and the engineer's cost estimate. The FNADR does not present the final decision regarding noise abatement; rather, it presents key information on abatement to be considered throughout the environmental review process that is 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 other reasonableness factors identified during the environmental review process. These factors may include:

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

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

## 1.2. Purpose of the Focused Noise Abatement Decision Report

The purpose of the FNADR is to:

- Summarize the conclusions of the FNSR relating to acoustical feasibility and the reasonable allowances for abatement evaluated;
- Present the 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 the secondary effects of abatement (impacts on cultural resources, scenic views, hazardous materials, and biological resources, etc.).

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

## 1.3. Project Description

In the Previous NADR, Caltrans, in cooperation with FHWA and the SCCRTC, proposed to improve SR 1 in Santa Cruz County for a distance of approximately 8.9 miles, from approximately 0.4-mile south of the San Andreas-Larkin Valley Road Interchange through the Morrissey Boulevard Interchange. This Focused NADR will analyze a portion of the corridor from Freedom Boulevard to State Park Drive, PM 8.1 – 10.7. The total length of the project on SR 1 is 2.6 miles. Within the limits of the proposed project, SR 1 is a controlled access freeway with two twelve-foot lanes; shoulder width varies within project limits. The average width of the inside shoulders is approximately five feet, and the average width of the outside shoulders is approximately 10 feet. The project also includes the proposed Coastal Rail Trail Segment 12, which would extend approximately 1.14 miles along the Santa Cruz Branch Line railroad, between Rio Del Mar Boulevard and State Park Drive. Within the project area, the existing railroad right of way is generally in the range of 40 to 55 feet wide, with the existing railroad tracks generally in the center of the right of way. The Project Regional Location and Project Study Area maps can be seen in Figures 2.1 and 2.2, respectively.

There is one (1) build alternative and a No Build alternative being considered for this project. No decision on a preferred alternative will be made until all alternatives have been fully evaluated. The project alternatives are described below.

### 1.3.1. No Build Alternative

SR 1 within the project limits would maintain the existing lane configuration and no construction of auxiliary lanes or bus on shoulders features on SR 1 within the project area, and Coastal Rail Trail Segment 12 would not be constructed. The existing transportation facilities within the project area would remain unchanged. The No-Build Alternative assumes the construction of other planned and programmed projects

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## Figure 2-1. Project Regional Location

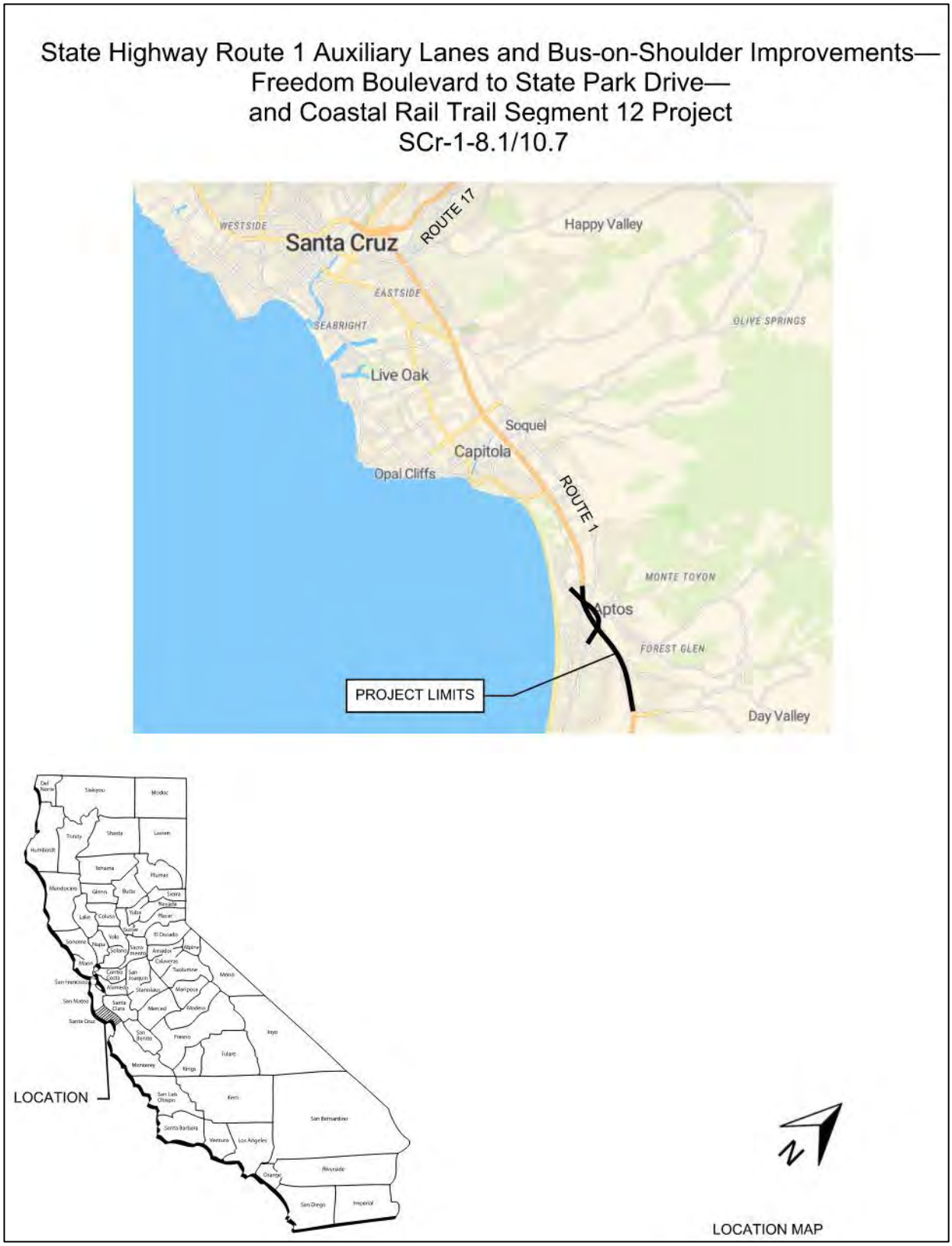
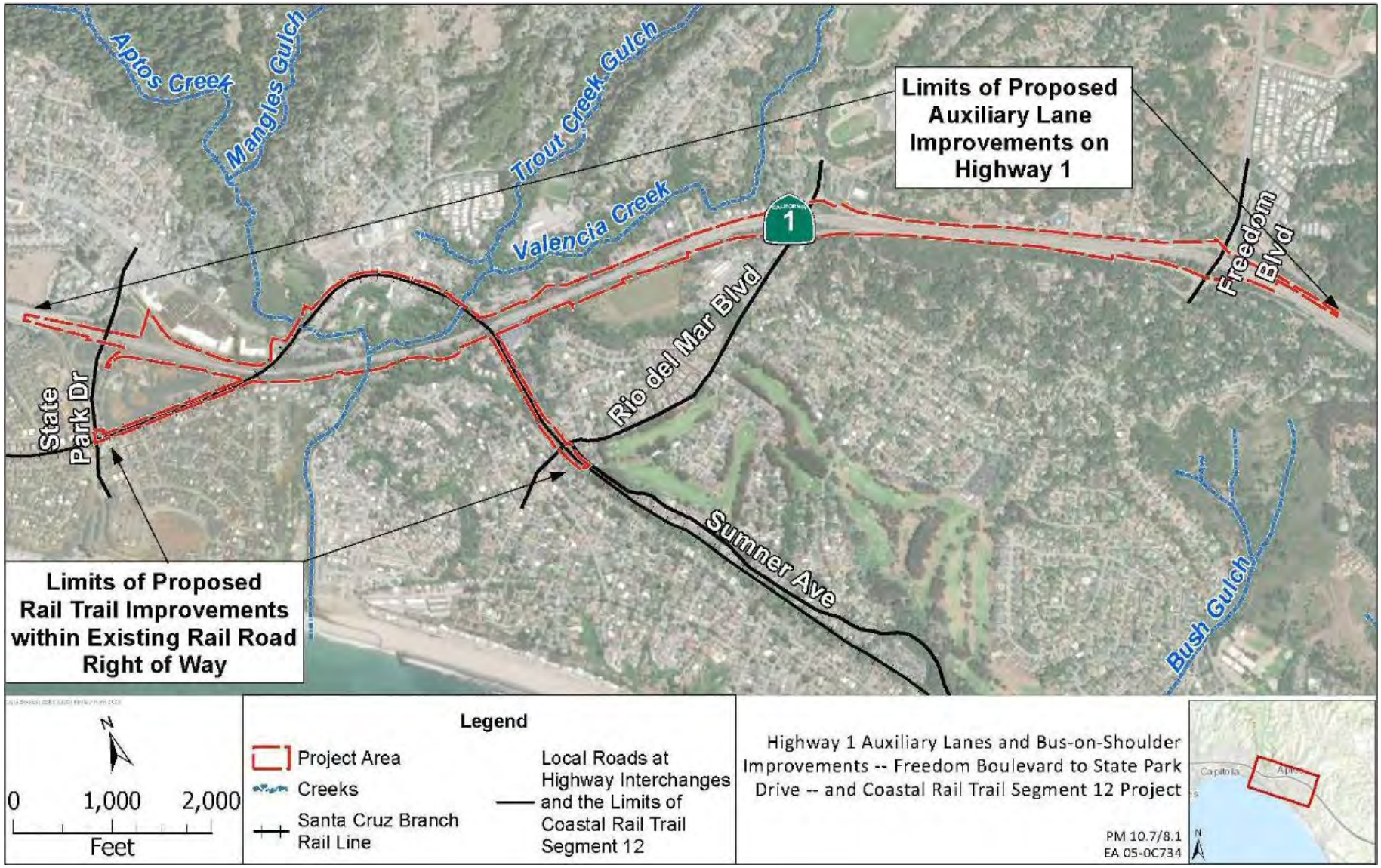


**Figure 2-2. Project Study Area**



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in the region, including other auxiliary lanes projects on SR 1 and other segments of the Coastal Rail Trail.

### 1.3.3. Build Alternative

The components of the build alternative are discussed in detail below.

#### Auxiliary Lanes

Auxiliary lanes are designed to improve merging operations and reduce conflicts between traffic entering and exiting SR 1 by connecting the on-ramp of one interchange to the off-ramp of the next; they are not designed to serve through traffic. A southbound auxiliary lane and a northbound auxiliary lane would be added to the following segments of SR 1:

- Between the Freedom Boulevard and Rio Del Mar Boulevard interchanges
- Between Rio Del Mar Boulevard and State Park Drive interchanges

The total roadway widening would be approximately 2.6 miles in length. Southbound, the auxiliary lane would begin at the existing State Park Drive loop on-ramp and end at the existing off-ramp to Freedom Boulevard. Northbound, the auxiliary lane would begin at the existing Freedom Boulevard on-ramp and end at the existing diagonal off-ramp to State Park Drive.

The new auxiliary lanes would be 12 feet wide. From Freedom Boulevard to Rio Del Mar Boulevard the width needed for the new lane would be added in the median. The existing median barrier will be reconstructed in its current location. From Rio Del Mar Boulevard to State Park Drive, the width needed for the new lane would be added outside the existing shoulders; standard 10-foot-wide outside shoulders would be included.

***Structures – SR 1***

The Build Alternative would include the replacement of the two Santa Cruz Branch Rail Line bridges over SR 1 and widening of the SR 1 bridge over Aptos Creek and Spreckels Drive to accommodate the proposed auxiliary lanes. The existing two-span Santa Cruz Branch Line railroad bridges (underpass structures) are proposed to be replaced with longer spans to accommodate the planned SR 1 ultimate improvements that are a six-through-lane concept plus an auxiliary lane in each direction between interchanges. The ultimate SR 1 configuration was approved in the Final

Environmental Impact Report/Environmental Assessment with a Finding of No Significant Impact for the Tier I High Occupancy Vehicle (HOV) Lanes and Tier II 41st Avenue to Soquel Avenue/Drive Auxiliary Lanes Project (Tier I/Tier II Final EA/EIR/FONSI). In addition to the proposed railroad overcrossing structures, new trail overcrossings would be constructed adjacent to the new railroad bridges over Aptos and Valencia creeks for Coastal Rail Trail Segment 12.

The widening of the SR 1 bridge over Aptos Creek and Spreckels Drive would occur on the south side of SR 1 only and require abutment walls along the existing embankments along the south side of Aptos Creek and the embankment on the north side of Spreckels Drive. The widened bridge would accommodate six lanes, each 12-feet wide (four through-lanes plus an auxiliary lane in each direction), 10-foot-wide outside shoulders, and a 9-foot-wide median with a 2-foot-wide inside shoulder in the northbound direction and 5-foot-wide inside shoulder in the southbound direction. To accommodate the SR 1 ultimate improvements of six through-lanes plus an auxiliary lane in each direction, the SR 1 bridge over Aptos Creek and Spreckels Drive would be widened to the north (inland) side as part of a future project.

***Retaining Walls – SR 1***

The build alternative would include retaining walls at the following locations along SR 1:

Northbound

- Station 258+90 - 261+26; Max height = 15 feet
- Station 288+07 - 296+00; Max height = 15 feet

Southbound

- Station 258+55 - 263+01; Max height = 20 feet
- Station 265+55 - 268+56; Max height = 12 feet
- Station 269+71 - 270+70; Max height = 12 feet
- Station 273+20 - 277+02; Max height = 20 feet
- Station 277+02 - 278+98; Max height = 30 feet

- Station 281+56 - 284+41; Max height = 35 feet
- Station 284+41 - 296+45; Max height = 15 feet

## Bus on Shoulder Features

Bus on shoulders features are proposed, which would allow future bus operations on the outside shoulders of SR 1 through the interchanges during peak congestion periods. At the Freedom Boulevard, Rio Del Mar Boulevard, and State Park Drive interchanges, the project would widen and improve SR 1 shoulders, which lack the width and pavement structural section to support bus operations.

***Cross Section – SR 1 Bus on Shoulders***

The added auxiliary lanes coupled with the bus on shoulder improvements allows the transit operator to use the auxiliary lane in between interchanges and use the shoulder between the off-ramp and on-ramps through the interchanges. Within the Freedom Boulevard, Rio Del Mar Boulevard, and State Park Drive interchange areas, the highway shoulders would be twelve-feet wide.

## Property Acquisitions

The Build Alternative would require full or partial acquisitions for the construction of the rail trail, as well as temporary easements for construction activities such as the construction of noise barriers and retaining walls.

Table 1.1 lists the full and partial property acquisitions that would occur under the Build Alternative. Additionally, temporary easements would occur for construction activities such as the construction of noise barriers and retaining walls.

**Table 1.1. Summary of Property Acquisitions**

| Assessor's Parcel No. | Street Address | Partial Acquisition (square feet) | Full Acquisition (square feet) |
|---|---|---|---|
| 039-232-03 | 7992 Soquel Drive | 2,700 | 7,510[1] |
| 039-232-02 | 7994 Soquel Drive | 1,100 | 3,350[1] |
| 039-232-01 | 7996 Soquel Drive | 5,370 | 12,110[1] |
| 041-011-42 | 10 Parade St A | 400 | |
| 041-011-41 | 15 Parade St B | 400 | |
| 041-561-11 | 8035 Soquel Drive 23 | 2,100 | |
| 044-282-47 | 379 Sandalwood Drive | 320 | |
| 044-282-48 | 369 Sandalwood Drive | 3 | |
| 041-052-16 | 9006 Soquel Drive | 520 | |
| 041-052-17 | Soquel Drive - Vacant | 1,560 | |
| 042-071-01, 042-071-02, 042-071-03, 042-067-18, | 345 Moosehead Drive | 1,129 | |
| 042-067-16 | Moosehead Drive - Vacant | 343 | |
| 042-067-17 | Moosehead Drive - Vacant | 735 | |

Source: LSA Associates, Inc. (October 2022).

[1] During final design, partial acquisition of parcel numbers 039-232-01, 039-232-02, and 039-232-03 may be determined to be feasible, in which case, the respective amounts shown in the "Partial Acquisition" column of Table 1.1 would be acquired. In the event that it is determined during final design that partial acquisition is infeasible, the respective amounts shown in the "Full Acquisition" column of Table 1.1 would be acquired.

## 1.4. Affected Land Uses

Land uses in the project vicinity were identified through land use maps, aerial photography, and site inspection. As required by the Protocol, noise abatement is only considered for areas of frequent human uses that would benefit from a lowered noise level. Accordingly, this impact analysis focuses on locations with defined outdoor activity areas, such as residential backyards, decks, balconies, common outdoor use areas for motel and, school playgrounds, and common use areas at multi-family residences.

Land uses along the SR 1 project corridor are predominantly residential with pockets of commercial and recreational parcels. Traffic on SR 1 is the dominant source of noise in the area.

The following land uses were identified in the project area:

- Single-family residences and multi-family residences: Activity Category B

- Churches, playgrounds, recreational sport areas: Activity Category C
- Churches (interior use): Activity Category D
- Office, restaurant, and hotel uses: Activity Category E

There are no existing uses that would be classified under Activity Category A within the study area. Although all developed land uses are evaluated in this analysis, 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 and common use areas at multi-family residences.

Land uses in the project area have been grouped into a series of numbered analysis areas that are identified in Figure A-1. It should be noted that Area 1 was analyzed within the NSR for the neighboring freeway segment, SR-1: State Park to Bay/Porter, and the changes associated with this project would not affect any receptors within this area. Therefore, no receptors in Area 1 were included within this Focused NADR for this project section. Each of these analysis areas are considered to be acoustically equivalent.

- **Area 2:** Area 2 is located north of SR 1 from the northwest quadrant of the SR 1/State Park Drive interchange to the Soquel Drive/SR 1 Santa Cruz Branch Line railroad overcrossing. A hotel (Activity Category E) and a large commercial retail development (Activity Category E) are located in this area. In general, the commercial retail area slopes upward in a southeast-northwest direction and is elevated above SR 1. The hotel property is roughly at grade with SR 1 or slightly higher than SR 1. There are no sound barriers located between the highway and the commercial retail or hotel uses. One outdoor dining area is located at the commercial retail area and an outdoor pool area is centrally located at the hotel property. (Refer to Figures A-1 and A-2.1).

- **Area 3:** Area 3 is located north of SR 1 from the Soquel Drive/SR 1 Santa Cruz Branch Line railroad overcrossing to the SR 1/Rio Del Mar Boulevard interchange. Multi-family and single-family residential uses (Activity Category B), outdoor dining areas (Activity Category E), and commercial/office uses are located in this area. The commercial/office uses do not have outdoor areas of frequent human use; therefore, this area focuses on the residential uses and outdoor dining areas that would benefit from a lowered noise level. This area is

generally flat with intervening vegetation between SR 1 and the receptors along Soquel Drive. (Refer to Figures A-1, A-2.2, and A-2.3).

- **Area 4:** Area 4 is located south of SR 1 from the SR 1/State Park Drive interchange to the Santa Cruz Branch Line railroad overcrossing. Single-family residential uses (Activity Category B) and a church (Activity Category C) are located in this area. This area is mostly flat with some varying topography in the residential hillside area east of Spreckels Drive. Intervening mature vegetation is located along SR 1 between the highway and the uses to the south. (Refer to Figures A-1, A-2.1, and A-2.2).

- **Area 5:** Area 5 is located south of SR 1 from the Santa Cruz Branch Line railroad overcrossing to the SR 1/Rio Del Mar Boulevard interchange. Single-family residential uses (Activity Category B), a tennis club (Activity Category C), and commercial retail development with outdoor dining areas (Activity Category E) are located in this area. This area is mostly flat along SR 1 with some varying topography in the residential hillside area to the south. Intervening mature vegetation is located along SR 1 between the highway and the uses to the south. (Refer to Figures A-1, A-2.2, and A-2.3).

- **Area 6:** Area 6 is located south of SR 1 from the SR 1/Rio Del Mar Boulevard interchange to the SR 1/Freedom Boulevard interchange. Single-family residential uses (Activity Category B) are located in this area. This area is mostly flat with some varying topography in the residential area to the south. Intervening mature vegetation is located along SR 1 between the highway and the uses to the south. (Refer to Figures A-1, A-2.3, and A-2.4).

- **Area 7:** Area 7 is located north of SR 1 from the SR 1/Rio Del Mar Boulevard interchange to the eastern project limits east of the SR 1/Freedom Boulevard interchange. Multi-family and single-family residential uses (Activity Category B), a church (Activity Category C), and commercial/office uses are located in this area. Most of the commercial/office uses do not have outdoor areas of frequent human use; therefore, this area focuses on residential uses, an outdoor area at the church, and an outdoor area at the pet hospital that would benefit from a lowered noise level. This area is generally flat along SR 1 and Soquel Drive with a noticeable increase in elevation north of Soquel Drive in the hillside residential areas. (Refer to Figures A-1, A-2.3, and A-2.4).

# Chapter 2. Results of the Focused Noise Study Report

The FNSR for this project was prepared by LSA in June 2022.

## 2.1. Noise Impact Locations

Potential long-term noise impacts associated with project operations are solely from traffic noise. Traffic noise was evaluated for the worst-case traffic condition. Using coordinates obtained from the topographic maps, 107 receptor locations associated with existing single- and multifamily residences, mobile homes, motels and hotels, recreational uses, religious uses, schools, and maintenance facilities were identified as receptors within the Study Area. Appendix A shows these receptor locations.

The existing and future 2045 traffic noise levels at all 107 receptor locations were modeled using either the worst-case traffic operations (prior to speed degradation) or peak-hour traffic volumes, whichever is lower. The worst-case traffic condition is generally loudest when vehicles on a given roadway travel at free-flowing traffic conditions and is assumed to be level of service (LOS) C. Traffic volume assumptions are based on the maximum number of vehicles that can typically travel in a given lane under such conditions. The worst-case traffic volumes are assumed to be 1,800 vehicles per lane per hour (vplph) on the SR 1 mainline, 1,500 vplph on auxiliary lanes, and 1,000 vplph on freeway ramps. The higher (a.m. or p.m.) peak-hour traffic volume was selected when the higher peak-hour traffic volume is lower than the worst-case traffic volume. The peak-hour traffic volumes for Route 1 were obtained from the Traffic Operations Report (CDM Smith. 2021).

The modeled future noise levels with the project were compared to the modeled existing noise levels (after calibration) from Traffic Noise Model 2.5 to determine whether a substantial noise increase would occur. The modeled future noise levels were also compared to the NAC under Activity Categories B, C, D, and E to determine whether a traffic noise impact would occur.

Of the 107 modeled receptors, 53 receptors under the Future Build Alternative would approach or exceed the NAC. No receptor would experience a substantial noise increase of 12 dBA or more over its corresponding existing noise levels. It should be noted that Area 1 was analyzed within the NSR for the neighboring freeway segment, SR-1: State Park to Bay/Porter, and the changes associated with this project would

not affect any receptors within this area. Therefore, no receptors in Area 1 are included within this Focused NADR.

The receptor locations listed below would be or would continue to be exposed to noise levels that approach or exceed the NAC under the Build Alternative:

- **Receptors 3-1 to 3-3, 3-7 to 3-11, and 3-13:** Within area 3, these receptor locations represent existing single family and multi-family uses along Soquel Drive on the northbound side of SR 1. Currently, no existing wall shields the noise sensitive areas. Three noise barriers (NB No. S90, S86a, S86b) were modeled along the State right-of-way on the northbound side of SR 1 to shield the exterior sensitive areas.

- **Receptors 4-4, 4-10b, 4-12, 4-14, 4-17, 4-18, and 4-22 to 4-27:** Within area 4, these receptor locations represent existing single family and multi-family uses on the southbound side of SR 1. Currently, no existing wall shields the noise sensitive areas. Three noise barriers (NB No. S93, S89, S87) were modeled along the State right-of-way on the southbound side of SR 1 to shield the exterior sensitive areas.

- **Receptors 5-2:** Within area 5, this receptor location represents existing single-family use along Robin Drive on the southbound side of SR 1. Currently, no existing wall shields the noise sensitive areas. One noise barrier (NB No. SB-1) was modeled along the State right-of-way on the southbound side of SR 1 to shield the exterior sensitive areas.

- **Receptors 6-3 to 6-14, 6-16, and 6-23 to 6-26:** Within area 6, these receptor locations represent existing single family uses on the southbound side of SR 1, south of Rio Del Mar Boulevard. Currently, no existing wall shields the noise sensitive areas. Two noise barriers (NB No. S71 and SB-2) were modeled along the State right-of-way on the southbound side of SR 1 to shield the exterior sensitive areas.

- **Receptors 7-1 to 7-4, 7-6, and 7-9 to 7-17:** Within area 7, these receptor locations represent existing single family and multi-family uses along Soquel Drive on the northbound side of SR 1. Currently, no existing wall shields the noise sensitive areas. Two noise barriers (NB No. S74 and S68) were modeled

along the State right-of-way on the northbound side of SR 1 to shield the exterior sensitive areas.

## 2.2. Locations for Evaluated Noise Abatement

Noise abatement measures such as noise barriers were considered in order to shield receptors within the Study Area that would become or would continue to be exposed to traffic noise levels approaching or exceeding the NAC. All properties requiring abatement consideration are within Activity Categories B (67 dBA $L_{eq}$ NAC), C (67 dBA $L_{eq}$ NAC), and E (72 dBA $L_{eq}$ NAC). Noise barriers were analyzed for each of these receptor locations. Depending on the location of the potential barrier and existing barrier height, noise barrier heights from 8 to 16 ft were analyzed at 2 ft increments. The location of the modeled noise barriers are shown on Figures A-2.1, A-2.2, A-2.3, and A-2.4 in Appendix A.

The following noise barriers were analyzed to shield receptor locations that would be exposed to traffic noise levels approaching or exceeding the NAC for the Build Alternative:

- **NB No. S90:** A 1,862 ft long barrier along the shoulder on the northbound side of SR 1 was analyzed to shield Receptors in Area 3.
- **NB No. S86a:** A 606 ft long barrier along the ROW of SR 1 on the northbound side was analyzed to shield Receptors in Area 3.
- **NB No. S93:** A 585 ft long barrier along the ROW of SR 1 on the southbound side was analyzed to shield Receptors in Area 4.
- **NB No. S89:** A 885 ft long barrier along the shoulder of SR 1 on the southbound side was analyzed to shield Receptors in Area 4.
- **NB No. S87:** A 1,057 ft long barrier along the ROW of SR 1 on the southbound side was analyzed to shield Receptors in Area 4.
- **NB No. SB-1:** A 141 ft long barrier along the ROW of SR 1 on the southbound side of SR 1 was analyzed to shield Receptors in Area 5.
- **NB No. S71:** A 3,280 ft long barrier along the shoulder of SR 1 on the southbound side was analyzed to shield Receptors in Area 6.
- **NB No. SB-2:** A 912 ft long barrier along the shoulder of SR 1 on the southbound side was analyzed to shield Receptors in Area 6.
- **NB No. S68:** A 3,293 ft long barrier along the ROW and shoulder of SR 1 on the northbound side was analyzed to shield Receptors in Area 7.

- **NB No. S74:** A 470 ft long barrier along the EOS of SR 1 on the northbound side was analyzed to shield Receptors in Area 7.

## 2.3. Feasible Noise Barriers

Section 3 of the Protocol states that a minimum noise reduction of 5 dBA must be achieved at the impacted receptors in order for the proposed noise abatement measure to be considered feasible. Greater noise reductions are encouraged if they can be reasonably achieved. Feasibility may also be restricted by the following factors: (1) topography, (2) access requirement for driveways, (3) presence of local cross-streets, (4) underground utilities, (5) other noise sources in the area, and (6) safety considerations. It should be noted that both NB No. S74 and NB No. SB-2 were found not to reduce noise by a minimum of 5 dBA, therefore making them infeasible.

Table 2.1 summarizes the feasibility of the proposed noise barriers and lists the noise barrier heights, approximate lengths, the noise attenuation, the number of benefited units/receptors, the total reasonable allowance, beginning and ending station number, and the beginning and ending top of wall elevation under the Build Alternative.

## Table 2.1: Summary of Feasible Noise Barriers from the Focused Noise Study Report

| Noise Barrier No. | Height (ft) | Approximate Length (ft) | Noise Attenuation (dBA) | Number of Benefited Receptors/Units[1] | Total Reasonable Allowance[2] | Noise Barrier Location | Noise Barrier Station Number | | Top of Wall Elevation (ft) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Begin | End | Begin | End |
| S90 | 8 | 1,862 | 5 | 1 | $107,000 | EOS/ROW | 268+00 | 287+00 | 88.23 | 78.80 |
| | 10 | | 6 | 2 | $214,000 | | | | 90.23 | 80.80 |
| | 12 | | 7 | 6 | $642,000 | | | | 92.23 | 82.80 |
| | 14[3] | | 8 | 7 | $749,000 | | | | 94.23 | 84.80 |
| | 16 | | 9 | 10 | $1,070,000 | | | | 96.23 | 86.80 |
| S86a | 8 | 606 | 10 | 10 | $1,070,000 | EOS/ROW | 261+81 | 267+49 | 104.96 | 92.0 |
| | 10 | | 12 | 10 | $1,070,000 | | | | 106.96 | 94.0 |
| | 12 | | 13 | 10 | $1,070,000 | | | | 108.96 | 96.0 |
| | 14[3] | | 14 | 10 | $1,070,000 | | | | 110.96 | 98.0 |
| | 16 | | 14 | 10 | $1,070,000 | | | | 112.96 | 100.0 |
| S93 | 8 | 585 | 0 | 0 | $0 | EOS/ROW | 285+73 | 291+52 | 108.0 | 116.68 |
| | 10[3] | | 6 | 4 | $428,000 | | | | 110.0 | 118.68 |
| | 12 | | 6 | 4 | $428,000 | | | | 112.0 | 120.68 |
| | 14 | | 7 | 5 | $535,000 | | | | 114.0 | 122.68 |
| | 16 | | 8 | 5 | $535,000 | | | | 116.0 | 124.68 |
| S89 | 8 | 885 | 10 | 9 | $963,000 | EOS/ROW | 276+62 | 284+41 | 58.0 | 77.90 |
| | 10 | | 10 | 10 | $1,070,000 | | | | 60.0 | 79.90 |
| | 12 | | 11 | 10 | $1,070,000 | | | | 62.0 | 81.90 |
| | 14 | | 11 | 10 | $1,070,000 | | | | 64.0 | 83.90 |
| | 16[4] | | 12 | 10 | $1,070,000 | | | | 66.0 | 85.90 |
| S87 | 8 | 1,057 | 10 | 4 | $428,000 | EOS/ROW | 267+36 | 277+03 | 95.73 | 43.96 |
| | 10 | | 12 | 4 | $428,000 | | | | 97.73 | 45.96 |
| | 12 | | 14 | 7 | $749,000 | | | | 99.73 | 47.96 |
| | 14[3] | | 15 | 7 | $749,000 | | | | 101.73 | 49.96 |
| | 16 | | 16 | 7 | $749,000 | | | | 103.73 | 51.96 |
| SB-1 | 8[3] | 141 | 5 | 2 | $214,000 | EOS/ROW | 259+82 | 261+14 | 197.61 | 180.85 |
| | 10 | | 6 | 2 | $214,000 | | | | 199.61 | 182.85 |
| | 12 | | 6 | 2 | $214,000 | | | | 201.61 | 184.85 |
| | 14 | | 6 | 2 | $214,000 | | | | 203.61 | 186.85 |
| | 16 | | 6 | 2 | $214,000 | | | | 205.61 | 188.85 |
| S71 | 8 | 3,280 | 6 | 2 | $214,000 | EOS/ROW | 201+17 | 233+40 | 142.7 | 152.0 |
| | 10 | | 7 | 20 | $2,140,000 | | | | 144.7 | 154.0 |
| | 12 | | 9 | 22 | $2,354,000 | | | | 146.7 | 156.0 |
| | 14 | | 10 | 24 | $2,568,000 | | | | 148.7 | 158.0 |
| | 16[3] | | 11 | 29 | $3,103,000 | | | | 150.7 | 160.0 |

## Table 2.1: Summary of Feasible Noise Barriers from the Focused Noise Study Report

| Noise Barrier No. | Height (ft) | Approximate Length (ft) | Noise Attenuation (dBA) | Number of Benefited Receptors/Units[1] | Total Reasonable Allowance[2] | Noise Barrier Location | Noise Barrier Station Number | | Top of Wall Elevation (ft) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Begin | End | Begin | End |
| S68 | 8 | 3,293 | 7 | 6 | $642,000 | EOS/ROW | 192+47 | 224+48 | 156.0 | 139.92 |
| | 10 | | 8 | 9 | $963,000 | | | | 158.0 | 141.92 |
| | 12 | | 9 | 14 | $1.498,000 | | | | 160.0 | 143.92 |
| | 14[3] | | 10 | 22 | $2,354,000 | | | | 162.0 | 145.92 |
| | 16 | | 10 | 22 | $2,354,000 | | | | 164.0 | 147.92 |

Source: LSA Associates, Inc. (October 2022).
[1] Number of receptors/units that are attenuated by 5 dBA or more by the modeled barrier.
[2] Calculated by multiplying the number of benefited receptors by $107,000 (the dollar amount per benefited receptor/unit).
[3] Denotes the minimum wall height required to break the line-of-sight between the receptor and a truck exhaust stack.
[4] Noise barrier does not break line-of-sight between the receptor and truck exhaust stack.
dBA = A-weighted decibels
ft = foot/feet
ROW = right-of-way

# Chapter 3. Preliminary Noise Abatement Decision

## 3.1. Summary of Key Information

Utilizing the information in Chapter 2, barriers considered to be feasible are analyzed to determine their reasonableness. As stated in Section 5.4 of the FNSR, the overall reasonableness of noise abatement is determined by considering factors such as the noise reduction design goal and the construction cost of the barrier. For a noise barrier to be considered reasonable, the noise level reduction design goal of 7 dBA must be achieved at one or more of the benefited receptors. For any noise barrier to be considered reasonable from a cost perspective, the estimated construction cost of the noise barrier would be equal to or less than the total cost allowance calculated for the barrier. The total reasonable allowance was determined based on the number of benefited receptors multiplied by the reasonable allowance per residence. The estimated noise barrier construction costs for the feasible noise barriers were prepared by Mark Thomas in July 2022 and are shown in Table 3.1 as well as in Appendix B. If the estimated noise barrier construction cost exceeds the total reasonable allowance, the noise barrier is determined to be not reasonable. However, if the estimated noise barrier construction cost is within the total reasonable allowance, the noise barrier is determined to be reasonable.

A summary of abatement information in Table 3.1 lists all the feasible noise barriers under the Build Alternative, along with their locations, heights, approximate lengths, the noise attenuation levels, the number of benefited units/receptors, the total reasonable allowance per barrier, the estimated construction costs, and whether the barrier is reasonable.

## Table 3.1: Summary of Abatement Key Information for the Build Alternative

| Noise Barrier No. | Noise Barrier Location | Height (ft) | Approximate Length (ft) | Noise Attenuation Level (dBA) | Number of Benefited Receptors/ Units[1] | Total Reasonable Allowance[2] | Estimated Construction Cost[3] | Reasonable? |
|---|---|---|---|---|---|---|---|---|
| NB-S90 | Shoulder / ROW | 8 | 1,862 | 5 | 1 | $107,000 | $2,611,680 | No |
| | | 10 | | 6 | 2 | $214,000 | $2,816,500 | No |
| | | 12 | | 7 | 6 | $642,000 | $3,006,424 | No |
| | | 14[5] | | 8 | 7 | $749,000 | $3,192,624 | No |
| | | 16 | | 9 | 25 | $2,675,000 | $3,356,480 | No |
| NB-S86a | ROW | 8 | 606 | 10 | 10 | $1,070,000 | $514,169 | Yes |
| | | 10 | | 12 | 10 | $1,070,000 | $580,829 | Yes |
| | | 12 | | 13 | 10 | $1,070,000 | $642,641 | Yes |
| | | 14[5] | | 14 | 10 | $1,070,000 | $703,241 | Yes |
| | | 16 | | 14 | 10 | $1,070,000 | $756,569 | Yes |
| NB-S93 | ROW | 8 | 585 | 0 | 0 | $0 | $590,114 | No |
| | | 10[5] | | 6 | 4 | $428,000 | $654,464 | No |
| | | 12 | | 6 | 4 | $428,000 | $714,134 | No |
| | | 14 | | 7 | 5 | $535,000 | $772,634 | No |
| | | 16 | | 8 | 5 | $535,000 | $824,114 | No |
| NB-S89 | ROW | 8 | 885 | 10 | 9 | $963,000 | $776,400 | Yes |
| | | 10 | | 10 | 10 | $1,070,000 | $873,750 | Yes |
| | | 12 | | 11 | 10 | $1,070,000 | $964,020 | Yes |
| | | 14 | | 11 | 10 | $1,070,000 | $1,052,520 | Yes |
| | | 16 | | 12 | 10 | $1,070,000 | $1,130,400 | No |
| NB-S87 | ROW | 8 | 1057 | 10 | 4 | $428,000 | $957,610 | No |
| | | 10 | | 12 | 4 | $428,000 | $1,073,880 | No |
| | | 12 | | 14 | 7 | $749,000 | $1,181,694 | No |
| | | 14[5] | | 15 | 7 | $749,000 | $1,287,394 | No |
| | | 16 | | 16 | 7 | $749,000 | $1,380,410 | No |
| NB-SB-1 | ROW | 8[5] | 141 | 5 | 2 | $214,000 | $217,950 | No |
| | | 10 | | 6 | 2 | $214,000 | $233,460 | No |
| | | 12 | | 6 | 2 | $214,000 | $247,842 | No |
| | | 14 | | 6 | 2 | $214,000 | $261,942 | No |
| | | 16 | | 6 | 2 | $214,000 | $274,350 | No |
| NB-S71 | Shoulder / ROW | 8 | 3,280 | 6 | 2 | $214,000 | $2,424,200 | No |
| | | 10 | | 7 | 20 | $2,140,000 | $2,785,000 | No |
| | | 12 | | 9 | 22 | $2,354,000 | $3,119,560 | No |
| | | 14 | | 10 | 24 | $2,568,000 | $3,447,560 | No |
| | | 16[5] | | 11 | 29 | $3,103,000 | $3,736,200 | No |

## Table 3.1: Summary of Abatement Key Information for the Build Alternative

| Noise Barrier No. | Noise Barrier Location | Height (ft) | Approximate Length (ft) | Noise Attenuation Level (dBA) | Number of Benefited Receptors/ Units[1] | Total Reasonable Allowance[2] | Estimated Construction Cost[3] | Reasonable? |
|---|---|---|---|---|---|---|---|---|
| NB-S68 | ROW | 8 | 3,293 | 7 | 6 | $642,000 | $2,170,450 | No |
| | | 10 | | 8 | 9 | $963,000 | $2,532,680 | No |
| | | 12 | | 9 | 14 | $1,498,000 | $2,868,566 | No |
| | | 14[5] | | 10 | 22 | $2,354,000 | $3,197,866 | No |
| | | 16 | | 10 | 22 | $2,354,000 | $4,493,541 | No |

Source: LSA Associates, Inc. (October 2022).
[1] Number of receptors/units that are attenuated by 5 dBA or more by the modeled barrier.
[2] Calculated by multiplying the number of benefited receptors by $107,000 (the dollar amount per benefited receptor/unit).
[3] Construction cost estimate provided by Mark Thomas (2022).
[4] Proposed barrier height does not meet the minimum noise levels design goal of 7 dBA.
[5] Denotes the minimum wall height required to break the line-of-sight between the receptor and a truck exhaust stack.
dBA = A-weighted decibels
ft = foot/feet
ROW = right-of-way

## 3.2. Nonacoustical Factors Relating to Feasibility

Nonacoustical factors relating to feasibility must be considered during the construction of noise barriers. While there could be potential impacts due to safety, maintenance access, constructability, removal of vegetation and trees, mitigation, and presence of existing utilities, feasible design considerations make the construction of the acoustically feasible and reasonable barriers possible. Below are further details on the individual sound walls:

- S68: Installation of the sound wall along the Caltrans R/W between the northbound SR 1 lanes and adjacent Soquel Drive would require removal of mature trees and vegetation changing the visual character of this segment of SR 1. Replacement planting would be required with limited opportunities within Caltrans R/W leading to potential off-site mitigation.
- S71: Installation of the sound wall at the edge of existing outside shoulder along southbound SR 1 between the Rio Del Mar Boulevard and Freedom Boulevard interchanges occurs adjacent to the Valencia Lagoon environmentally sensitive area (ESA). Any disturbance in this area is considered an impact to the ESA but mitigation is not viable. Since the wall is placed at the edge of shoulder rather than Caltrans R/W, Caltrans Maintenance personnel would be required to get access behind the sound wall between the back of wall and Caltrans R/W but this is the ESA where disturbance is to be avoided and Caltrans preference is not to have areas behind sound walls to maintain. Placing the sound wall at the Caltrans R/W is not feasible as it would be further within the ESA. This sound wall would need to be removed when the future HOV lanes are constructed.
- S86a: Installation of the sound wall along the Caltrans R/W would require removal of mature trees and vegetation changing the visual character of this segment of SR 1. The homes and businesses that directly back onto the freeway where the sound wall is proposed would see a significant removal of mature trees that would be replaced with a sound wall. Replacement planting would be required with limited opportunities within Caltrans R/W leading to potential off-site mitigation.
- S87: Installation of the sound wall along the Caltrans R/W would require removal of mature trees and vegetation changing the visual character of this segment of SR 1. Replacement planting would be required with limited opportunities within Caltrans R/W leading to potential off-site mitigation. The existing topography is steep in this area requiring the contractor to build access

roads to get to the location of the sound wall installation that would require removal of additional mature trees and vegetation. Additional grading would be needed in front of the wall on the freeway side to provide a permanent level benched area for maintenance access. Caltrans Maintenance personnel would not be able to drive vehicles up to the face of the sound wall from the freeway side due to the existing topography.

- S89: A segment of the sound wall would be on the widened Aptos Creek Bridge and approaches changing the visual character of the freeway in this area where it crosses Aptos Creek.
- S90: Installation of the sound wall at the edge of existing and widened outside shoulder along northbound SR 1 between the South Aptos UP bridge to just north of the Aptos Creek Bridge is adjacent to Valencia Creek where there are steep slopes from the edge of freeway down to the creek. An existing retaining wall system would need to be removed and replaced with a new retaining wall system that could support the sound wall. Due to the steep side slopes down to Valencia Creek, Caltrans Maintenance personnel would not be able to maintain the back side of the sound wall as placing additional grading for a level benched area is not feasible. A segment of the sound wall would be on the existing Aptos Creek Bridge and approaches changing the visual character of the freeway in this area where it crosses Aptos Creek and would require strengthening of the existing Aptos Creek Bridge to support the new sound wall. This sound wall would need to be removed when the future HOV lanes are constructed.
- S93: Installation of the sound wall along the Caltrans R/W would require removal of mature trees and vegetation changing the visual character of this segment of SR 1. Replacement planting would be required with limited opportunities within Caltrans R/W leading to potential off-site mitigation. The existing topography is steep in this area requiring the contractor to build access roads to get to the location of the sound wall installation that would require removal of additional mature trees and vegetation. Caltrans Maintenance personnel would not be able to drive vehicles up to the face of the sound wall from the freeway side due to the existing topography. There are existing overhead utility lines and poles that conflict with the sound wall location requiring relocation.
- SB-1: Installation of the sound wall along the Caltrans R/W would require removal of mature trees and vegetation changing the visual character of this segment of SR 1. Replacement planting would be required with limited opportunities within Caltrans R/W leading to potential off-site mitigation. The

existing topography is steep in this area requiring the contractor to build access roads to get to the location of the sound wall installation that would require removal of additional mature trees and vegetation. Additional grading would be needed in front of the wall on the freeway side to provide a permanent level benched area for maintenance access. Caltrans Maintenance personnel would not be able to drive vehicles up to the face of the sound wall from the freeway side due to the existing topography.

## 3.3. Preliminary Recommendation and Decision

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

As part of the public review period for the project, the property owners and non-owner occupants will be sent a noise barrier survey letter to request each owner's or occupant's opinion on whether or not they would prefer a noise barrier and what height they would prefer the barrier to be based on the range of feasible and reasonable heights listed in Table 3.1.

# Chapter 4. Secondary Effects of Abatement

Secondary effects of noise abatement were considered as part of this FNADR. The proposed project includes avoidance, minimization, and/or mitigation measures that lessen potential environmental effects. Noise abatement is a part of the overall project footprint, and any secondary effects would be addressed by these measures.

Construction of sound walls (S68, S86a, S87, S93, SB-1) would require removal of mature trees and vegetation changing the visual character of the area. Replacement plantings would reduce these effects, but not completely.

Construction of the sound walls identified above could potentially disturb active bird nests. Construction of these sound walls could have impacts on active bird nests and any young or eggs residing in nests could occur during the removal of trees and vegetation and the removal of nests. Temporary indirect impacts on birds could also result from disturbance and noise associated with construction activities, which could alter nesting and foraging behaviors. Biological surveys for active nests should be conducted before project construction.

Sound wall S71 occurs adjacent to the Valencia Ecological Preserve. Construction activities would be outside the Preserve but could result in impacts on Santa Cruz Long-Toed Salamander. Since the wall is placed at the edge of shoulder rather than Caltrans right-of-way, Caltrans Maintenance personnel would be required to get access behind the sound wall between the back of wall and Caltrans right-of-way but this is the Preserve boundary where disturbance is to be avoided and Caltrans preference is not to have areas behind sound walls to maintain.

The entire project area has the potential for encountering contaminated soil and groundwater due to past agricultural uses, railroad operations, and past vehicle use of leaded gasoline (aerially deposited lead near roadways. Preconstruction survey for contaminants should occur before any ground-disturbing activities.

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# Chapter 5. References

California Department of Transportation (Caltrans). 2020. *Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects*. April. Website: https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/traffic-noise-protocol-april-2020-a11y.pdf.

CDM Smith. 2021. *Highway 1 Auxiliary Lanes and Bus-on-Shoulder Improvements–Freedom Boulevard to State Park Drive – and Coastal Rail Trail Segment 12 Project Draft Traffic Operations Analysis Report.* March.

Mark Thomas. 2022. Noise Barrier Construction Cost Estimate. July.

LSA Associates, Inc. 2022. *Focused Noise Study Report.* June.

Wilbur Smith Associates. 2012. *State Route 1 HOV Lane Widening Project Traffic Operations Report*. April.

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# Appendix A. Monitoring, Receptor, and Noise Barrier Location Figures

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LSA

LEGEND

Receptor Areas

- Area 1
- Area 2
- Area 3
- Area 4
- Area 5
- Area 6
- Area 7

N

0 500 1000
FEET

SOURCE: Google (2021)

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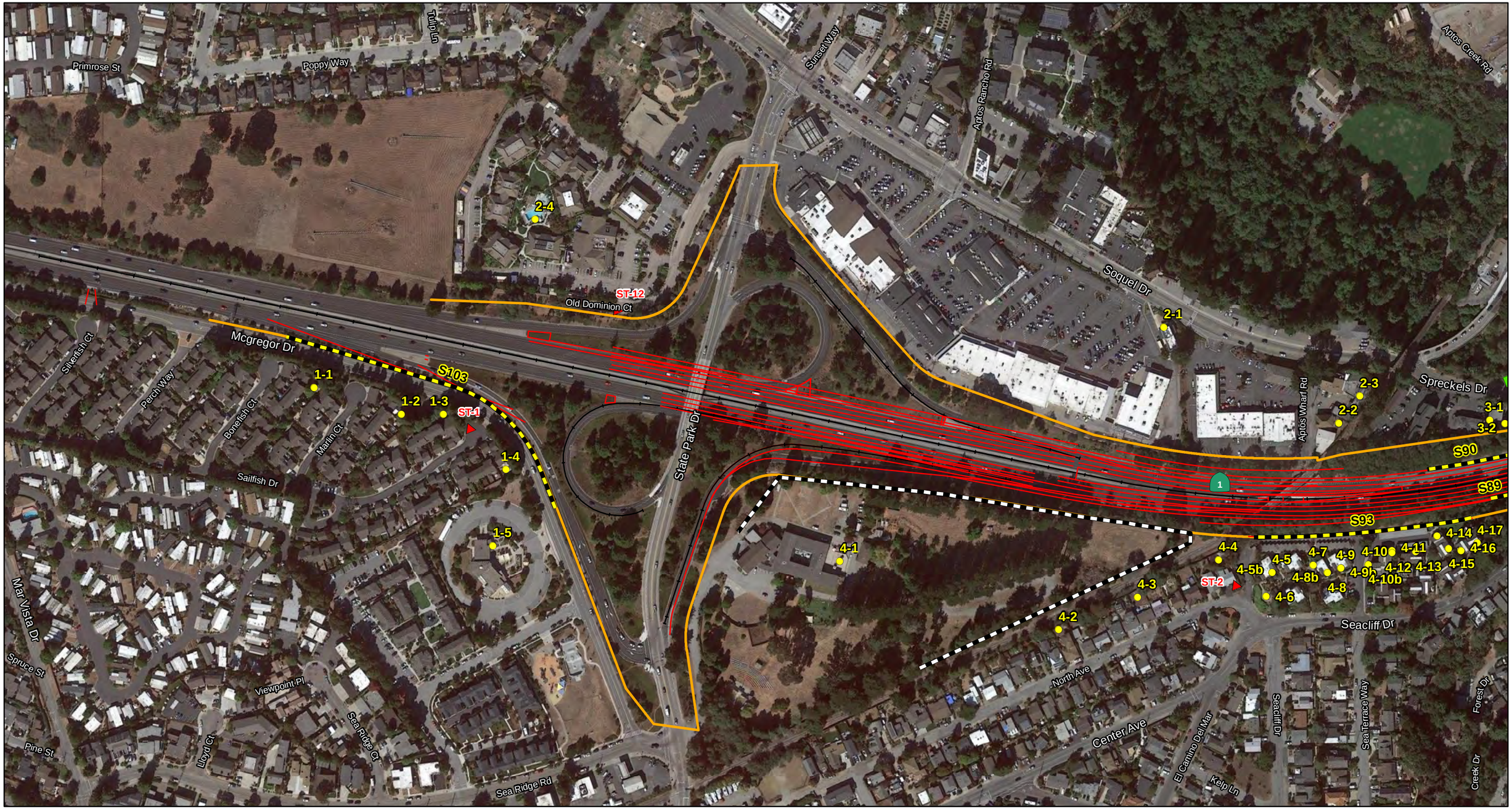
FIGURE A-1

*State Highway Route 1 Auxiliary Lanes and Bus-on-Shoulder Improvements*
*Freedom Boulevard to State Park Drive and Coastal Rail Trail Segment 12 Project*

Receptor Areas




LSA

LEGEND

- Modeled Receptors
- Short-Term Monitoring Locations
- Long-Term Monitoring Locations
- Existing Noise Barrier
- Modeled Sound Barrier
- Right-of-Way

Proposed Geometrics

- Roadway
- Centerline

0 125 250
FEET

SOURCE: Google (2021), CAD Data (3/7/2022)

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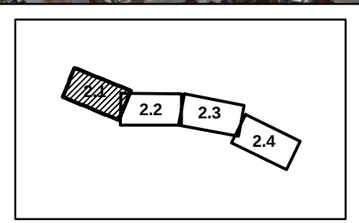
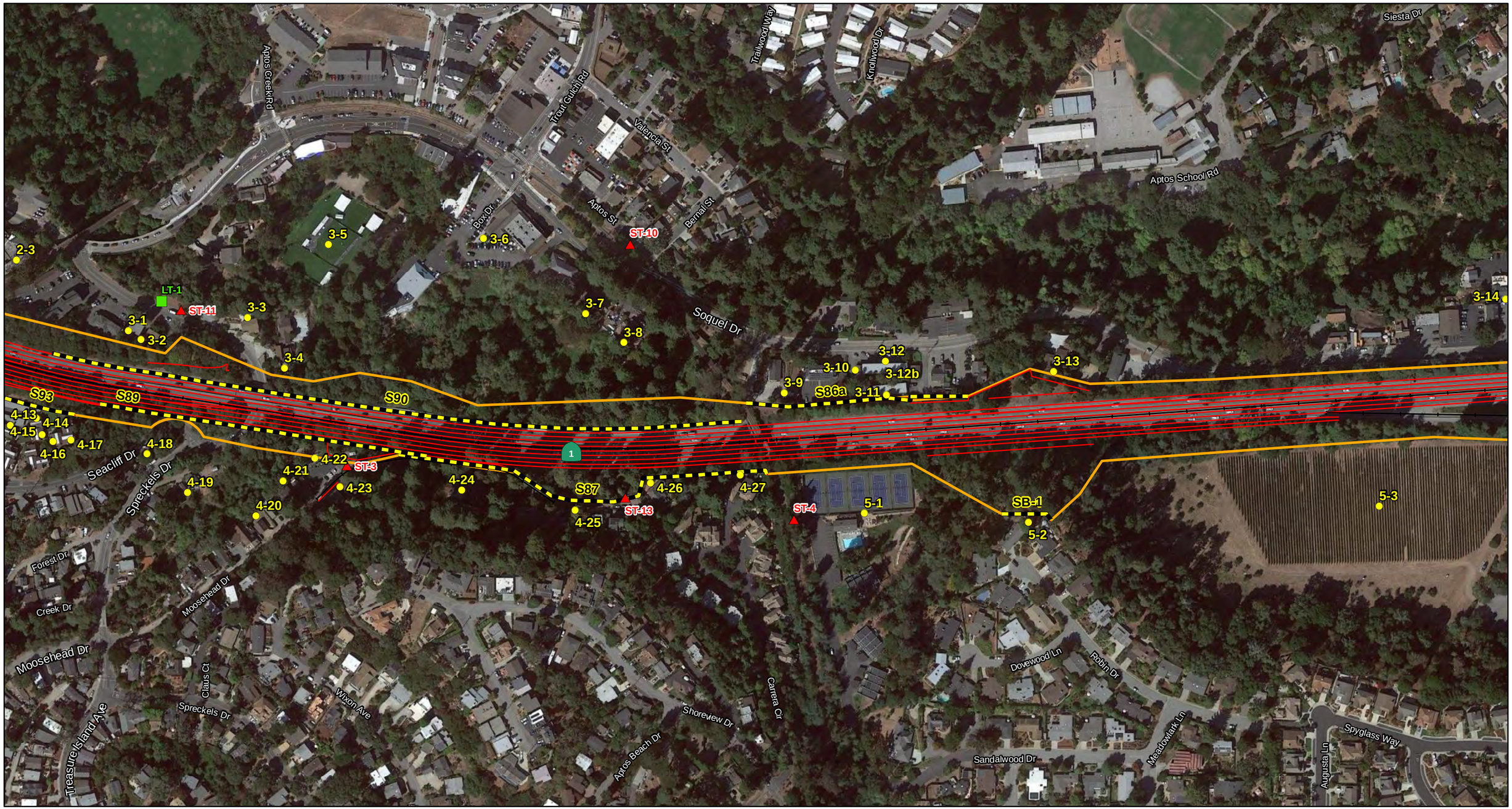



FIGURE A-2.1

*State Highway Route 1 Auxiliary Lanes and Bus-on Shoulder Improvements*
*Freedom Boulevard to State Park Drive and Coastal Rail Trail Segment 12 Project*

Modeled Noise Barriers and Receptor Locations




LSA

LEGEND

- Modeled Receptors
- Short-Term Monitoring Locations
- Long-Term Monitoring Locations
- Existing Noise Barrier
- Modeled Sound Barrier
- Right-of-Way

Proposed Geometrics

- Roadway
- Centerline

0 125 250
FEET

SOURCE: Google (2021), CAD Data (3/7/2022)

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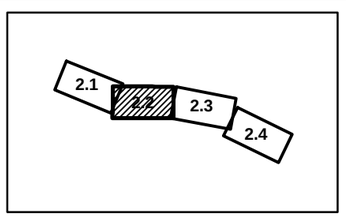
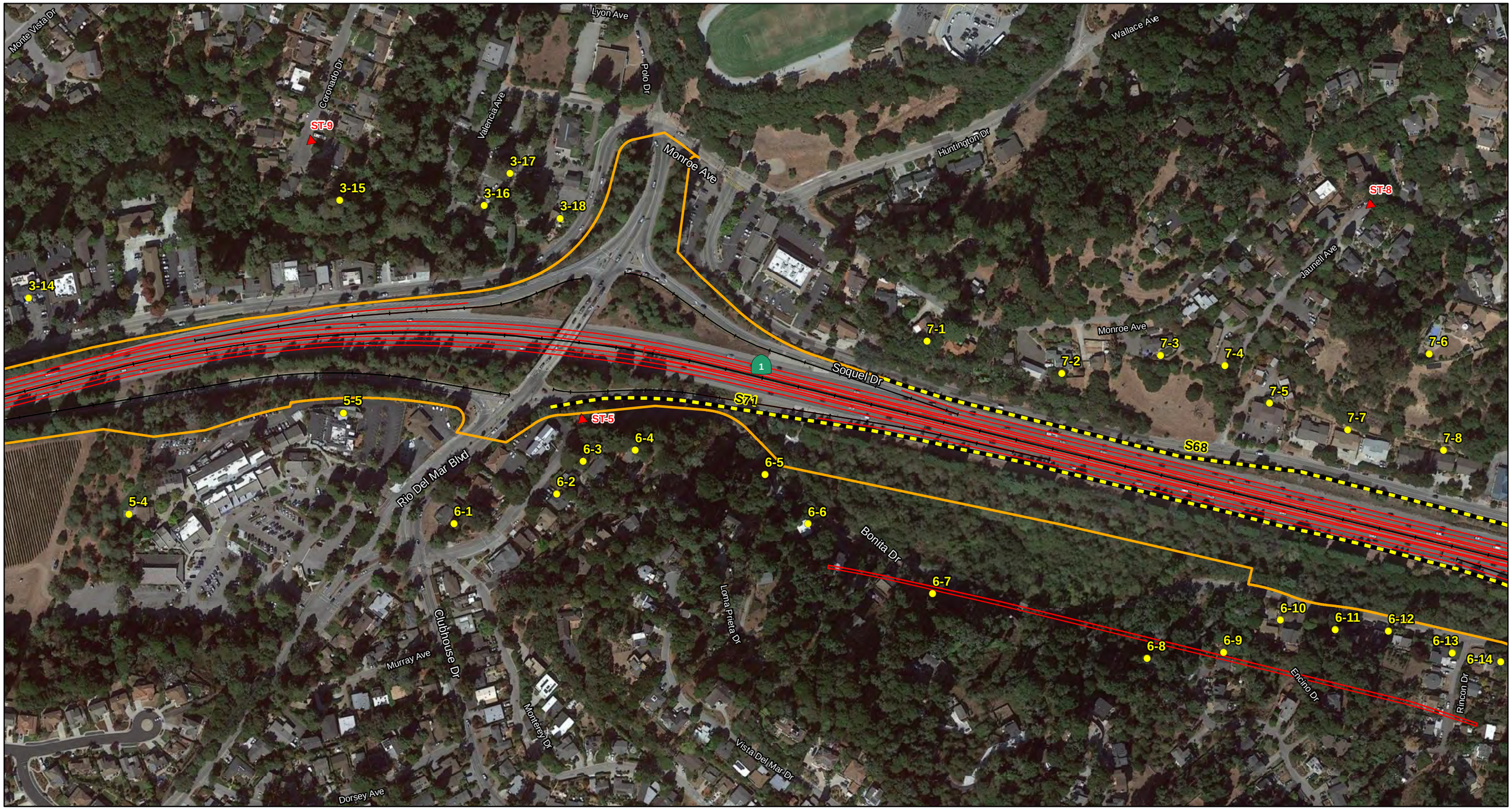



FIGURE A-2.2

*State Highway Route 1 Auxiliary Lanes and Bus-on Shoulder Improvements*
*Freedom Boulevard to State Park Drive and Coastal Rail Trail Segment 12 Project*

Modeled Noise Barriers and Receptor Locations




LSA

LEGEND

- Modeled Receptors
- Short-Term Monitoring Locations
- Long-Term Monitoring Locations
- Existing Noise Barrier
- Modeled Sound Barrier
- Right-of-Way

Proposed Geometrics

- Roadway
- Centerline

0 125 250
FEET

SOURCE: Google (2021), CAD Data (3/7/2022)

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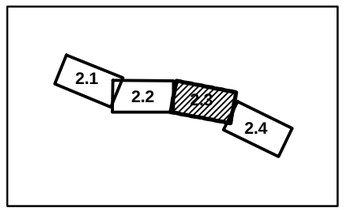
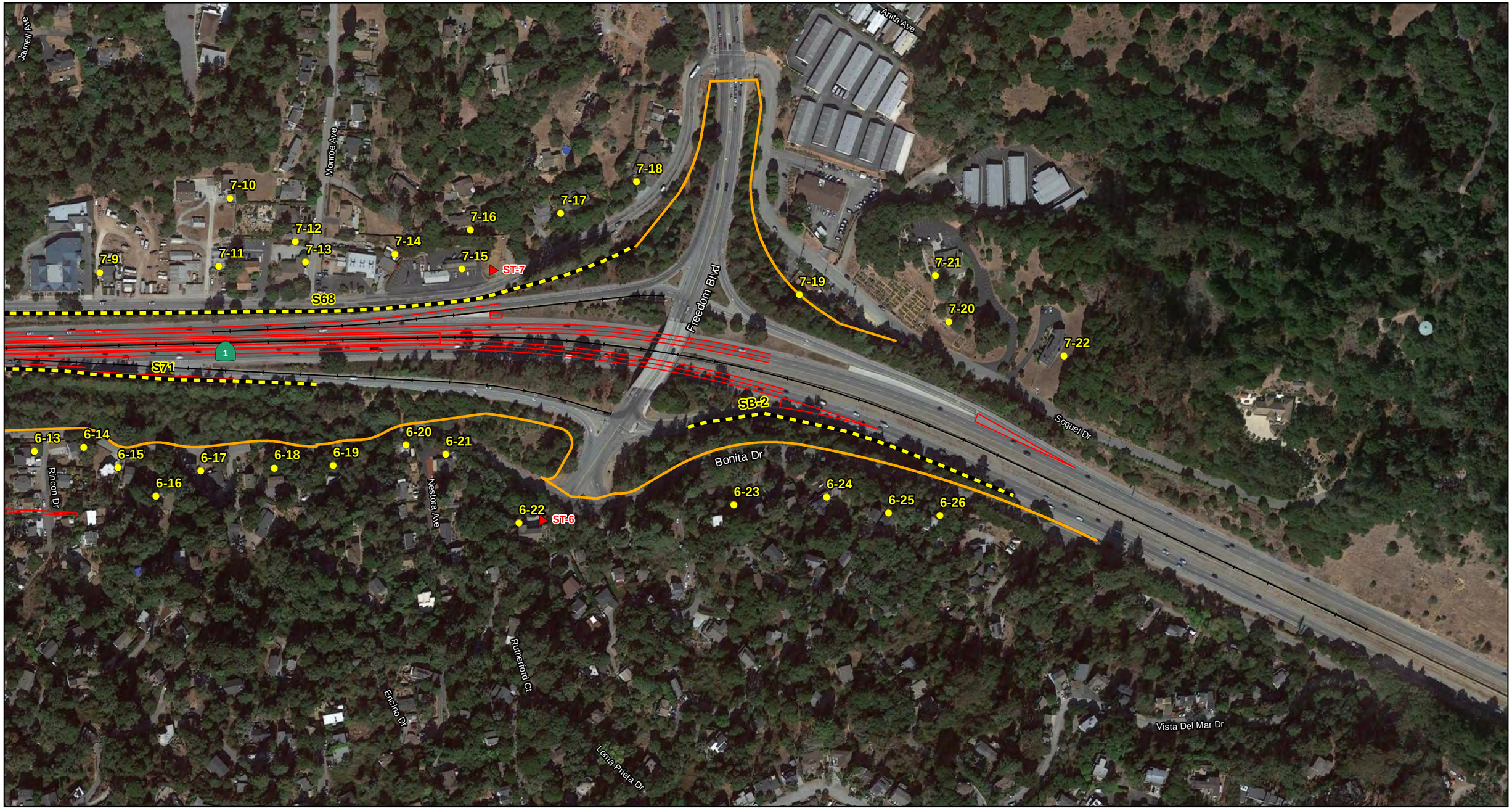



FIGURE A-2.3

*State Highway Route 1 Auxiliary Lanes and Bus-on Shoulder Improvements*
*Freedom Boulevard to State Park Drive and Coastal Rail Trail Segment 12 Project*

Modeled Noise Barriers and Receptor Locations




LSA

LEGEND

- Modeled Receptors
- Short-Term Monitoring Locations
- Long-Term Monitoring Locations
- Existing Noise Barrier
- Modeled Sound Barrier
- Right-of-Way

Proposed Geometrics

- Roadway
- Centerline

0 125 250
FEET

SOURCE: Google (2021), CAD Data (3/7/2022)

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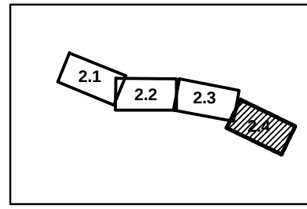


FIGURE A-2.4

*State Highway Route 1 Auxiliary Lanes and Bus-on Shoulder Improvements*
*Freedom Boulevard to State Park Drive and Coastal Rail Trail Segment 12 Project*

Modeled Noise Barriers and Receptor Locations

# Appendix B. Noise Barrier Construction Cost Estimate

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# Preliminary Noise Barrier Costs

| Noise Barrier No. | Preliminary Recommended Height Based on Noise Reduction (ft) | Length (ft) | Approximate Noise Barrier Location | Standard Sound Wall Cost | Other Costs (utilities, added structures, environmental, site access, added grading) | ROW Costs | Total Estimated Sound Wall Costs |
|---|---|---|---|---|---|---|---|
| S68 | 8 | 3,293 | Northbound SR 1 installed at Caltrans right of way from northbound on-ramp from Freedom Blvd to northbound off-ramp to Rio Del Mar Blvd | $2,107,520 | $62,930 | $0 | $2,170,450 |
| | 10 | | | $2,469,750 | | | $2,532,680 |
| | 12 | | | $2,805,636 | | | $2,868,566 |
| | 14 | | | $3,134,936 | | | $3,197,866 |
| | 16 | | | $3,424,720 | | | $3,487,650 |
| S71 | 8 | 3,280 | Southbound SR 1 installed at edge of shoulder from southbound on-ramp from Rio Del Mar Blvd to southbound off-ramp to Freedom Blvd | $2,099,200 | $325,000 | $0 | $2,424,200 |
| | 10 | | | $2,460,000 | | | $2,785,000 |
| | 12 | | | $2,794,560 | | | $3,119,560 |
| | 14 | | | $3,122,560 | | | $3,447,560 |
| | 16 | | | $3,411,200 | | | $3,736,200 |
| S86a | 8 | 606 | Northbound SR 1 installed at Caltrans right of way just south of the South Aptos UP (Rail Bridge) | $387,840 | $66,060 | $60,269 | $514,169 |
| | 10 | | | $454,500 | | | $580,829 |
| | 12 | | | $516,312 | | | $642,641 |
| | **14** | | | $576,912 | | | $703,241 |
| | 16 | | | $630,240 | | | $756,569 |
| S87 | 8 | 1,057 | Southbound SR 1 installed at Caltrans right of way from just north of the South Aptos UP (Rail Bridge) to just south of the Aptos Creek Bridge (on top of Moosehead Drive retaining wall) | $676,480 | $255,570 | $25,560 | $957,610 |
| | 10 | | | $792,750 | | | $1,073,880 |
| | 12 | | | $900,564 | | | $1,181,694 |
| | 14 | | | $1,006,264 | | | $1,287,394 |
| | 16 | | | $1,099,280 | | | $1,380,410 |
| S89 | 8 | 885 | Southbound SR 1 installed at the edge of shoulder from just north of Moosehead Drive to just north of the Aptos Creek Bridge | $566,400 | $210,000 | $0 | $776,400 |
| | 10 | | | $663,750 | | | $873,750 |
| | 12 | | | $754,020 | | | $964,020 |
| | 14 | | | $842,520 | | | $1,052,520 |
| | 16 | | | $920,400 | | | $1,130,400 |
| S90 | 8 | 1862 | Northbound SR 1 installed at the edge of shoulder from just north of the South Aptos UP (Rail Bridge) to just north of the Aptos Creek Bridge | $1,191,680 | $1,420,000 | $0 | $2,611,680 |
| | **10** | | | $1,396,500 | | | $2,816,500 |
| | 12 | | | $1,586,424 | | | $3,006,424 |
| | 14 | | | $1,772,624 | | | $3,192,624 |
| | 16 | | | $1,936,480 | | | $3,356,480 |
| S93 | 8 | 585 | Southbound SR 1 installed at the Caltrans right of way just south of the North Aptos UP (Rail Bridge) | $374,400 | $155,850 | $59,864 | $590,114 |
| | 10 | | | $438,750 | | | $654,464 |
| | 12 | | | $498,420 | | | $714,134 |
| | 14 | | | $556,920 | | | $772,634 |
| | 16 | | | $608,400 | | | $824,114 |
| SB-1 | 8 | 141 | Southbound SR 1 installed at the Caltrans right of way just south of the South Aptos UP (Rail Bridge) | $90,240 | $111,410 | $16,300 | $217,950 |
| | 10 | | | $105,750 | | | $233,460 |
| | 12 | | | $120,132 | | | $247,842 |
| | 14 | | | $134,232 | | | $261,942 |
| | 16 | | | $146,640 | | | $274,350 |