PRELIMINARY
NOISE ABATEMENT DECISION REPORT (NADR)

INTERSTATE 5/ STATE ROUTE 56 INTERCHANGE PROJECT

November 2011

Prepared for:

California Department of Transportation
District 11

Prepared by:

Dokken Engineering

PRELIMINARY
NOISE ABATEMENT DECISION REPORT
INTERSTATE 5/ STATE ROUTE 56 INTERCHANGE PROJECT

11-SD-005,056
SD-005-52.6/56.0 KP, SD-56-0.0/4.1 KP
EA 11-235800

November 2011

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Executive Summary

The preliminary Noise Abatement Decision Report (NADR) presents the preliminary noise abatement decision as defined in the Caltrans Traffic Noise Analysis Protocol (Protocol) for the Interstate 5/ State Route 56 (I-5/SR 56) Interchange Project. The project level noise study report (NSR) (January 2010) and subsequent Addendum (October 2011) prepared for this project is hereby incorporated by reference.

This project proposes the future construction of interchange improvements at the junction of Interstate 5 (I-5) and State Route 56 (SR 56). Improvements may include construction of direct connector ramps, extension of an existing four-lane local bypass along northbound (NB) and southbound (SB) I-5, ramp-metering, and all necessary local street improvements. Four build alternatives have been selected for consideration in this report.

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 noise reduction of at least 5 dBA at receivers subject to noise impacts. 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 results showed noise barriers ranging in height from approximately 8 to 16 feet would reduce the noise levels by at least 5 dBA at many of the residences. Nineteen noise barriers for Alternative 2, sixteen noise barriers for Alternative 3, seventeen noise barriers for Alternative 4, and seventeen noise barriers for Alternative 5 are preliminarily considered feasible in the Noise Study Report, based on the FHWA/Caltrans Noise Abatement Criteria. Six noise barriers (56.S31, 05.S539, 05.S557, 05.S561, 05.S563, and 05.S567) are common to all alternatives.

Based on the analysis in this report, four proposed noise barriers for Alternative 2, one proposed noise barrier for Alternative 3, two proposed noise barriers for Alternative 4, and two proposed noise barriers for Alternative 5 were deemed preliminarily reasonable. Four noise barriers for Alternative 2, five noise barriers for Alternative 3, four noise barriers for Alternative 4, and four noise barriers for Alternative 5 were deemed conditionally reasonable. Construction of conditionally reasonable barriers are not recommended unless negotiation with the property owners would result in estimated costs that do not exceed the reasonable allowance. This may be accomplished if the property owners are willing to donate easements by signing a waiver of just compensation. Two severely impacted receptors along a noise barrier for Alternative 2, 3, 4, and 5 will receive attenuation by means of unusual and extraordinary abatement.

Interdisciplinary technical meetings were held to reach the recommendations stated in this document. The barriers that were determined to be preliminarily recommended will be further analyzed within the Environmental Document.

List of Abbreviated Terms

Benefited residence	A dwelling unit expected to receive a noise reducton of at least 5 dBA from the proposed abatement measure
Caltrans	California Department of Transportation
CCD	Contract Cost Data
Critical design receiver	The design receiver that is impacted and for which the absolute noise levels, build vs. existing noise levels, or achievable noise reduction will be at a maximum where noise abatement is considered
DAR	Direct Access Ramps
Date of public knowledge	The date that a project is approved—approval of the final environmental documentation (e.g., Record of Decision) is complete
dB	A measure of sound pressure level on a logarithmic scale
dBA	A-weighted sound pressure level
ED	Environmental document
FHWA	Federal Highway Administration
HOV	High Occupancy Vehicle
Leq	Equivalent sound level (energy averaged sound level)
Leq[h]	A-weighted, energy average sound level during a 1-hour period
MCAS	Marine Corps Air Station
NAC	Noise abatement criteria
NADR	Noise Abatement Decision Report
NSR	Noise Study Report
Planned, designed, and programmed	A noise-sensitive land use is considered planned, designed, and programmed when it has received final development approval (generally the issuance of a building permit) from the local agency with jurisdiction
Protocol	Traffic Noise Analysis Protocol
PS&E	Plans, Specifications & Estimate
Reasonable allowance	A single dollar value—a reasonable allowance per benefited residence that embodies five reasonableness factors
SI	Severely impacted receptor

SSP	Standard Special Provision
SWPPP	Storm Water Pollution Prevention Program

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1. Introduction

The preliminary Noise Abatement Decision Report (NADR) presents the preliminary noise abatement decision as defined in the Caltrans Traffic Noise Analysis Protocol (Protocol) for the Interstate 5/ State Route 56 Interchange Project. This report has been approved by a Calfornia licensed professional civil engineer. The project level noise study report (NSR) (January 2010) and subsequent Addendum (October 2011) prepared for this project 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 Caltrans Traffic Noise Analysis Protocol (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) 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 dB of the NAC. A substantial increase is defined as being a 12-dB increase above existing conditions. Primary consideration are given to outdoor areas of frequent human use.

23 CFR 772 requires 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.

The Protocol establishes a process for assessing the reasonableness and feasibility of noise abatement. Before publication of the draft environmental document, 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 noise reduction of at least 5 dBA at receivers subject to noise impacts. Other nonacoustical factors relating to geometric standards (e.g., sight distances), constructability, safety, maintenance, and security can also affect feasibility.

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 preliminary NADR presents the preliminary noise abatement decision based on acoustical and nonacoustical feasibility factors as well as the relationship between noise abatement allowances and the engineer's cost estimate. The NADR 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 environmental document (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:

- impacts of abatement construction,
- public and local agency input,
- life cycle of abatement measures,
- views/opinions of impacted residents, and
- social, economic, environmental, legal, and technological factors.

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 environmental review process indicates that it should be changed.

1.2. Purpose of the Noise Abatement Decision Report

The purpose of the preliminary NADR is to:

- summarize the conclusions of the NSR 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 nonacoustical feasibility issues,

- present the preliminary noise abatement decision, and
- present preliminary information on secondary effects of abatement (impacts on cultural resources, scenic veiws, hazardous materials, biology, etc.).

The NADR 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

State Route 56 (SR-56) is a four-lane facility servicing the northern communities of the City of San Diego. Completed in 2004, the facility serves as a vital interregional east-west link between Interstate 5 (I-5) to the west and Interstate 15 to the east. The I-5 / SR-56 Interchange project proposes to maintain or improve the existing and future traffic operations along the I-5 and SR-56 corridors between Del Mar Heights Road, Carmel Valley Road, and Carmel Country Road in order to improve the safe and efficient local and regional movement of people and goods, while minimizing environmental and community impacts for the planning design year of 2030.

This project proposes the future construction of interchange improvements at the junction of Interstate 5 (I-5) and State Route 56 (SR 56). Improvements may include construction of direct connector ramps, extension of an existing four-lane local bypass along northbound (NB) and southbound (SB) I-5, ramp-metering, and all necessary local street improvements. Four build alternatives have been selected for consideration in this report.

Alternative 2: Direct Connector Alternative

The Direct Connector Alternative proposes the construction of direct freeway - to - freeway connectors in the west to north and south to east directions. The connector ramps would have two general purpose lanes. This alternative includes the extension of the local bypass in both the northbound and southbound directions to the Del Mar Heights Road interchange. Auxiliary lanes, improvements to ramps, reconstruction of the Del Mar Heights Road overcrossing, widening of the El Camino Real undercrossing, and associated operational improvements are proposed with this alternative.

Alternative 3: Auxiliary Lane Alternative

The Auxiliary Lane Alternative proposes the construction of an auxiliary lane along southbound I-5, improvements to the southbound off-ramp and northbound on-and off-ramp at Carmel Valley Road, improvements along Carmel Valley Road east of I-5, and improvements to the eastbound El Camino Real on-ramp. Reconstruction of the Del Mar Heights Road overcrossing and associated operational improvements are also proposed with this alternative.

Alternative 4: Hybrid Alternative

The Hybrid Alternative is a combination of the Direct Connector Alternative and the Auxiliary Lane Alternative. In this alternative, the proposed west to north connector featured in the Direct Connector Alternative would be combined with the proposed southbound and eastbound improvements featured in the Auxiliary Lane Alternative.

Alternative 5: Hybrid with Flyover Alternative

The Hybrid with Flyover alternative is a variation of the Hybrid Alternative. In the Hybrid Alternative, traffic on Carmel Valley Road wishing to enter eastbound SR 56 must go through the signalized intersection at El Camino Real before entering the eastbound SR 56 on-ramp. The Hybrid with Flyover Alternative proposes the construction of a separation structure that would provide a direct connection from eastbound Carmel Valley Road to the eastbound SR 56 fast lane, allowing traffic to bypass the El Camino Real / eastbound SR 56 on-ramp intersection. As with the Hybrid Alternative, the Hybrid with Flyover Alternative includes the proposed west to north connector featured as part of the Direct Connector Alternative.

1.4. Affected Land Uses

Existing land uses adjacent to the project are characterized by the following: commercial, office, and industrial structures, multi-family residences, single-family residences, and recreational areas. The terrain of the land surrounding the highway varies from steep slopes to relatively flat land both above and below the freeway.

The project location was divided into two areas for analysis, SR 56 and I-5. A total 402 residences were included in this study. For the Build Alternatives without abatement, SR 56 and I-5 all have receiver location noise levels that approach or exceed the Noise Abatement Criteria (NAC) for a total of 228 impacted residences for Alternative 2, 179 impacted residences for Alternative 3, 199 impacted residences for Alternative 4, and 217 impacted

residences for Alternative 5. Residential and recreations receptors are classified as Category "B" receptors. The NAC for Category "B" receptors is 67 dBA L_{eq} for exterior locations. Commercial, office, and industrial receptors are classified as Category "C" receptors and have a NAC of 72 dBA L_{eq} for exterior locations.

Some of the proposed sound barriers will replace existing sound barriers, property walls or wood fences.

2. Results of the Noise Study Report

The NSR for this project was prepared by Parsons in January 2010 and subsequent Addendum (October 2011). The NSR primarily analyzed traffic noise impacts in the project area and then analyzed the preliminary feasibility of noise abatement alternatives. The purpose of this report was to identify the sensitive noise receptors in the vicinity of the project, describe the traffic noise that occurs currently and the noise that is forecasted to occur upon implementation of the planned roadway improvements. Many existing noise levels currently exceed the Federal Highway Administration (FHWA) and California Department of Transportation (Caltrans) noise abatement criteria for the areas adjacent to I-5 and SR 56. In the future, traffic noise levels will continue to exceed the current noise abatement criteria in many areas.

According to FHWA/Caltrans criteria, noise abatement must be considered at impacted receptors where areas of frequent human use occurs, such as a yard, patio, or deck, and where a lowered noise level would therefore be of benefit. The results showed noise barriers ranging in height from approximately 8 to 16 feet would reduce the noise levels by at least 5 dBA at many of the residences. Nineteen proposed noise barriers for Alternative 2, sixteen proposed noise barriers for Alternative 3, seventeen proposed noise barriers for Alternative 4, and seventeen proposed noise barriers for Alternative 5 are preliminarily considered feasible in the Noise Study Report, based on the FHWA/Caltrans Noise Abatement Criteria. Six noise barriers (56.S31, 05.S539, 05.S557, 05.S561, 05.S563, and 05.S567) are common to all alternatives.

The Noise Study Report prepared for this project evaluated traffic noise impacts to all sensitive receptor sites along the alignments and provided barrier recommendations to abate noise impacts based on location only. A Reasonableness Cost Analysis was completed in this report and the engineer cost breakdowns for each barrier are included in the Noise Barrier Analysis section of this document. Reasonable Allowance Worksheet Calculations, which calculate the reasonable cost allowance for each sound barrier, are included as Appendix D in the Noise Study Report.

3. Preliminary Noise Abatement Decision

3.1. Summary of Key Information

3.1.1 Feasibility Criteria

The feasibility of a noise abatement measure is defined as an engineering consideration. A minimum 5 dBA, with exceptions according to the Project Development Procedures Manual (PDPM), noise reduction must be achieved at the affected receivers for the proposed noise abatement measure to be considered feasible. The ability to achieve an adequate noise reduction may be limited by topography, access requirements for driveways and ramps, the presence of local cross streets, other noise sources in the area, and safety considerations.

3.1.2 Reasonableness Criteria

The determination of reasonableness of noise abatement is considered more subjective than the feasibility criterion. This determination typically requires common sense and good judgment in arriving at a decision to construct noise abatement measures. Noise abatement is only considered after noise impacts are predicted and where frequent human use occurs and a lowered noise level would be of benefit. The overall reasonableness of noise abatement is determined by considering a multitude of factors including but not necessarily limited to the following:

a. Abatement cost
b. Absolute noise levels
c. Noise level changes
d. Noise abatement benefits
e. Date of development along the highway
f. Life cycle of abatement measures
g. Environmental impacts of abatement construction
h. Views/opinions of impacted residents
i. Public and local agency input
j. Social, economic, environmental, legal, and technological factors

A preliminary reasonableness decision is based on the above factors (a through f), and a reasonable dollar value is allowed per benefited residence. If the abatement can be constructed for a reasonable cost allowance, the preliminary reasonableness decision will be to provide abatement. The final decision on the reasonableness of abatement measures is determined after environmental impacts and public input, which includes the above factors (g through j), are considered.

Cost Analysis Methodology

Cost Allowance

A cost allowance per benefited residence has been calculated (Table 1) using the standard methodology. A base allowance of $31,000 per benefited residence is allotted according to the Caltrans Traffic Noise Analysis Protocol (Protocol) dated August 2006, which was updated in June 2009. An additional allowance per benefited residence is added based on the following:

Table 2: Cost Considerations

Absolute Noise Levels	Less than 69 dBA	Add $2,000
	70-74 dBA	Add $4,000
	75-78 dBA	Add $6,000
	More than 78 dBA	Add $8,000
Noise Level Increase	Less than 3 dBA	Add $0
	3-7 dBA	Add $2,000
	8-11 dBA	Add $4,000
	12 dBA or more	Add $6,000
Achievable Noise Reduction	Less than 6 dBA	Add $0
	6-8 dBA	Add $2,000
	9-11 dBA	Add $4,000
	12 dBA or more	Add $6,000

*From the Caltrans Traffic Noise Analysis Protocol

An additional allowance per benefited residence may be added if the project is new highway construction or more than 50% of the benefited residences' construction pre-date 1978:

Table 3: Highway Construction vs. Date of Residential Construction Adjustment

No on both	Add $0
Yes on either one	Add $10,000

All allowances are summed to determine a total allowance per benefited residence for each sound barrier under consideration.

TABLE 1. COST ALLOWANCE PER RESIDENCE (ALTERNATIVE 2)											
Sound Wall	Base Allowance	Highest Predicted Future Noise Level	Absolute Noise Level Allowance	Highest Noise Level Increase	Build vs. Existing Noise Levels Allowance	Achievable Noise Reduction	Achievable Noise Reduction Allowance	Residences Predate 1978*	Predate 1978 Allowance	Total Allowance	Severely Impacted
56.S27	$31,000	69	$2000	5	$2000	6	$2000	NO	$0	$37,000	NO
56.S31	$31,000	71	$4000	7	$2000	9	$4000	NO	$0	$41,000	NO
56.S35	$31,000	68	$2000	3	$2000	6	$2000	NO	$0	$37,000	NO
56.S41	$31,000	66	$2000	2	$0	5	$0	NO	$0	$33,000	NO
56.S47	$31,000	68	$2000	1	$0	6	$2000	NO	$0	$35,000	NO
56.S20	$31,000	69	$2000	4	$2000	8	$2000	NO	$0	$37,000	NO
56.S34a	$31,000	71	$4000	5	$2000	11	$4000	YES	$10,000	$51,000	NO
56.S34b	$31,000	71	$4000	5	$2000	8	$2000	YES	$10,000	$49,000	NO
05.S539	$31,000	72	$4000	2	$0	8	$2000	NO	$0	$37,000	NO
05.S541	$31,000	75	$6000	5	$2000	12	$6000	NO	$0	$45,000	YES
05.S545	$31,000	79	$8000	11	$4000	9	$4000	YES	$10,000	$57,000	YES
05.S551_1	$31,000	68	$2000	2	$0	6	$2000	YES	$10,000	$45,000	YES
05.S551_2	$31,000	82	$8000	10	$4000	13	$6000	YES	$10,000	$59,000	YES
05.S555	$31,000	78	$6000	10	$4000	11	$4000	YES	$10,000	$55,000	YES
05.S557	$31,000	80	$8000	3	$2000	10	$4000	NO	$0	$45,000	YES
05.S561	$31,000	76	$6000	1	$0	11	$4000	NO	$0	$41,000	YES
05.S563	$31,000	69	$2000	6	$2000	8	$2000	YES	$10,000	$47,000	NO
05.S567	$31,000	74	$4000	2	$0	11	$4000	YES	$10,000	$49,000	NO
05.S569	$31,000	66	$2000	-1	$0	5	$0	YES	$10,000	$43,000	NO
05.S568	$31,000	70	$4000	1	$0	12	$6000	NO	$0	$41,000	NO

TABLE 1. COST ALLOWANCE PER RESIDENCE (ALTERNATIVE 3)											
Sound Wall	Base Allowance	Highest Predicted Future Noise Level	Absolute Noise Level Allowance	Highest Noise Level Increase	Build vs. Existing Noise Levels Allowance	Achievable Noise Reduction	Achievable Noise Reduction Allowance	Residences Predate 1978*	Predate 1978 Allowance	Total Allowance	Severely Impacted
56.S27	$31,000	67	$2000	4	$2000	6	$2000	NO	$0	$37,000	NO
56.S31	$31,000	70	$4000	6	$2000	10	$4000	NO	$0	$41,000	NO
56.S35	$31,000	67	$2000	1	$0	5	$0	NO	$0	$33,000	NO
56.S47	$31,000	67	$2000	0	$0	6	$2000	NO	$0	$35,000	NO
56.S20	$31,000	69	$2000	4	$2000	5	$0	NO	$0	$35,000	NO
56.S34a	$31,000	70	$4000	4	$2000	6	$2000	YES	$10,000	$49,000	NO
56.S34b	$31,000	70	$4000	4	$2000	9	$4000	YES	$10,000	$51,000	NO
05.S539	$31,000	73	$4000	3	$2000	8	$2000	NO	$0	$39,000	YES
05.S541	$31,000	75	$6000	5	$2000	12	$6000	NO	$0	$45,000	YES
05.S551	$31,000	68	$2000	0	$0	6	$2000	YES	$10,000	$45,000	NO
05.S557	$31,000	79	$8000	2	$0	10	$4000	NO	$0	$43,000	YES
05.S561	$31,000	75	$6000	0	$0	11	$4000	NO	$0	$41,000	YES
05.S563	$31,000	68	$2000	5	$2000	7	$2000	YES	$10,000	$47,000	NO
05.S567	$31,000	73	$4000	1	$0	10	$4000	YES	$10,000	$49,000	NO
05.S569	$31,000	65	$2000	-2	$0	5	$0	YES	$10,000	$43,000	NO
05.S568	$31,000	69	$2000	0	$0	11	$4000	NO	$0	$37,000	NO

TABLE 1. COST ALLOWANCE PER RESIDENCE (ALTERNATIVE 4)											
Sound Wall	Base Allowance	Highest Predicted Future Noise Level	Absolute Noise Level Allowance	Highest Noise Level Increase	Build vs. Existing Noise Levels Allowance	Achievable Noise Reduction	Achievable Noise Reduction Allowance	Residences Predate 1978*	Predate 1978 Allowance	Total Allowance	Severely Impacted
56.S27	$31,000	66	$2000	4	$2000	6	$2000	NO	$0	$37,000	NO
56.S31	$31,000	71	$4000	7	$2000	10	$4000	NO	$0	$41,000	NO
56.S35	$31,000	67	$2000	1	$0	5	$0	NO	$0	$33,000	NO
56.S41	$31,000	66	$2000	2	$0	5	$0	NO	$0	$33,000	NO
56.S47	$31,000	67	$2000	0	$0	6	$2000	NO	$0	$35,000	NO
56.S20	$31,000	69	$2000	4	$2000	6	$2000	NO	$0	$37,000	NO
56.S34a	$31,000	70	$4000	4	$2000	5	$0	YES	$10,000	$47,000	NO
56.S34b	$31,000	70	$4000	4	$2000	8	$2000	YES	$10,000	$49,000	NO
05.S539	$31,000	72	$4000	2	$0	7	$2000	NO	$0	$37,000	YES
05.S541	$31,000	75	$6000	5	$2000	12	$6000	NO	$0	$45,000	YES
05.S551	$31,000	70	$4000	-2	$0	6	$2000	YES	$10,000	$47,000	YES
05.S557	$31,000	79	$8000	2	$0	10	$4000	NO	$0	$43,000	YES
05.S561	$31,000	75	$6000	0	$0	11	$4000	NO	$0	$41,000	YES
05.S563	$31,000	69	$2000	6	$2000	8	$2000	YES	$10,000	$47,000	NO
05.S567	$31,000	74	$4000	2	$0	11	$4000	YES	$10,000	$49,000	NO
05.S569	$31,000	66	$2000	-1	$0	5	$0	YES	$10,000	$43,000	NO
05.S568	$31,000	69	$2000	0	$0	11	$4000	NO	$0	$37,000	NO

TABLE 1. COST ALLOWANCE PER RESIDENCE (ALTERNATIVE 5)											
Sound Wall	Base Allowance	Highest Predicted Future Noise Level	Absolute Noise Level Allowance	Highest Noise Level Increase	Build vs. Existing Noise Levels Allowance	Achievable Noise Reduction	Achievable Noise Reduction Allowance	Residences Predate 1978*	Predate 1978 Allowance	Total Allowance	Severely Impacted
56.S27	$31,000	69	$2000	5	$2000	6	$2000	NO	$0	$37,000	NO
56.S31	$31,000	71	$4000	7	$2000	9	$4000	NO	$0	$41,000	NO
56.S35	$31,000	68	$2000	3	$2000	6	$2000	NO	$0	$37,000	NO
56.S41	$31,000	66	$2000	3	$2000	5	$0	NO	$0	$35,000	NO
56.S47	$31,000	68	$2000	1	$0	6	$2000	NO	$0	$35,000	NO
56.S20	$31,000	66	$2000	3	$2000	5	$0	NO	$0	$35,000	NO
56.S34a	$31,000	71	$4000	5	$2000	5	$0	YES	$10,000	$47,000	NO
56.S34b	$31,000	71	$4000	5	$2000	8	$2000	YES	$10,000	$49,000	NO
05.S539	$31,000	72	$4000	2	$0	7	$2000	NO	$0	$37,000	YES
05.S541	$31,000	75	$6000	5	$2000	12	$6000	NO	$0	$45,000	YES
05.S551	$31,000	70	$4000	-2	$0	6	$2000	YES	$10,000	$47,000	YES
05.S557	$31,000	79	$8000	2	$0	10	$4000	NO	$0	$43,000	YES
05.S561	$31,000	75	$6000	0	$0	11	$4000	NO	$0	$41,000	YES
05.S563	$31,000	69	$2000	6	$2000	8	$2000	YES	$10,000	$47,000	NO
05.S567	$31,000	74	$4000	2	$0	11	$4000	YES	$10,000	$49,000	NO
05.S569	$31,000	67	$2000	0	$0	5	$0	YES	$10,000	$43,000	NO
05.S568	$31,000	69	$2000	0	$0	11	$4000	NO	$0	$37,000	NO

Construction Costs

Unit Price Derivation:

Since the size, type, and location can all affect the Estimated Cost to build a noise barrier, its cost analysis should be broken down into components. A unit price is assigned to each construction component of a barrier based upon historical construction costs for each item of work. The source used is the Contract Cost Data (CCD) web site (http://sv08data.dot.ca.gov/contractcost/index.php), and historical experience. The following criteria were used when analyzing the unit prices on the Caltrans Cost Data web site: only the awarded bidders; District 7, 11, 12; and year 2008 were considered. Any unique special pricing considerations are described in the write up for each item on the following pages. The unit price was based on the weighted, unmodified value. The Office Engineer tracks standard contract item unit prices for bids opened throughout the state of California. It is important to understand the inclusions of materials and related items of work specified to each cost item. To determine inclusions, the Measurement and Payment section of the Caltrans Standard Special Provisions (SSP) for each item of work should be consulted. The SSP's can be found in the following web location: (http://www.dot.ca.gov/hq/esc/oe/specifications/SSPs/99_04-SSPs/)

The total cost of a barrier is dependent on several factors, itemized as follows:

1) Masonry Costs
2) Footing Costs
3) Structure Excavation and Backfill Costs
4) Berm Embankment
5) Demolition Costs
6) Clearing and Grubbing Costs
7) Landscape Costs
8) Traffic Control Costs
9) Storm Water Pollution Prevention Program (SWPPP) Implementation Costs
10) Easement Costs

These costs are described in the following sections.

Sound Barrier Masonry Cost:

According to the measurement and payment section for sound barrier masonry all reinforcing steel, cell fill material, scaffolding and other construction related costs to

constructing the masonry portion of a sound barrier are included in the Caltrans unit price. The CCD Item code is 518002 Sound Barrier (Masonry Block). A **$200/m^2** unit price was used in this analysis.

Sound Barrier Footing (Minor Concrete) Cost:
According to the Caltrans SSP, sound barrier footing should include the cost of concrete reinforcing and concrete. Since the items of excavation and concrete can vary greatly depending on footing type, the costs for excavation and backfill have been separated from the footing estimated cost. The CCD Item code is 510524 Minor Concrete (Sound Barrier). A value of **$750/m^3** was used for the unit price of minor concrete.

Sound Barrier Structural Excavation and Backfill:
According to the Caltrans SSP, structure excavation includes all costs associated with excavation of structural footings. The measurement of structure excavation and backfill quantity is based upon a diagram in the Caltrans Standard plans. Spread and trench footings are proposed. Excavation and backfill quantities reflect these two footing types. Due to the nature of a sound barrier, structure excavation is the same volume as structure backfill. For this reason, we have combined the two items. There are multiple item codes in the CCD book and web site for structure excavation and structure backfill. There is an item code for structure excavation (Sound Barrier) which has a unit price of $75/m^3 and structure backfill (Sound Barrier) which has a unit price of $50/m^3. The combination of these two unit prices is $125/m^3, and a value of **$125/m^3** was used in this analysis.

Berm Embankment Costs:
The costs associated with construction of berm embankment should be considered separately from standard roadway excavation/embankment unit costs. Proposed noise barriers 56.S20 and 56.S35 are located on an existing earthen berm. In order to construct the proposed noise barrier, a portion of the existing earthen berm would be reconstructed. The proposed berm will likely be constructed with excess material from the I-5/SR 56 Interchange Project; therefore, the unit price developed for imported borrow, CCD item number 198001, will be less than prices listed in the CCD. A unit price of **$20/m^3** was used in this analysis.

Demolition Costs:

Certain sound barriers that have been proposed for this project require the removal of existing walls or fences. The cost of the demolition of existing property walls is found by using a derived unit price of **$32/m^2**, which was found by combining costs of past projects for Item 150835 Remove Existing Wall in the CCD book. The demolition unit cost for wooden fences used in this analysis is **$40/linear meter.** This value was derived from past projects for Item 150604 Remove Wood Fence in the CCD book.

Clearing and Grubbing, Landscaping, Traffic Control, and SWPPP Costs:

Additional costs for clearing and grubbing, landscaping, traffic control, and storm water pollution prevention program (SWPPP) must also be taken into account in the cost analysis. Clearing and Grubbing, Landscaping, Traffic Control, and SWPPP Costs are considered to be a percentage of the total construction cost of the barrier and were determined by examining construction costs for similar jobs and quantities. Clearing and Grubbing is designated as 8% of the construction cost of the barrier, Landscaping is designated as 10% of the construction cost of the barrier, and traffic control and SWPPP are both designated as 5% each.

Easement Costs:

Both temporary construction easements and permanent easements may be required for construction of the sound barriers under consideration. Easements are necessary for barriers constructed within or immediately adjacent to parcels not owned by the State. Easement costs are found by multiplying the required easement area by a designated unit cost. These unit costs are based on appraisal information on previous projects located within the project vicinity. Permanent easements include both footing easements and right of way acquisition. Unit costs of **$360/m^2** and **$690/m^2** are used for footing easements and right of way acquisitions, respectively. The width of the footing is based on the height of the barrier and is determined by using the spread and trench footing table on p. 291 of Caltrans' Standard Plans, July 2004 edition. Right of way acquisition is determined on a case by case basis. The purpose of a temporary construction easement is to provide enough space adjacent to the proposed barrier alignment for typical construction equipment/methods to be applied to the barrier. A typical temporary construction easement is linear and calculated by multiplying the length times 3 meters (measured from the edge of footing). Temporary construction easements costs are based upon a unit cost of **$140/m^2.**

3.2. Nonacoustical Factors Relating to Feasibility

Nonacoustical factors may affect the feasibility of the proposed noise barriers. These factors may include: geometric standards, constructability, safety, maintenance, security, geotechical considerations, and utility relocations. The proposed noise barriers were designed in such a way to minimize the disturbance to existing utilities, geotechical concerns, and biologically sensitive areas.

3.3. Preliminary Recommendation and Decision

3.3.1 Determination of Recommendations

Determination of Reasonableness:
The first criteria in determining a recommendation for a particular noise barrier is to determine whether or not the proposed noise barrier is reasonable. In a preliminary NADR analysis, reasonableness is solely based on cost. Costs and allowances are compared on a "per benefited residence" basis. The total cost of the sound barrier without easements, the total cost with construction easements only, and the total cost with all easements, are each divided by the number of benefited residences to obtain a cost per benefited residence. The cost per benefited residence is then compared to the allowance per benefited residence for each sound barrier under consideration. If the estimated cost is higher than the allowance, the barrier is determined to be not reasonable. If the barrier is reasonable to construct, only considering sound barrier costs, but becomes not reasonable when either type of easement is added, it may be possible to construct the barrier provided that the property owner or owners donate the necessary easements. When noise abatement is provided on public or private properties consistent with this policy, an agreement must be entered into with the owner of the subject property that specifies that Caltrans is not responsible for any future costs of operating or maintaining the noise abatement measures.

Severely Impacted Receptors:
The second criteria in determining a recommendation for a particular noise barrier is the existence of severely impacted receptors within the influence of a barrier. There may be situations where "severe" traffic noise impacts exist or are predicted but the abatement measures listed in 23 CFR 772.13(c) are not feasible or reasonable. A severe noise impact is considered to occur when predicted exterior noise levels equal or exceed 75 dBA-Leq(h) or are 30 dB or more above existing noise levels. In these instances, noise abatement measures other than those listed in 23 CFR 772.13(c) must

be considered. Such measures are considered "unusual and extraordinary" abatement measures and may include measures such as constructing noise barriers that have an estimated construction cost that exceeds the reasonableness allowance or providing interior abatement in residential units. Unusual and extraordinary abatement proposed on a Federal-aid project is subject to approval by FHWA on a case-by-case basis. Unusual and extraordinary abatement must reduce noise by at least 5 dB to be considered feasible from an acoustical perspective. Noise barriers that abate for receptors that are severely impacted are considered beyond the reasonableness basis stated above. Severely impacted receptors (receptors that have a noise level of 75 dBA or above) will still receive attenuation by means of unusual and extraordinary abatement, even if the proposed sound barrier is found to be not reasonable from the basis of cost. There are several means of unusual and extraordinary abatement. If the barrier abates for many severely impacted receptors or severely impacted receptors that are in close proximity to one another, the entire proposed barrier or a portion of the proposed barrier may be constructed. If the barrier abates for a small number of severely impacted receptors, or if the severely impacted receptors are not in close proximity to one another, the residences represented by these receptors may receive individual abatement. If individual barriers are difficult or not feasible to construct, the residences may receive alternate forms of abatement such as interior abatement (air-conditioning, double-paned windows, etc.). The exact method of providing abatement for severely impacted receptors that are found to be not reasonable will be determined in more detail later on in the noise abatement process.

3.3.2 Conclusions and Recommendations

Interdisciplinary technical meetings were held to reach the recommendations stated in this document. The barriers that were determined to be preliminarily recommended will be further analyzed within the Environmental Document. During the Environmental Document phase, public input and competing environmental interests shall be considered. Some of the competing environmental impacts that will be analyzed include such items as biological, visual and cultural. Tables 4, 5, 6, and 7 summarize the conclusions of this report.

Recommended Process for Negotiation with Property Owners

This report recommends that the following process be considered for use by design and environmental staff during the final Environmental Document and Plans, Specifications & Estimate (PS&E) phases of this project.

- During the public circulation process, affected property owners should be polled during public meetings to determine whether they approve the proposed abatement feature. For noise abatement features that are located within State right of way the Protocol states that more than 50% of affected property owners must approve of the abatement feature for the abatement to be constructed. For noise abatement features that are located on private property the Protocol states that 100% of affected property owners must approve of the abatement feature for the abatement to be constructed. Severely impacted residences shall continue to be considered for unusual and extraordinary abatement.
- Once the projects' draft Environmental Document has been circulated publicly, the project staff should meet with affected property owners. These meetings should include the property owners, an engineer familiar with the proposed abatement, a right of way specialist, and a landscape architect with the purpose of finalizing the property owners' acceptance of the abatement measure. The public meetings should inform the owners of general information about the NADR process, where abatement proposed at their property is located, what the abatement feature would look like, and what the noise level would be at their property with and without the proposed abatement. All decisions/discussions should be documented.
- The project design and Right of Way team should endeavor to have a Right of Way Contract signed for all noise abatement measures prior to completion of the 65% PS&E plans.
- If the negotiated easement costs and cost to cure items (such as property owners landscaping) cause an abatement measure to exceed the reasonable allowance then the barrier is no longer considered reasonable.

Table 4 – Summary of Noise Abatement Decisions: Alternative 2

ALTERNATIVE 2						
Noise Barrier	# of Benefited Residences	Reasonable w/o Easements	Reasonable w/ Construction Easements Only	Reasonable w/ all easements	Existence of Severely Impacted Receptors	Preliminarily Recommended for Construction
56.S27	13	NO	NO	NO	NO	NO
56.S31	2	NO	NO	NO	NO	NO
56.S35	35	YES	YES	YES	NO	YES
56.S41	7	NO	NO	NO	NO	NO
56.S47	11	NO	NO	NO	NO	NO
56.S20	7	NO	NO	NO	NO	NO
56.S34	2	NO	NO	NO	NO	NO
56.S34 Option	2	NO	NO	NO	NO	NO
05.S539	1	NO	NO	NO	NO	NO
05.S541	5	NO	NO	NO	YES	FOR SI ONLY
05.S545	24	YES	YES	YES	YES	YES
05.S551 (Option 1)	18	NO	NO	NO	NO	NO
05.S551 (Option 2)	52	YES	YES	YES	YES	YES
05.S555	5	YES	YES	YES	YES	YES
05.S557	10	YES	YES	NO	YES	CONDITIONAL
05.S561	6	YES	NO	NO	YES	CONDITIONAL
05.S563	4	YES	NO	NO	NO	CONDITIONAL
05.S567	13	YES	YES	YES	NO	YES
05.S569	3	NO	NO	NO	NO	NO
05.S568	10	YES	NO	NO	NO	CONDITIONAL

Table 5 – Summary of Noise Abatement Decisions: Alternative 3

ALTERNATIVE 3						
Noise Barrier	# of Benefited Residences	Reasonable w/o Easements	Reasonable w/ Construction Easements Only	Reasonable w/ all easements	Existence of Severely Impacted Receptors	Preliminarily Recommended for Construction
56.S27	11	NO	NO	NO	NO	NO
56.S31	2	NO	NO	NO	NO	NO
56.S35	14	YES	YES	NO	NO	CONDITIONAL
56.S47	10	NO	NO	NO	NO	NO
56.S20	7	NO	NO	NO	NO	NO
56.S34	1	NO	NO	NO	NO	NO
56.S34 Option	1	NO	NO	NO	NO	NO
05.S539	1	NO	NO	NO	NO	NO
05.S541	5	NO	NO	NO	YES	FOR SI ONLY
05.S551	20	NO	NO	NO	NO	NO
05.S557	10	YES	NO	NO	YES	CONDITIONAL
05.S561	6	YES	NO	NO	YES	CONDITIONAL
05.S563	4	YES	NO	NO	NO	CONDITIONAL
05.S567	13	YES	YES	YES	NO	YES
05.S569	3	NO	NO	NO	NO	NO
05.S568	9	YES	NO	NO	NO	CONDITIONAL

Table 6 – Summary of Noise Abatement Decisions: Alternative 4

ALTERNATIVE 4						
Noise Barrier	# of Benefited Residences	Reasonable w/o Easements	Reasonable w/ Construction Easements Only	Reasonable w/ all easements	Existence of Severely Impacted Receptors	Preliminarily Recommended for Construction
56.S27	11	NO	NO	NO	NO	NO
56.S31	2	NO	NO	NO	NO	NO
56.S35	31	YES	YES	YES	NO	YES
56.S41	4	NO	NO	NO	NO	NO
56.S47	10	NO	NO	NO	NO	NO
56.S20	7	NO	NO	NO	NO	NO
56.S34	1	NO	NO	NO	NO	NO
56.S34 Option	1	NO	NO	NO	NO	NO
05.S539	1	NO	NO	NO	NO	NO
05.S541	5	NO	NO	NO	YES	FOR SI ONLY
05.S551	23	NO	NO	NO	NO	NO
05.S557	10	YES	YES	NO	YES	CONDITIONAL
05.S561	6	YES	NO	NO	YES	CONDITIONAL
05.S563	4	YES	NO	NO	NO	CONDITIONAL
05.S567	13	YES	YES	YES	NO	YES
05.S569	3	NO	NO	NO	NO	NO
05.S568	9	YES	NO	NO	NO	CONDITIONAL

Table 7 – Summary of Noise Abatement Decisions: Alternative 5

ALTERNATIVE 5						
Noise Barrier	# of Benefited Residences	Reasonable w/o Easements	Reasonable w/ Construction Easements Only	Reasonable w/ all easements	Existence of Severely Impacted Receptors	Preliminarily Recommended for Construction
56.S27	13	NO	NO	NO	NO	NO
56.S31	2	NO	NO	NO	NO	NO
56.S35	36	YES	YES	YES	NO	YES
56.S41	7	NO	NO	NO	NO	NO
56.S47	11	NO	NO	NO	NO	NO
56.S20	4	NO	NO	NO	NO	NO
56.S34	2	NO	NO	NO	NO	NO
56.S34 Option	2	NO	NO	NO	NO	NO
05.S539	1	NO	NO	NO	NO	NO
05.S541	5	NO	NO	NO	YES	FOR SI ONLY
05.S551	21	NO	NO	NO	NO	NO
05.S557	10	YES	YES	NO	YES	CONDITIONAL
05.S561	6	YES	NO	NO	YES	CONDITIONAL
05.S563	4	YES	NO	NO	NO	CONDITIONAL
05.S567	13	YES	YES	YES	NO	YES
05.S569	3	NO	NO	NO	NO	NO
05.S568	9	YES	NO	NO	NO	CONDITIONAL

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 also may 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 to construct noise abatement will be made upon completion of the project design.

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

3.3.3 Report Format

The I-5/SR 56 Interchange Project is broken up into two areas to be analyzed for noise abatement, I-5 and SR 56. The preliminary analysis of all proposed sound barriers, which includes relevant data and a discussion on each barrier along with figures and cost analysis, can be found in the respective tabbed sections. A key map

and a list of the sound barriers are also located in the tabbed sections to aid in the determination of the general location of each exhibit with respect to I-5 and SR 56.

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, biology, or other resources. The proposed noise abatement alternatives have the potential to cause negative visual impacts. A *Visual Impact Assessment* (VIA) was completed during the Environmental Document phase. This report assessed the visual impacts of the proposed project and proposed measures to mitigate any adverse visual impacts associated with the improvements. It is anticipated that the proposed noise barriers would have a low degree of visual impact. Another secondary effect of noise abatement may include community impacts. A *Community Impact Assessment* (CIA) was completed to analyze project-related impacts to the surrounding community. Owners affected by noise abatement measures may experience a decrease in property values due to an increase in shaded area, changes in noise levels, and changes in viewsheds. In contrast, it may also be possible that the proximity to I-5 and installation of noise barriers would improve property values creating an environment with reduced traffic-related noise and a relative separation from the freeway. According to the CIA, there would be an increase in urban features in the project area due to the construction of noise barriers and other project features.

5. References

California Department of Transportation, 2006. *Traffic Noise Analysis Protocol*. Sacramento, California.

Parsons, 2010. *Noise Study Report Interstate 5/ State Route 56 Interchange*. Pasadena, California.

Parsons, 2011. *Noise Study Report Addendum Interstate 5/State Route 56 Interchange.* Pasadena, California.

6. Project Personnel

Allan Kosup	Caltrans, Corridor Director
Arturo Jacobo	Caltrans, Corridor Project Manager
Keith Ploettner	Caltrans, Task Order Manager
Ted Evans	Caltrans, Project Engineer
Kent Askew	Caltrans, Landscape Architecture
Azar Habibafshar	Caltrans, Environmental Engineering
Gerard Lumabas	Dokken Engineering, Consultant Design Project Manager
Mary Elizabeth Northeimer	Dokken Engineering, Consultant Associate Engineer

ALTERNATIVE 2
OVERVIEW

ALTERNATIVE 2: LIST OF BARRIERS

SHEET 1
- NONE

SHEET 2
- NOISE BARRIER 56.S20

SHEET 3
- NOISE BARRIER 56.S27

SHEET 4
- NOISE BARRIER 56.S31
- NOISE BARRIER 56.S34
- NOISE BARRIER 56.S34 (OPTION)
- NOISE BARRIER 56.S35

SHEET 5
- NOISE BARRIER 56.S41
- NOISE BARRIER 56.S47

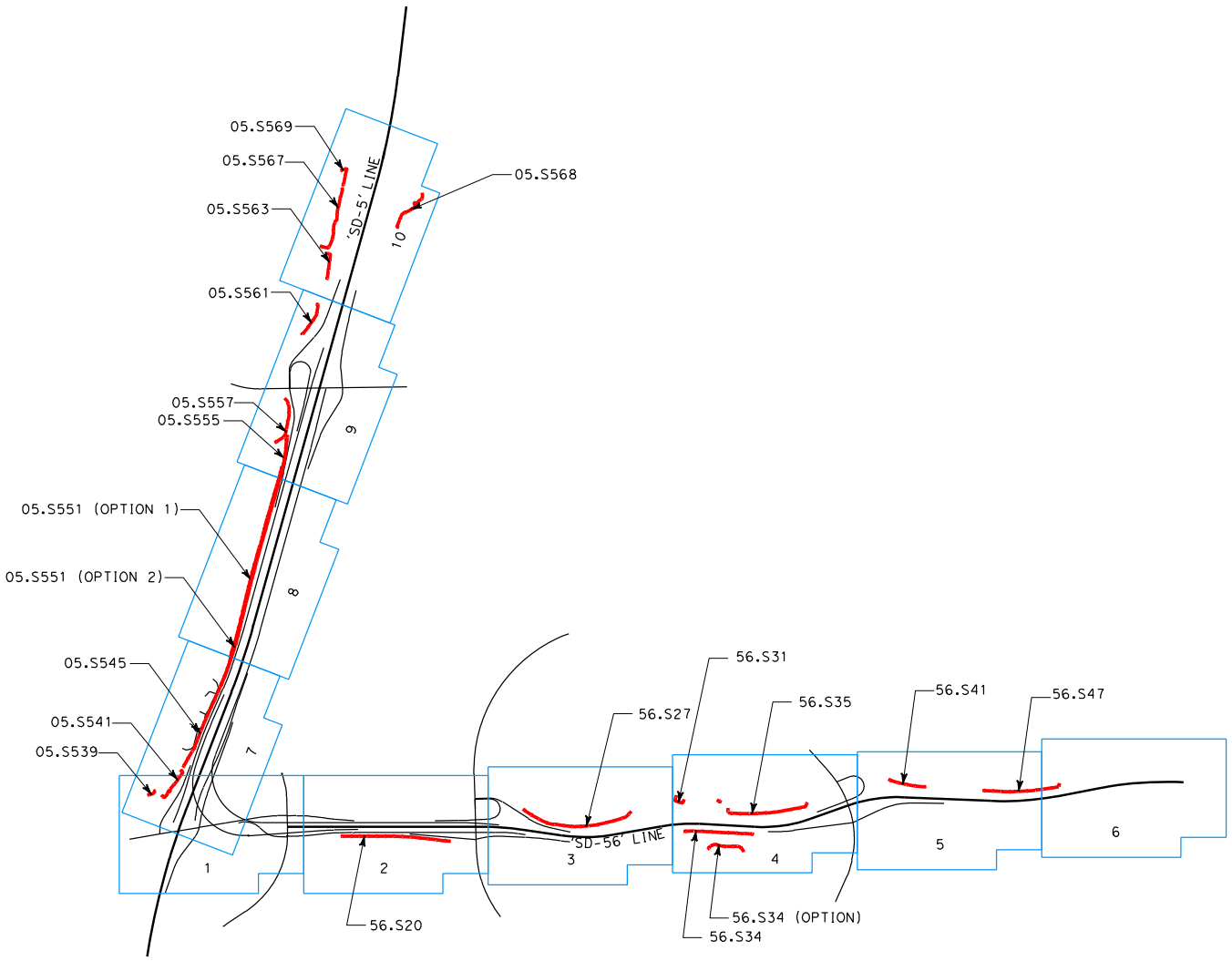
SHEET 6
- NOISE BARRIER 56.S47 (CONTINUED)

SHEET 7
- NOISE BARRIER 05.S539
- NOISE BARRIER 05.S541
- NOISE BARRIER 05.S545
- NOISE BARRIER 05.S551 (OPTION 1)
- NOISE BARRIER 05.S551 (OPTION 2)

SHEET 8
- NOISE BARRIER 05.S551 (OPTION 1) (CONTINUED)
- NOISE BARRIER 05.S551 (OPTION 2) (CONTINUED)

SHEET 9
- NOISE BARRIER 05.S551 (OPTION 1) (CONTINUED)
- NOISE BARRIER 05.S551 (OPTION 2) (CONTINUED)
- NOISE BARRIER 05.S555
- NOISE BARRIER 05.S557
- NOISE BARRIER 05.S561

SHEET 10
- NOISE BARRIER 05.S563
- NOISE BARRIER 05.S567
- NOISE BARRIER 05.S568
- NOISE BARRIER 05.S569



I-5/SR-56 INTERCHANGE PROJECT ALTERNATIVE 2	
KEYMAP	
NO SCALE	Sheet No. 1 of 1

ALTERNATIVE 2
BARRIER REPORT

Noise Barrier 56.S27 (Alternative 2)

General

Type: Sound wall

SR 56 Station limits: 25+06 to 29+94

Receptor sites: R4A to R10

Severely Impacted Receptors: None

Height: 4.3 to 4.9 meters (14 to 16 feet)

Location: Westbound SR 56; see Sheet 3

Benefited units: 13 Single-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 69 dBA

Compared to existing (year 2009): Five dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$481,000
Estimated Total Cost without Easements:	$1,217,848
Estimated Total Cost with Construction Easements only:	$1,328,140
Estimated Total Cost with all Easements:	$1,532,565

Reasonable Cost Allowance/Benefited Unit:	$37,000
Estimated Cost/Benefited Unit without Easements:	$93,681
Estimated Cost/Benefited Unit with Construction Easements only:	$102,165
Estimated Cost/Benefited Unit with all Easements:	$117,890

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 3 of the Alternative 2 exhibits, noise barrier 56.S27 would be located on private property and Caltrans right of way along the westbound side of SR-56, east of I-5. This area is represented by receiver sites R4A to R10. The sound wall would extend for approximately 492 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 4.3 meters (14 feet) and 4.9 meters (16 feet). The proposed noise barrier would replace an existing 8-foot high glass/block soundwall. The wall would benefit approximately 13 single-family residences and is considered feasible. The estimated construction cost of 56.S27, without easements is 153 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 176 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 219 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 56.S27 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 56.S27. No severely impacted receptors exist at this location. Construction of noise barrier 56.S27 is not recommended.

Noise Barrier 56.S31 (Alternative 2)

General

Type: Sound wall

SR 56 Station limits: 31+83 to 32+09

Receptor sites: R14 to R15

Severely Impacted Receptors: None

Height: 2.4 meters (8 feet)

Location: Westbound SR 56; see Sheet 4

Benefited units: Two Frontage Units

Predicted Noise Levels if Project Built without Abatement

Year 2030: 71 dBA

Compared to existing (year 2009): Seven dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$82,000
Estimated Total Cost without Easements:	$108,801
Estimated Total Cost with Construction Easements only:	$140,931
Estimated Total Cost with all Easements:	$176,733

Reasonable Cost Allowance/Benefited Unit:	$41,000
Estimated Cost/Benefited Unit without Easements:	$54,401
Estimated Cost/Benefited Unit with Construction Easements only:	$70,466
Estimated Cost/Benefited Unit with all Easements:	$88,367

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 4 of the Alternative 2 exhibits, noise barrier 56.S31 would be located on private property along the westbound side of SR-56, east of I-5. This area is represented by receiver sites R14 through R15. The sound wall would extend for approximately 77 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 meters (8 feet). The wall would benefit the Notre Dame Academy playground and is considered feasible. The estimated construction cost of 56.S31, without easements is 33 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 72 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 116 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 56.S31 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 56.S31. No severely impacted receptors exist at this location. Construction of noise barrier 56.S31 is not recommended.

Noise Barrier 56.S35 (Alternative 2)

General

Type: Sound wall

SR 56 Station limits: 33+36 to 33+56, 33+84 to 37+50

Receptor sites: R16 to R21A

Severely Impacted Receptors: None

Height: 3.0 to 3.7 meters (10 to 12 feet)

Location: Westbound SR 56; see Sheet 4

Benefited units: 35 Single-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 68 dBA

Compared to existing (year 2009): Three dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$1,295,000
Estimated Total Cost without Easements:	$789,571
Estimated Total Cost with Construction Easements only:	$894,445
Estimated Total Cost with all Easements:	$1,035,259

Reasonable Cost Allowance/Benefited Unit:	$37,000
Estimated Cost/Benefited Unit without Easements:	$22,559
Estimated Cost/Benefited Unit with Construction Easements only:	$25,556
Estimated Cost/Benefited Unit with all Easements:	$29,579

Reasonable without Easements:	Yes
Reasonable with Construction Easements only:	Yes
Reasonable with all Easements:	Yes

Discussion

As shown in Sheet 4 of the Alternative 2 exhibits, noise barrier 56.S35 would be located on private property and Caltrans right-of-way along the westbound side of SR-56, east of I-5. This area is represented by receiver sites R16 through R21A. The noise barrier would extend for approximately 392 meters. The heights of the barrier required to achieve a 5 dBA or more insertion loss at the critical design receiver would be 3.0 meters (10 feet) and 3.7 meters (12 feet). The proposed noise barrier would replace an existing 6-foot block property wall located on the right of way and property line. The wall would benefit 35 single-family residences and is considered feasible. The estimated construction cost of 56.S35, without easements is 39 percent below the reasonable allowance. When only temporary construction easements are included, the estimated cost is below the reasonable allowance by 31 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 20 percent below the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 56.S35 is feasible and reasonable. No severely impacted receptors exist at this location. Construction of noise barrier 56.S35 is recommended.

Noise Barrier 56.S41 (Alternative 2)

General

Type: Sound wall

SR 56 Station limits: 40+87 to 42+40

Receptor sites: R29 to R30

Severely Impacted Receptors: None

Height: 3.7 meters (12 feet)

Location: Westbound SR 56; see Sheet 5

Benefited units: Seven Single-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 66 dBA

Compared to existing (year 2009): Two dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$231,000
Estimated Total Cost without Easements:	$336,350
Estimated Total Cost with Construction Easements only:	$370,853
Estimated Total Cost with all Easements:	$424,086

Reasonable Cost Allowance/Benefited Unit:	$33,000
Estimated Cost/Benefited Unit without Easements:	$48,050
Estimated Cost/Benefited Unit with Construction Easements only:	$52,979
Estimated Cost/Benefited Unit with all Easements:	$60,584

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 5 of the Alternative 2 exhibits, noise barrier 56.S41 would be located on private property and Caltrans right of way along the westbound side of SR-56, east of I-5. This area is represented by receiver sites R29 through R30. The sound wall would extend for approximately 165 meters. The height of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 3.7 meters (12 feet). The proposed noise barrier would replace an existing 6-foot high block property wall located on the right of way line. The wall would benefit seven single-family residences and is considered feasible. The estimated construction cost of 56.S41, without easements is 46 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 61 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 84 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 56.S41 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 56.S41. No severely impacted receptors exist at this location. Construction of noise barrier 56.S41 is not recommended.

Noise Barrier 56.S47 (Alternative 2)

General

Type: Sound wall

SR 56 Station limits: 44+76 to 48+15

Receptor sites: R32 to R36

Severely Impacted Receptors: None

Height: 3.0 to 4.3 meters (10 to 14 feet)

Location: Westbound SR 56; see Sheets 5 and 6

Benefited units: 11 Single-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 68 dBA

Compared to existing (year 2007): One dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$385,000
Estimated Total Cost without Easements:	$732,739
Estimated Total Cost with Construction Easements only:	$804,013
Estimated Total Cost with all Easements:	$919,515

Reasonable Cost Allowance/Benefited Unit:	$35,000
Estimated Cost/Benefited Unit without Easements:	$66,613
Estimated Cost/Benefited Unit with Construction Easements only:	$73,092
Estimated Cost/Benefited Unit with all Easements:	$83,592

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheets 5 and 6 of the Alternative 2 exhibits, noise barrier 56.S47 would be located on private property and Caltrans right of way along the westbound side of SR-56, east of I-5. This area is represented by receiver sites R32 through R36. The sound wall would extend for approximately 339 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 3.0 meters (10 feet) to 4.3 meters (14 feet). The proposed noise barrier would replace an existing 6-foot high block property wall located on the right of way line and would connect to an existing soundwall. The wall would benefit 11 single-family residences and is considered feasible. The estimated construction cost of 56.S47, without easements is 90 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 109 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 139 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 56.S47 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 56.S47. No severely impacted receptors exist at this location. Construction of noise barrier 56.S47 is not recommended.

Noise Barrier 56.S20 (Alternative 2)

General

Type: Sound wall

SR 56 Station limits: 17+50 to 22+14

Receptor sites: R42 to R45

Severely Impacted Receptors: None

Height: 3.7 to 4.9 meters (12 to 16 feet)

Location: Eastbound SR 56; see Sheet 2

Benefited units: Seven Frontage Units

Predicted Noise Levels if Project Built without Abatement

Year 2030: 69 dBA

Compared to existing (year 2009): Four dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$259,000
Estimated Total Cost without Easements:	$1,138,048
Estimated Total Cost with Construction Easements only:	$1,138,048
Estimated Total Cost with all Easements:	$1,138,048

Reasonable Cost Allowance/Benefited Unit:	$37,000
Estimated Cost/Benefited Unit without Easements:	$162,578
Estimated Cost/Benefited Unit with Construction Easements only:	$162,578
Estimated Cost/Benefited Unit with all Easements:	$162,578

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 2 of the Alternative 2 exhibits, noise barrier 56.S20 would be located on Caltrans right of way along the eastbound side of SR-56, east of I-5. This area is represented by receiver sites R42 through R45. The sound wall would extend for approximately 465 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 3.7 meters (12 feet) to 4.9 meters (16 feet). The proposed noise barrier would be located on an existing earthen berm located on the right of way line. The proposed barrier would impact an existing environmentally sensitive area (ESA) known as the Carmel Valley Restoration and Enhancement Project (CVREP). The wall would benefit seven frontage units and is considered feasible. The estimated construction cost of 56.S20, without easements is 339 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 339 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 339 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 56.S20 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 56.S20. No severely impacted receptors exist at this location. Construction of noise barrier 56.S20 is not recommended.

Noise Barrier 56.S34 (Alternative 2)

General

Type: Sound wall

SR 56 Station limits: 32+00 to 35+00

Receptor sites: R46 to R47

Severely Impacted Receptors: None

Height: 2.4 to 3.0 meters (8 to 10 feet)

Location: Eastbound SR 56; see Sheet 4

Benefited units: Two Single-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 71 dBA

Compared to existing (year 2009): Five dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$102,000
Estimated Total Cost without Easements:	$488,040
Estimated Total Cost with Construction Easements only:	$488,040
Estimated Total Cost with all Easements:	$488,040

Reasonable Cost Allowance/Benefited Unit:	$51,000
Estimated Cost/Benefited Unit without Easements:	$244,020
Estimated Cost/Benefited Unit with Construction Easements only:	$244,020
Estimated Cost/Benefited Unit with all Easements:	$244,020

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 4 of the Alternative 2 exhibits, noise barrier 56.S34 would be located on Caltrans right of way along the eastbound side of SR-56, east of I-5. This area is represented by receiver sites R46 through R47. The sound wall would extend for approximately 297 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 meters (8 feet) to 3.0 meters (10 feet). The proposed noise barrier would be located on an existing earthen berm located on the right of way line. The proposed barrier would impact an existing environmentally sensitive area (ESA) known as the Carmel Valley Restoration and Enhancement Project (CVREP). The wall would benefit two single-family residences and is considered feasible. The estimated construction cost of 56.S34, without easements is 378 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 378 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 378 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 56.S34 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 56.S34. No severely impacted receptors exist at this location. Construction of noise barrier 56.S34 is not recommended.

Noise Barrier 56.S34 Option (Alternative 2)

General

Type: Sound wall

SR 56 Station limits: 33+08 to 34+60

Receptor sites: R46 to R47

Severely Impacted Receptors: None

Height: 3.7 to 4.3 meters (12 to 14 feet)

Location: Eastbound SR 56; see Sheet 4

Benefited units: Two Single-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 71 dBA

Compared to existing (year 2009): Five dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$98,000
Estimated Total Cost without Easements:	$369,499
Estimated Total Cost with Construction Easements only:	$405,680
Estimated Total Cost with all Easements:	$465,908

Reasonable Cost Allowance/Benefited Unit:	$49,000
Estimated Cost/Benefited Unit without Easements:	$184,750
Estimated Cost/Benefited Unit with Construction Easements only:	$202,840
Estimated Cost/Benefited Unit with all Easements:	$232,954

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

An option to noise barrier 56.S34 was developed that analyzed the feasibility of constructing a noise barrier on the private property. As shown on Sheet 4 of the Alternative 2 exhibits, noise barrier 56.S34 Option would be located on private property along the eastbound side of SR-56, east of I-5. This area is represented by receiver sites R46 through R47. The sound wall would extend for approximately 171 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 3.7 meters (12 feet) to 4.3 meters (14 feet). The wall would benefit two single-family residences and is considered feasible. The estimated construction cost of 56.S34 Option, without easements is 227 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 314 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 375 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 56.S34 Option is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 56.S34 Option. No severely impacted receptors exist at this location. Construction of noise barrier 56.S34 Option is not recommended.

Noise Barrier 05.S539 (Alternative 2)

General

Type: Sound wall

I-5 Station limits: 540+19 to 540+43

Receptor sites: R4.1

Severely Impacted Receptors: None

Height: 2.4 meters (8 feet)

Location: Southbound I-5; see Sheet 7

Benefited units: One Single-Family Residence

Predicted Noise Levels if Project Built without Abatement

Year 2030: 72 dBA

Compared to existing (year 2009): Two dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$37,000
Estimated Total Cost without Easements:	$62,831
Estimated Total Cost with Construction Easements only:	$80,471
Estimated Total Cost with all Easements:	$100,127

Reasonable Cost Allowance/Benefited Unit:	$37,000
Estimated Cost/Benefited Unit without Easements:	$62,831
Estimated Cost/Benefited Unit with Construction Easements only:	$80,471
Estimated Cost/Benefited Unit with all Easements:	$100,127

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 7 of the Alternative 2 exhibits, noise barrier 05.S539 would be located on private property along the southbound side of I-5, north of SR 56. This area is represented by receiver site R4.1. The sound wall would extend for approximately 42 meters. The height of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 meters (8 feet). The proposed noise barrier would replace an existing 8-foot property wall. The wall would benefit approximately one single-family residence. The sound wall is considered feasible. The estimated construction cost of 05.S539, without easements is 70 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 117 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 171 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 05.S539 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 05.S539. No severely impacted receptors exist at this location. Construction of noise barrier 05.S539 is not recommended.

Noise Barrier 05.S541 (Alternative 2)

General

Type: Sound wall

I-5 Station limits: 540+36 to 541+64

Receptor sites: R4.2 to R4.4

Severely Impacted Receptors: Two

Height: 2.4 to 4.3 meters (8 to 14 feet)

Location: Southbound I-5; see Sheet 7

Benefited units: One Single-Family Residence and Four Frontage Units

Predicted Noise Levels if Project Built without Abatement

Year 2030: 75 dBA

Compared to existing (year 2009): Five dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$225,000
Estimated Total Cost without Easements:	$375,645
Estimated Total Cost with Construction Easements only:	$452,631
Estimated Total Cost with all Easements:	$570,430

Reasonable Cost Allowance/Benefited Unit:	$45,000
Estimated Cost/Benefited Unit without Easements:	$75,129
Estimated Cost/Benefited Unit with Construction Easements only:	$90,526
Estimated Cost/Benefited Unit with all Easements:	$114,086

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 7 of the Alternative 2 exhibits, noise barrier 05.S541 would be located on private property along the southbound side of I-5, north of SR 56. This area is represented by receiver sites R4.2 to R4.4. The sound wall would extend for approximately 183 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 meters (8 feet) to 4.3 meters (14 feet). The proposed noise barrier would replace an existing 8-foot property wall. The wall would benefit approximately one single-family residence and four frontage units. The sound wall is considered feasible. The estimated construction cost of 05.S541, without easements is 67 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 101 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 154 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 05.S541 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 05.S541. Two severely impacted receptors exist at this location. Due to the existence of severely impacted receptors (R4.3 and R4.4), it is recommended that the noise barrier be constructed with FHWA approval under unusual and extraordinary abatement.

Noise Barrier 05.S545 (Alternative 2)

General

Type: Sound wall

I-5 Station limits: 541+80 to 547+00

Receptor sites: R4.5 to R4.12

Severely Impacted Receptors: Seven

Height: 2.4 to 4.9 meters (8 to 16 feet)

Location: Southbound I-5; see Sheets 7 and 8

Benefited units: 6 Single-Family Residences, 17 Multi-Family Residences, 1 Frontage Unit

Predicted Noise Levels if Project Built without Abatement

Year 2030: 79 dBA

Compared to existing (year 2009): 11 dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$1,368,000
Estimated Total Cost without Easements:	$481,018
Estimated Total Cost with Construction Easements only:	$613,329
Estimated Total Cost with all Easements:	$703,250

Reasonable Cost Allowance/Benefited Unit:	$57,000
Estimated Cost/Benefited Unit without Easements:	$20,042
Estimated Cost/Benefited Unit with Construction Easements only:	$25,555
Estimated Cost/Benefited Unit with all Easements:	$29,302

Reasonable without Easements:	Yes
Reasonable with Construction Easements only:	Yes
Reasonable with all Easements:	Yes

Discussion

As shown on Sheets 7 and 8 of the Alternative 2 exhibits, noise barrier 05.S545 would be located on private property and Caltrans right of way along the southbound side of I-5, north of SR 56. This area is represented by receiver sites R4.5 to R4.12. The sound wall would extend for approximately 500 meters and would be located on a retaining wall. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 to 4.9 meters (8 to 16 feet). The wall would benefit approximately 6 single-family residences, 17 multi-family residences, and 1 frontage unit. The sound wall is considered feasible. The estimated construction cost of 05.S545, without easements is 65 percent below the reasonable allowance. When only temporary construction easements are included, the estimated cost is below the reasonable allowance by 55 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 49 percent below the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 05.S545 is feasible and reasonable. Severely impacted receptors exist at this location. Construction of noise barrier 05.S545 is recommended.

Noise Barrier 05.S551 Option 1 (Alternative 2)

General

Type: Sound wall

I-5 Station limits: 547+00 to 555+20

Receptor sites: R4.12A to R4.21

Severely Impacted Receptors: One

Height: 4.3 to 4.9 meters (14 to 16 feet)

Location: Southbound I-5; see Sheets 8A, and 9A

Benefited units: 18 Single-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 68 dBA

Compared to existing (year 2009): Two dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$810,000
Estimated Total Cost without Easements:	$2,084,781
Estimated Total Cost with Construction Easements only:	$2,433,423
Estimated Total Cost with all Easements:	$3,093,703

Reasonable Cost Allowance/Benefited Unit:	$45,000
Estimated Cost/Benefited Unit without Easements:	$115,821
Estimated Cost/Benefited Unit with Construction Easements only:	$135,190
Estimated Cost/Benefited Unit with all Easements:	$171,872

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheets 8A and 9A of the Alternative 2 exhibits, noise barrier 05.S551 would be located on private property along the southbound side of I-5, north of SR 56. This area is represented by receiver sites R4.12A to R4.21. The sound wall would extend for approximately 830 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 4.3 meters (14 feet) and 4.9 meters (16 feet). The proposed noise barrier would replace an existing 8-foot sound wall. The wall would benefit approximately 18 single-family residences. The sound wall is considered feasible. The estimated construction cost of 05.S551, without easements is 157 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 200 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 282 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 05.S551 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 05.S551. One severely impacted receptor (4.21) exists at this location. Receptor 4.21 will benefit from the construction of noise barrier 05.S555 and future noise levels at this receptor will be reduced to 67 dBA. Construction of noise barrier 05.S551 is not recommended.

Noise Barrier 05.S551 Option 2 (Alternative 2)

General

Type: Sound wall

I-5 Station limits: 545+54 to 556+56

Receptor sites: R4.11 to R4.22

Severely Impacted Receptors: Five

Height: 2.4 to 3.7 meters (8 to 12 feet)

Location: Southbound I-5; see Sheets 7B, 8B, and 9B

Benefited units: 52 Single-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 82 dBA

Compared to existing (year 2009): Ten dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$3,068,000
Estimated Total Cost without Easements:	$806,750
Estimated Total Cost with Construction Easements only:	$1,037,557
Estimated Total Cost with all Easements:	$1,037,557

Reasonable Cost Allowance/Benefited Unit:	$59,000
Estimated Cost/Benefited Unit without Easements:	$15,514
Estimated Cost/Benefited Unit with Construction Easements only:	$19,953
Estimated Cost/Benefited Unit with all Easements:	$19,953

Reasonable without Easements:	Yes
Reasonable with Construction Easements only:	Yes
Reasonable with all Easements:	Yes

Discussion

An option to noise barrier 05.S551 was developed that analyzed the feasibility of constructing a noise barrier on top of a re-aligned retaining wall. The retaining wall would be located several feet up the existing slope along southbound I-5. This buffer would provide homeowners with up to 20 feet of additional useable area for their property along Portofino Drive. This increase in backyard space would be accomplished by increasing the height of the proposed retaining wall, placing fill behind the retaining wall, and reconstructing the sound wall directly on top of the retaining wall. As shown on Sheets 7B, 8B, and 9B of the Alternative 2 exhibits, noise barrier 05.S551 (Option 2) would be located on private property and Caltrans right of way along the southbound side of I-5, north of SR 56. This area is represented by receiver sites R4.11 to R4.22. The sound wall would extend for approximately 1,099 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 meters (8 feet) to 3.7 meters (12 feet). The proposed noise barrier would replace an existing 8-foot sound wall. The wall would benefit approximately 52 single-family residences. The sound wall is considered feasible. The estimated construction cost of 05.S551 (Option 2), without easements is 74 percent below the reasonable allowance. When only temporary construction easements are included, the estimated cost is below the reasonable allowance by 66 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 66 percent below the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 05.S551 (Option 2) is feasible and reasonable. Severely impacted receptors exist at this location. Construction of noise barrier 05.S551 (Option 2) is recommended.

Noise Barrier 05.S555 (Alternative 2)

General

Type: Sound wall

I-5 Station limits: 555+20 to 556+37

Receptor sites: R4.21A to R4.22

Severely Impacted Receptors: Two

Height: 2.4 (8 feet)

Location: Southbound I-5; see Sheet 9

Benefited units: 4 Single-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 78 dBA

Compared to existing (year 2009): 10 dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$220,000
Estimated Total Cost without Easements:	$70,971
Estimated Total Cost with Construction Easements only:	$96,632
Estimated Total Cost with all Easements:	$96,632

Reasonable Cost Allowance/Benefited Unit:	$55,000
Estimated Cost/Benefited Unit without Easements:	$17,743
Estimated Cost/Benefited Unit with Construction Easements only:	$24,158
Estimated Cost/Benefited Unit with all Easements:	$24,158

Reasonable without Easements:	Yes
Reasonable with Construction Easements only:	Yes
Reasonable with all Easements:	Yes

Discussion

As shown on Sheet 9 of the Alternative 2 exhibits, noise barrier 05.S555 would be located on private property and Caltrans right of way along the southbound side of I-5, north of SR 56. This area is represented by receiver sites R4.21A to R4.22. The sound wall would extend for approximately 122 meters and would be located on a retaining wall. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 (8 feet). The wall would benefit approximately four single-family residences. The sound wall is considered feasible. The estimated construction cost of 05.S555, without easements is 68 percent below the reasonable allowance. When only temporary construction easements are included, the estimated cost is below the reasonable allowance by 56 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 56 percent below the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 05.S555 is feasible and reasonable. Severely impacted receptors exist at this location. Construction of noise barrier 05.S555 is recommended. The construction of noise barrier 05.S555 will decrease noise levels at severely impacted receptor 4.21, which is located along noise barrier 05.S551.

Noise Barrier 05.S557 (Alternative 2)

General

Type: Sound wall

I-5 Station limits: 556+08 to 558+01

Receptor sites: R4.22A to R4.24

Severely Impacted Receptors: Four

Height: 2.4 to 3.0 meters (8 to 10 feet)

Location: Southbound I-5; see Sheet 9

Benefited units: 10 Multi-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 80 dBA

Compared to existing (year 2009): Three dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$450,000
Estimated Total Cost without Easements:	$350,009
Estimated Total Cost with Construction Easements only:	$441,821
Estimated Total Cost with all Easements:	$555,812

Reasonable Cost Allowance/Benefited Unit:	$45,000
Estimated Cost/Benefited Unit without Easements:	$35,001
Estimated Cost/Benefited Unit with Construction Easements only:	$44,182
Estimated Cost/Benefited Unit with all Easements:	$55,581

Reasonable without Easements:	Yes
Reasonable with Construction Easements only:	Yes
Reasonable with all Easements:	No

Discussion

As shown on Sheet 9 of the Alternative 2 exhibits, noise barrier 05.S557 would be located on private property along the southbound side of I-5, north of SR 56. This area is represented by receiver sites R4.22A to R4.24. The sound wall would extend for approximately 219 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 to 3.0 meters (8 to 10 feet). The wall would benefit approximately 10 multi-family residences. The sound wall is considered feasible. The estimated construction cost of 05.S557, without easements is 22 percent below the reasonable allowance. When only temporary construction easements are included, the estimated cost is below the reasonable allowance by 2 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 24 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 05.S557 is not recommended as proposed because the wall is not constructible. Due to the existence of severely impacted receptors (R4.22A, R4.23, R4.23A, and R4.24), it is recommended that the severely impacted receptors receive abatement with FHWA approval under unusual and extraordinary abatement.

Noise Barrier 05.S561 (Alternative 2)

General

Type: Sound wall

I-5 Station limits: 560+85 to 562+21

Receptor sites: R5.1 to R5.2

Severely Impacted Receptors: Two

Height: 2.4 (8 feet)

Location: Southbound I-5; see Sheet 9

Benefited units: Six Multi-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 76 dBA

Compared to existing (year 2009): One dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$246,000
Estimated Total Cost without Easements:	$233,465
Estimated Total Cost with Construction Easements only:	$299,012
Estimated Total Cost with all Easements:	$372,049

Reasonable Cost Allowance/Benefited Unit:	$41,000
Estimated Cost/Benefited Unit without Easements:	$38,911
Estimated Cost/Benefited Unit with Construction Easements only:	$49,835
Estimated Cost/Benefited Unit with all Easements:	$62,008

Reasonable without Easements:	Yes
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 9 of the Alternative 2 exhibits, noise barrier 05.S561 would be located on private property along the southbound side of I-5, north of SR 56. This area is represented by receiver sites R5.1 to R5.2. The sound wall would extend for approximately 156 meters. The height of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 meters (8 feet). The wall would benefit approximately six multi-family residences. The sound wall is considered feasible. The estimated construction cost of 05.S561, without easements is 5 percent below the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 22 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 51 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 05.S561 is feasible and conditionally reasonable. Two severely impacted receptors exist at this location. Due to the existence of severely impacted receptors (R5.1 and R5.2), it is recommended that the noise barrier be constructed with FHWA approval under unusual and extraordinary abatement.

Noise Barrier 05.S563 (Alternative 2)

General

Type: Sound wall

I-5 Station limits: 563+28 to 564+36

Receptor sites: R5.5A to R5.6

Severely Impacted Receptors: None

Height: 2.4 meters (8 feet)

Location: Southbound I-5; see Sheet 10

Benefited units: Four Frontage Units

Predicted Noise Levels if Project Built without Abatement

Year 2030: 69 dBA

Compared to existing (year 2009): Six dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$188,000
Estimated Total Cost without Easements:	$184,571
Estimated Total Cost with Construction Easements only:	$239,077
Estimated Total Cost with all Easements:	$299,811

Reasonable Cost Allowance/Benefited Unit:	$47,000
Estimated Cost/Benefited Unit without Easements:	$46,143
Estimated Cost/Benefited Unit with Construction Easements only:	$59,769
Estimated Cost/Benefited Unit with all Easements:	$74,953

Reasonable without Easements:	Yes
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 10 of the Alternative 2 exhibits, noise barrier 05.S563 would be located on private property along the southbound side of I-5, north of SR 56. This area is represented by receiver sites R5.5A to R5.6. The sound wall would extend for approximately 130 meters. The height of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 meters (8 feet). The wall would benefit approximately four frontage units. The sound wall is considered feasible. The estimated construction cost of 05.S563, without easements is 2 percent below the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 27 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 59 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 05.S563 is not recommended unless negotiation with the property owners would result in estimated costs that do not exceed the reasonable allowance. This may be accomplished if the property owners are willing to donate easements by signing a waiver of just compensation. If the total cost cannot be reduced to less than or equal to the reasonable allowance, construction is not recommended. No severely impacted receptors exist at this location.

Noise Barrier 05.S567 (Alternative 2)

General

Type: Sound wall

I-5 Station limits: 564+61 to 567+18

Receptor sites: R5.7A to R5.8B

Severely Impacted Receptors: None

Height: 2.4 meters (8 feet)

Location: Southbound I-5; see Sheet 10

Benefited units: 13 Single-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 74 dBA

Compared to existing (year 2009): Two dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$637,000
Estimated Total Cost without Easements:	$425,385
Estimated Total Cost with Construction Easements only:	$503,596
Estimated Total Cost with all Easements:	$611,679

Reasonable Cost Allowance/Benefited Unit:	$49,000
Estimated Cost/Benefited Unit without Easements:	$32,722
Estimated Cost/Benefited Unit with Construction Easements only:	$38,738
Estimated Cost/Benefited Unit with all Easements:	$47,052

Reasonable without Easements:	Yes
Reasonable with Construction Easements only:	Yes
Reasonable with all Easements:	Yes

Discussion

As shown on Sheet 10 of the Alternative 2 exhibits, noise barrier 05.S567 would be located on private property and Caltrans right of way along the southbound side of I-5, north of SR 56. This area is represented by receiver sites R5.7A to R5.8B. The sound wall would extend for approximately 299 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 meters (8 feet). The wall would benefit approximately 13 single-family residences. The sound wall is considered feasible. The estimated construction cost of 05.S567, without easements is 33 percent below the reasonable allowance. When only temporary construction easements are included, the estimated cost is below the reasonable allowance by 21 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 4 percent below the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 05.S567 is feasible and reasonable. No severely impacted receptors exist at this location. Construction of noise barrier 05.S567 is recommended.

Noise Barrier 05.S569 (Alternative 2)

General

Type: Sound wall

I-5 Station limits: 567+29 to 567+89

Receptor sites: R5.9A to R5.9

Severely Impacted Receptors: None

Height: 2.4 to 4.3 meters (8 to 14 feet)

Location: Southbound I-5; see Sheet 10

Benefited units: Three Single-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 66 dBA

Compared to existing (year 2009): One dBA decrease

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$129,000
Estimated Total Cost without Easements:	$203,064
Estimated Total Cost with Construction Easements only:	$225,412
Estimated Total Cost with all Easements:	$258,630

Reasonable Cost Allowance/Benefited Unit:	$43,000
Estimated Cost/Benefited Unit without Easements:	$67,688
Estimated Cost/Benefited Unit with Construction Easements only:	$75,137
Estimated Cost/Benefited Unit with all Easements:	$86,210

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 10 of the Alternative 2 exhibits, noise barrier 05.S569 would be located on private property and Caltrans right of way along the southbound side of I-5, north of SR 56. This area is represented by receiver sites R5.9A to R5.9. The sound wall would extend for approximately 106 meters. The height of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 to 4.3 meters (8 to 14 feet). The wall would benefit approximately three single-family residences. The sound wall is considered feasible. The estimated construction cost of 05.S569, without easements is 57 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 75 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 100 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 05.S569 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 05.S569. No severely impacted receptors exist at this location. Construction of noise barrier 05.S569 is not recommended.

Noise Barrier 05.S568 (Alternative 2)

General

Type: Sound wall

I-5 Station limits: 566+24 to 567+90

Receptor sites: R5.21 to R5.23A

Severely Impacted Receptors: None

Height: 2.4 to 3.7 meters (8 to 12 feet)

Location: Northbound I-5; see Sheet 10

Benefited units: 10 Single-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 70 dBA

Compared to existing (year 2009): One dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$410,000
Estimated Total Cost without Easements:	$333,102
Estimated Total Cost with Construction Easements only:	$443,608
Estimated Total Cost with all Easements:	$537,363

Reasonable Cost Allowance/Benefited Unit:	$41,000
Estimated Cost/Benefited Unit without Easements:	$33,310
Estimated Cost/Benefited Unit with Construction Easements only:	$44,361
Estimated Cost/Benefited Unit with all Easements:	$53,736

Reasonable without Easements:	Yes
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 10 of the Alternative 2 exhibits, noise barrier 05.S568 would be located on private property and Caltrans right of way along the northbound side of I-5, north of SR 56. This area is represented by receiver sites R5.21 to R5.23A. The sound wall would extend for approximately 215 meters. The height of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 to 3.7 meters (8 to 12 feet). The wall would benefit approximately 10 single-family residences. The sound wall is considered feasible. The estimated construction cost of 05.S568, without easements is 19 percent below the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 8 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 31 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 05.S568 is not recommended unless negotiation with the property owners would result in estimated costs that do not exceed the reasonable allowance. This may be accomplished if the property owners are willing to donate easements by signing a waiver of just compensation. If the total cost cannot be reduced to less than or equal to the reasonable allowance, construction is not recommended. No severely impacted receptors exist at this location.

ALTERNATIVE 2
COST ANALYSIS

SR 56 (ALTERNATIVE 2) - COST ANALYSIS

NOISE BARRIER	# OF BENEFITED RESIDENCES	WALL CHARACTERISTICS				QUANTITIES							EASEMENTS		
		Height	Length of Sound Wall	Length of Sound Wall on Retaining Wall	Length of Sound Wall Not on Retaining Wall	Excavation Depth	Excavation Width	Excavation and Backfill	Berm Embankment	Demolition of wood fence	Demolition of existing sound walls/property walls	Minor Concrete Sound Wall (Spread or Trench Footing)	Temporary Construction Easements	Footing Easements	Total Easements
		(m)	(m)	(m)	(m)	(m)	(m)	(m3)	(m3)	(m)	(m2)	(m3)	(m2)	(m2)	(m2)
56.S27	13	4.3	207	0	207	0.90	2.6	485	0	0	498	126	361	241	602
		4.9	284	0	284	0.90	2.9	742	0	0	682	199	426	327	753
56.S31	2	2.4	77	0	77	0.90	1.9	131	0	0	0	30	230	99	329
56.S35	35	3.0	42	0	42	0.90	2.1	80	0	0	76	19	203	63	266
		3.7	350	0	350	0.90	2.4	756	0	0	630	192	546	328	874
56.S41	7	3.7	164	0	164	0.90	2.4	355	0	0	296	90	246	148	394
56.S47	11	3.0	17	0	17	0.90	2.1	32	0	0	31	8	26	13	38
		3.7	143	0	143	0.90	2.4	309	0	0	258	79	215	129	343
		4.3	179	0	179	0.90	2.6	420	0	0	323	109	269	179	448
56.S20	7	3.7	95	0	95	0.90	2.4	206	558	0	0	52	0	0	0
		4.3	152	0	152	0.90	2.6	355	889	0	0	93	0	0	0
		4.9	218	0	218	0.90	2.9	568	1,273	0	0	153	0	0	0
56.S34	2	2.4	209	0	209	0.90	1.9	358	1,224	0	0	83	0	0	0
		3.0	88	0	88	0.90	2.1	166	514	0	0	40	0	0	0
56.S34 Option	2	3.7	50	0	50	0.90	2.4	108	0	0	0	27	75	45	120
		4.3	122	0	122	0.90	2.6	286	0	0	0	75	184	122	306

NOISE BARRIER	# OF BENEFITED RESIDENCES	CONSTRUCTION COSTS						ADDITIONAL COSTS				EASEMENT COSTS		
		Sound Wall Masonry Cost	Minor Concrete Sound Wall Cost	Excavation and Backfill Cost	Berm Embankment Cost	Demolition Cost - wood fence	Demolition Cost - sound wall/property wall	Clearing & Grubbing	Landscaping Cost	Traffic Control Cost	SWPPP Cost	Construction Easements	Footing Easements	Total Easements
		($200/m2)	($750/m3)	($125/m3)	($40/m3)	($40/m)	($32/m2)	(8% of Wall Cost)	(10% of Wall Cost)	(5% of Wall Cost)	(5% of Wall Cost)	($140/m2)	($360/m2)	
56.S27	13	$203,154	$94,840	$60,635	$0	$0	$15,921	$29,964	$37,455	$18,727	$18,727	$50,589	$86,724	$137,313
		$312,730	$149,577	$92,753	$0	$0	$21,834	$46,152	$57,689	$28,845	$28,845	$59,703	$117,700	$177,403
		$515,884	***$244,417***	***$153,388***	***$0***	***$0***	***$37,755***	***$76,116***	***$95,144***	***$47,572***	***$47,572***	***$110,292***	***$204,424***	***$314,716***
56.S31	2	$45,900	$22,749	$16,352	$0	$0	$0	$6,800	$8,500	$4,250	$4,250	$32,130	$35,802	$67,932
		$45,900	***$22,749***	***$16,352***	***$0***	***$0***	***$0***	***$6,800***	***$8,500***	***$4,250***	***$4,250***	***$32,130***	***$35,802***	***$67,932***
56.S35	35	$30,456	$14,514	$9,993	$0	$0	$2,436	$4,592	$5,740	$2,870	$2,870	$28,413	$22,842	$51,255
		$300,828	$144,030	$94,446	$0	$0	$20,148	$44,756	$55,945	$27,973	$27,973	$76,461	$117,968	$194,429
		$331,284	***$158,544***	***$104,439***	***$0***	***$0***	***$22,585***	***$49,348***	***$61,685***	***$30,843***	***$30,843***	***$104,874***	***$140,810***	***$245,684***
56.S41	7	$141,298	$67,651	$44,361	$0	$0	$9,464	$21,022	$26,277	$13,139	$13,139	$34,503	$53,233	$87,736
		$141,298	***$67,651***	***$44,361***	***$0***	***$0***	***$9,464***	***$21,022***	***$26,277***	***$13,139***	***$13,139***	***$34,503***	***$53,233***	***$87,736***
56.S47	11	$12,240	$5,833	$4,016	$0	$0	$979	$1,845	$2,307	$1,153	$1,153	$3,570	$4,590	$8,160
		$123,066	$58,921	$38,637	$0	$0	$8,243	$18,309	$22,887	$11,443	$11,443	$30,051	$46,364	$76,415
		$175,714	$82,030	$52,445	$0	$0	$10,328	$25,641	$32,052	$16,026	$16,026	$37,653	$64,548	$102,201
		$311,020	***$146,784***	***$95,099***	***$0***	***$0***	***$19,549***	***$45,796***	***$57,245***	***$28,623***	***$28,623***	***$71,274***	***$115,502***	***$186,776***
56.S20	7	$82,044	$39,281	$25,758	$11,162	$0	$0	$12,660	$15,824	$7,912	$7,912	$0	$0	$0
		$148,862	$69,494	$44,431	$17,772	$0	$0	$22,445	$28,056	$14,028	$14,028	$0	$0	$0
		$239,360	$114,485	$70,992	$25,459	$0	$0	$36,024	$45,030	$22,515	$22,515	$0	$0	$0
		$470,266	***$223,260***	***$141,181***	***$54,393***	***$0***	***$0***	***$71,128***	***$88,910***	***$44,455***	***$44,455***	***$0***	***$0***	***$0***
56.S34	2	$125,520	$62,211	$44,717	$24,476	$0	$0	$20,554	$25,692	$12,846	$12,846	$0	$0	$0
		$63,216	$30,126	$20,743	$10,273	$0	$0	$9,949	$12,436	$6,218	$6,218	$0	$0	$0
		$188,736	***$92,337***	***$65,459***	***$34,749***	***$0***	***$0***	***$30,503***	***$38,128***	***$19,064***	***$19,064***	***$0***	***$0***	***$0***
56.S34 Option	2	$42,875	$20,528	$13,461	$0	$0	$0	$6,149	$7,686	$3,843	$3,843	$10,470	$16,153	$26,623
		$119,983	$56,013	$35,811	$0	$0	$0	$16,945	$21,181	$10,590	$10,590	$25,711	$44,076	$69,786
		$162,859	***$76,540***	***$49,272***	***$0***	***$0***	***$0***	***$23,094***	***$28,867***	***$14,434***	***$14,434***	***$36,180***	***$60,229***	***$96,409***

NOISE BARRIER	# OF BENEFITED RESIDENCES	TOTAL COSTS			COST PER BENEFITTED RESIDENCE			COST ALLOWANCE		REASONABLENESS		
		Estimated Total Cost (w/o Easements)	Estimated Total Cost (w/ Construction Easement Only)	Estimated Total Cost w/ Easements	Estimated Cost/Benefited Residence (w/o Easements)	Estimated Cost/Benefited Residence (w/ Construction Easement Only)	Estimated Cost Per Benefitted Residence w/ Easements	Reasonable Allowance Per Residence	Reasonable Total Allowance	Reasonable w/o Easements	Reasonable w/ Construction Easements Only	Reasonable w/ all easements
56.S27	13	$479,424	$530,013	$616,737	***$93,681***	***$102,165***	***$117,890***	***$37,000***	***$481,000***	***NO***	***NO***	***NO***
		$738,425	$798,128	$915,828								
		$1,217,848	***$1,328,140***	***$1,532,565***								
56.S31	2	$108,801	$140,931	$176,733	***$54,401***	***$70,466***	***$88,367***	***$41,000***	***$82,000***	***NO***	***NO***	***NO***
		$108,801	***$140,931***	***$176,733***								
56.S35	35	$73,472	$101,885	$124,727	***$22,559***	***$25,556***	***$29,579***	***$37,000***	***$1,295,000***	***YES***	***YES***	***YES***
		$716,099	$792,560	$910,529								
		$789,571	***$894,445***	***$1,035,256***								
56.S41	7	$336,350	$370,853	$424,086	***$48,050***	***$52,979***	***$60,584***	***$33,000***	***$231,000***	***NO***	***NO***	***NO***
		$336,350	***$370,853***	***$424,086***								
56.S47	11	$29,528	$33,098	$37,688	***$66,613***	***$73,092***	***$83,592***	***$35,000***	***$385,000***	***NO***	***NO***	***NO***
		$292,950	$323,001	$369,365								
		$410,261	$447,914	$512,462								
		$732,739	***$804,013***	***$919,515***								
56.S20	7	$202,553	$202,553	$202,553	***$162,578***	***$162,578***	***$162,578***	***$37,000***	***$259,000***	***NO***	***NO***	***NO***
		$359,116	$359,116	$359,116								
		$576,379	$576,379	$576,379								
		$1,138,048	***$1,138,048***	***$1,138,048***								
56.S34	2	$328,862	$328,862	$328,862	***$244,020***	***$244,020***	***$244,020***	***$51,000***	***$102,000***	***NO***	***NO***	***NO***
		$159,178	$159,178	$159,178								
		$488,040	***$488,040***	***$488,040***								
56.S34 Option	2	$98,386	$108,855	$125,008	***$184,750***	***$202,840***	***$232,954***	***$49,000***	***$98,000***	***NO***	***NO***	***NO***
		$271,113	$296,824	$340,900								
		$369,499	***$405,680***	***$465,908***								

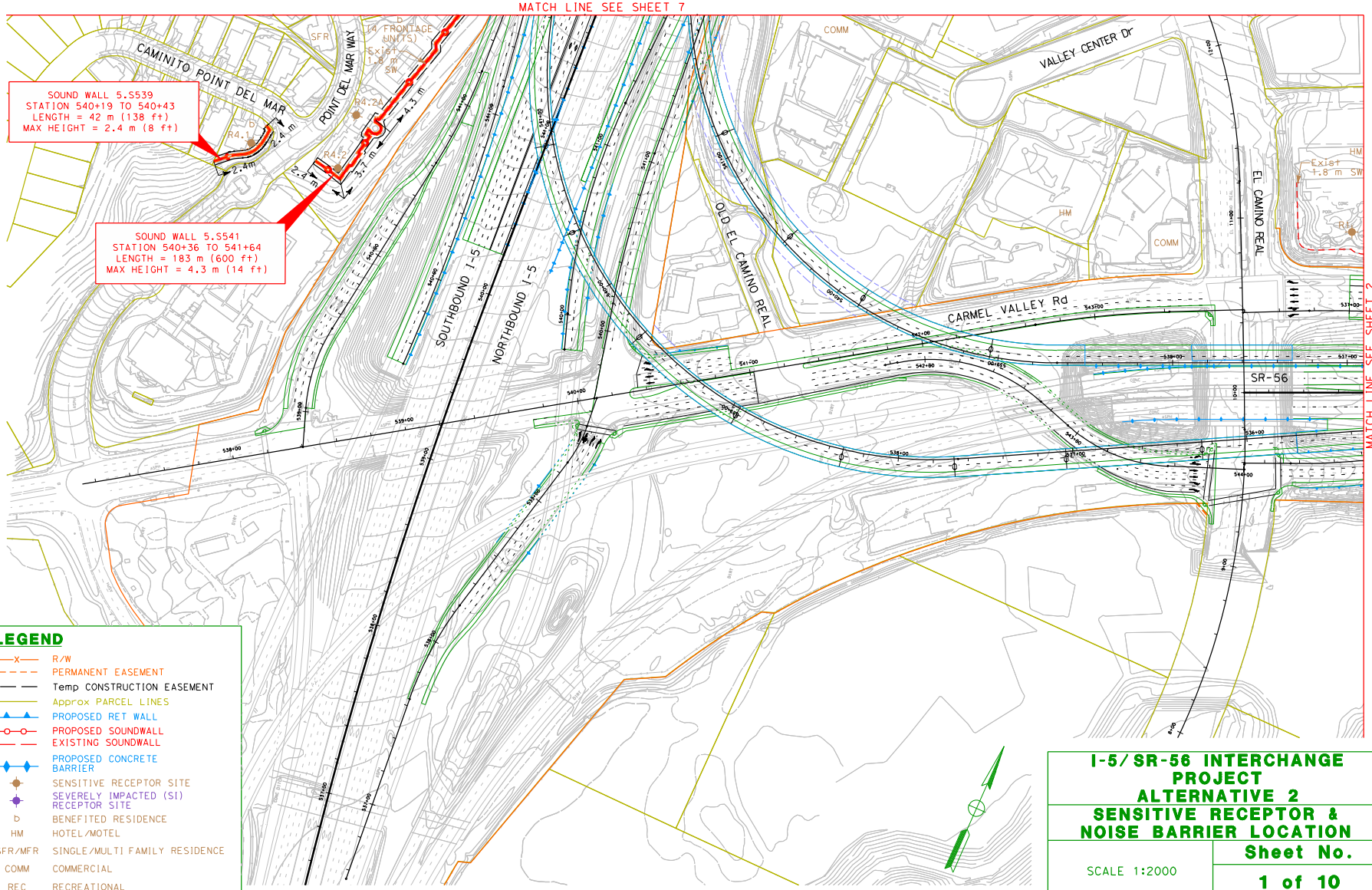
I-5 (ALTERNATIVE 2) - COST ANALYSIS

NOISE BARRIER	# OF BENEFITED RESIDENCES	WALL CHARACTERISTICS				QUANTITIES						EASEMENTS		
		Height	Length of Sound Wall	Length of Sound Wall on Retaining Wall	Length of Sound Wall Not on Retaining Wall	Excavation Depth	Excavation Width	Excavation and Backfill	Demolition of wood fence	Demolition of existing sound walls/property walls	Minor Concrete Sound Wall (Spread or Trench Footing)	Temporary Construction Easements	Footing Easements	Total Easements
		(m)	(m)	(m)	(m)	(m)	(m)	(m3)	(m)	(m2)	(m3)	(m2)	(m2)	(m2)
05.S539	1	2.4	42	0	42	0.9	1.9	72	0	76	17	126	55	181
05.S541	5	2.4	17	0	17	0.9	1.9	30	0	31	7	52	23	75
		3.0	54	0	54	0.9	2.1	103	0	98	25	163	82	245
		4.3	112	0	112	0.9	2.6	261	0	201	68	335	223	558
05.S545	24	2.4	126	126	0	0.9	1.9	0	0	505	0	189	0	189
		3.0	29	29	0	0.9	2.1	0	0	88	0	44	0	44
		3.7	42	42	0	0.9	2.4	0	0	88	0	63	0	63
		4.3	216	216	0	0.9	2.6	0	0	156	0	324	0	324
		4.9	109	109	0	0.9	2.9	0	0	1037	0	326	250	576
05.S551 (Option 1)	18	4.3	250	0	250	0.9	2.6	586	0	601	153	751	501	1252
		4.9	580	0	580	0.9	2.9	1513	0	1391	407	1739	1333	3072
05.S551 (Option 2)	52	2.4	399	399	0	0.9	1.9	0	0	958	0	598	0	598
		3.0	155	155	0	0.9	2.1	0	0	371	0	232	0	232
		3.7	546	546	0	0.9	2.4	0	0	1309	0	818	0	818
05.S555	4	2.4	122	122	0	0.9	1.9	0	0	293	0	183	0	183
05.S557	10	2.4	56	0	56	0.9	1.9	96	0	0	22	169	73	242
		3.0	162	0	162	0.9	2.1	307	0	0	74	487	243	730
05.S561	6	2.4	156	0	156	0.9	1.9	267	0	281	62	468	203	671
05.S563	4	2.4	130	0	130	0.9	1.9	222	0	0	51	389	169	558
05.S567	13	2.4	299	0	299	0.9	1.9	511	0	0	119	559	300	859
05.S569	3	2.4	29	0	29	0.9	1.9	50	0	0	12	44	19	63
		3.7	39	0	39	0.9	2.4	85	0	0	22	59	35	94
		4.3	38	0	38	0.9	2.6	89	0	0	23	57	38	95
05.S568	10	2.4	153	0	153	0.9	1.9	261	0	0	61	680	198	879
		3.0	23	0	23	0.9	2.1	44	0	0	11	35	17	52
		3.7	39	0	39	0.9	2.4	85	0	0	22	74	45	119

NOISE BARRIER	# OF BENEFITED RESIDENCES	CONSTRUCTION COSTS					ADDITIONAL COSTS				EASEMENT COSTS		
		Sound Wall Masonry Cost	Minor Concrete Sound Wall Cost	Excavation and Backfill Cost	Demolition Cost - wood fence	Demolition Cost - sound wall/property wall	Clearing & Grubbing	Landscaping Cost	Traffic Control Cost	SWPPP Cost	Construction Easements	Footing Easements	Total Easements
		($200/m2)	($750/m3)	($125/m3)	($40/m)	($32/m2)	(8% of Wall Cost)	(10% of Wall Cost)	(5% of Wall Cost)	(5% of Wall Cost)	($140/m2)	($360/m2)	
05.S539	1	$25,200	$12,490	$8,978	$0	$2,419	$3,927	$4,909	$2,454	$2,454	$17,640	$19,656	$37,296
		$25,200	***$12,490***	***$8,978***	***$0***	***$2,419***	***$3,927***	***$4,909***	***$2,454***	***$2,454***	***$17,640***	***$19,656***	***$37,296***
05.S541	5	$10,440	$5,174	$3,719	$0	$1,002	$1,627	$2,034	$1,017	$1,017	$7,308	$8,143	$15,451
		$39,168	$18,666	$12,852	$0	$3,133	$5,906	$7,382	$3,691	$3,691	$22,848	$29,376	$52,224
		$109,270	$51,011	$32,614	$0	$6,422	$15,945	$19,932	$9,966	$9,966	$46,830	$80,280	$127,110
		$158,878	***$74,852***	***$49,185***	***$0***	***$10,558***	***$23,478***	***$29,347***	***$14,674***	***$14,674***	***$76,986***	***$117,799***	***$194,785***
05.S545	24	$63,504	$0	$0	$0	$16,150	$0	$0	$0	$0	$26,460	$0	$26,460
		$18,332	$0	$0	$0	$2,830	$0	$0	$0	$0	$6,111	$0	$6,111
		$32,604	$0	$0	$0	$2,830	$0	$0	$0	$0	$8,812	$0	$8,812
		$194,863	$0	$0	$0	$4,978	$0	$0	$0	$0	$45,317	$0	$45,317
		$111,749	$0	$0	$0	$33,177	$0	$0	$0	$0	$45,612	$89,921	$135,533
		$421,052	***$0***	***$0***	***$0***	***$59,965***	***$0***	***$0***	***$0***	***$0***	***$132,312***	***$89,921***	***$222,232***
05.S551 (Option 1)	18	$245,392	$114,558	$73,242	$0	$19,231	$36,194	$45,242	$22,621	$22,621	$105,168	$180,288	$285,456
		$637,670	$304,995	$189,127	$0	$44,521	$94,105	$117,631	$58,816	$58,816	$243,474	$479,992	$723,466
		$883,062	***$419,553***	***$262,369***	***$0***	***$63,752***	***$130,299***	***$162,874***	***$81,437***	***$81,437***	***$348,642***	***$660,280***	***$1,008,922***
05.S551 (Option 2)	52	$201,088	$0	$0	$0	$30,642	$0	$0	$0	$0	$83,787	$0	$83,787
		$97,367	$0	$0	$0	$11,869	$0	$0	$0	$0	$32,456	$0	$32,456
		$423,887	$0	$0	$0	$41,898	$0	$0	$0	$0	$114,564	$0	$114,564
		$722,341	***$0***	***$0***	***$0***	***$84,409***	***$0***	***$0***	***$0***	***$0***	***$230,806***	***$0***	***$230,806***
05.S555	4	$61,586	$0	$0	$0	$9,385	$0	$0	$0	$0	$25,661	$0	$25,661
		$61,586	***$0***	***$0***	***$0***	***$9,385***	***$0***	***$0***	***$0***	***$0***	***$25,661***	***$0***	***$25,661***
05.S557	10	$33,780	$16,742	$12,034	$0	$0	$5,005	$6,256	$3,128	$3,128	$23,646	$26,348	$49,994
		$116,856	$55,689	$38,343	$0	$0	$16,871	$21,089	$10,544	$10,544	$68,166	$87,642	$155,808
		$150,636	***$72,431***	***$50,378***	***$0***	***$0***	***$21,876***	***$27,344***	***$13,672***	***$13,672***	***$91,812***	***$113,990***	***$205,802***
05.S561	6	$93,638	$46,409	$33,358	$0	$8,989	$14,592	$18,239	$9,120	$9,120	$65,546	$73,037	$138,584
		$93,638	***$46,409***	***$33,358***	***$0***	***$8,989***	***$14,592***	***$18,239***	***$9,120***	***$9,120***	***$65,546***	***$73,037***	***$138,584***
05.S563	4	$77,865	$38,592	$27,739	$0	$0	$11,536	$14,420	$7,210	$7,210	$54,506	$60,735	$115,240
		$77,865	***$38,592***	***$27,739***	***$0***	***$0***	***$11,536***	***$14,420***	***$7,210***	***$7,210***	***$54,506***	***$60,735***	***$115,240***
05.S567	13	$179,457	$88,943	$63,932	$0	$0	$26,587	$33,233	$16,617	$16,617	$78,211	$108,083	$186,294
		$179,457	***$88,943***	***$63,932***	***$0***	***$0***	***$26,587***	***$33,233***	***$16,617***	***$16,617***	***$78,211***	***$108,083***	***$186,294***
05.S569	3	$17,532	$8,689	$6,246	$0	$0	$2,597	$3,247	$1,623	$1,623	$6,136	$6,837	$12,974
		$33,712	$16,141	$10,584	$0	$0	$4,835	$6,044	$3,022	$3,022	$8,232	$12,701	$20,933
		$37,240	$17,385	$11,115	$0	$0	$5,259	$6,574	$3,287	$3,287	$7,980	$13,680	$21,660
		$88,484	***$42,215***	***$27,945***	***$0***	***$0***	***$12,691***	***$15,864***	***$7,932***	***$7,932***	***$22,348***	***$33,218***	***$55,566***
05.S568	10	$91,601	$45,400	$32,633	$0	$0	$13,571	$16,963	$8,482	$8,482	$95,236	$71,449	$166,685
		$16,705	$7,961	$5,481	$0	$0	$2,412	$3,015	$1,507	$1,507	$4,872	$6,265	$11,137
		$33,721	$16,145	$10,587	$0	$0	$4,836	$6,045	$3,023	$3,023	$10,397	$16,042	$26,439
		$142,028	***$69,506***	***$48,701***	***$0***	***$0***	***$20,819***	***$26,024***	***$13,012***	***$13,012***	***$110,506***	***$93,755***	***$204,261***

NOISE BARRIER	# OF BENEFITED RESIDENCES	TOTAL COSTS			COST PER BENEFITTED RESIDENCE			COST ALLOWANCE		REASONABLENESS		
		Estimated Total Cost (w/o Easements)	Estimated Total Cost (w/ Construction Easement Only)	Estimated Total Cost w/ Easements	Estimated Cost/Benefited Residence (w/o Easements)	Estimated Cost/Benefited Residence (w/ Construction Easement Only)	Estimated Cost Per Benefitted Residence w/ Easements	Reasonable Allowance Per Residence	Reasonable Total Allowance	Reasonable w/o Easements	Reasonable w/ Construction Easements Only	Reasonable w/ all easements
05.S539	1	$62,831	$80,471	$100,127	***$62,831***	***$80,471***	***$100,127***	***$37,000***	***$37,000***	***NO***	***NO***	***NO***
		$62,831	***$80,471***	***$100,127***								
05.S541	5	$26,030	$33,338	$41,481	***$75,129***	***$90,526***	***$114,086***	***$45,000***	***$225,000***	***NO***	***NO***	***NO***
		$94,489	$117,337	$146,713								
		$255,126	$301,956	$382,236								
		$375,645	***$452,631***	***$570,430***								
05.S545	24	$79,654	$106,114	$106,114	***$20,042***	***$25,555***	***$29,302***	***$57,000***	***$1,368,000***	***YES***	***YES***	***YES***
		$21,163	$27,274	$27,274								
		$35,434	$44,246	$44,246								
		$199,840	$245,157	$245,157								
		$144,926	$190,538	$280,459								
		$481,018	***$613,329***	***$703,250***								
05.S551 (Option 1)	18	$579,101	$684,269	$864,557	***$115,821***	***$135,190***	***$171,872***	***$45,000***	***$810,000***	***NO***	***NO***	***NO***
		$1,505,680	$1,749,154	$2,229,146								
		$2,084,781	***$2,433,423***	***$3,093,703***								
05.S551 (Option 2)	52	$231,730	$315,517	$315,517	***$15,514***	***$19,953***	***$19,953***	***$59,000***	***$3,068,000***	***YES***	***YES***	***YES***
		$109,236	$141,691	$141,691								
		$465,785	$580,349	$580,349								
		$806,750	***$1,037,557***	***$1,037,557***								
05.S555	4	$70,971	$96,632	$96,632	***$17,743***	***$24,158***	***$24,158***	***$55,000***	***$220,000***	***YES***	***YES***	***YES***
		$70,971	***$96,632***	***$96,632***								
05.S557	10	$80,072	$103,718	$130,067	***$35,001***	***$44,182***	***$55,581***	***$45,000***	***$450,000***	***YES***	***YES***	***NO***
		$269,937	$338,103	$425,745								
		$350,009	***$441,821***	***$555,812***								
05.S561	6	$233,465	$299,012	$372,049	***$38,911***	***$49,835***	***$62,008***	***$41,000***	***$246,000***	***YES***	***NO***	***NO***
		$233,465	***$299,012***	***$372,049***								
05.S563	4	$184,571	$239,077	$299,811	***$46,143***	***$59,769***	***$74,953***	***$47,000***	***$188,000***	***YES***	***NO***	***NO***
		$184,571	***$239,077***	***$299,811***								
05.S567	13	$425,385	$503,596	$611,679	***$32,722***	***$38,738***	***$47,052***	***$49,000***	***$637,000***	***YES***	***YES***	***YES***
		$425,385	***$503,596***	***$611,679***								
05.S569	3	$41,558	$47,694	$54,532	***$67,688***	***$75,137***	***$86,210***	***$43,000***	***$129,000***	***NO***	***NO***	***NO***
		$77,359	$85,591	$98,292								
		$84,147	$92,127	$105,807								
		$203,064	***$225,412***	***$258,630***								
05.S568	10	$217,132	$312,368	$383,817	***$33,310***	***$44,361***	***$53,736***	***$41,000***	***$410,000***	***YES***	***NO***	***NO***
		$38,590	$43,462	$49,727								
		$77,381	$87,778	$103,819								
		$333,102	***$443,608***	***$537,363***								

ALTERNATIVE 2
EXHIBITS



I-5/ SR-56 INTERCHANGE PROJECT ALTERNATIVE 2

SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

SCALE 1:2000

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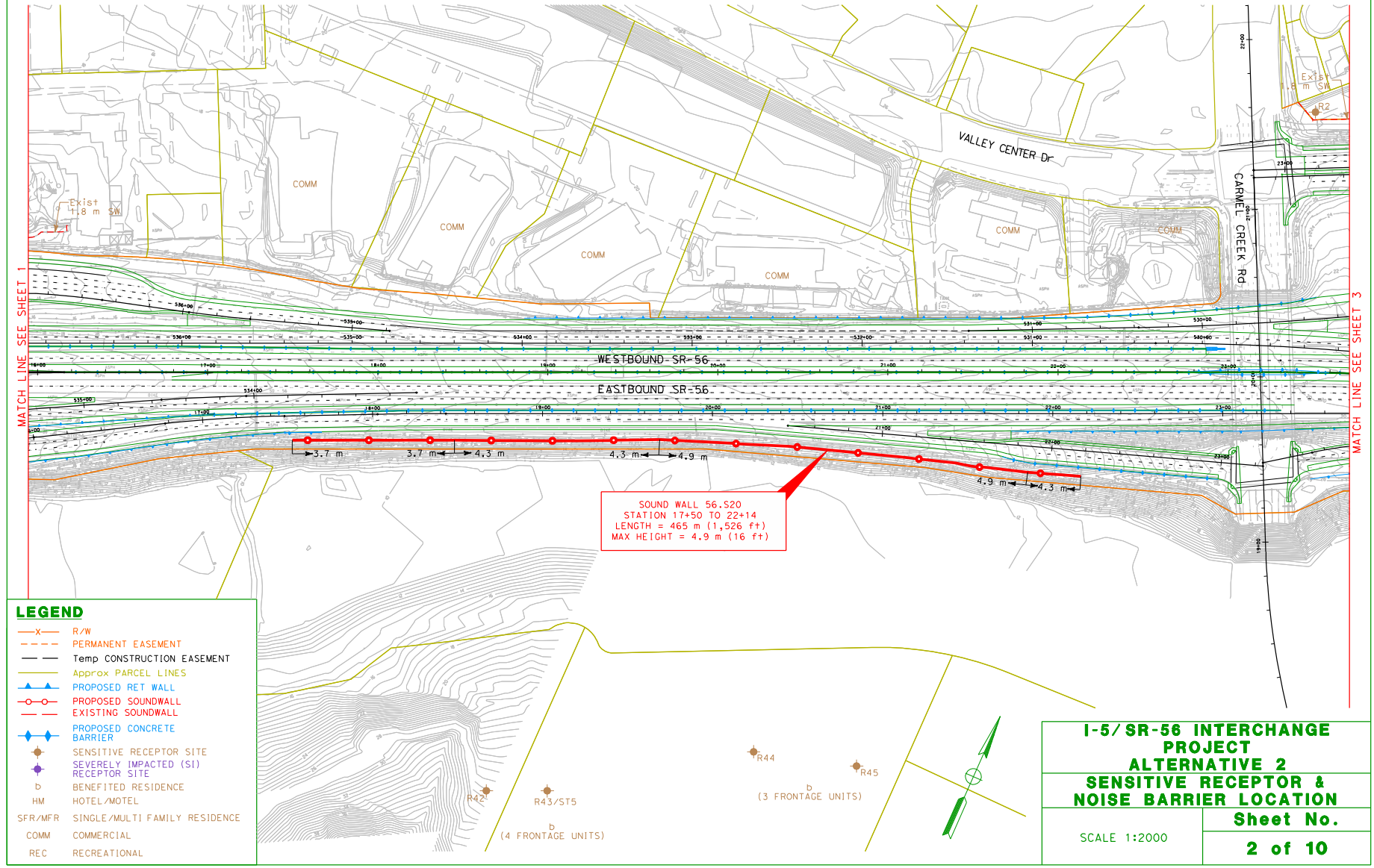

LEGEND

—x—	R/W
- - - -	PERMANENT EASEMENT
— —	Temp CONSTRUCTION EASEMENT
——	Approx PARCEL LINES
▲▲▲	PROPOSED RET WALL
—o—o—	PROPOSED SOUNDWALL
— —	EXISTING SOUNDWALL
♦♦♦	PROPOSED CONCRETE BARRIER
●	SENSITIVE RECEPTOR SITE
●	SEVERELY IMPACTED (SI) RECEPTOR SITE
b	BENEFITED RESIDENCE
HM	HOTEL/MOTEL
SFR/MFR	SINGLE/MULTI FAMILY RESIDENCE
COMM	COMMERCIAL
REC	RECREATIONAL

I-5/ SR-56 INTERCHANGE PROJECT
ALTERNATIVE 2
SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

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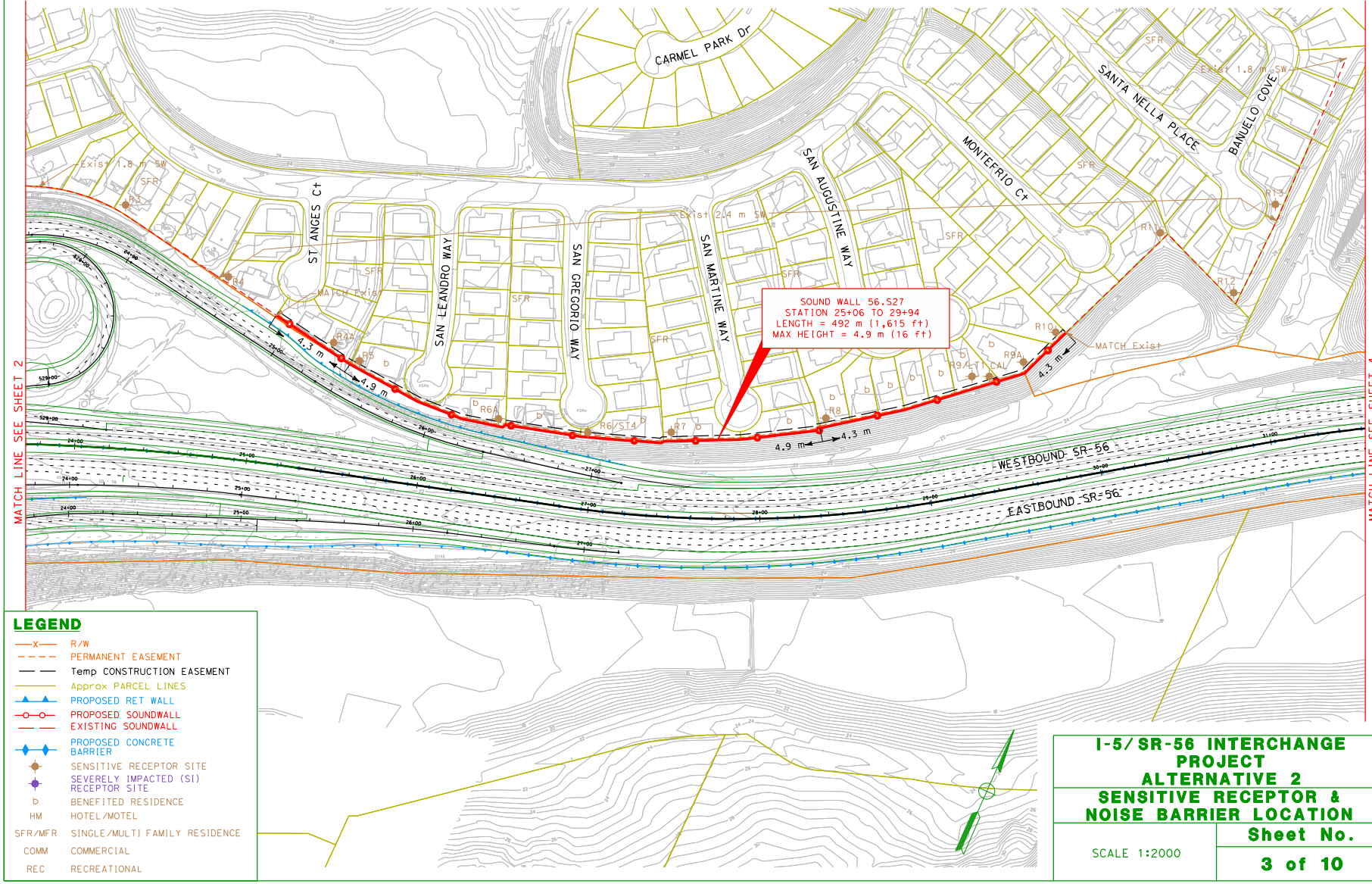

I-5/SR-56 INTERCHANGE PROJECT ALTERNATIVE 2

SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

SCALE 1:2000

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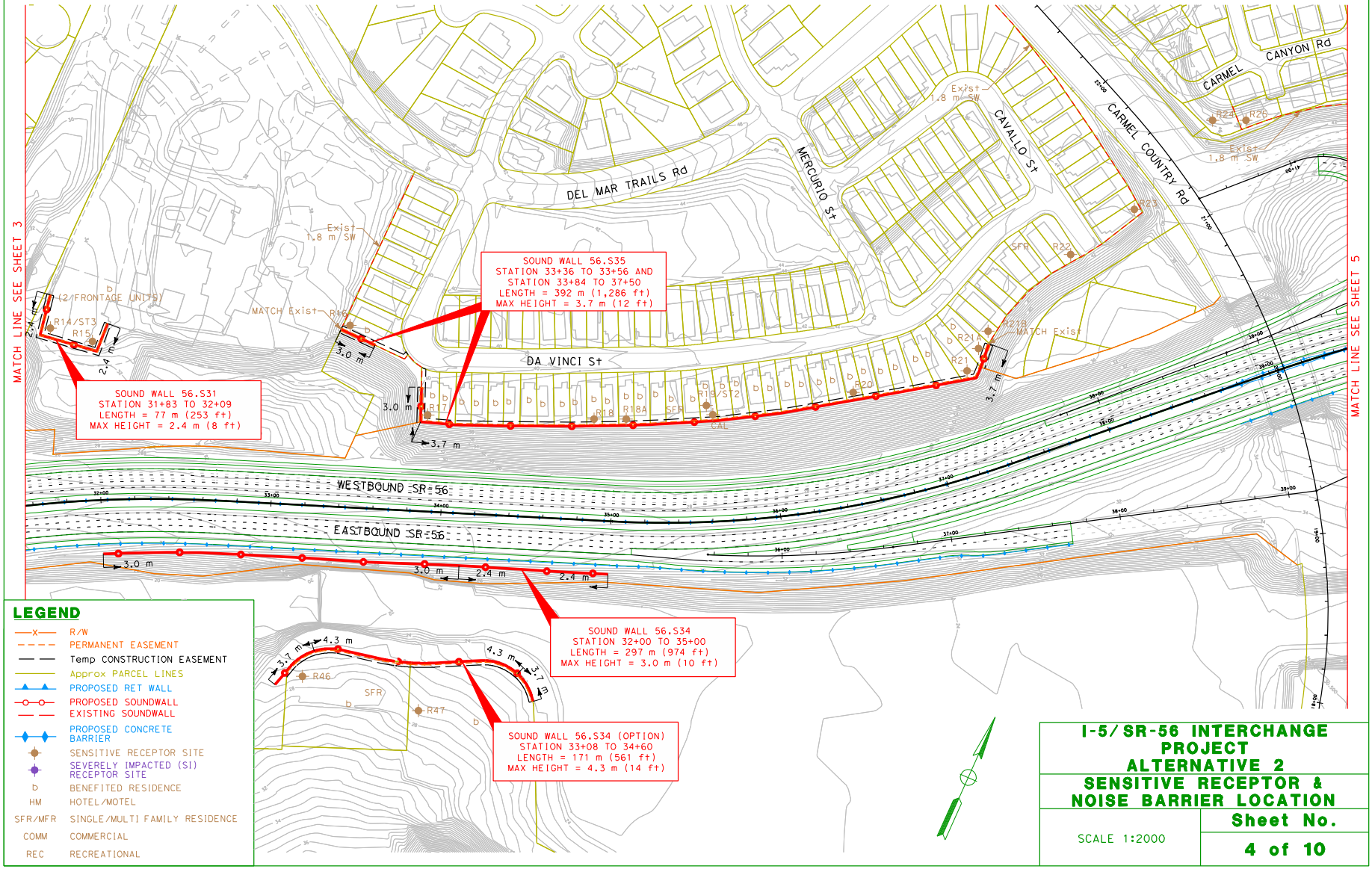

I-5/ SR-56 INTERCHANGE PROJECT ALTERNATIVE 2

SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

SCALE 1:2000

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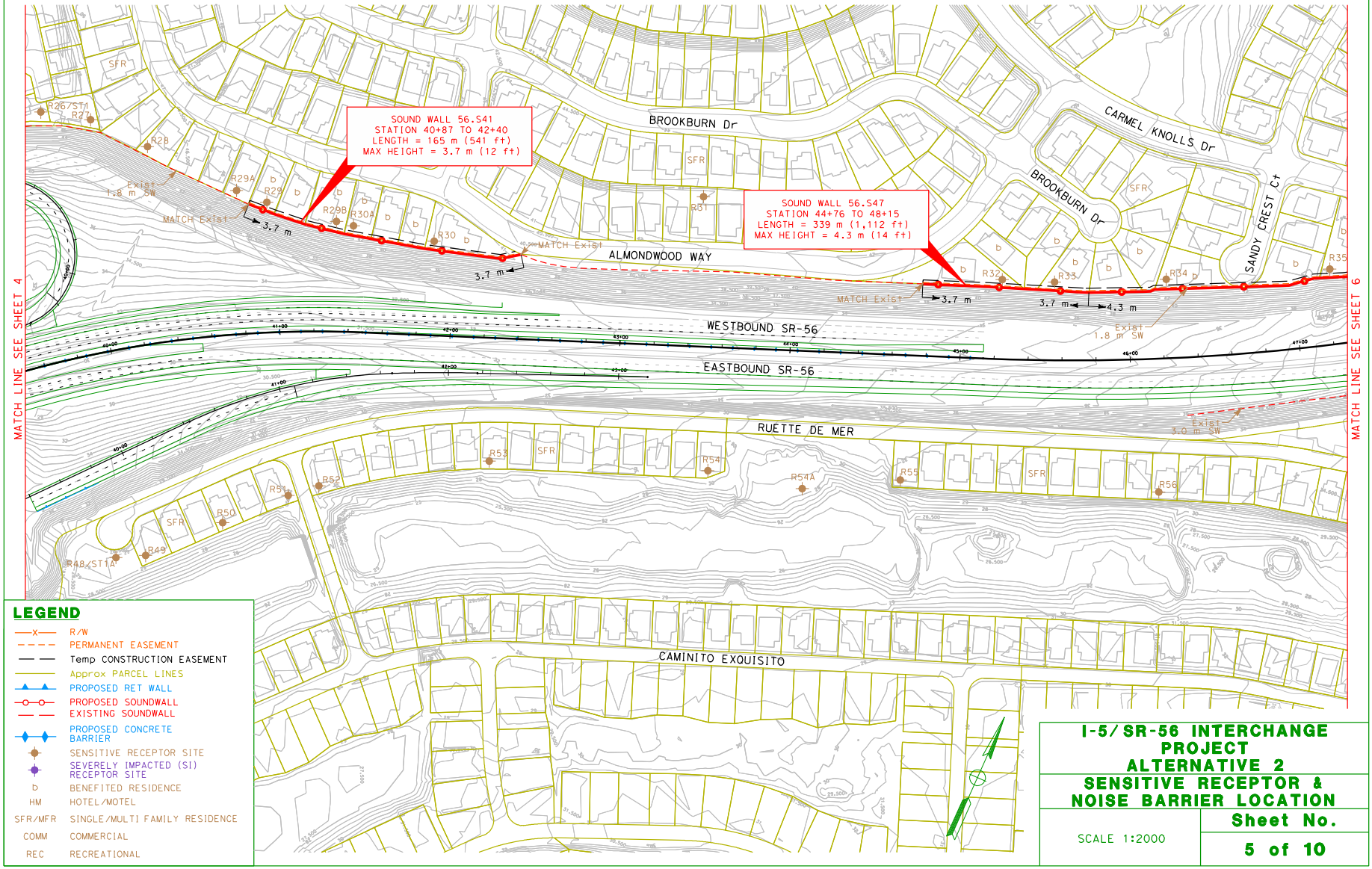

I-5/ SR-56 INTERCHANGE PROJECT
ALTERNATIVE 2
SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

SCALE 1:2000

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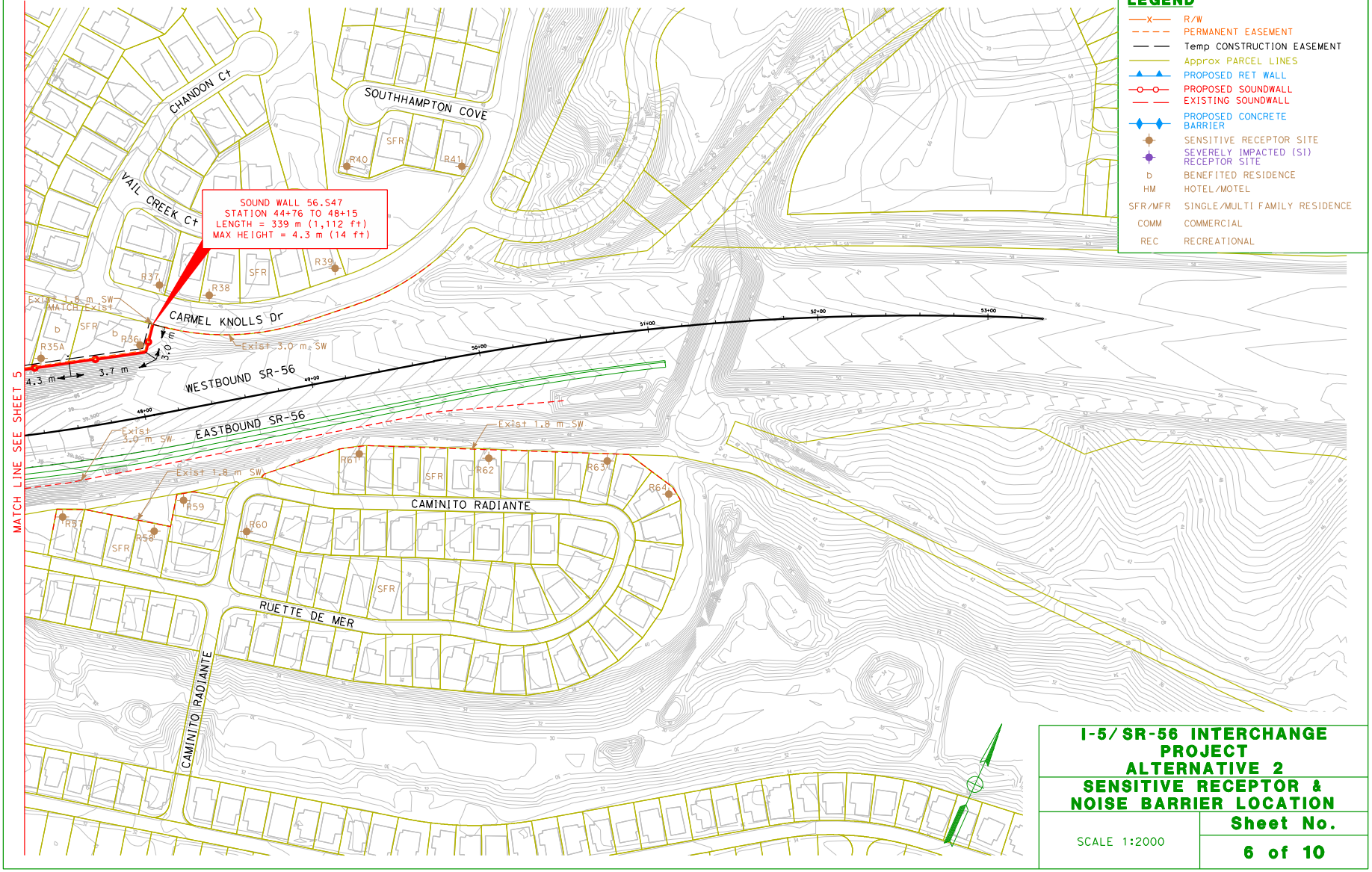
LEGEND
R/W
PERMANENT EASEMENT
Temp CONSTRUCTION EASEMENT
Approx PARCEL LINES
PROPOSED RET WALL
PROPOSED SOUNDWALL
EXISTING SOUNDWALL
PROPOSED CONCRETE BARRIER
SENSITIVE RECEPTOR SITE
SEVERELY IMPACTED (SI) RECEPTOR SITE
b BENEFITED RESIDENCE
HM HOTEL/MOTEL
SFR/MFR SINGLE/MULTI FAMILY RESIDENCE
COMM COMMERCIAL
REC RECREATIONAL
SOUND WALL 56.S47
STATION 44+76 TO 48+15
LENGTH = 339 m (1,112 ft)
MAX HEIGHT = 4.3 m (14 ft)
MATCH LINE SEE SHEET 5
CHANDON Ct
SOUTHHAMPTON COVE
VAIL CREEK Ct
CARMEL KNOLLS Dr
WESTBOUND SR-56
EASTBOUND SR-56
CAMINITO RADIANTE
RUETTE DE MER
CAMINITO RADIANTE
Exist 1.8 m SW MATCH Exist
Exist 3.0 m SW
Exist 1.8 m SW
Exist 3.0 m SW
Exist 1.8 m SW
4.3 m
3.7 m
3.0
SFR
b
R35A
R36
R37
R38
R39
R40
R41
R58
R59
R60
R61
R62
R63
R64
48+00
49+00
50+00
51+00
52+00
53+00
I-5/ SR-56 INTERCHANGE PROJECT
ALTERNATIVE 2
SENSITIVE RECEPTOR & NOISE BARRIER LOCATION
SCALE 1:2000
Sheet No.
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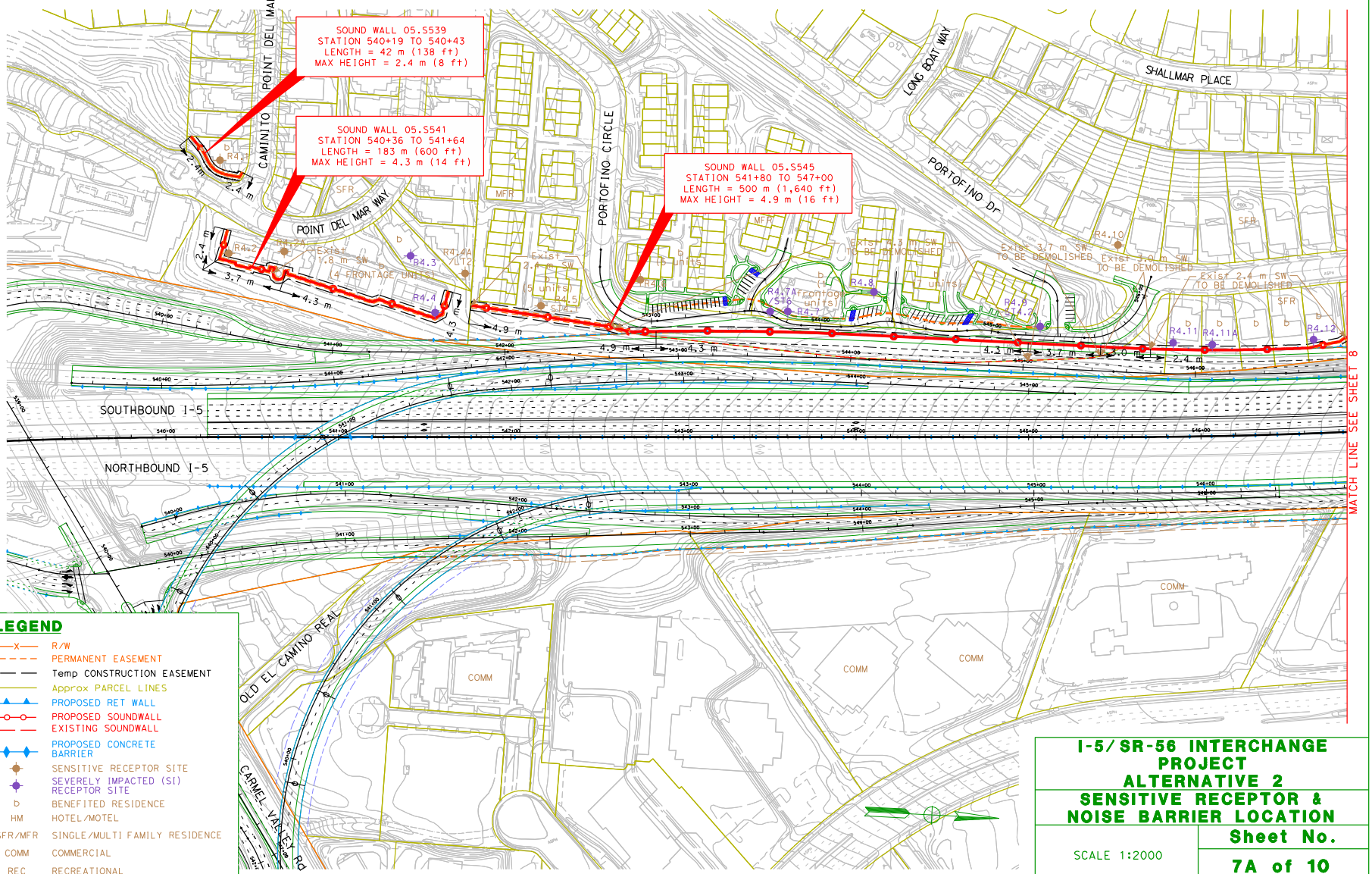

I-5/ SR-56 INTERCHANGE PROJECT ALTERNATIVE 2

SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

SCALE 1:2000

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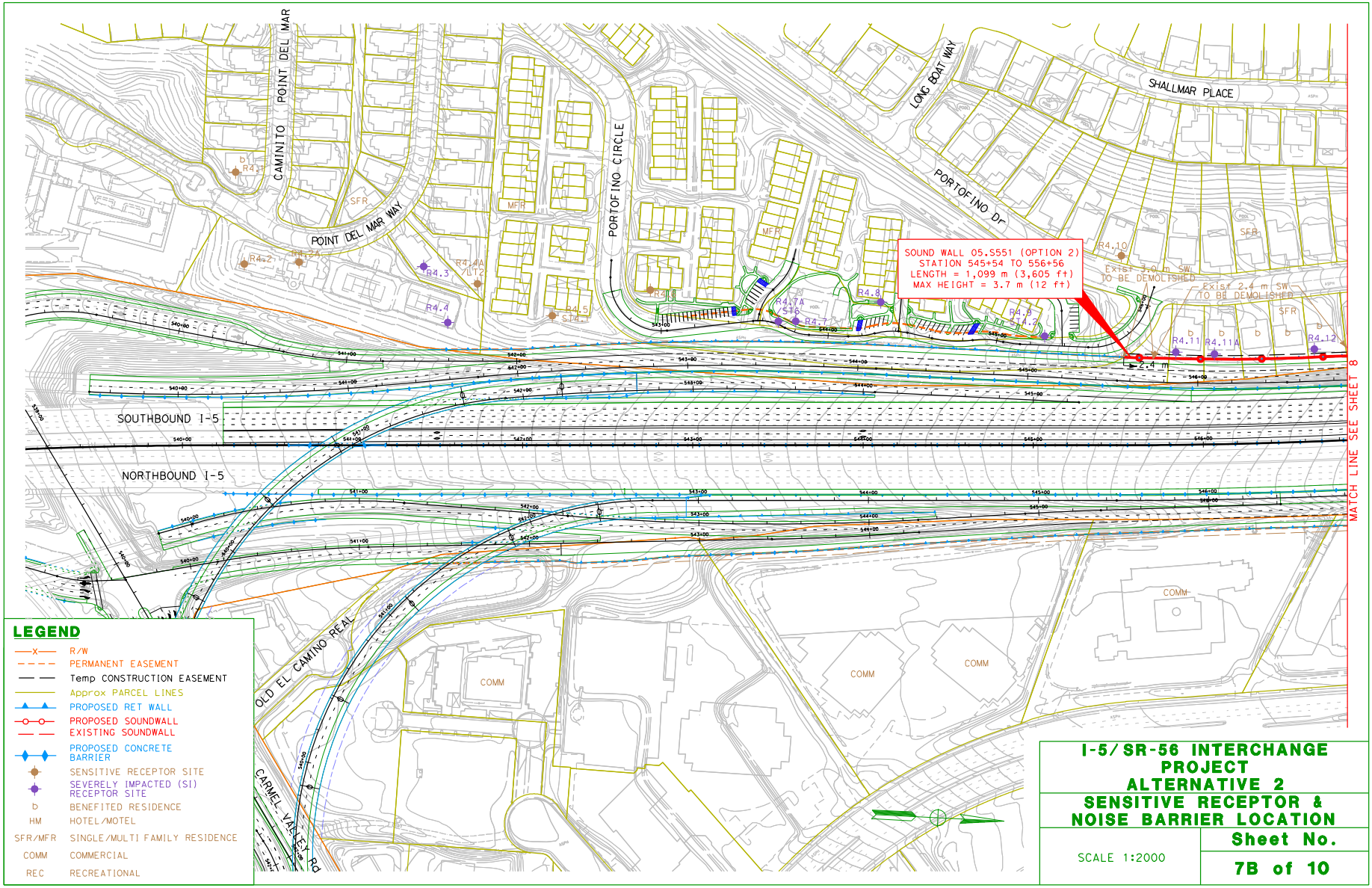

LEGEND

—x—	R/W
- - - -	PERMANENT EASEMENT
— —	Temp CONSTRUCTION EASEMENT
	Approx PARCEL LINES
	PROPOSED RET WALL
—o—o—	PROPOSED SOUNDWALL
— —	EXISTING SOUNDWALL
	PROPOSED CONCRETE BARRIER
	SENSITIVE RECEPTOR SITE
	SEVERELY IMPACTED (SI) RECEPTOR SITE
b	BENEFITED RESIDENCE
HM	HOTEL/MOTEL
SFR/MFR	SINGLE/MULTI FAMILY RESIDENCE
COMM	COMMERCIAL
REC	RECREATIONAL

I-5/ SR-56 INTERCHANGE PROJECT
ALTERNATIVE 2
SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

SCALE 1:2000

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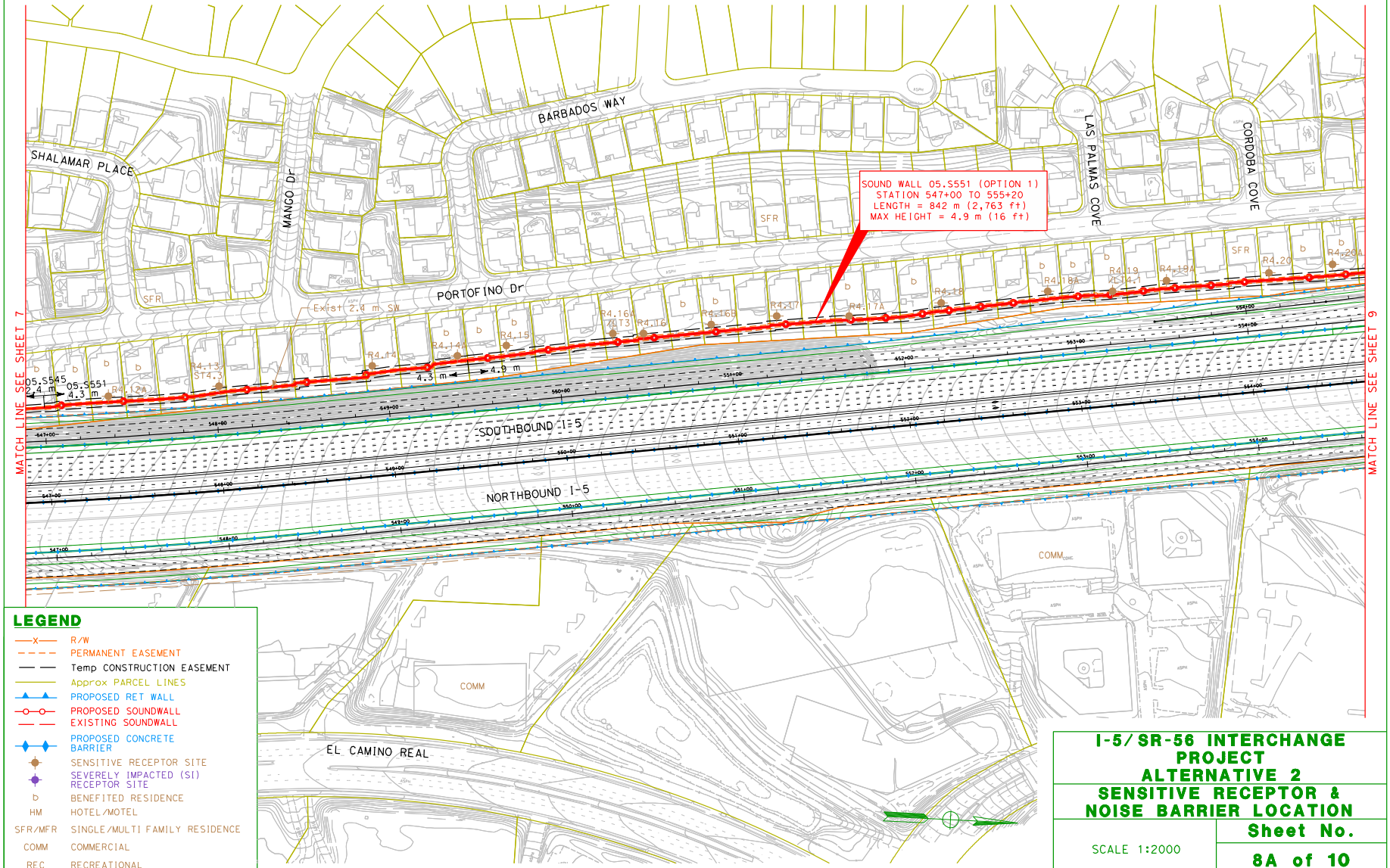

I-5/SR-56 INTERCHANGE PROJECT ALTERNATIVE 2

SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

SCALE 1:2000

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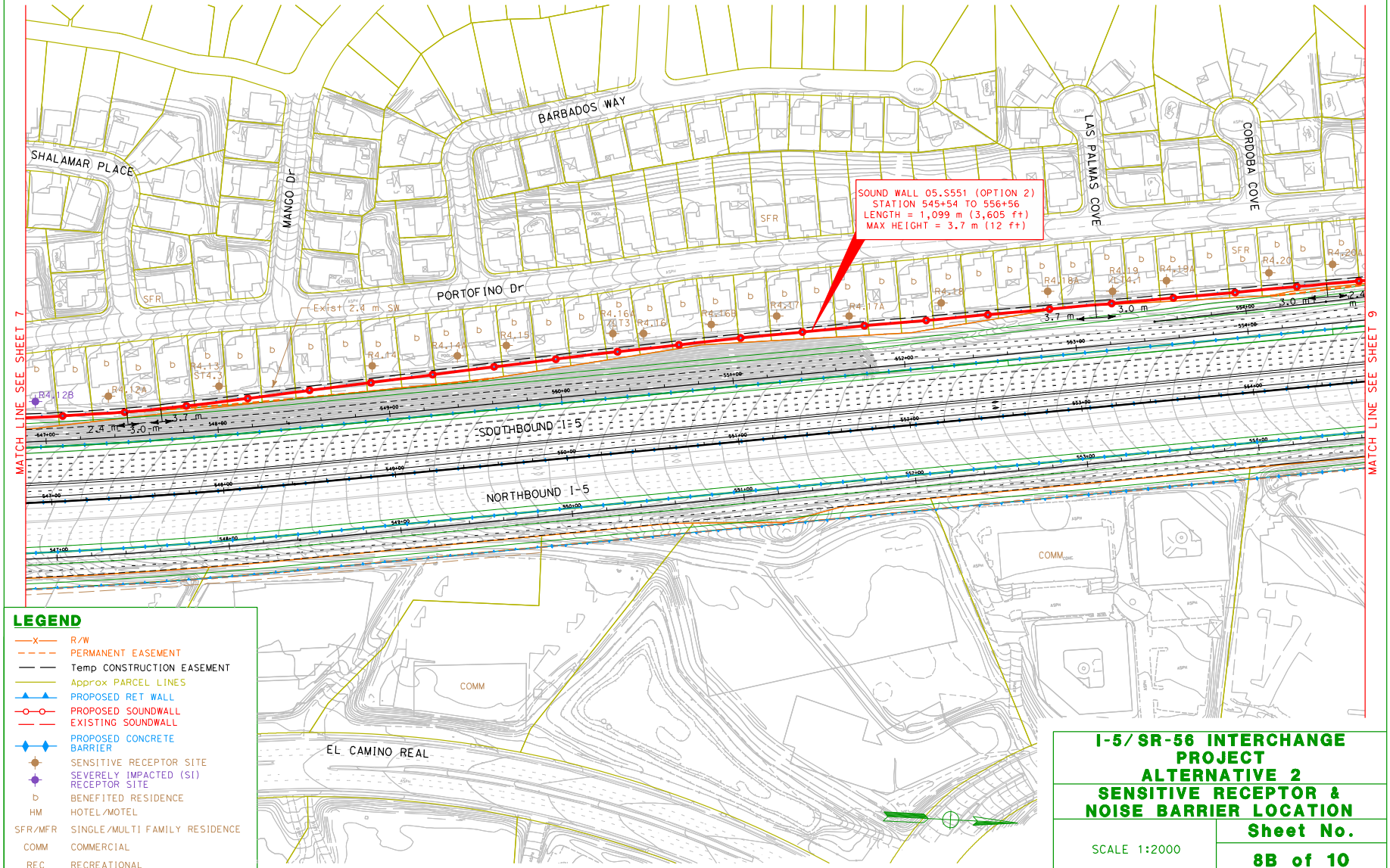

LEGEND

—x—	R/W
- - - -	PERMANENT EASEMENT
— —	Temp CONSTRUCTION EASEMENT
	Approx PARCEL LINES
	PROPOSED RET WALL
	PROPOSED SOUNDWALL
	EXISTING SOUNDWALL
	PROPOSED CONCRETE BARRIER
	SENSITIVE RECEPTOR SITE
	SEVERELY IMPACTED (SI) RECEPTOR SITE
b	BENEFITED RESIDENCE
HM	HOTEL/MOTEL
SFR/MFR	SINGLE/MULTI FAMILY RESIDENCE
COMM	COMMERCIAL
REC	RECREATIONAL

I-5/ SR-56 INTERCHANGE PROJECT
ALTERNATIVE 2
SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

SCALE 1:2000

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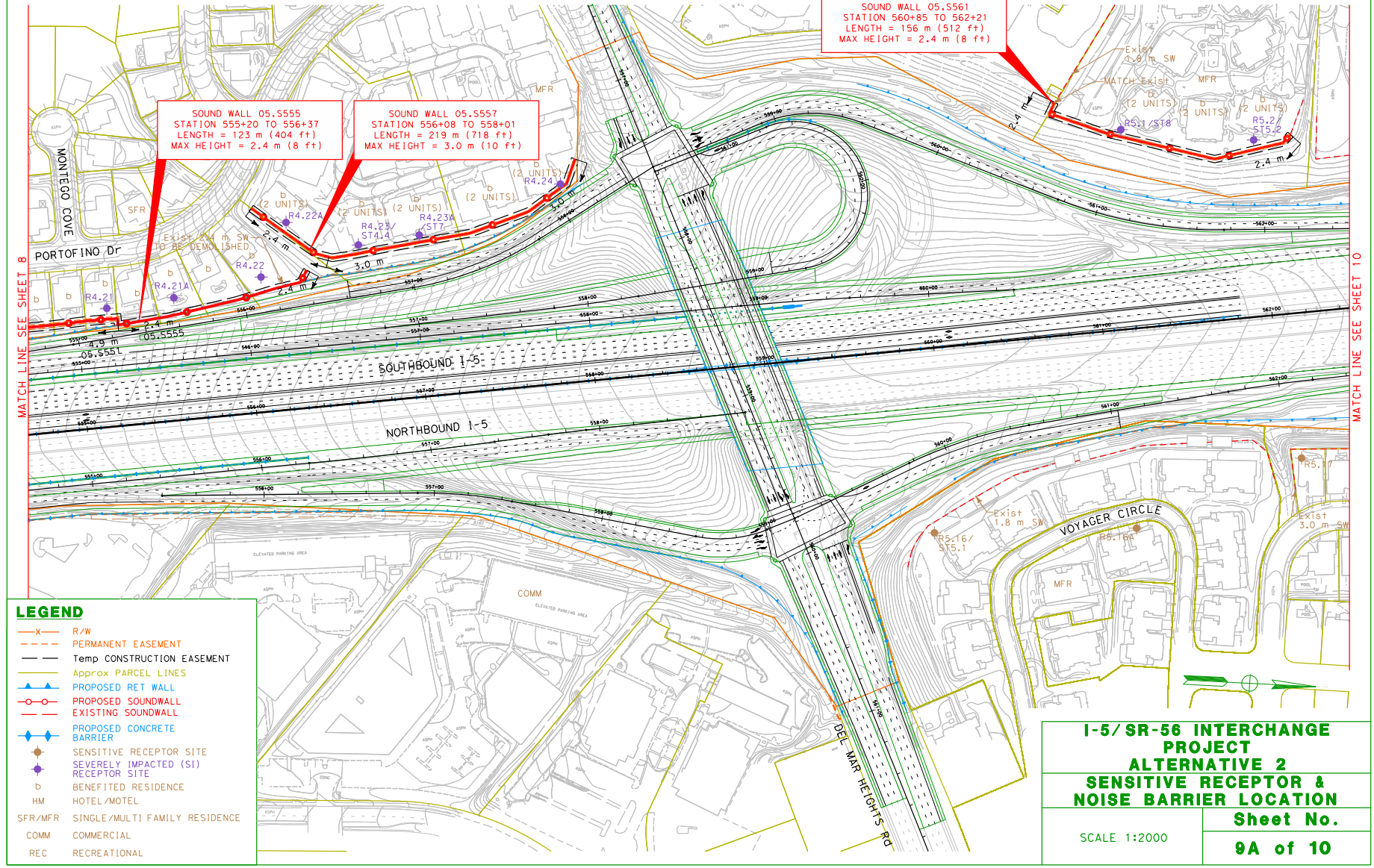

I-5/ SR-56 INTERCHANGE PROJECT ALTERNATIVE 2

SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

SCALE 1:2000

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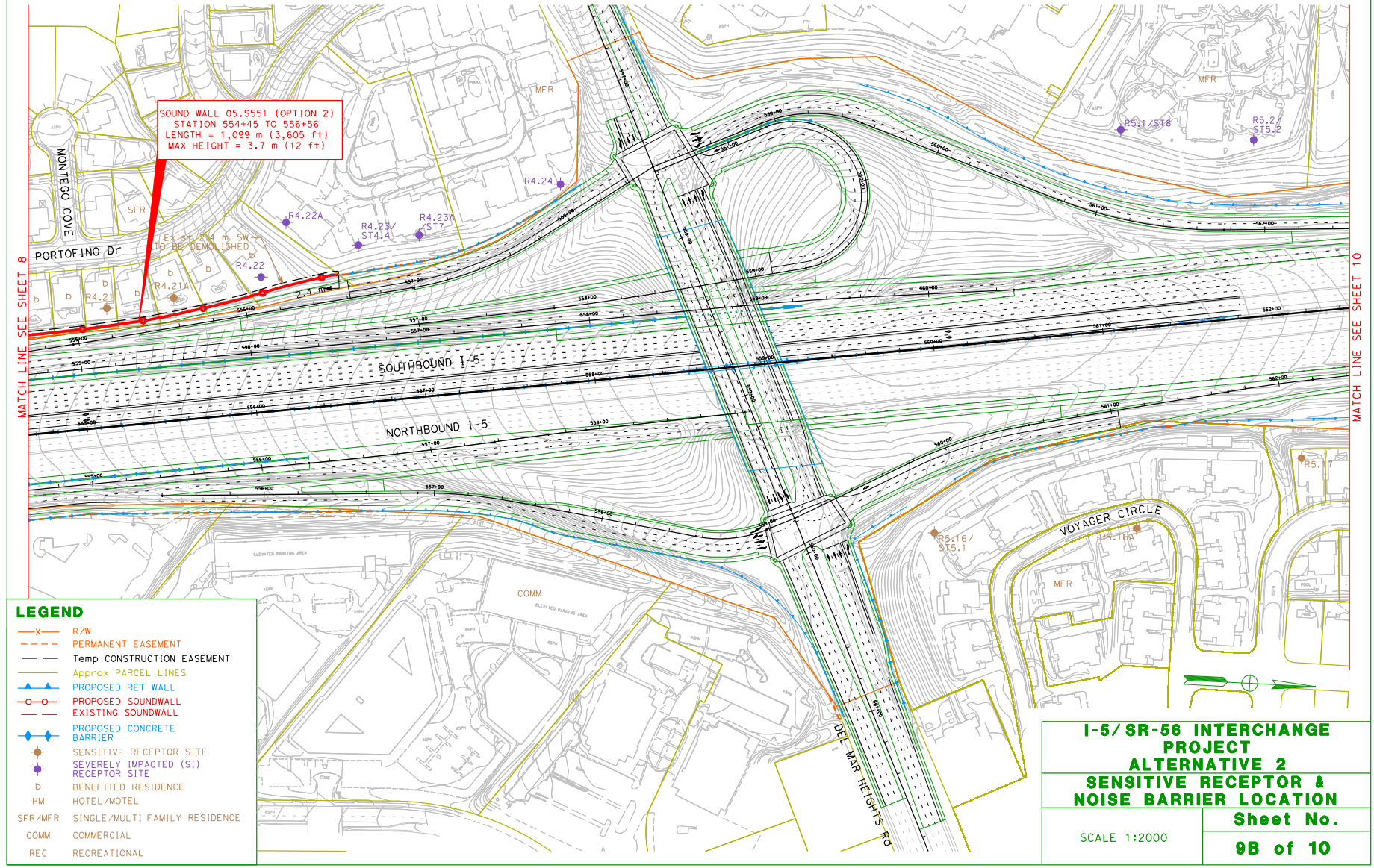

I-5/ SR-56 INTERCHANGE PROJECT ALTERNATIVE 2

SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

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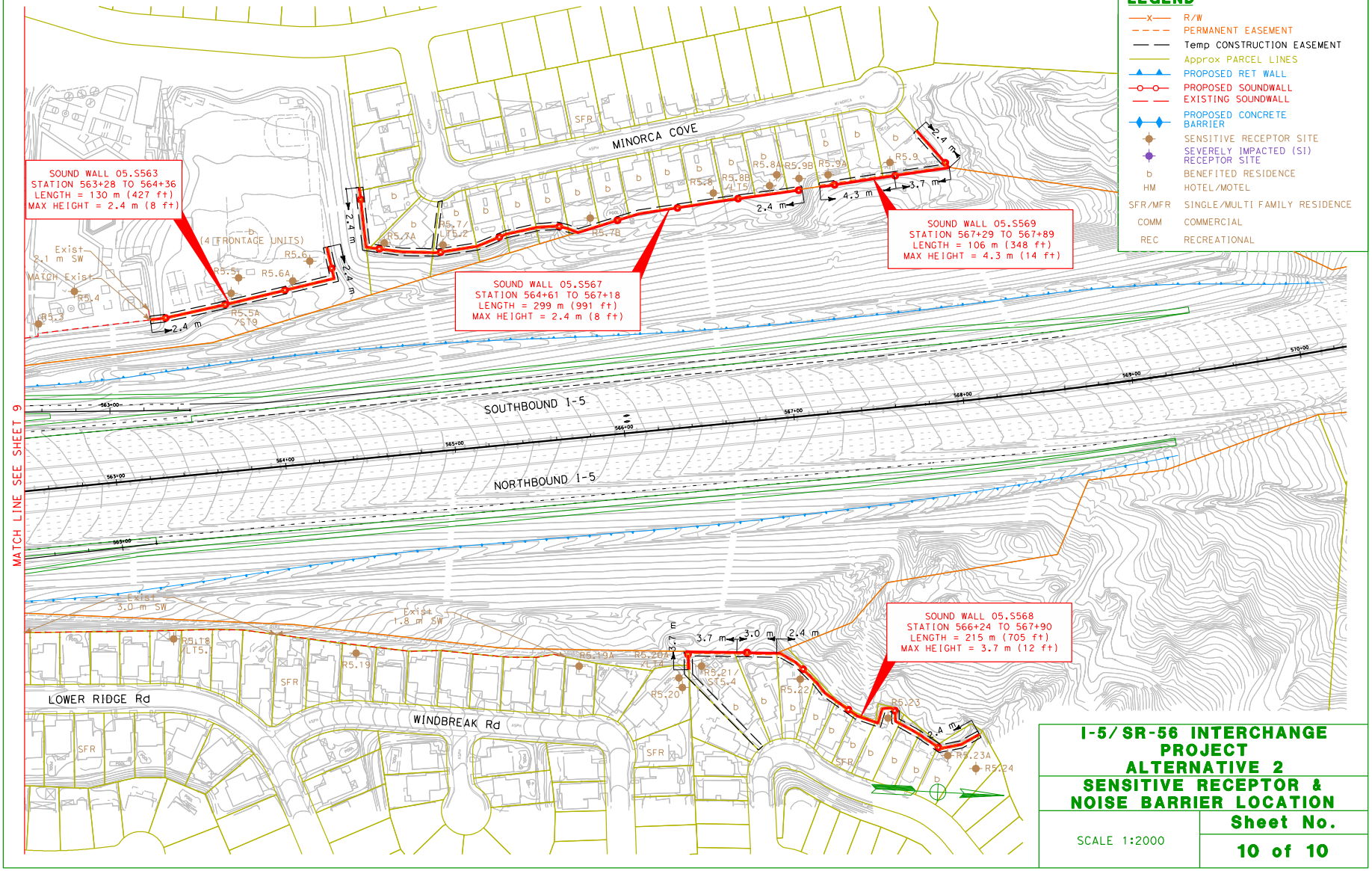
LEGEND
R/W
PERMANENT EASEMENT
Temp CONSTRUCTION EASEMENT
Approx PARCEL LINES
PROPOSED RET WALL
PROPOSED SOUNDWALL
EXISTING SOUNDWALL
PROPOSED CONCRETE BARRIER
SENSITIVE RECEPTOR SITE
SEVERELY IMPACTED (SI) RECEPTOR SITE
b BENEFITED RESIDENCE
HM HOTEL/MOTEL
SFR/MFR SINGLE/MULTI FAMILY RESIDENCE
COMM COMMERCIAL
REC RECREATIONAL
SOUND WALL 05.S563
STATION 563+28 TO 564+36
LENGTH = 130 m (427 ft)
MAX HEIGHT = 2.4 m (8 ft)
SOUND WALL 05.S567
STATION 564+61 TO 567+18
LENGTH = 299 m (991 ft)
MAX HEIGHT = 2.4 m (8 ft)
SOUND WALL 05.S569
STATION 567+29 TO 567+89
LENGTH = 106 m (348 ft)
MAX HEIGHT = 4.3 m (14 ft)
SOUND WALL 05.S568
STATION 566+24 TO 567+90
LENGTH = 215 m (705 ft)
MAX HEIGHT = 3.7 m (12 ft)
MINORCA COVE
SOUTHBOUND I-5
NORTHBOUND I-5
LOWER RIDGE Rd
WINDBREAK Rd
MATCH LINE SEE SHEET 9
SFR
(4 FRONTAGE UNITS)
Exist 2.1 m SW
MATCH Exist
Exist 3.0 m SW
Exist 1.8 m SW
2.4 m
3.7 m
3.0 m
4.3 m
I-5/SR-56 INTERCHANGE PROJECT
ALTERNATIVE 2
SENSITIVE RECEPTOR & NOISE BARRIER LOCATION
SCALE 1:2000
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ALTERNATIVE 3
OVERVIEW

ALTERNATIVE 3: LIST OF BARRIERS

SHEET 1
- NONE

SHEET 2
- NOISE BARRIER 56.S20

SHEET 3
- NOISE BARRIER 56.S27

SHEET 4
- NOISE BARRIER 56.S31
- NOISE BARRIER 56.S34
- NOISE BARRIER 56.S34 (OPTION)
- NOISE BARRIER 56.S35

SHEET 5
- NOISE BARRIER 56.S47

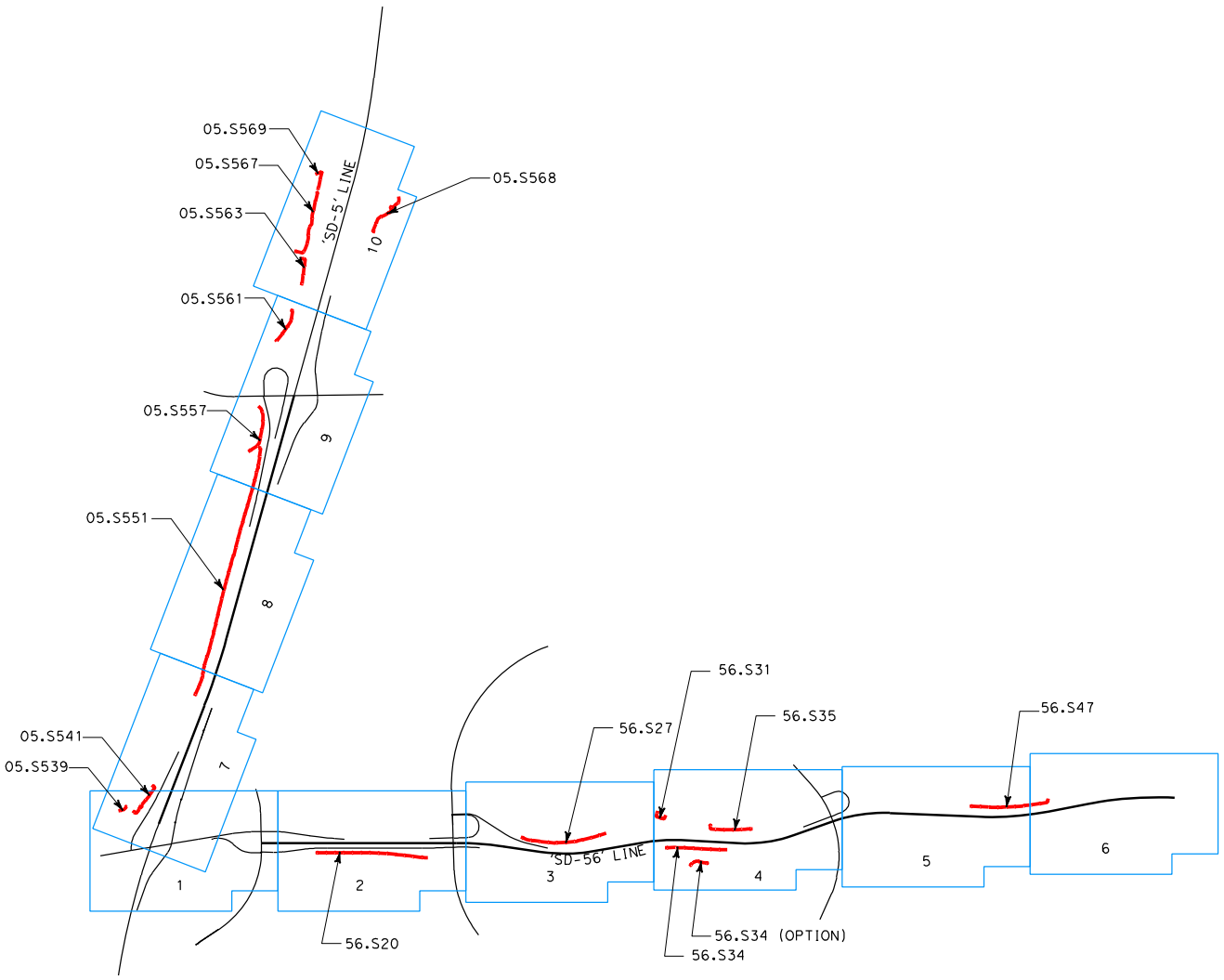
SHEET 6
- NOISE BARRIER 56.S47 (CONTINUED)

SHEET 7
- NOISE BARRIER 05.S539
- NOISE BARRIER 05.S541
- NOISE BARRIER 05.S551

SHEET 8
- NOISE BARRIER 05.S551 (CONTINUED)

SHEET 9
- NOISE BARRIER 05.S551 (CONTINUED)
- NOISE BARRIER 05.S557
- NOISE BARRIER 05.S561

SHEET 10
- NOISE BARRIER 05.S563
- NOISE BARRIER 05.S567
- NOISE BARRIER 05.S568
- NOISE BARRIER 05.S569



I-5/SR-56 INTERCHANGE PROJECT ALTERNATIVE 3

KEYMAP

NO SCALE

Sheet No.

1 of 1

ALTERNATIVE 3
BARRIER REPORT

Noise Barrier 56.S27 (Alternative 3)

General

Type: Sound wall

SR 56 Station limits: 25+93 to 29+66

Receptor sites: R6A to R9

Severely Impacted Receptors: None

Height: 4.3 to 4.9 meters (14 to 16 feet)

Location: Westbound SR 56; see Sheet 3

Benefited units: 11 Single-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 67 dBA

Compared to existing (year 2009): Four dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$407,000
Estimated Total Cost without Easements:	$924,071
Estimated Total Cost with Construction Easements only:	$1,000,091
Estimated Total Cost with all Easements:	$1,146,892

Reasonable Cost Allowance/Benefited Unit:	$37,000
Estimated Cost/Benefited Unit without Easements:	$84,006
Estimated Cost/Benefited Unit with Construction Easements only:	$90,917
Estimated Cost/Benefited Unit with all Easements:	$104,263

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 3 of the Alternative 3 exhibits, noise barrier 56.S27 would be located on private property and Caltrans right of way along the westbound side of SR-56, east of I-5. This area is represented by receiver sites R6A to R9. The sound wall would extend for approximately 362 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 4.3 meters (14 feet) and 4.9 meters (16 feet). The proposed noise barrier would replace an existing 8-foot high glass/block soundwall. The wall would benefit approximately 11 single-family residences and is considered feasible. The estimated construction cost of 56.S27, without easements is 127 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 146 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 182 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 56.S27 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 56.S27. No severely impacted receptors exist at this location. Construction of noise barrier 56.S27 is not recommended.

Noise Barrier 56.S31 (Alternative 3)

General

Type: Sound wall

SR 56 Station limits: 31+83 to 32+09

Receptor sites: R14 to R15

Severely Impacted Receptors: None

Height: 2.4 meters (8 feet)

Location: Westbound SR 56; see Sheet 4

Benefited units: Two Frontage Units

Predicted Noise Levels if Project Built without Abatement

Year 2030: 70 dBA

Compared to existing (year 2009): Six dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$82,000
Estimated Total Cost without Easements:	$108,801
Estimated Total Cost with Construction Easements only:	$140,931
Estimated Total Cost with all Easements:	$176,733

Reasonable Cost Allowance/Benefited Unit:	$41,000
Estimated Cost/Benefited Unit without Easements:	$54,401
Estimated Cost/Benefited Unit with Construction Easements only:	$70,466
Estimated Cost/Benefited Unit with all Easements:	$88,367

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 4 of the Alternative 3 exhibits, noise barrier 56.S31 would be located on private property along the westbound side of SR-56, east of I-5. This area is represented by receiver sites R14 through R15. The sound wall would extend for approximately 77 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 meters (8 feet). The wall would benefit the Notre Dame Academy playground and is considered feasible. The estimated construction cost of 56.S31, without easements is 33 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 72 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 116 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 56.S31 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 56.S31. No severely impacted receptors exist at this location. Construction of noise barrier 56.S31 is not recommended.

Noise Barrier 56.S35 (Alternative 3)

General

Type: Sound wall

SR 56 Station limits: 33+84 to 35+66

Receptor sites: R17 to R19

Severely Impacted Receptors: None

Height: 3.0 to 3.7 meters (10 to 12 feet)

Location: Westbound SR 56; see Sheet 4

Benefited units: 14 Single-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 67 dBA

Compared to existing (year 2009): One dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$462,000
Estimated Total Cost without Easements:	$378,362
Estimated Total Cost with Construction Easements only:	$427,313
Estimated Total Cost with all Easements:	$492,334

Reasonable Cost Allowance/Benefited Unit:	$33,000
Estimated Cost/Benefited Unit without Easements:	$27,026
Estimated Cost/Benefited Unit with Construction Easements only:	$30,552
Estimated Cost/Benefited Unit with all Easements:	$35,167

Reasonable without Easements:	Yes
Reasonable with Construction Easements only:	Yes
Reasonable with all Easements:	No

Discussion

As shown in Sheet 4 of the Alternative 3 exhibits, noise barrier 56.S35 would be located on private property and Caltrans right-of-way along the westbound side of SR-56, east of I-5. This area is represented by receiver sites R17 through R19. The noise barrier would extend for approximately 195 meters. The heights of the barrier required to achieve a 5 dBA or more insertion loss at the critical design receiver would be 3.0 meters (10 feet) and 3.7 meters (12 feet). The proposed noise barrier would replace an existing 6-foot block property wall located on the right of way and property line. The wall would benefit 14 single-family residences and is considered feasible. The estimated construction cost of 56.S35, without easements is 18 percent below the reasonable allowance. When only temporary construction easements are included, the estimated cost is below the reasonable allowance by 8 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 7 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 56.S35 is not recommended unless negotiation with the property owners would result in estimated costs that do not exceed the reasonable allowance. This may be accomplished if the property owners are willing to donate easements by signing a waiver of just compensation. If the total cost cannot be reduced to less than or equal to the reasonable allowance, construction is not recommended. No severely impacted receptors exist at this location.

Noise Barrier 56.S47 (Alternative 3)

General

Type: Sound wall

SR 56 Station limits: 44+76 to 48+15

Receptor sites: R32 to R36

Severely Impacted Receptors: None

Height: 3.0 to 4.3 meters (10 to 14 feet)

Location: Westbound SR 56; see Sheets 5 and 6

Benefited units: 10 Single-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 67 dBA

Compared to existing (year 2007): No dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$350,000
Estimated Total Cost without Easements:	$723,302
Estimated Total Cost with Construction Easements only:	$794,597
Estimated Total Cost with all Easements:	$908,822

Reasonable Cost Allowance/Benefited Unit:	$35,000
Estimated Cost/Benefited Unit without Easements:	$72,330
Estimated Cost/Benefited Unit with Construction Easements only:	$79,460
Estimated Cost/Benefited Unit with all Easements:	$90,882

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheets 5 and 6 of the Alternative 3 exhibits, noise barrier 56.S47 would be located on private property and Caltrans right of way along the westbound side of SR-56, east of I-5. This area is represented by receiver sites R32 through R36. The sound wall would extend for approximately 340 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 3.0 meters (10 feet) to 4.3 meters (14 feet). The proposed noise barrier would replace an existing 6-foot high block property wall located on the right of way line and would connect to an existing soundwall. The wall would benefit 10 single-family residences and is considered feasible. The estimated construction cost of 56.S47, without easements is 107 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 127 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 160 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 56.S47 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 56.S47. No severely impacted receptors exist at this location. Construction of noise barrier 56.S47 is not recommended.

Noise Barrier 56.S20 (Alternative 3)

General

Type: Sound wall

SR 56 Station limits: 17+50 to 22+14

Receptor sites: R42 to R45

Severely Impacted Receptors: None

Height: 3.7 to 4.9 meters (12 to 16 feet)

Location: Eastbound SR 56; see Sheet 2

Benefited units: Seven Frontage Units

Predicted Noise Levels if Project Built without Abatement

Year 2030: 69 dBA

Compared to existing (year 2009): Four dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$245,000
Estimated Total Cost without Easements:	$1,135,345
Estimated Total Cost with Construction Easements only:	$1,135,345
Estimated Total Cost with all Easements:	$1,135,345

Reasonable Cost Allowance/Benefited Unit:	$35,000
Estimated Cost/Benefited Unit without Easements:	$162,192
Estimated Cost/Benefited Unit with Construction Easements only:	$162,192
Estimated Cost/Benefited Unit with all Easements:	$162,192

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 2 of the Alternative 3 exhibits, noise barrier 56.S20 would be located on Caltrans right of way along the eastbound side of SR-56, east of I-5. This area is represented by receiver sites R42 through R45. The sound wall would extend for approximately 465 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 3.7 meters (12 feet) to 4.9 meters (16 feet). The proposed noise barrier would be located on an existing earthen berm located on the right of way line. The proposed barrier would impact an existing environmentally sensitive area (ESA) known as the Carmel Valley Restoration and Enhancement Project (CVREP). The wall would benefit seven frontage units and is considered feasible. The estimated construction cost of 56.S20, without easements is 363 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 363 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 363 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 56.S20 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 56.S20. No severely impacted receptors exist at this location. Construction of noise barrier 56.S20 is not recommended.

Noise Barrier 56.S34 (Alternative 3)

General

Type: Sound wall

SR 56 Station limits: 32+00 to 34+60

Receptor sites: R46

Severely Impacted Receptors: None

Height: 2.4 to 3.0 meters (8 to 10 feet)

Location: Eastbound SR 56; see Sheet 4

Benefited units: One Single-Family Residence

Predicted Noise Levels if Project Built without Abatement

Year 2030: 70 dBA

Compared to existing (year 2009): Four dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$49,000
Estimated Total Cost without Easements:	$423,405
Estimated Total Cost with Construction Easements only:	$423,405
Estimated Total Cost with all Easements:	$423,405

Reasonable Cost Allowance/Benefited Unit:	$49,000
Estimated Cost/Benefited Unit without Easements:	$423,405
Estimated Cost/Benefited Unit with Construction Easements only:	$423,405
Estimated Cost/Benefited Unit with all Easements:	$423,405

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 4 of the Alternative 3 exhibits, noise barrier 56.S34 would be located on Caltrans right of way along the eastbound side of SR-56, east of I-5. This area is represented by receiver sites R46. The sound wall would extend for approximately 258 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 meters (8 feet) to 3.0 meters (10 feet). The proposed noise barrier would be located on an existing earthen berm located on the right of way line. The proposed barrier would impact an existing environmentally sensitive area (ESA) known as the Carmel Valley Restoration and Enhancement Project (CVREP). The wall would benefit one single-family residence and is considered feasible. The estimated construction cost of 56.S34, without easements is 764 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 764 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 764 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 56.S34 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 56.S34. No severely impacted receptors exist at this location. Construction of noise barrier 56.S34 is not recommended.

Noise Barrier 56.S34 Option (Alternative 3)

General

Type: Sound wall

SR 56 Station limits: 33+08 to 33+87

Receptor sites: R46

Severely Impacted Receptors: None

Height: 3.7 to 4.3 meters (12 to 14 feet)

Location: Eastbound SR 56; see Sheet 4

Benefited units: One Single-Family Residence

Predicted Noise Levels if Project Built without Abatement

Year 2030: 70 dBA

Compared to existing (year 2009): Four dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$51,000
Estimated Total Cost without Easements:	$188,825
Estimated Total Cost with Construction Easements only:	$207,439
Estimated Total Cost with all Easements:	$238,235

Reasonable Cost Allowance/Benefited Unit:	$51,000
Estimated Cost/Benefited Unit without Easements:	$188,825
Estimated Cost/Benefited Unit with Construction Easements only:	$207,439
Estimated Cost/Benefited Unit with all Easements:	$238,235

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

An option to noise barrier 56.S34 was developed that analyzed the feasibility of constructing a noise barrier on the private property. As shown on Sheet 4 of the Alternative 3 exhibits, noise barrier 56.S34 Option would be located on private property along the eastbound side of SR-56, east of I-5. This area is represented by receiver site R46. The sound wall would extend for approximately 89 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 3.7 meters (12 feet) to 4.3 meters (14 feet). The wall would benefit one single-family residence and is considered feasible. The estimated construction cost of 56.S34 Option, without easements is 270 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 307 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 367 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 56.S34 Option is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 56.S34 Option. No severely impacted receptors exist at this location. Construction of noise barrier 56.S34 Option is not recommended.

Noise Barrier 05.S539 (Alternative 3)

General

Type: Sound wall

I-5 Station limits: 540+19 to 540+43

Receptor sites: R4.1

Severely Impacted Receptors: None

Height: 2.4 meters (8 feet)

Location: Southbound I-5; see Sheet 7

Benefited units: One Single-Family Residence

Predicted Noise Levels if Project Built without Abatement

Year 2030: 73 dBA

Compared to existing (year 2009): Three dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$39,000
Estimated Total Cost without Easements:	$62,831
Estimated Total Cost with Construction Easements only:	$80,471
Estimated Total Cost with all Easements:	$100,127

Reasonable Cost Allowance/Benefited Unit:	$39,000
Estimated Cost/Benefited Unit without Easements:	$62,831
Estimated Cost/Benefited Unit with Construction Easements only:	$80,471
Estimated Cost/Benefited Unit with all Easements:	$100,127

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 7 of the Alternative 3 exhibits, noise barrier 05.S539 would be located on private property along the southbound side of I-5, north of SR 56. This area is represented by receiver site R4.1. The sound wall would extend for approximately 42 meters. The height of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 meters (8 feet). The proposed noise barrier would replace an existing 8-foot property wall. The wall would benefit approximately one single-family residence. The sound wall is considered feasible. The estimated construction cost of 05.S539, without easements is 61 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 106 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 157 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 05.S539 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 05.S539. No severely impacted receptors exist at this location. Construction of noise barrier 05.S539 is not recommended.

Noise Barrier 05.S541 (Alternative 3)

General

Type: Sound wall

I-5 Station limits: 540+36 to 541+64

Receptor sites: R4.2 to R4.4

Severely Impacted Receptors: Two

Height: 2.4 to 4.3 meters (8 to 14 feet)

Location: Southbound I-5; see Sheet 7

Benefited units: One Single-Family Residence and Four Frontage Units

Predicted Noise Levels if Project Built without Abatement

Year 2030: 75 dBA

Compared to existing (year 2009): Five dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$225,000
Estimated Total Cost without Easements:	$388,142
Estimated Total Cost with Construction Easements only:	$465,086
Estimated Total Cost with all Easements:	$587,446

Reasonable Cost Allowance/Benefited Unit:	$45,000
Estimated Cost/Benefited Unit without Easements:	$77,628
Estimated Cost/Benefited Unit with Construction Easements only:	$93,017
Estimated Cost/Benefited Unit with all Easements:	$117,489

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 7 of the Alternative 3 exhibits, noise barrier 05.S541 would be located on private property along the southbound side of I-5, north of SR 56. This area is represented by receiver sites R4.2 to R4.4. The sound wall would extend for approximately 183 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 meters (8 feet) to 4.3 meters (14 feet). The proposed noise barrier would replace an existing 8-foot property wall. The wall would benefit approximately one single-family residence and four frontage units. The sound wall is considered feasible. The estimated construction cost of 05.S541, without easements is 73 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 107 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 161 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 05.S541 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 05.S541. Two severely impacted receptors exist at this location. Due to the existence of severely impacted receptors (R4.3 and R4.4), it is recommended that the noise barrier be constructed with FHWA approval under unusual and extraordinary abatement.

Noise Barrier 05.S551 (Alternative 3)

General

Type: Sound wall

I-5 Station limits: 545+72 to 556+37

Receptor sites: R4.11 to R4.22

Severely Impacted Receptors: None

Height: 4.3 to 4.9 meters (14 to 16 feet)

Location: Southbound I-5; see Sheets 7, 8, and 9

Benefited units: 20 Single-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 68 dBA

Compared to existing (year 2009): No dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$900,000
Estimated Total Cost without Easements:	$2,779,749
Estimated Total Cost with Construction Easements only:	$3,233,769
Estimated Total Cost with all Easements:	$4,118,220

Reasonable Cost Allowance/Benefited Unit:	$45,000
Estimated Cost/Benefited Unit without Easements:	$138,987
Estimated Cost/Benefited Unit with Construction Easements only:	$161,688
Estimated Cost/Benefited Unit with all Easements:	$205,911

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheets 7, 8, and 9 of the Alternative 3 exhibits, noise barrier 05.S551 would be located on private property along the southbound side of I-5, north of SR 56. This area is represented by receiver sites R4.11 to R4.22. The sound wall would extend for approximately 1,081 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 4.3 meters (14 feet) and 4.9 meters (16 feet). The proposed noise barrier would replace an existing 8-foot sound wall. The wall would benefit approximately 20 single-family residences. The sound wall is considered feasible. The estimated construction cost of 05.S551, without easements is 209 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 259 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 358 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 05.S551 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 05.S551. No severely impacted receptors exist at this location. Construction of noise barrier 05.S551 is not recommended.

Noise Barrier 05.S557 (Alternative 3)

General

Type: Sound wall

I-5 Station limits: 556+08 to 558+01

Receptor sites: R4.22A to R4.24

Severely Impacted Receptors: Two

Height: 2.4 to 3.0 meters (8 to 10 feet)

Location: Southbound I-5; see Sheet 9

Benefited units: 10 Multi-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 79 dBA

Compared to existing (year 2009): Two dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$430,000
Estimated Total Cost without Easements:	$350,009
Estimated Total Cost with Construction Easements only:	$441,821
Estimated Total Cost with all Easements:	$555,812

Reasonable Cost Allowance/Benefited Unit:	$43,000
Estimated Cost/Benefited Unit without Easements:	$35,001
Estimated Cost/Benefited Unit with Construction Easements only:	$44,182
Estimated Cost/Benefited Unit with all Easements:	$55,581

Reasonable without Easements:	Yes
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 9 of the Alternative 3 exhibits, noise barrier 05.S557 would be located on private property along the southbound side of I-5, north of SR 56. This area is represented by receiver sites R4.22A to R4.24. The sound wall would extend for approximately 219 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 meters (8 feet) and 3.0 meters (10 feet). The wall would benefit approximately 10 multi-family residences. The sound wall is considered feasible. The estimated construction cost of 05.S557, without easements is 19 percent below the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 3 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 29 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 05.S557 is not recommended as proposed because the wall is not constructible. Due to the existence of severely impacted receptors (R4.23 and R4.23A), it is recommended that the severely impacted receptors receive abatement with FHWA approval under unusual and extraordinary abatement.

Noise Barrier 05.S561 (Alternative 3)

General

Type: Sound wall

I-5 Station limits: 560+85 to 562+21

Receptor sites: R5.1 to R5.2

Severely Impacted Receptors: One

Height: 2.4 (8 feet)

Location: Southbound I-5; see Sheet 9

Benefited units: Six Multi-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 75 dBA

Compared to existing (year 2009): No dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$246,000
Estimated Total Cost without Easements:	$233,465
Estimated Total Cost with Construction Easements only:	$299,012
Estimated Total Cost with all Easements:	$372,049

Reasonable Cost Allowance/Benefited Unit:	$41,000
Estimated Cost/Benefited Unit without Easements:	$38,911
Estimated Cost/Benefited Unit with Construction Easements only:	$49,835
Estimated Cost/Benefited Unit with all Easements:	$62,008

Reasonable without Easements:	Yes
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 9 of the Alternative 3 exhibits, noise barrier 05.S561 would be located on private property along the southbound side of I-5, north of SR 56. This area is represented by receiver sites R5.1 to R5.2. The sound wall would extend for approximately 156 meters. The height of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 meters (8 feet). The wall would benefit approximately six multi-family residences. The sound wall is considered feasible. The estimated construction cost of 05.S561, without easements is 5 percent below the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 22 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 51 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 05.S561 is feasible and conditionally reasonable. One severely impacted receptor exists at this location. Due to the existence of severely impacted receptor (R5.1), it is recommended that the noise barrier be constructed with FHWA approval under unusual and extraordinary abatement.

Noise Barrier 05.S563 (Alternative 3)

General

Type: Sound wall

I-5 Station limits: 563+28 to 564+36

Receptor sites: R5.5A to R5.6

Severely Impacted Receptors: None

Height: 2.4 meters (8 feet)

Location: Southbound I-5; see Sheet 10

Benefited units: Four Frontage Units

Predicted Noise Levels if Project Built without Abatement

Year 2030: 68 dBA

Compared to existing (year 2009): Five dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$188,000
Estimated Total Cost without Easements:	$184,571
Estimated Total Cost with Construction Easements only:	$239,077
Estimated Total Cost with all Easements:	$299,811

Reasonable Cost Allowance/Benefited Unit:	$47,000
Estimated Cost/Benefited Unit without Easements:	$46,143
Estimated Cost/Benefited Unit with Construction Easements only:	$59,769
Estimated Cost/Benefited Unit with all Easements:	$74,953

Reasonable without Easements:	Yes
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 10 of the Alternative 3 exhibits, noise barrier 05.S563 would be located on private property along the southbound side of I-5, north of SR 56. This area is represented by receiver sites R5.5A to R5.6. The sound wall would extend for approximately 130 meters. The height of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 meters (8 feet). The wall would benefit approximately four frontage units. The sound wall is considered feasible. The estimated construction cost of 05.S563, without easements is 2 percent below the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 27 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 59 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 05.S563 is not recommended unless negotiation with the property owners would result in estimated costs that do not exceed the reasonable allowance. This may be accomplished if the property owners are willing to donate easements by signing a waiver of just compensation. If the total cost cannot be reduced to less than or equal to the reasonable allowance, construction is not recommended. No severely impacted receptors exist at this location.

Noise Barrier 05.S567 (Alternative 3)

General

Type: Sound wall

I-5 Station limits: 564+61 to 567+18

Receptor sites: R5.7A to R5.8B

Severely Impacted Receptors: None

Height: 2.4 meters (8 feet)

Location: Southbound I-5; see Sheet 10

Benefited units: 13 Single-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 73 dBA

Compared to existing (year 2009): One dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$637,000
Estimated Total Cost without Easements:	$425,385
Estimated Total Cost with Construction Easements only:	$503,596
Estimated Total Cost with all Easements:	$611,679

Reasonable Cost Allowance/Benefited Unit:	$49,000
Estimated Cost/Benefited Unit without Easements:	$32,722
Estimated Cost/Benefited Unit with Construction Easements only:	$38,738
Estimated Cost/Benefited Unit with all Easements:	$47,052

Reasonable without Easements:	Yes
Reasonable with Construction Easements only:	Yes
Reasonable with all Easements:	Yes

Discussion

As shown on Sheet 10 of the Alternative 3 exhibits, noise barrier 05.S567 would be located on private property and Caltrans right of way along the southbound side of I-5, north of SR 56. This area is represented by receiver sites R5.7A to R5.8B. The sound wall would extend for approximately 299 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 meters (8 feet). The wall would benefit approximately 13 single-family residences. The sound wall is considered feasible. The estimated construction cost of 05.S567, without easements is 33 percent below the reasonable allowance. When only temporary construction easements are included, the estimated cost is below the reasonable allowance by 21 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 4 percent below the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 05.S567 is feasible and reasonable. No severely impacted receptors exist at this location. Construction of noise barrier 05.S567 is recommended.

Noise Barrier 05.S569 (Alternative 3)

General

Type: Sound wall

I-5 Station limits: 567+29 to 567+89

Receptor sites: R5.9A to R5.9

Severely Impacted Receptors: None

Height: 2.4 to 4.3 meters (8 to 14 feet)

Location: Southbound I-5; see Sheet 10

Benefited units: Three Single-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 65 dBA

Compared to existing (year 2009): Two dBA decrease

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$129,000
Estimated Total Cost without Easements:	$203,064
Estimated Total Cost with Construction Easements only:	$225,412
Estimated Total Cost with all Easements:	$258,630

Reasonable Cost Allowance/Benefited Unit:	$43,000
Estimated Cost/Benefited Unit without Easements:	$67,688
Estimated Cost/Benefited Unit with Construction Easements only:	$75,137
Estimated Cost/Benefited Unit with all Easements:	$86,210

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 10 of the Alternative 3 exhibits, noise barrier 05.S569 would be located on private property and Caltrans right of way along the southbound side of I-5, north of SR 56. This area is represented by receiver sites R5.9A to R5.9. The sound wall would extend for approximately 106 meters. The height of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 to 4.3 meters (8 to 14 feet). The wall would benefit approximately three single-family residences. The sound wall is considered feasible. The estimated construction cost of 05.S569, without easements is 57 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 75 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 100 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 05.S569 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 05.S569. No severely impacted receptors exist at this location. Construction of noise barrier 05.S569 is not recommended.

Noise Barrier 05.S568 (Alternative 3)

General

Type: Sound wall

I-5 Station limits: 566+24 to 567+90

Receptor sites: R5.21 to R5.23A

Severely Impacted Receptors: None

Height: 2.4 meters (8 feet)

Location: Northbound I-5; see Sheet 10

Benefited units: Nine Single-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 69 dBA

Compared to existing (year 2009): No dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$333,000
Estimated Total Cost without Easements:	$305,924
Estimated Total Cost with Construction Easements only:	$416,503
Estimated Total Cost with all Easements:	$505,048

Reasonable Cost Allowance/Benefited Unit:	$37,000
Estimated Cost/Benefited Unit without Easements:	$33,992
Estimated Cost/Benefited Unit with Construction Easements only:	$46,278
Estimated Cost/Benefited Unit with all Easements:	$56,116

Reasonable without Easements:	Yes
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 10 of the Alternative 3 exhibits, noise barrier 05.S568 would be located on private property and Caltrans right of way along the northbound side of I-5, north of SR 56. This area is represented by receiver sites R5.21 to R5.23A. The sound wall would extend for approximately 215 meters. The height of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 meters (8 feet). The wall would benefit approximately nine single-family residences. The sound wall is considered feasible. The estimated construction cost of 05.S568, without easements is 8 percent below the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 25 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 52 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 05.S568 is not recommended unless negotiation with the property owners would result in estimated costs that do not exceed the reasonable allowance. This may be accomplished if the property owners are willing to donate easements by signing a waiver of just compensation. If the total cost cannot be reduced to less than or equal to the reasonable allowance, construction is not recommended. No severely impacted receptors exist at this location.

ALTERNATIVE 3
COST ANALYSIS

SR 56 (ALTERNATIVE 3) - COST ANALYSIS

NOISE BARRIER	# OF BENEFITED RESIDENCES	WALL CHARACTERISTICS				QUANTITIES							EASEMENTS		
		Height	Length of Sound Wall	Length of Sound Wall on Retaining Wall	Length of Sound Wall Not on Retaining Wall	Excavation Depth	Excavation Width	Excavation and Backfill	Berm Embankment	Demolition of wood fence	Demolition of existing sound walls/property walls	Minor Concrete Sound Wall (Spread or Trench Footing)	Temporary Construction Easements	Footing Easements	Total Easements
		(m)	(m)	(m)	(m)	(m)	(m)	(m3)	(m3)	(m)	(m2)	(m3)	(m2)	(m2)	(m2)
56.S27	11	4.3	57	0	57	0.90	2.6	133	0	0	136	35	85	57	142
		4.9	305	0	305	0.90	2.9	797	0	0	732	214	458	351	809
56.S31	2	2.4	77	0	77	0.90	1.9	131	0	0	0	30	230	99	329
56.S35	14	3.0	70	0	70	0.90	2.1	132	0	0	126	32	161	68	229
		3.7	126	0	126	0.90	2.4	271	0	0	226	69	188	113	301
56.S47	10	3.7	222	0	222	0.90	2.4	480	0	0	400	122	333	200	533
		4.3	117	0	117	0.90	2.6	275	0	0	211	72	176	117	294
56.S20	7	3.7	127	0	127	0.90	2.4	274	741	0	0	70	0	0	0
		4.3	104	0	104	0.90	2.6	242	606	0	0	63	0	0	0
		4.9	235	0	235	0.90	2.9	612	1,372	0	0	165	0	0	0
56.S34	1	2.4	181	0	181	0.90	1.9	310	1,059	0	0	72	0	0	0
		3.0	77	0	77	0.90	2.1	145	448	0	0	35	0	0	0
56.S34 Option	1	3.7	31	0	31	0.90	2.4	67	0	0	0	17	46	28	74
		4.3	58	0	58	0.90	2.6	135	0	0	0	35	86	58	144

NOISE BARRIER	# OF BENEFITED RESIDENCES	CONSTRUCTION COSTS						ADDITIONAL COSTS				EASEMENT COSTS		
		Sound Wall Masonry Cost	Minor Concrete Sound Wall Cost	Excavation and Backfill Cost	Berm Embankment Cost	Demolition Cost - wood fence	Demolition Cost - sound wall/property wall	Clearing & Grubbing	Landscaping Cost	Traffic Control Cost	SWPPP Cost	Construction Easements	Footing Easements	Total Easements
		($200/m2)	($750/m3)	($125/m3)	($40/m3)	($40/m)	($32/m2)	(8% of Wall Cost)	(10% of Wall Cost)	(5% of Wall Cost)	(5% of Wall Cost)	($140/m2)	($360/m2)	
56.S27	11	$55,664	$25,986	$16,614	$0	$0	$4,362	$8,210	$10,263	$5,131	$5,131	$11,928	$20,448	$32,376
		$335,720	$160,573	$99,572	$0	$0	$23,439	$49,544	$61,930	$30,965	$30,965	$64,092	$126,353	$190,445
		$391,384	***$186,559***	***$116,186***	***$0***	***$0***	***$27,802***	***$57,754***	***$72,193***	***$36,097***	***$36,097***	***$76,020***	***$146,801***	***$222,821***
56.S31	2	$45,900	$22,749	$16,352	$0	$0	$0	$6,800	$8,500	$4,250	$4,250	$32,130	$35,802	$67,932
		$45,900	***$22,749***	***$16,352***	***$0***	***$0***	***$0***	***$6,800***	***$8,500***	***$4,250***	***$4,250***	***$32,130***	***$35,802***	***$67,932***
56.S35	14	$50,256	$23,950	$16,490	$0	$0	$4,020	$7,577	$9,472	$4,736	$4,736	$22,575	$24,327	$46,902
		$108,016	$51,716	$33,912	$0	$0	$7,235	$16,070	$20,088	$10,044	$10,044	$26,376	$40,694	$67,070
		$158,272	***$75,666***	***$50,402***	***$0***	***$0***	***$11,255***	***$23,648***	***$29,560***	***$14,780***	***$14,780***	***$48,951***	***$65,021***	***$113,972***
56.S47	10	$191,006	$91,450	$59,967	$0	$0	$12,793	$28,417	$35,522	$17,761	$17,761	$46,641	$71,960	$118,601
		$115,052	$53,711	$34,340	$0	$0	$6,762	$16,789	$20,986	$10,493	$10,493	$24,654	$42,264	$66,918
		$306,058	***$145,160***	***$94,307***	***$0***	***$0***	***$19,555***	***$45,206***	***$56,508***	***$28,254***	***$28,254***	***$71,295***	***$114,224***	***$185,519***
56.S20	7	$108,962	$52,169	$34,209	$14,824	$0	$0	$16,813	$21,016	$10,508	$10,508	$0	$0	$0
		$101,528	$47,397	$30,303	$12,121	$0	$0	$15,308	$19,135	$9,567	$9,567	$0	$0	$0
		$258,060	$123,429	$76,538	$27,448	$0	$0	$38,838	$48,548	$24,274	$24,274	$0	$0	$0
		$468,550	***$222,995***	***$141,050***	***$54,393***	***$0***	***$0***	***$70,959***	***$88,699***	***$44,349***	***$44,349***	***$0***	***$0***	***$0***
56.S34	1	$108,600	$53,825	$38,689	$21,177	$0	$0	$17,783	$22,229	$11,115	$11,115	$0	$0	$0
		$55,152	$26,283	$18,097	$8,962	$0	$0	$8,680	$10,849	$5,425	$5,425	$0	$0	$0
		$163,752	***$80,108***	***$56,786***	***$30,139***	***$0***	***$0***	***$26,463***	***$33,078***	***$16,539***	***$16,539***	***$0***	***$0***	***$0***
56.S34 Option	1	$26,640	$12,755	$8,364	$0	$0	$0	$3,821	$4,776	$2,388	$2,388	$6,505	$10,037	$16,542
		$56,512	$26,382	$16,867	$0	$0	$0	$7,981	$9,976	$4,988	$4,988	$12,110	$20,759	$32,869
		$83,152	***$39,137***	***$25,231***	***$0***	***$0***	***$0***	***$11,802***	***$14,752***	***$7,376***	***$7,376***	***$18,615***	***$30,796***	***$49,411***

NOISE BARRIER	# OF BENEFITED RESIDENCES	TOTAL COSTS			COST PER BENEFITTED RESIDENCE			COST ALLOWANCE		REASONABLENESS		
		Estimated Total Cost (w/o Easements)	Estimated Total Cost (w/ Construction Easement Only)	Estimated Total Cost w/ Easements	Estimated Cost/Benefited Residence (w/o Easements)	Estimated Cost/Benefited Residence (w/ Construction Easement Only)	Estimated Cost Per Benefitted Residence w/ Easements	Reasonable Allowance Per Residence	Reasonable Total Allowance	Reasonable w/o Easements	Reasonable w/ Construction Easements Only	Reasonable w/ all easements
56.S27	11	$131,362	$143,290	$163,738	***$84,006***	***$90,917***	***$104,263***	***$37,000***	***$407,000***	***NO***	***NO***	***NO***
		$792,709	$856,801	$983,154								
		$924,071	***$1,000,091***	***$1,146,892***								
56.S31	2	$108,801	$140,931	$176,733	***$54,401***	***$70,466***	***$88,367***	***$41,000***	***$82,000***	***NO***	***NO***	***NO***
		$108,801	***$140,931***	***$176,733***								
56.S35	14	$121,238	$143,813	$168,140	***$27,026***	***$30,522***	***$35,167***	***$33,000***	***$462,000***	***YES***	***YES***	***NO***
		$257,124	$283,500	$324,195								
		$378,362	***$427,313***	***$492,334***								
56.S47	10	$454,676	$501,317	$573,277	***$72,330***	***$79,460***	***$90,882***	***$35,000***	***$350,000***	***NO***	***NO***	***NO***
		$268,626	$293,280	$335,544								
		$723,302	***$794,597***	***$908,822***								
56.S20	7	$269,009	$269,009	$269,009	***$162,192***	***$162,192***	***$162,192***	***$35,000***	***$245,000***	***NO***	***NO***	***NO***
		$244,927	$244,927	$244,927								
		$621,408	$621,408	$621,408								
		$1,135,345	***$1,135,345***	***$1,135,345***								
56.S34	1	$284,532	$284,532	$284,532	***$423,405***	***$423,405***	***$423,405***	***$49,000***	***$49,000***	***NO***	***NO***	***NO***
		$138,873	$138,873	$138,873								
		$423,405	***$423,405***	***$423,405***								
56.S34 Option	1	$61,131	$67,636	$77,673	***$188,825***	***$207,439***	***$238,235***	***$51,000***	***$51,000***	***NO***	***NO***	***NO***
		$127,693	$139,803	$160,562								
		$188,825	***$207,439***	***$238,235***								

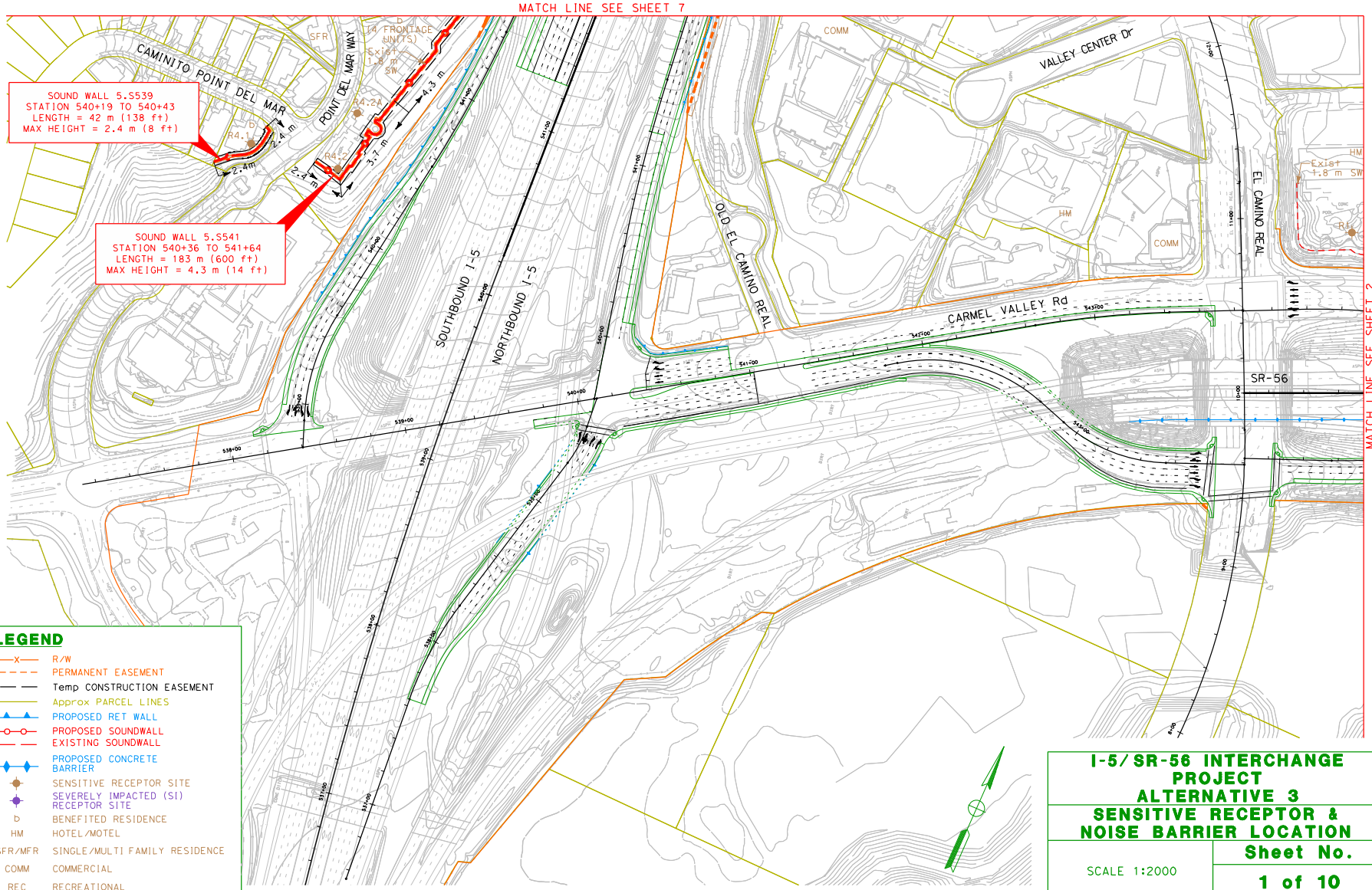
I-5 (ALTERNATIVE 3) - COST ANALYSIS

NOISE BARRIER	# OF BENEFITED RESIDENCES	WALL CHARACTERISTICS				QUANTITIES						EASEMENTS		
		Height	Length of Sound Wall	Length of Sound Wall on Retaining Wall	Length of Sound Wall Not on Retaining Wall	Excavation Depth	Excavation Width	Excavation and Backfill	Demolition of wood fence	Demolition of existing sound walls/property walls	Minor Concrete Sound Wall (Spread or Trench Footing)	Temporary Construction Easements	Footing Easements	Total Easements
		(m)	(m)	(m)	(m)	(m)	(m)	(m3)	(m)	(m2)	(m3)	(m2)	(m2)	(m2)
05.S539	1	2.4	42	0	42	0.90	1.9	72	0	76	17	126	55	181
05.S541	5	2.4	18	0	18	0.90	1.9	30	0	32	7	53	23	75
		3.7	71	0	71	0.90	2.4	154	0	128	39	214	128	342
		4.3	94	0	94	0.90	2.6	221	0	170	58	283	189	472
05.S551	20	4.3	98	0	98	0.90	2.6	230	0	236	60	295	197	492
		4.9	983	0	983	0.90	2.9	2,565	0	2,358	689	2,948	2,260	5,208
05.S557	10	2.4	56	0	56	0.90	1.9	96	0	0	22	169	73	242
		3.0	162	0	162	0.90	2.1	307	0	0	74	487	243	730
05.S561	6	2.4	156	0	156	0.90	1.9	267	0	281	62	468	203	671
05.S563	4	2.4	130	0	130	0.90	1.9	222	0	0	51	389	169	558
05.S567	13	2.4	299	0	299	0.90	1.9	511	0	0	119	559	300	859
05.S569	3	2.4	29	0	29	0.90	1.9	50	0	0	12	44	19	63
		3.7	39	0	39	0.90	2.4	85	0	0	22	59	35	94
		4.3	38	0	38	0.90	2.6	89	0	0	23	57	38	95
05.S568	9	2.4	215	0	215	0.90	1.9	368	0	0	85	790	246	1,036

NOISE BARRIER	# OF BENEFITED RESIDENCES	CONSTRUCTION COSTS					ADDITIONAL COSTS				EASEMENT COSTS		
		Sound Wall Masonry Cost	Minor Concrete Sound Wall Cost	Excavation and Backfill Cost	Demolition Cost - wood fence	Demolition Cost - sound wall/property wall	Clearing & Grubbing	Landscaping Cost	Traffic Control Cost	SWPPP Cost	Construction Easements	Footing Easements	Total Easements
		($200/m2)	($750/m3)	($125/m3)	($40/m)	($32/m2)	(8% of Wall Cost)	(10% of Wall Cost)	(5% of Wall Cost)	(5% of Wall Cost)	($140/m2)	($360/m2)	
05.S539	1	$25,200	$12,490	$8,978	$0	$2,419	$3,927	$4,909	$2,454	$2,454	$17,640	$19,656	$37,296
		$25,200	***$12,490***	***$8,978***	***$0***	***$2,419***	***$3,927***	***$4,909***	***$2,454***	***$2,454***	***$17,640***	***$19,656***	***$37,296***
05.S541	5	$10,500	$5,204	$3,741	$0	$1,008	$1,636	$2,045	$1,023	$1,023	$7,350	$8,190	$15,540
		$61,318	$29,358	$19,251	$0	$4,107	$9,123	$11,403	$5,702	$5,702	$29,946	$46,202	$76,148
		$92,512	$43,188	$27,612	$0	$5,437	$13,500	$16,875	$8,437	$8,437	$39,648	$67,968	$107,616
		$164,330	***$77,750***	***$50,604***	***$0***	***$10,552***	***$24,259***	***$30,324***	***$15,162***	***$15,162***	***$76,944***	***$122,360***	***$199,304***
05.S551	20	$96,334	$44,972	$28,753	$0	$7,549	$14,209	$17,761	$8,880	$8,880	$41,286	$70,776	$112,062
		$1,080,970	$517,023	$320,606	$0	$75,471	$159,526	$199,407	$99,704	$99,704	$412,734	$813,676	$1,226,410
		$1,177,304	***$561,995***	***$349,359***	***$0***	***$83,021***	***$173,734***	***$217,168***	***$108,584***	***$108,584***	***$454,020***	***$884,452***	***$1,338,472***
05.S557	10	$33,780	$16,742	$12,034	$0	$0	$5,005	$6,256	$3,128	$3,128	$23,646	$26,348	$49,994
		$116,856	$55,689	$38,343	$0	$0	$16,871	$21,089	$10,544	$10,544	$68,166	$87,642	$155,808
		$150,636	***$72,431***	***$50,378***	***$0***	***$0***	***$21,876***	***$27,344***	***$13,672***	***$13,672***	***$91,812***	***$113,990***	***$205,802***
05.S561	6	$93,638	$46,409	$33,358	$0	$8,989	$14,592	$18,239	$9,120	$9,120	$65,546	$73,037	$138,584
		$93,638	***$46,409***	***$33,358***	***$0***	***$8,989***	***$14,592***	***$18,239***	***$9,120***	***$9,120***	***$65,546***	***$73,037***	***$138,584***
05.S563	4	$77,865	$38,592	$27,739	$0	$0	$11,536	$14,420	$7,210	$7,210	$54,506	$60,735	$115,240
		$77,865	***$38,592***	***$27,739***	***$0***	***$0***	***$11,536***	***$14,420***	***$7,210***	***$7,210***	***$54,506***	***$60,735***	***$115,240***
05.S567	13	$179,457	$88,943	$63,932	$0	$0	$26,587	$33,233	$16,617	$16,617	$78,211	$108,083	$186,294
		$179,457	***$88,943***	***$63,932***	***$0***	***$0***	***$26,587***	***$33,233***	***$16,617***	***$16,617***	***$78,211***	***$108,083***	***$186,294***
05.S569	3	$17,532	$8,689	$6,246	$0	$0	$2,597	$3,247	$1,623	$1,623	$6,136	$6,837	$12,974
		$33,712	$16,141	$10,584	$0	$0	$4,835	$6,044	$3,022	$3,022	$8,232	$12,701	$20,933
		$37,240	$17,385	$11,115	$0	$0	$5,259	$6,574	$3,287	$3,287	$7,980	$13,680	$21,660
		$88,484	***$42,215***	***$27,945***	***$0***	***$0***	***$12,691***	***$15,864***	***$7,932***	***$7,932***	***$22,348***	***$33,218***	***$55,566***
05.S568	9	$129,060	$63,965	$45,978	$0	$0	$19,120	$23,900	$11,950	$11,950	$110,579	$88,546	$199,125
		$129,060	***$63,965***	***$45,978***	***$0***	***$0***	***$19,120***	***$23,900***	***$11,950***	***$11,950***	***$110,579***	***$88,546***	***$199,125***

NOISE BARRIER	# OF BENEFITED RESIDENCES	TOTAL COSTS			COST PER BENEFITTED RESIDENCE			COST ALLOWANCE		REASONABLENESS		
		Estimated Total Cost (w/o Easements)	Estimated Total Cost (w/ Construction Easement Only)	Estimated Total Cost w/ Easements	Estimated Cost/Benefited Residence (w/o Easements)	Estimated Cost/Benefited Residence (w/ Construction Easement Only)	Estimated Cost Per Benefitted Residence w/ Easements	Reasonable Allowance Per Residence	Reasonable Total Allowance	Reasonable w/o Easements	Reasonable w/ Construction Easements Only	Reasonable w/ all easements
05.S539	1	$62,831	$80,471	$100,127	***$62,831***	***$80,471***	***$100,127***	***$39,000***	***$39,000***	***NO***	***NO***	***NO***
		$62,831	***$80,471***	***$100,127***								
05.S541	5	$26,179	$33,529	$41,719	***$77,628***	***$93,017***	***$117,489***	***$45,000***	***$225,000***	***NO***	***NO***	***NO***
		$145,963	$175,909	$222,111								
		$215,999	$255,647	$323,615								
		$388,142	***$465,086***	***$587,446***								
05.S551	20	$227,339	$268,625	$339,401	***$138,987***	***$161,688***	***$205,911***	***$45,000***	***$900,000***	***NO***	***NO***	***NO***
		$2,552,410	$2,965,144	$3,778,820								
		$2,779,749	***$3,233,769***	***$4,118,220***								
05.S557	10	$80,072	$103,718	$130,067	***$35,001***	***$44,182***	***$55,581***	***$43,000***	***$430,000***	***YES***	***NO***	***NO***
		$269,937	$338,103	$425,745								
		$350,009	***$441,821***	***$555,812***								
05.S561	6	$233,465	$299,012	$372,049	***$38,911***	***$49,835***	***$62,008***	***$41,000***	***$246,000***	***YES***	***NO***	***NO***
		$233,465	***$299,012***	***$372,049***								
05.S563	4	$184,571	$239,077	$299,811	***$46,143***	***$59,769***	***$74,953***	***$47,000***	***$188,000***	***YES***	***NO***	***NO***
		$184,571	***$239,077***	***$299,811***								
05.S567	13	$425,385	$503,596	$611,679	***$32,722***	***$38,738***	***$47,052***	***$49,000***	***$637,000***	***YES***	***YES***	***YES***
		$425,385	***$503,596***	***$611,679***								
05.S569	3	$41,558	$47,694	$54,532	***$67,688***	***$75,137***	***$86,210***	***$43,000***	***$129,000***	***NO***	***NO***	***NO***
		$77,359	$85,591	$98,292								
		$84,147	$92,127	$105,807								
		$203,064	***$225,412***	***$258,630***								
05.S568	9	$305,924	$416,503	$505,048	***$33,992***	***$46,278***	***$56,116***	***$37,000***	***$333,000***	***YES***	***NO***	***NO***
		$305,924	***$416,503***	***$505,048***								

ALTERNATIVE 3
EXHIBITS



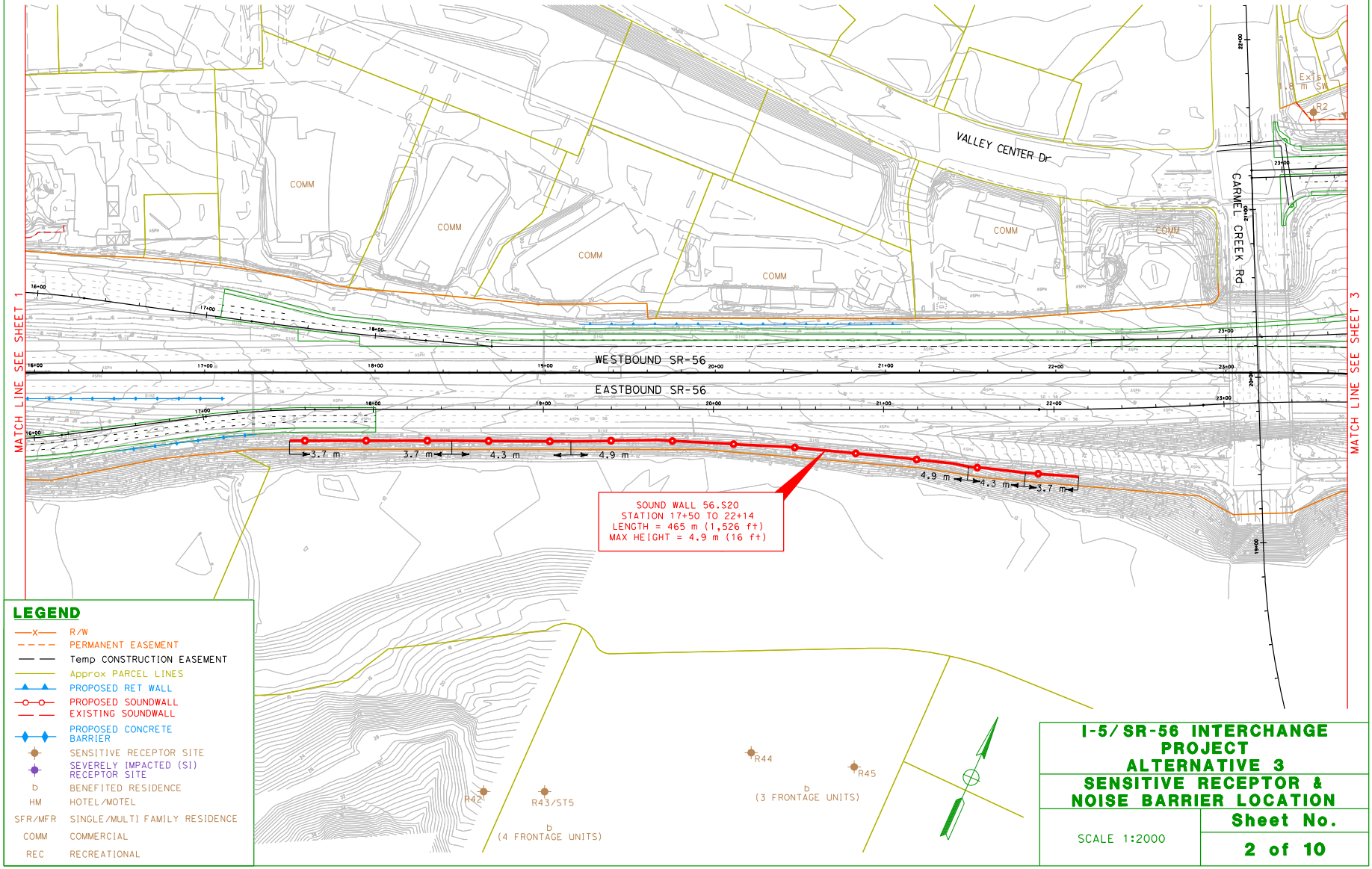
I-5/ SR-56 INTERCHANGE PROJECT ALTERNATIVE 3

SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

SCALE 1:2000

Sheet No.

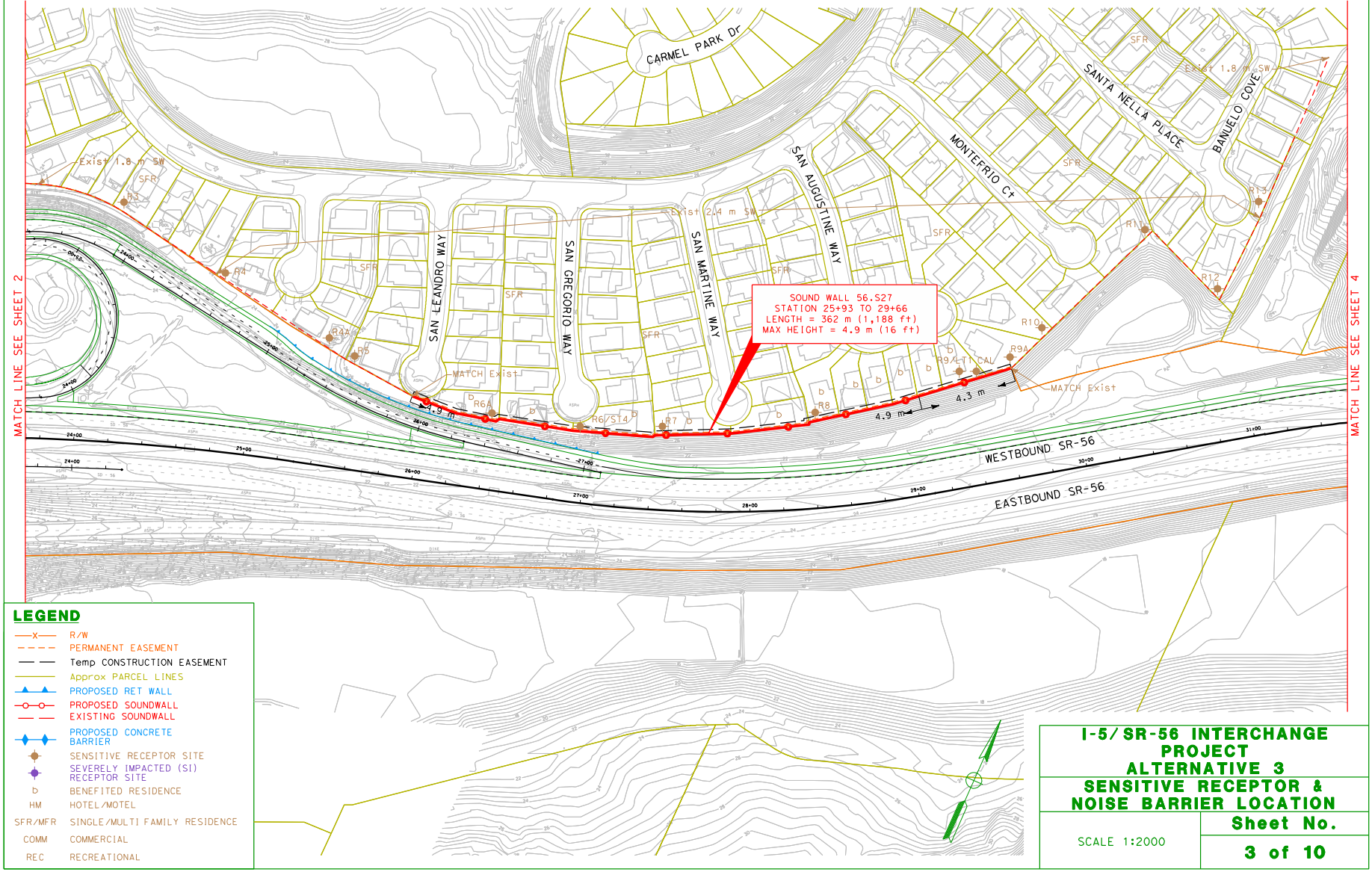
1 of 10



I-5/ SR-56 INTERCHANGE PROJECT
ALTERNATIVE 3
SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

SCALE 1:2000

Sheet No.
2 of 10



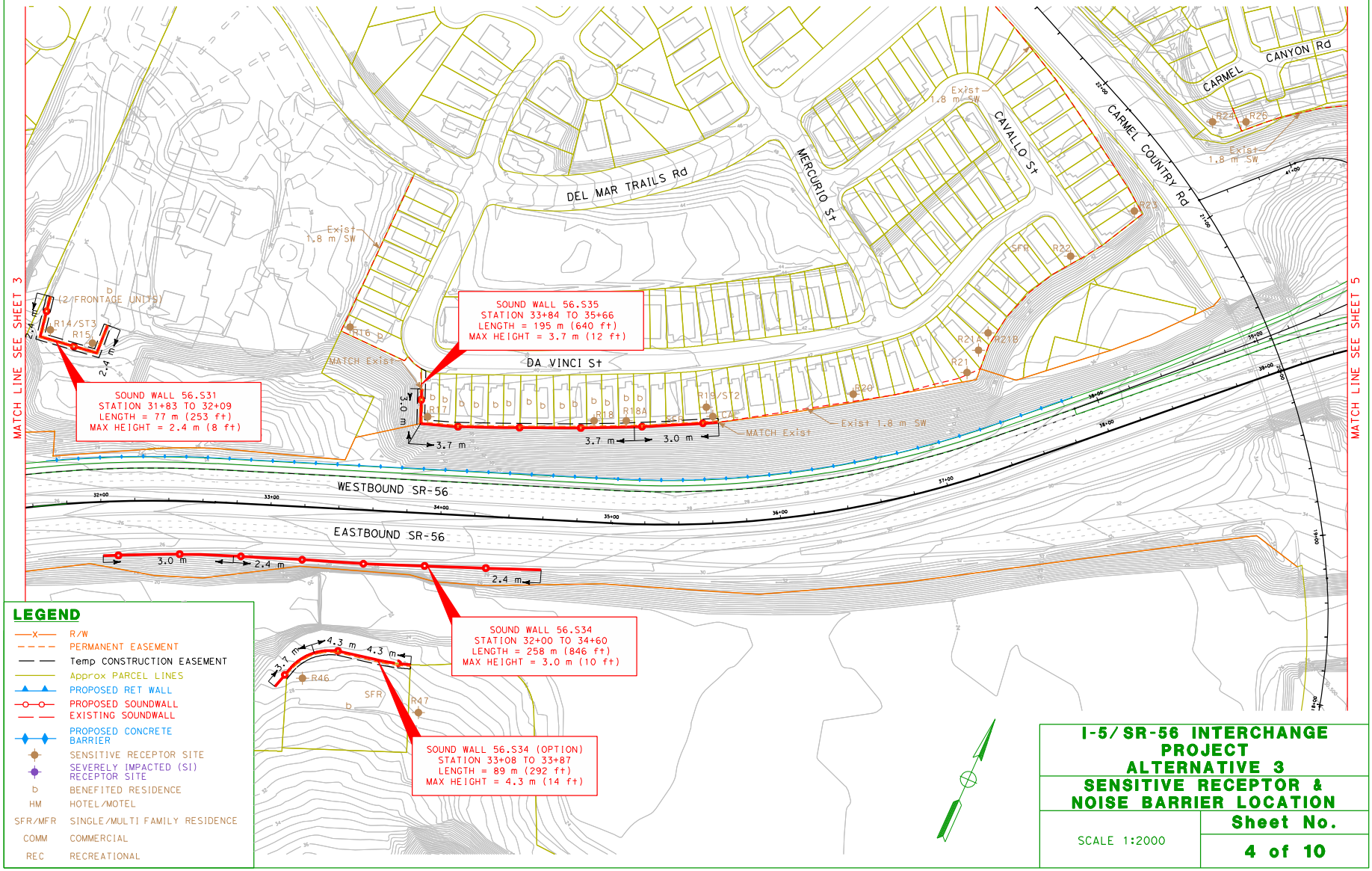
I-5/ SR-56 INTERCHANGE PROJECT ALTERNATIVE 3

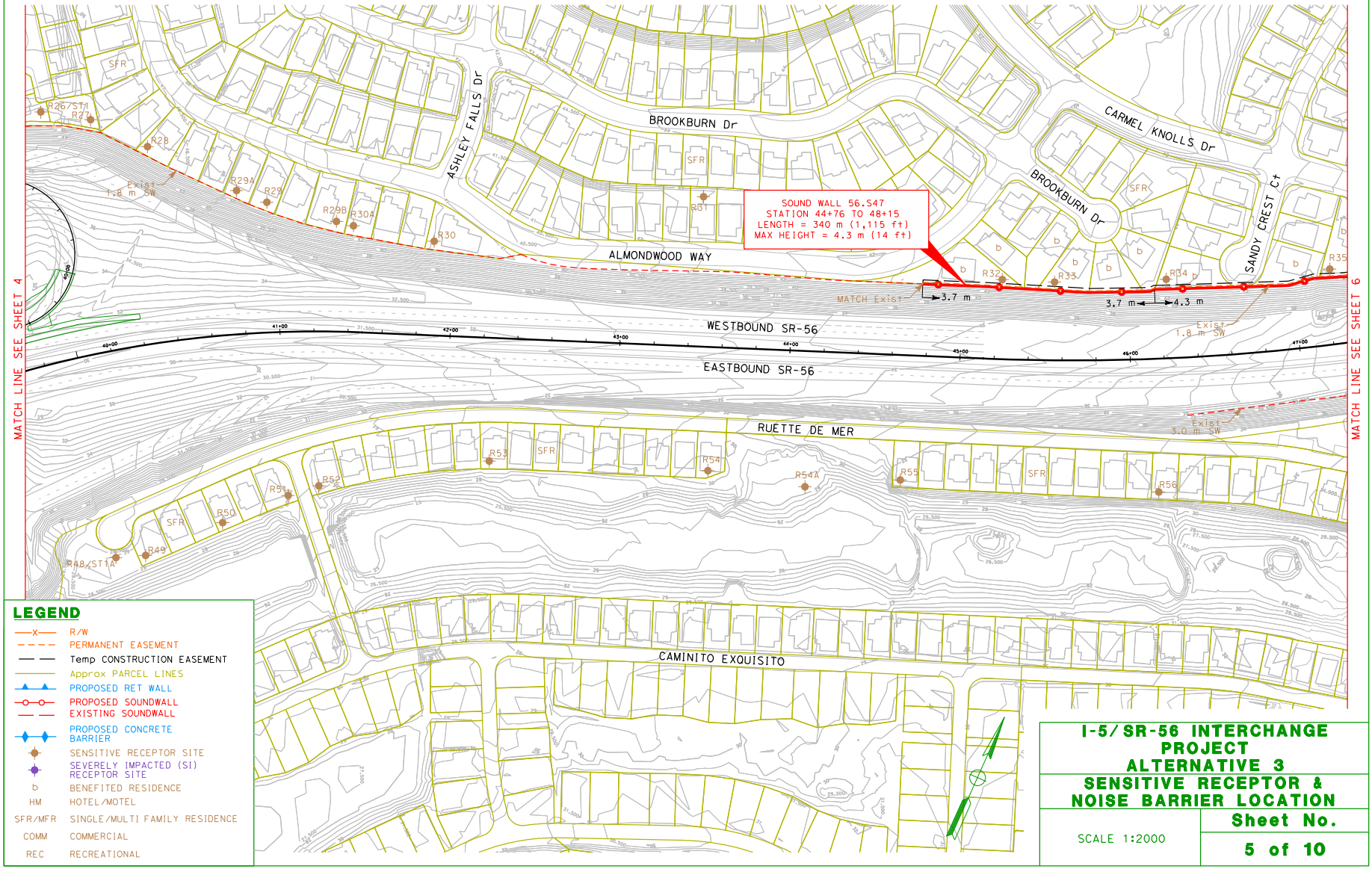
SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

SCALE 1:2000

Sheet No.

3 of 10


MATCH LINE SEE SHEET 3
MATCH LINE SEE SHEET 5
DEL MAR TRAILS Rd
MERCURIO St
CAVALLO St
CARMEL
CANYON Rd
CARMEL COUNTRY Rd
DA VINCI St
WESTBOUND SR-56
EASTBOUND SR-56
Exist 1.8 m SW
MATCH Exist
(2/FRONTAGE UNITS)
SOUND WALL 56.S31
STATION 31+83 TO 32+09
LENGTH = 77 m (253 ft)
MAX HEIGHT = 2.4 m (8 ft)
SOUND WALL 56.S35
STATION 33+84 TO 35+66
LENGTH = 195 m (640 ft)
MAX HEIGHT = 3.7 m (12 ft)
SOUND WALL 56.S34
STATION 32+00 TO 34+60
LENGTH = 258 m (846 ft)
MAX HEIGHT = 3.0 m (10 ft)
SOUND WALL 56.S34 (OPTION)
STATION 33+08 TO 33+87
LENGTH = 89 m (292 ft)
MAX HEIGHT = 4.3 m (14 ft)
LEGEND
R/W
PERMANENT EASEMENT
Temp CONSTRUCTION EASEMENT
Approx PARCEL LINES
PROPOSED RET WALL
PROPOSED SOUNDWALL
EXISTING SOUNDWALL
PROPOSED CONCRETE BARRIER
SENSITIVE RECEPTOR SITE
SEVERELY IMPACTED (SI) RECEPTOR SITE
BENEFITED RESIDENCE
HOTEL/MOTEL
SINGLE/MULTI FAMILY RESIDENCE
COMMERCIAL
RECREATIONAL
I-5/ SR-56 INTERCHANGE PROJECT
ALTERNATIVE 3
SENSITIVE RECEPTOR & NOISE BARRIER LOCATION
SCALE 1:2000
Sheet No.
4 of 10



I-5/ SR-56 INTERCHANGE PROJECT ALTERNATIVE 3

SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

SCALE 1:2000

Sheet No.

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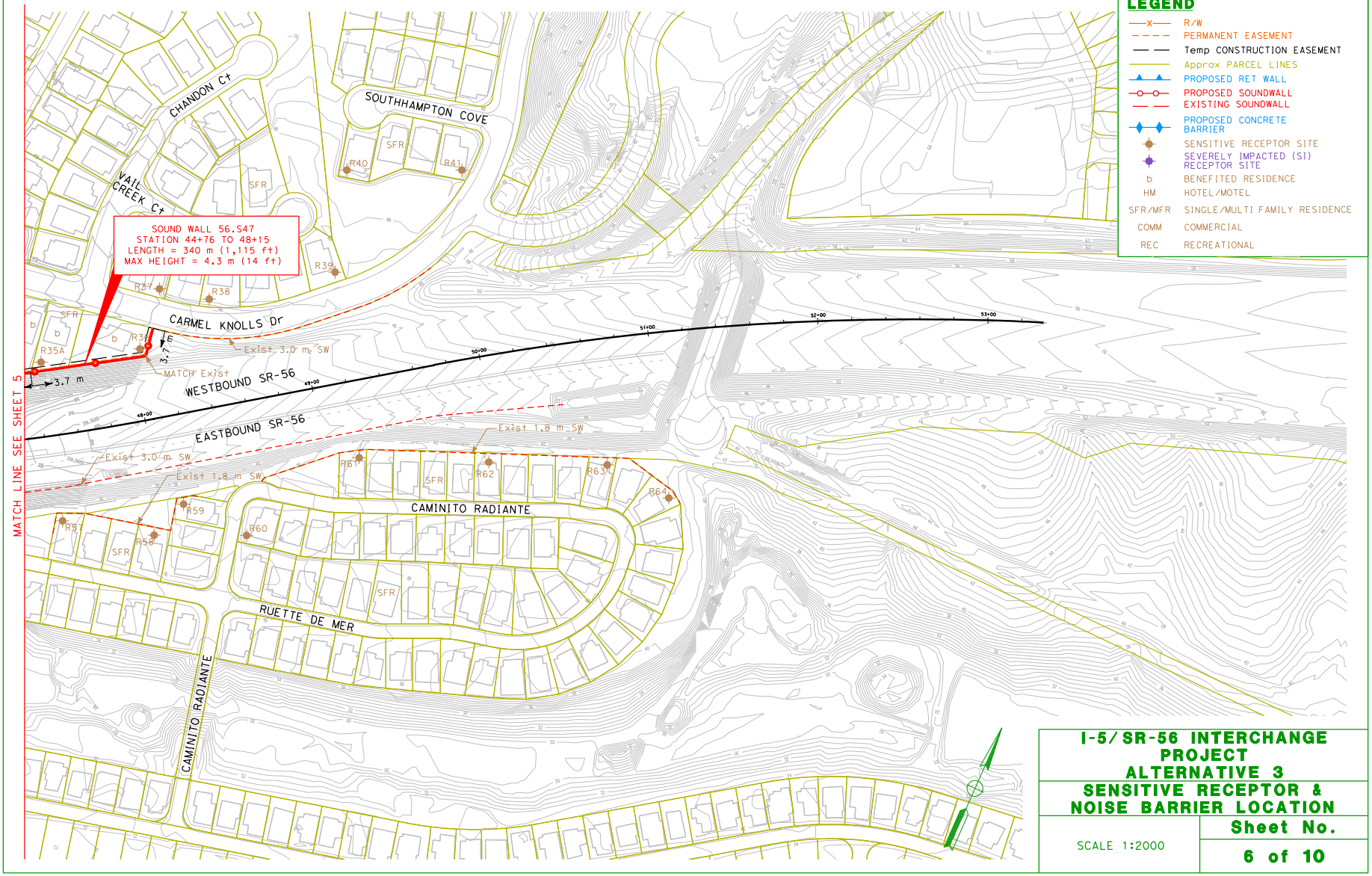

I-5/ SR-56 INTERCHANGE PROJECT ALTERNATIVE 3

SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

SCALE 1:2000

Sheet No.

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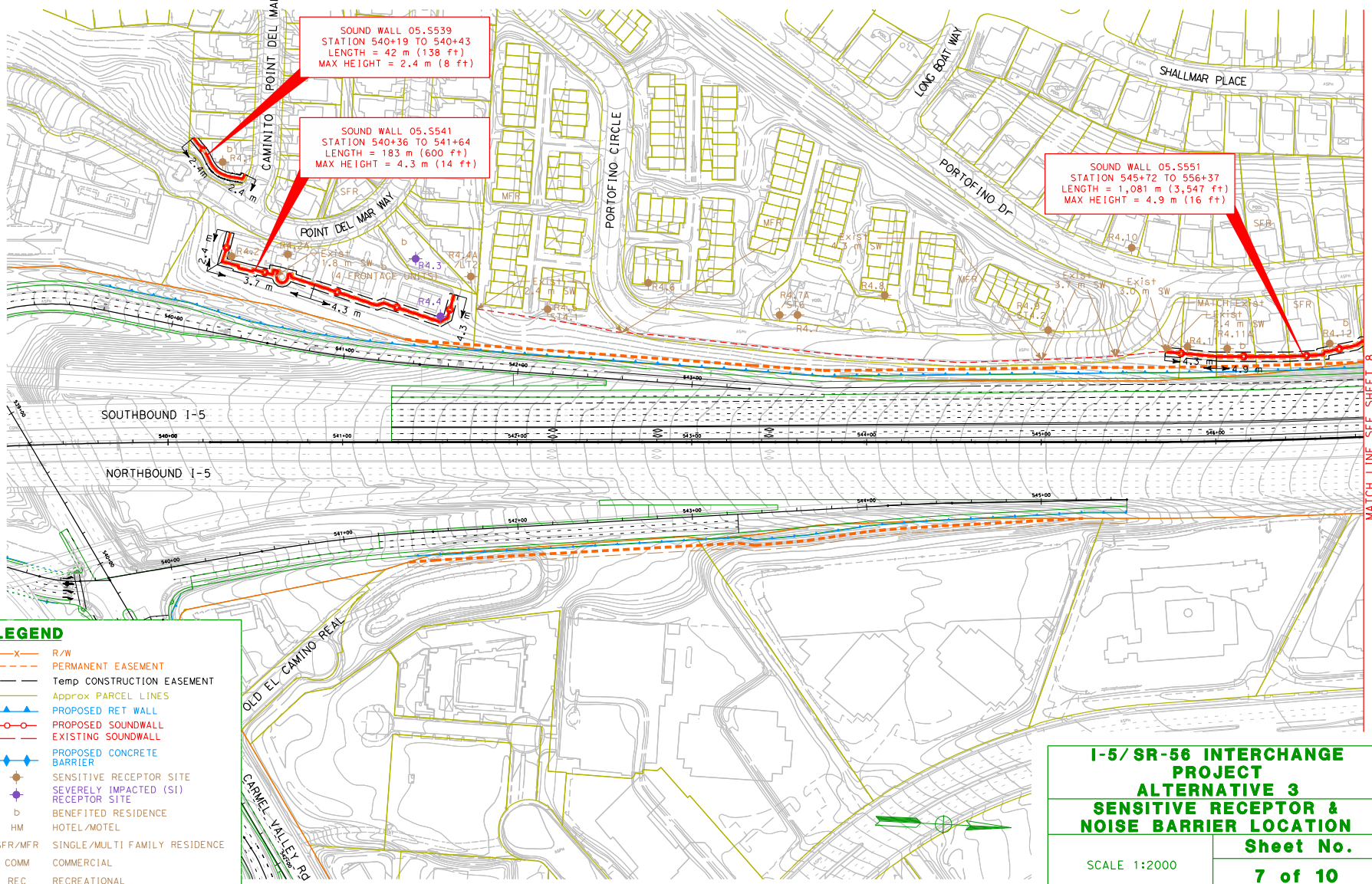
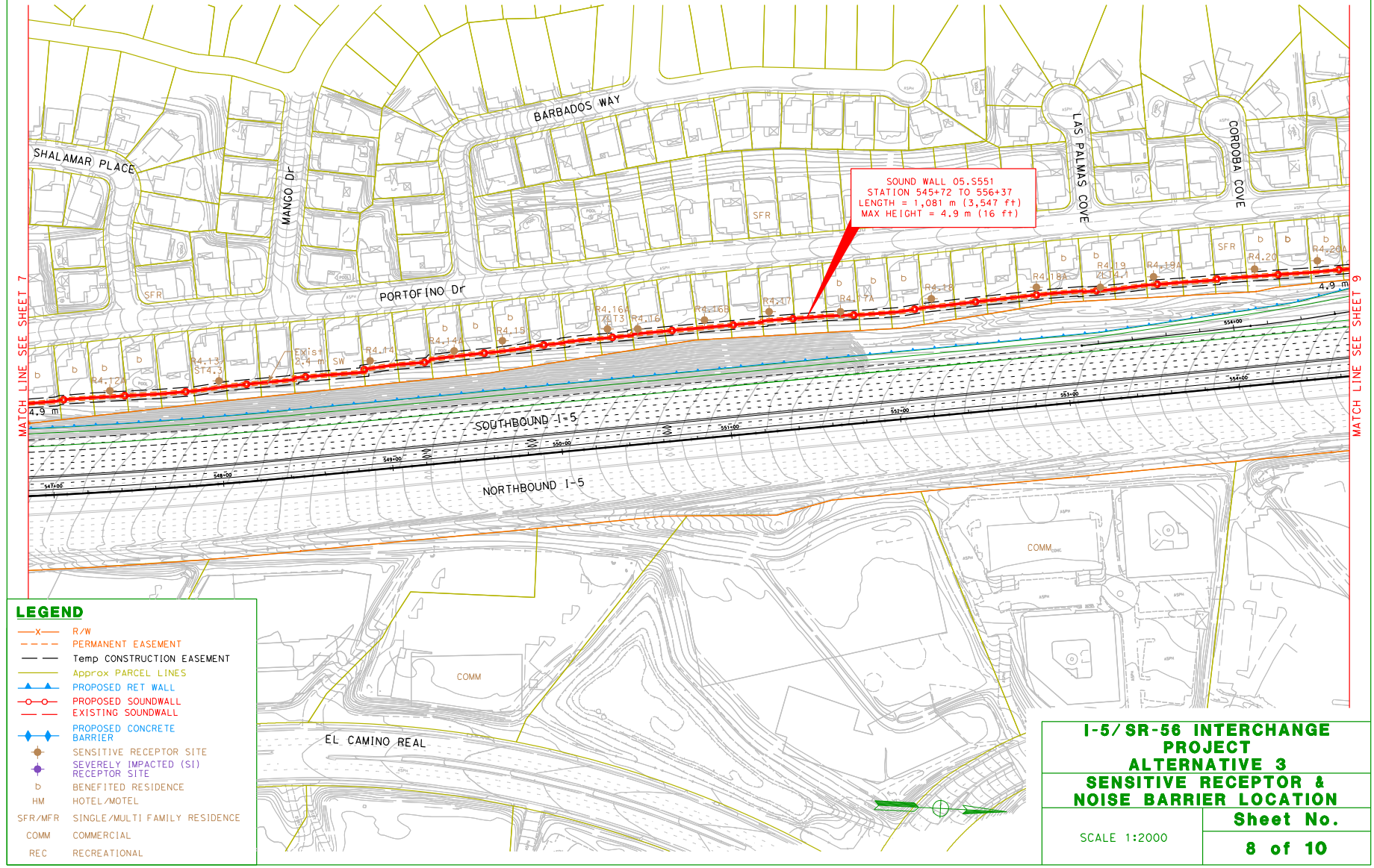


I-5/ SR-56 INTERCHANGE PROJECT
ALTERNATIVE 3
SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

SCALE 1:2000

Sheet No.
7 of 10



I-5/SR-56 INTERCHANGE PROJECT ALTERNATIVE 3

SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

SCALE 1:2000

Sheet No.

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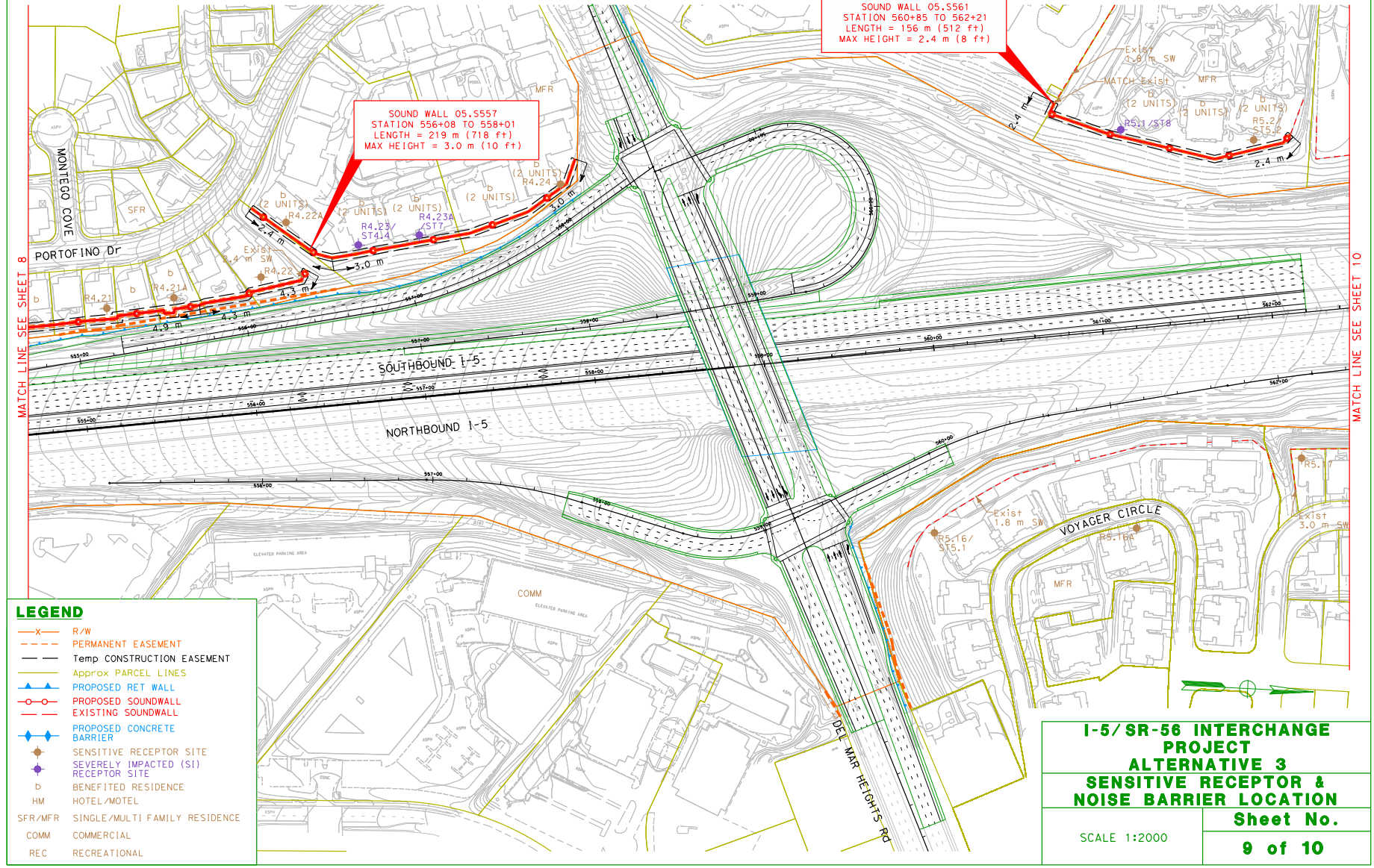

LEGEND

- R/W
- PERMANENT EASEMENT
- Temp CONSTRUCTION EASEMENT
- Approx PARCEL LINES
- PROPOSED RET WALL
- PROPOSED SOUNDWALL
- EXISTING SOUNDWALL
- PROPOSED CONCRETE BARRIER
- SENSITIVE RECEPTOR SITE
- SEVERELY IMPACTED (SI) RECEPTOR SITE
- b — BENEFITED RESIDENCE
- HM — HOTEL/MOTEL
- SFR/MFR — SINGLE/MULTI FAMILY RESIDENCE
- COMM — COMMERCIAL
- REC — RECREATIONAL

I-5/ SR-56 INTERCHANGE PROJECT ALTERNATIVE 3

SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

SCALE 1:2000

Sheet No.

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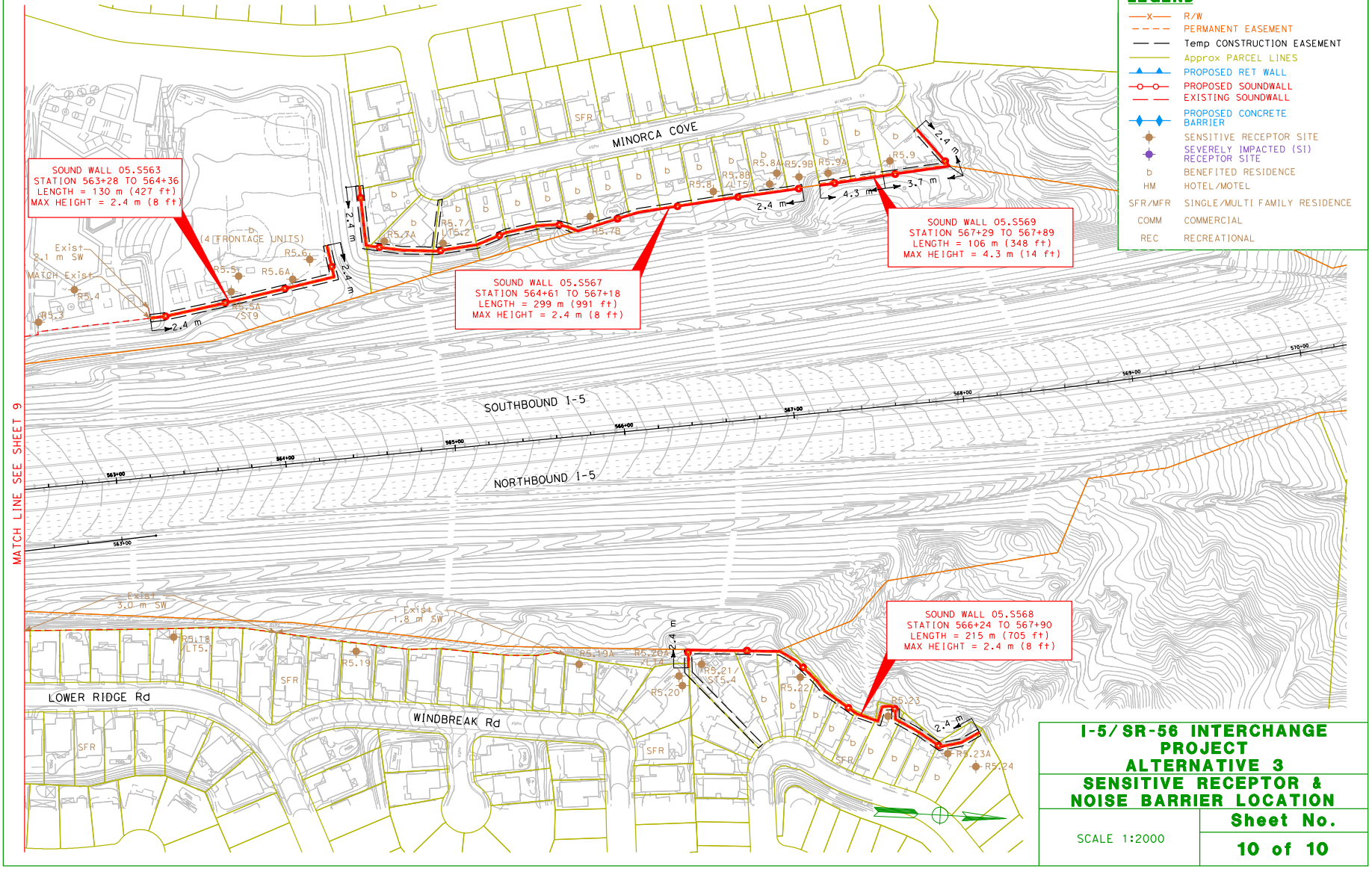

LEGEND
R/W
PERMANENT EASEMENT
Temp CONSTRUCTION EASEMENT
Approx PARCEL LINES
PROPOSED RET WALL
PROPOSED SOUNDWALL
EXISTING SOUNDWALL
PROPOSED CONCRETE BARRIER
SENSITIVE RECEPTOR SITE
SEVERELY IMPACTED (SI) RECEPTOR SITE
b BENEFITED RESIDENCE
HM HOTEL/MOTEL
SFR/MFR SINGLE/MULTI FAMILY RESIDENCE
COMM COMMERCIAL
REC RECREATIONAL
SOUND WALL 05.S563
STATION 563+28 TO 564+36
LENGTH = 130 m (427 ft)
MAX HEIGHT = 2.4 m (8 ft)
SOUND WALL 05.S567
STATION 564+61 TO 567+18
LENGTH = 299 m (991 ft)
MAX HEIGHT = 2.4 m (8 ft)
SOUND WALL 05.S569
STATION 567+29 TO 567+89
LENGTH = 106 m (348 ft)
MAX HEIGHT = 4.3 m (14 ft)
SOUND WALL 05.S568
STATION 566+24 TO 567+90
LENGTH = 215 m (705 ft)
MAX HEIGHT = 2.4 m (8 ft)
MATCH LINE SEE SHEET 9
SOUTHBOUND I-5
NORTHBOUND I-5
MINORCA COVE
LOWER RIDGE Rd
WINDBREAK Rd
SFR
(4 FRONTAGE UNITS)
Exist 2.1 m SW
MATCH Exist
Exist 3.0 m SW
Exist 1.8 m SW
I-5/ SR-56 INTERCHANGE PROJECT
ALTERNATIVE 3
SENSITIVE RECEPTOR & NOISE BARRIER LOCATION
SCALE 1:2000
Sheet No.
10 of 10

ALTERNATIVE 4
OVERVIEW

ALTERNATIVE 4: LIST OF BARRIERS

SHEET 1
- NONE

SHEET 2
- NOISE BARRIER 56.S20

SHEET 3
- NOISE BARRIER 56.S27

SHEET 4
- NOISE BARRIER 56.S31
- NOISE BARRIER 56.S34
- NOISE BARRIER 56.S34 (OPTION)
- NOISE BARRIER 56.S35

SHEET 5
- NOISE BARRIER 56.S41
- NOISE BARRIER 56.S47

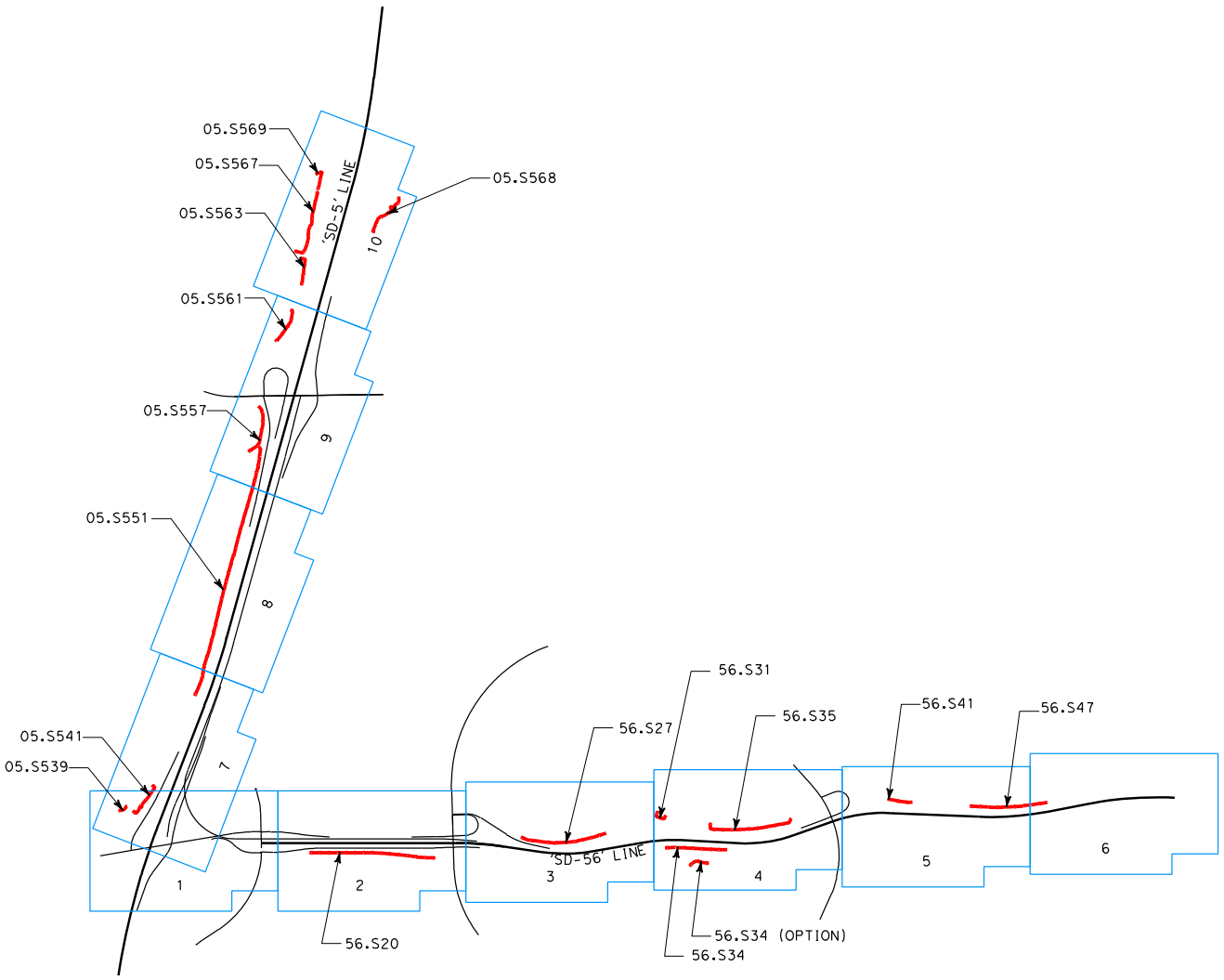
SHEET 6
- NOISE BARRIER 56.S47 (CONTINUED)

SHEET 7
- NOISE BARRIER 05.S539
- NOISE BARRIER 05.S541
- NOISE BARRIER 05.S551

SHEET 8
- NOISE BARRIER 05.S551 (CONTINUED)

SHEET 9
- NOISE BARRIER 05.S551 (CONTINUED)
- NOISE BARRIER 05.S557
- NOISE BARRIER 05.S561

SHEET 10
- NOISE BARRIER 05.S563
- NOISE BARRIER 05.S567
- NOISE BARRIER 05.S568
- NOISE BARRIER 05.S569



I-5/SR-56 INTERCHANGE PROJECT ALTERNATIVE 4

KEYMAP

NO SCALE

Sheet No.

1 of 1

ALTERNATIVE 4
BARRIER REPORT

Noise Barrier 56.S27 (Alternative 4)

General

Type: Sound wall

SR 56 Station limits: 25+93 to 29+66

Receptor sites: R6A to R9

Severely Impacted Receptors: None

Height: 3.7 to 4.9 meters (12 to 16 feet)

Location: Westbound SR 56; see Sheet 3

Benefited units: 11 Single-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 66 dBA

Compared to existing (year 2009): Four dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$407,000
Estimated Total Cost without Easements:	$905,921
Estimated Total Cost with Construction Easements only:	$981,941
Estimated Total Cost with all Easements:	$1,125,567

Reasonable Cost Allowance/Benefited Unit:	$37,000
Estimated Cost/Benefited Unit without Easements:	$82,356
Estimated Cost/Benefited Unit with Construction Easements only:	$89,267
Estimated Cost/Benefited Unit with all Easements:	$102,324

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 3 of the Alternative 4 exhibits, noise barrier 56.S27 would be located on private property and Caltrans right of way along the westbound side of SR-56, east of I-5. This area is represented by receiver sites R6A to R9. The sound wall would extend for approximately 362 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 3.7 meters (12 feet) to 4.9 meters (16 feet). The proposed noise barrier would replace an existing 8-foot high glass/block soundwall. The wall would benefit approximately 11 single-family residences and is considered feasible. The estimated construction cost of 56.S27, without easements is 123 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 141 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 177 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 56.S27 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 56.S27. No severely impacted receptors exist at this location. Construction of noise barrier 56.S27 is not recommended.

Noise Barrier 56.S31 (Alternative 4)

General

Type: Sound wall

SR 56 Station limits: 31+83 to 32+09

Receptor sites: R14 to R15

Severely Impacted Receptors: None

Height: 2.4 meters (8 feet)

Location: Westbound SR 56; see Sheet 4

Benefited units: Two Frontage Units

Predicted Noise Levels if Project Built without Abatement

Year 2030: 71 dBA

Compared to existing (year 2009): Seven dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$82,000
Estimated Total Cost without Easements:	$108,801
Estimated Total Cost with Construction Easements only:	$140,931
Estimated Total Cost with all Easements:	$176,733

Reasonable Cost Allowance/Benefited Unit:	$41,000
Estimated Cost/Benefited Unit without Easements:	$54,401
Estimated Cost/Benefited Unit with Construction Easements only:	$70,466
Estimated Cost/Benefited Unit with all Easements:	$88,367

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 4 of the Alternative 4 exhibits, noise barrier 56.S31 would be located on private property along the westbound side of SR-56, east of I-5. This area is represented by receiver sites R14 through R15. The sound wall would extend for approximately 77 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 meters (8 feet). The wall would benefit the Notre Dame Academy playground and is considered feasible. The estimated construction cost of 56.S31, without easements is 33 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 72 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 116 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 56.S31 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 56.S31. No severely impacted receptors exist at this location. Construction of noise barrier 56.S31 is not recommended.

Noise Barrier 56.S35 (Alternative 4)

General

Type: Sound wall

SR 56 Station limits: 33+84 to 37+50

Receptor sites: R17 to R21A

Severely Impacted Receptors: None

Height: 3.0 to 3.7 meters (10 to 12 feet)

Location: Westbound SR 56; see Sheet 4

Benefited units: 31 Single-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 67 dBA

Compared to existing (year 2009): One dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$1,023,000
Estimated Total Cost without Easements:	$751,359
Estimated Total Cost with Construction Easements only:	$840,000
Estimated Total Cost with all Easements:	$968,930

Reasonable Cost Allowance/Benefited Unit:	$33,000
Estimated Cost/Benefited Unit without Easements:	$24,237
Estimated Cost/Benefited Unit with Construction Easements only:	$27,097
Estimated Cost/Benefited Unit with all Easements:	$31,256

Reasonable without Easements:	Yes
Reasonable with Construction Easements only:	Yes
Reasonable with all Easements:	Yes

Discussion

As shown in Sheet 4 of the Alternative 4 exhibits, noise barrier 56.S35 would be located on private property and Caltrans right-of-way along the westbound side of SR-56, east of I-5. This area is represented by receiver sites R17 through R21A. The noise barrier would extend for approximately 370 meters. The heights of the barrier required to achieve a 5 dBA or more insertion loss at the critical design receiver would be 3.0 meters (10 feet) and 3.7 meters (12 feet). The proposed noise barrier would replace an existing 6-foot block property wall located on the right of way and property line. The wall would benefit 31 single-family residences and is considered feasible. The estimated construction cost of 56.S35, without easements is 27 percent below the reasonable allowance. When only temporary construction easements are included, the estimated cost is below the reasonable allowance by 18 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 5 percent below the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 56.S35 is feasible and reasonable. No severely impacted receptors exist at this location. Construction of noise barrier 56.S35 is recommended.

Noise Barrier 56.S41 (Alternative 4)

General

Type: Sound wall

SR 56 Station limits: 41+36 to 42+40

Receptor sites: R30A to R30

Severely Impacted Receptors: None

Height: 3.7 meters (12 feet)

Location: Westbound SR 56; see Sheet 5

Benefited units: Four Single-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 66 dBA

Compared to existing (year 2009): Two dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$132,000
Estimated Total Cost without Easements:	$215,157
Estimated Total Cost with Construction Easements only:	$237,228
Estimated Total Cost with all Easements:	$271,281

Reasonable Cost Allowance/Benefited Unit:	$33,000
Estimated Cost/Benefited Unit without Easements:	$53,789
Estimated Cost/Benefited Unit with Construction Easements only:	$59,307
Estimated Cost/Benefited Unit with all Easements:	$67,820

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 5 of the Alternative 4 exhibits, noise barrier 56.S41 would be located on private property and Caltrans right of way along the westbound side of SR-56, east of I-5. This area is represented by receiver sites R30A through R30. The sound wall would extend for approximately 105 meters. The height of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 3.7 meters (12 feet). The proposed noise barrier would replace an existing 6-foot high block property wall located on the right of way line. The wall would benefit four single-family residences and is considered feasible. The estimated construction cost of 56.S41, without easements is 63 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 80 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 106 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 56.S41 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 56.S41. No severely impacted receptors exist at this location. Construction of noise barrier 56.S41 is not recommended.

Noise Barrier 56.S47 (Alternative 4)

General

Type: Sound wall

SR 56 Station limits: 44+76 to 48+07

Receptor sites: R32 to R35A

Severely Impacted Receptors: None

Height: 3.7 to 4.3 meters (12 to 14 feet)

Location: Westbound SR 56; see Sheets 5 and 6

Benefited units: 10 Single-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 67 dBA

Compared to existing (year 2007): No dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$350,000
Estimated Total Cost without Easements:	$688,910
Estimated Total Cost with Construction Easements only:	$756,677
Estimated Total Cost with all Easements:	$865,458

Reasonable Cost Allowance/Benefited Unit:	$35,000
Estimated Cost/Benefited Unit without Easements:	$68,891
Estimated Cost/Benefited Unit with Construction Easements only:	$75,668
Estimated Cost/Benefited Unit with all Easements:	$86,546

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheets 5 and 6 of the Alternative 4 exhibits, noise barrier 56.S47 would be located on private property and Caltrans right of way along the westbound side of SR-56, east of I-5. This area is represented by receiver sites R32 through R35A. The sound wall would extend for approximately 323 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 3.7 meters (12 feet) to 4.3 meters (14 feet). The proposed noise barrier would replace an existing 6-foot high block property wall located on the right of way line and would connect to an existing soundwall. The wall would benefit 10 single-family residences and is considered feasible. The estimated construction cost of 56.S47, without easements is 97 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 116 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 147 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 56.S47 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 56.S47. No severely impacted receptors exist at this location. Construction of noise barrier 56.S47 is not recommended.

Noise Barrier 56.S20 (Alternative 4)

General

Type: Sound wall

SR 56 Station limits: 17+25 to 22+44

Receptor sites: R42 to R45

Severely Impacted Receptors: None

Height: 3.7 to 4.9 meters (12 to 16 feet)

Location: Eastbound SR 56; see Sheet 2

Benefited units: Seven Frontage Units

Predicted Noise Levels if Project Built without Abatement

Year 2030: 69 dBA

Compared to existing (year 2009): Four dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$259,000
Estimated Total Cost without Easements:	$1,317,618
Estimated Total Cost with Construction Easements only:	$1,317,618
Estimated Total Cost with all Easements:	$1,317,618

Reasonable Cost Allowance/Benefited Unit:	$37,000
Estimated Cost/Benefited Unit without Easements:	$188,231
Estimated Cost/Benefited Unit with Construction Easements only:	$188,231
Estimated Cost/Benefited Unit with all Easements:	$188,231

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 2 of the Alternative 4 exhibits, noise barrier 56.S20 would be located on Caltrans right of way along the eastbound side of SR-56, east of I-5. This area is represented by receiver sites R42 through R45. The sound wall would extend for approximately 519 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 3.7 meters (12 feet) to 4.9 meters (16 feet). The proposed noise barrier would be located on an existing earthen berm located on the right of way line. The proposed barrier would impact an existing environmentally sensitive area (ESA) known as the Carmel Valley Restoration and Enhancement Project (CVREP). The wall would benefit seven frontage units and is considered feasible. The estimated construction cost of 56.S20, without easements is 409 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 409 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 409 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 56.S20 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 56.S20. No severely impacted receptors exist at this location. Construction of noise barrier 56.S20 is not recommended.

Noise Barrier 56.S34 (Alternative 4)

General

Type: Sound wall

SR 56 Station limits: 32+00 to 34+60

Receptor sites: R46

Severely Impacted Receptors: None

Height: 2.4 to 3.0 meters (8 to 10 feet)

Location: Eastbound SR 56; see Sheet 4

Benefited units: One Single-Family Residence

Predicted Noise Levels if Project Built without Abatement

Year 2030: 70 dBA

Compared to existing (year 2009): Four dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$47,000
Estimated Total Cost without Easements:	$422,462
Estimated Total Cost with Construction Easements only:	$422,462
Estimated Total Cost with all Easements:	$422,462

Reasonable Cost Allowance/Benefited Unit:	$47,000
Estimated Cost/Benefited Unit without Easements:	$422,462
Estimated Cost/Benefited Unit with Construction Easements only:	$422,462
Estimated Cost/Benefited Unit with all Easements:	$422,462

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 4 of the Alternative 4 exhibits, noise barrier 56.S34 would be located on Caltrans right of way along the eastbound side of SR-56, east of I-5. This area is represented by receiver site R46. The sound wall would extend for approximately 258 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 meters (8 feet) to 3.0 meters (10 feet). The proposed noise barrier would be located on an existing earthen berm located on the right of way line. The proposed barrier would impact an existing environmentally sensitive area (ESA) known as the Carmel Valley Restoration and Enhancement Project (CVREP). The wall would benefit one single-family residence and is considered feasible. The estimated construction cost of 56.S34, without easements is 799 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 799 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 799 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 56.S34 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 56.S34. No severely impacted receptors exist at this location. Construction of noise barrier 56.S34 is not recommended.

Noise Barrier 56.S34 Option (Alternative 4)

General

Type: Sound wall

SR 56 Station limits: 33+08 to 33+87

Receptor sites: R46

Severely Impacted Receptors: None

Height: 3.7 to 4.3 meters (12 to 14 feet)

Location: Eastbound SR 56; see Sheet 4

Benefited units: One Single-Family Residence

Predicted Noise Levels if Project Built without Abatement

Year 2030: 70 dBA

Compared to existing (year 2009): Four dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$49,000
Estimated Total Cost without Easements:	$188,825
Estimated Total Cost with Construction Easements only:	$207,439
Estimated Total Cost with all Easements:	$238,235

Reasonable Cost Allowance/Benefited Unit:	$49,000
Estimated Cost/Benefited Unit without Easements:	$188,825
Estimated Cost/Benefited Unit with Construction Easements only:	$207,439
Estimated Cost/Benefited Unit with all Easements:	$238,235

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

An option to noise barrier 56.S34 was developed that analyzed the feasibility of constructing a noise barrier on the private property. As shown on Sheet 4 of the Alternative 4 exhibits, noise barrier 56.S34 Option would be located on private property along the eastbound side of SR-56, east of I-5. This area is represented by receiver site R46. The sound wall would extend for approximately 89 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 3.7 meters (12 feet) to 4.3 meters (14 feet). The wall would benefit one single-family residence and is considered feasible. The estimated construction cost of 56.S34 Option, without easements is 285 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 323 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 386 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 56.S34 Option is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 56.S34 Option. No severely impacted receptors exist at this location. Construction of noise barrier 56.S34 Option is not recommended.

Noise Barrier 05.S539 (Alternative 4)

General

Type: Sound wall

I-5 Station limits: 540+19 to 540+43

Receptor sites: R4.1

Severely Impacted Receptors: None

Height: 2.4 meters (8 feet)

Location: Southbound I-5; see Sheet 7

Benefited units: One Single-Family Residence

Predicted Noise Levels if Project Built without Abatement

Year 2030: 72 dBA

Compared to existing (year 2009): Two dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$37,000
Estimated Total Cost without Easements:	$62,831
Estimated Total Cost with Construction Easements only:	$80,471
Estimated Total Cost with all Easements:	$100,127

Reasonable Cost Allowance/Benefited Unit:	$37,000
Estimated Cost/Benefited Unit without Easements:	$62,831
Estimated Cost/Benefited Unit with Construction Easements only:	$80,471
Estimated Cost/Benefited Unit with all Easements:	$100,127

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 7 of the Alternative 4 exhibits, noise barrier 05.S539 would be located on private property along the southbound side of I-5, north of SR 56. This area is represented by receiver site R4.1. The sound wall would extend for approximately 42 meters. The height of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 meters (8 feet). The proposed noise barrier would replace an existing 8-foot property wall. The wall would benefit approximately one single-family residence. The sound wall is considered feasible. The estimated construction cost of 05.S539, without easements is 70 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 117 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 171 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 05.S539 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 05.S539. No severely impacted receptors exist at this location. Construction of noise barrier 05.S539 is not recommended.

Noise Barrier 05.S541 (Alternative 4)

General

Type: Sound wall

I-5 Station limits: 540+36 to 541+64

Receptor sites: R4.2 to R4.4

Severely Impacted Receptors: Two

Height: 2.4 to 4.3 meters (8 to 14 feet)

Location: Southbound I-5; see Sheet 7

Benefited units: One Single-Family Residence and Four Frontage Units

Predicted Noise Levels if Project Built without Abatement

Year 2030: 75 dBA

Compared to existing (year 2009): Five dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$225,000
Estimated Total Cost without Easements:	$388,142
Estimated Total Cost with Construction Easements only:	$465,086
Estimated Total Cost with all Easements:	$587,446

Reasonable Cost Allowance/Benefited Unit:	$45,000
Estimated Cost/Benefited Unit without Easements:	$77,628
Estimated Cost/Benefited Unit with Construction Easements only:	$93,017
Estimated Cost/Benefited Unit with all Easements:	$117,489

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 7 of the Alternative 4 exhibits, noise barrier 05.S541 would be located on private property along the southbound side of I-5, north of SR 56. This area is represented by receiver sites R4.2 to R4.4. The sound wall would extend for approximately 183 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 meters (8 feet) to 4.3 meters (14 feet). The proposed noise barrier would replace an existing 8-foot property wall. The wall would benefit approximately one single-family residence and four frontage units. The sound wall is considered feasible. The estimated construction cost of 05.S541, without easements is 73 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 107 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 161 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 05.S541 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 05.S541. Two severely impacted receptors exist at this location. Due to the existence of severely impacted receptors (R4.3 and R4.4), it is recommended that the noise barrier be constructed with FHWA approval under unusual and extraordinary abatement.

Noise Barrier 05.S551 (Alternative 4)

General

Type: Sound wall

I-5 Station limits: 545+72 to 556+37

Receptor sites: R4.12 to R4.21A

Severely Impacted Receptors: None

Height: 4.3 to 4.9 meters (14 to 16 feet)

Location: Southbound I-5; see Sheets 7, 8, and 9

Benefited units: 23 Single-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 70 dBA

Compared to existing (year 2009): Two dBA decrease

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$1,081,000
Estimated Total Cost without Easements:	$2,779,749
Estimated Total Cost with Construction Easements only:	$3,233,769
Estimated Total Cost with all Easements:	$4,118,220

Reasonable Cost Allowance/Benefited Unit:	$47,000
Estimated Cost/Benefited Unit without Easements:	$120,859
Estimated Cost/Benefited Unit with Construction Easements only:	$140,599
Estimated Cost/Benefited Unit with all Easements:	$179,053

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheets 7, 8, and 9 of the Alternative 4 exhibits, noise barrier 05.S551 would be located on private property along the southbound side of I-5, north of SR 56. This area is represented by receiver sites R4.12 to R4.21A. The sound wall would extend for approximately 1,081 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 4.3 meters (14 feet) and 4.9 meters (16 feet). The proposed noise barrier would replace an existing 8-foot sound wall. The wall would benefit approximately 23 single-family residences. The sound wall is considered feasible. The estimated construction cost of 05.S551, without easements is 157 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 199 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 281 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 05.S551 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 05.S551. No severely impacted receptors exist at this location. Construction of noise barrier 05.S551 is not recommended.

Noise Barrier 05.S557 (Alternative 4)

General

Type: Sound wall

I-5 Station limits: 556+08 to 558+01

Receptor sites: R4.22A to R4.24

Severely Impacted Receptors: Two

Height: 2.4 to 3.0 meters (8 to 10 feet)

Location: Southbound I-5; see Sheet 9

Benefited units: 10 Multi-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 79 dBA

Compared to existing (year 2009): Two dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$430,000
Estimated Total Cost without Easements:	$350,009
Estimated Total Cost with Construction Easements only:	$441,821
Estimated Total Cost with all Easements:	$555,812

Reasonable Cost Allowance/Benefited Unit:	$43,000
Estimated Cost/Benefited Unit without Easements:	$35,001
Estimated Cost/Benefited Unit with Construction Easements only:	$44,182
Estimated Cost/Benefited Unit with all Easements:	$55,581

Reasonable without Easements:	Yes
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 9 of the Alternative 4 exhibits, noise barrier 05.S557 would be located on private property along the southbound side of I-5, north of SR 56. This area is represented by receiver sites R4.22A to R4.24. The sound wall would extend for approximately 219 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 meters (8 feet) and 3.0 meters (10 feet). The wall would benefit approximately 10 multi-family residences. The sound wall is considered feasible. The estimated construction cost of 05.S557, without easements is 19 percent below the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 3 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 29 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 05.S557 is not recommended as proposed because the wall is not constructible. Due to the existence of severely impacted receptors (R4.23 and R4.23A), it is recommended that the severely impacted receptors receive abatement with FHWA approval under unusual and extraordinary abatement.

Noise Barrier 05.S561 (Alternative 4)

General

Type: Sound wall

I-5 Station limits: 560+85 to 562+21

Receptor sites: R5.1 to R5.2

Severely Impacted Receptors: Two

Height: 2.4 (8 feet)

Location: Southbound I-5; see Sheet 9

Benefited units: Six Multi-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 75 dBA

Compared to existing (year 2009): No dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$246,000
Estimated Total Cost without Easements:	$233,465
Estimated Total Cost with Construction Easements only:	$299,012
Estimated Total Cost with all Easements:	$372,049

Reasonable Cost Allowance/Benefited Unit:	$41,000
Estimated Cost/Benefited Unit without Easements:	$38,911
Estimated Cost/Benefited Unit with Construction Easements only:	$49,835
Estimated Cost/Benefited Unit with all Easements:	$62,008

Reasonable without Easements:	Yes
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 9 of the Alternative 4 exhibits, noise barrier 05.S561 would be located on private property along the southbound side of I-5, north of SR 56. This area is represented by receiver sites R5.1 to R5.2. The sound wall would extend for approximately 156 meters. The height of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 meters (8 feet). The wall would benefit approximately six multi-family residences. The sound wall is considered feasible. The estimated construction cost of 05.S561, without easements is 5 percent below the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 22 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 51 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 05.S561 is feasible and conditionally reasonable. Two severely impacted receptors exist at this location. Due to the existence of severely impacted receptors (R5.1 and R5.2), it is recommended that the noise barrier be constructed with FHWA approval under unusual and extraordinary abatement.

Noise Barrier 05.S563 (Alternative 4)

General

Type: Sound wall

I-5 Station limits: 563+28 to 564+36

Receptor sites: R5.5A to R5.6A

Severely Impacted Receptors: None

Height: 2.4 meters (8 feet)

Location: Southbound I-5; see Sheet 10

Benefited units: Four Frontage Units

Predicted Noise Levels if Project Built without Abatement

Year 2030: 69 dBA

Compared to existing (year 2009): Six dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$188,000
Estimated Total Cost without Easements:	$184,571
Estimated Total Cost with Construction Easements only:	$239,077
Estimated Total Cost with all Easements:	$299,811

Reasonable Cost Allowance/Benefited Unit:	$47,000
Estimated Cost/Benefited Unit without Easements:	$46,143
Estimated Cost/Benefited Unit with Construction Easements only:	$59,769
Estimated Cost/Benefited Unit with all Easements:	$74,953

Reasonable without Easements:	Yes
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 10 of the Alternative 4 exhibits, noise barrier 05.S563 would be located on private property along the southbound side of I-5, north of SR 56. This area is represented by receiver sites R5.5A to R5.6A. The sound wall would extend for approximately 130 meters. The height of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 meters (8 feet). The wall would benefit approximately four frontage units. The sound wall is considered feasible. The estimated construction cost of 05.S563, without easements is 2 percent below the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 27 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 59 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 05.S563 is not recommended unless negotiation with the property owners would result in estimated costs that do not exceed the reasonable allowance. This may be accomplished if the property owners are willing to donate easements by signing a waiver of just compensation. If the total cost cannot be reduced to less than or equal to the reasonable allowance, construction is not recommended. No severely impacted receptors exist at this location.

Noise Barrier 05.S567 (Alternative 4)

General

Type: Sound wall

I-5 Station limits: 564+61 to 567+18

Receptor sites: R5.7A to R5.8B

Severely Impacted Receptors: None

Height: 2.4 meters (8 feet)

Location: Southbound I-5; see Sheet 10

Benefited units: 13 Single-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 74 dBA

Compared to existing (year 2009): Two dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$637,000
Estimated Total Cost without Easements:	$425,385
Estimated Total Cost with Construction Easements only:	$503,596
Estimated Total Cost with all Easements:	$611,679

Reasonable Cost Allowance/Benefited Unit:	$49,000
Estimated Cost/Benefited Unit without Easements:	$32,722
Estimated Cost/Benefited Unit with Construction Easements only:	$38,738
Estimated Cost/Benefited Unit with all Easements:	$47,052

Reasonable without Easements:	Yes
Reasonable with Construction Easements only:	Yes
Reasonable with all Easements:	Yes

Discussion

As shown on Sheet 10 of the Alternative 4 exhibits, noise barrier 05.S567 would be located on private property and Caltrans right of way along the southbound side of I-5, north of SR 56. This area is represented by receiver sites R5.7A to R5.8B. The sound wall would extend for approximately 299 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 meters (8 feet). The wall would benefit approximately 13 single-family residences. The sound wall is considered feasible. The estimated construction cost of 05.S567, without easements is 33 percent below the reasonable allowance. When only temporary construction easements are included, the estimated cost is below the reasonable allowance by 21 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 4 percent below the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 05.S567 is feasible and reasonable. No severely impacted receptors exist at this location. Construction of noise barrier 05.S567 is recommended.

Noise Barrier 05.S569 (Alternative 4)

General

Type: Sound wall

I-5 Station limits: 567+29 to 567+89

Receptor sites: R5.9A to R5.9

Severely Impacted Receptors: None

Height: 2.4 to 4.3 meters (8 to 14 feet)

Location: Southbound I-5; see Sheet 10

Benefited units: Three Single-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 66 dBA

Compared to existing (year 2009): One dBA decrease

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$129,000
Estimated Total Cost without Easements:	$204,578
Estimated Total Cost with Construction Easements only:	$226,922
Estimated Total Cost with all Easements:	$260,366

Reasonable Cost Allowance/Benefited Unit:	$43,000
Estimated Cost/Benefited Unit without Easements:	$68,193
Estimated Cost/Benefited Unit with Construction Easements only:	$75,641
Estimated Cost/Benefited Unit with all Easements:	$86,789

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 10 of the Alternative 4 exhibits, noise barrier 05.S569 would be located on private property and Caltrans right of way along the southbound side of I-5, north of SR 56. This area is represented by receiver sites R5.9A to R5.9. The sound wall would extend for approximately 106 meters. The height of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 to 4.3 meters (8 to 14 feet). The wall would benefit approximately three single-family residences. The sound wall is considered feasible. The estimated construction cost of 05.S569, without easements is 59 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 76 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 102 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 05.S569 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 05.S569. No severely impacted receptors exist at this location. Construction of noise barrier 05.S569 is not recommended.

Noise Barrier 05.S568 (Alternative 4)

General

Type: Sound wall

I-5 Station limits: 566+24 to 567+90

Receptor sites: R5.22 to R5.23A

Severely Impacted Receptors: None

Height: 2.4 meters (8 feet)

Location: Northbound I-5; see Sheet 10

Benefited units: Nine Single-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 69 dBA

Compared to existing (year 2009): No dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$333,000
Estimated Total Cost without Easements:	$305,924
Estimated Total Cost with Construction Easements only:	$416,503
Estimated Total Cost with all Easements:	$505,048

Reasonable Cost Allowance/Benefited Unit:	$37,000
Estimated Cost/Benefited Unit without Easements:	$33,992
Estimated Cost/Benefited Unit with Construction Easements only:	$46,278
Estimated Cost/Benefited Unit with all Easements:	$56,116

Reasonable without Easements:	Yes
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 10 of the Alternative 4 exhibits, noise barrier 05.S568 would be located on private property and Caltrans right of way along the northbound side of I-5, north of SR 56. This area is represented by receiver sites R5.22 to R5.23A. The sound wall would extend for approximately 215 meters. The height of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 meters (8 feet). The wall would benefit approximately nine single-family residences. The sound wall is considered feasible. The estimated construction cost of 05.S568, without easements is 8 percent below the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 25 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 52 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 05.S568 is not recommended unless negotiation with the property owners would result in estimated costs that do not exceed the reasonable allowance. This may be accomplished if the property owners are willing to donate easements by signing a waiver of just compensation. If the total cost cannot be reduced to less than or equal to the reasonable allowance, construction is not recommended. No severely impacted receptors exist at this location.

ALTERNATIVE 4
COST ANALYSIS

SR 56 (ALTERNATIVE 4) - COST ANALYSIS

NOISE BARRIER	# OF BENEFITED RESIDENCES	WALL CHARACTERISTICS				QUANTITIES							EASEMENTS		
		Height	Length of Sound Wall	Length of Sound Wall on Retaining Wall	Length of Sound Wall Not on Retaining Wall	Excavation Depth	Excavation Width	Excavation and Backfill	Berm Embankment	Demolition of wood fence	Demolition of existing sound walls/property walls	Minor Concrete Sound Wall (Spread or Trench Footing)	Temporary Construction Easements	Footing Easements	Total Easements
		(m)	(m)	(m)	(m)	(m)	(m)	(m3)	(m3)	(m)	(m2)	(m3)	(m2)	(m2)	(m2)
56.S27	11	3.7	28	0	28	0.9	2.4	60	0	0	66	15	41	25	66
		4.3	70	0	70	0.9	2.6	163	0	0	167	42	104	70	174
		4.9	265	0	265	0.9	2.9	691	0	0	636	186	397	305	702
56.S31	2	2.4	77	0	77	0.9	1.9	131	0	0	0	30	230	99	329
56.S35	31	3.0	20	0	20	0.9	2.1	38	0	0	37	9	87	30	117
		3.7	350	0	350	0.9	2.4	756	0	0	630	192	546	328	874
56.S41	4	3.7	105	0	105	0.9	2.4	227	0	0	189	58	158	95	252
56.S47	10	3.7	205	0	205	0.9	2.4	443	0	0	370	113	308	185	493
		4.3	117	0	117	0.9	2.6	275	0	0	211	72	176	117	294
56.S20	7	3.7	70	0	70	0.9	2.4	151	410	0	0	38	0	0	0
		4.3	81	0	81	0.9	2.6	188	471	0	0	49	0	0	0
		4.9	369	0	369	0.9	2.9	964	2161	0	0	259	0	0	0
56.S34	1	2.4	180	0	180	0.9	1.9	308	1055	0	0	72	0	0	0
		3.0	77	0	77	0.9	2.1	145	448	0	0	35	0	0	0
56.S34 Option	1	3.7	31	0	31	0.9	2.4	67	0	0	0	17	46	28	74
		4.3	58	0	58	0.9	2.6	135	0	0	0	35	86	58	144

NOISE BARRIER	# OF BENEFITED RESIDENCES	CONSTRUCTION COSTS						ADDITIONAL COSTS				EASEMENT COSTS		
		Sound Wall Masonry Cost	Minor Concrete Sound Wall Cost	Excavation and Backfill Cost	Berm Embankment Cost	Demolition Cost - wood fence	Demolition Cost - sound wall/property wall	Clearing & Grubbing	Landscaping Cost	Traffic Control Cost	SWPPP Cost	Construction Easements	Footing Easements	Total Easements
		($200/m2)	($750/m3)	($125/m3)	($40/m3)	($40/m)	($32/m2)	(8% of Wall Cost)	(10% of Wall Cost)	(5% of Wall Cost)	(5% of Wall Cost)	($140/m2)	($360/m2)	
56.S27	11	$23,736	$11,364	$7,452	$0	$0	$2,120	$3,574	$4,467	$2,234	$2,234	$5,796	$8,942	$14,738
		$68,208	$31,842	$20,358	$0	$0	$5,345	$10,060	$12,575	$6,288	$6,288	$14,616	$25,056	$39,672
		$291,280	$139,318	$86,391	$0	$0	$20,337	$42,986	$53,733	$26,866	$26,866	$55,608	$109,627	$165,235
		$383,224	***$182,524***	***$114,201***	***$0***	***$0***	***$27,802***	***$56,620***	***$70,775***	***$35,388***	***$35,388***	***$76,020***	***$143,626***	***$219,646***
56.S31	2	$45,900	$22,749	$16,352	$0	$0	$0	$6,800	$8,500	$4,250	$4,250	$32,130	$35,802	$67,932
		$45,900	***$22,749***	***$16,352***	***$0***	***$0***	***$0***	***$6,800***	***$8,500***	***$4,250***	***$4,250***	***$32,130***	***$35,802***	***$67,932***
56.S35	31	$14,616	$6,965	$4,796	$0	$0	$1,169	$2,204	$2,755	$1,377	$1,377	$12,180	$10,962	$23,142
		$300,828	$144,030	$94,446	$0	$0	$20,148	$44,756	$55,945	$27,973	$27,973	$76,461	$117,968	$194,429
		$315,444	***$150,996***	***$99,242***	***$0***	***$0***	***$21,318***	***$46,960***	***$58,700***	***$29,350***	***$29,350***	***$88,641***	***$128,930***	***$217,571***
56.S41	4	$90,386	$43,275	$28,377	$0	$0	$6,054	$13,447	$16,809	$8,405	$8,405	$22,071	$34,052	$56,123
		$90,386	***$43,275***	***$28,377***	***$0***	***$0***	***$6,054***	***$13,447***	***$16,809***	***$8,405***	***$8,405***	***$22,071***	***$34,052***	***$56,123***
56.S47	10	$176,558	$84,532	$55,431	$0	$0	$11,825	$26,268	$32,835	$16,417	$16,417	$43,113	$66,517	$109,630
		$115,052	$53,711	$34,340	$0	$0	$6,762	$16,789	$20,986	$10,493	$10,493	$24,654	$42,264	$66,918
		$291,610	***$138,243***	***$89,771***	***$0***	***$0***	***$18,588***	***$43,057***	***$53,821***	***$26,911***	***$26,911***	***$67,767***	***$108,781***	***$176,548***
56.S20	7	$60,286	$28,864	$18,927	$8,202	$0	$0	$9,302	$11,628	$5,814	$5,814	$0	$0	$0
		$78,890	$36,829	$23,546	$9,419	$0	$0	$11,895	$14,868	$7,434	$7,434	$0	$0	$0
		$406,340	$194,351	$120,517	$43,220	$0	$0	$61,154	$76,443	$38,221	$38,221	$0	$0	$0
		$545,516	***$260,043***	***$162,990***	***$60,840***	***$0***	***$0***	***$82,351***	***$102,939***	***$51,469***	***$51,469***	***$0***	***$0***	***$0***
56.S34	1	$108,240	$53,646	$38,561	$21,107	$0	$0	$17,724	$22,155	$11,078	$11,078	$0	$0	$0
		$55,152	$26,283	$18,097	$8,962	$0	$0	$8,680	$10,849	$5,425	$5,425	$0	$0	$0
		$163,392	***$79,930***	***$56,657***	***$30,069***	***$0***	***$0***	***$26,404***	***$33,005***	***$16,502***	***$16,502***	***$0***	***$0***	***$0***
56.S34 Option	1	$26,640	$12,755	$8,364	$0	$0	$0	$3,821	$4,776	$2,388	$2,388	$6,505	$10,037	$16,542
		$56,512	$26,382	$16,867	$0	$0	$0	$7,981	$9,976	$4,988	$4,988	$12,110	$20,759	$32,869
		$83,152	***$39,137***	***$25,231***	***$0***	***$0***	***$0***	***$11,802***	***$14,752***	***$7,376***	***$7,376***	***$18,615***	***$30,796***	***$49,411***

NOISE BARRIER	# OF BENEFITED RESIDENCES	TOTAL COSTS			COST PER BENEFITTED RESIDENCE			COST ALLOWANCE		REASONABLENESS		
		Estimated Total Cost (w/o Easements)	Estimated Total Cost (w/ Construction Easement Only)	Estimated Total Cost w/ Easements	Estimated Cost/Benefited Residence (w/o Easements)	Estimated Cost/Benefited Residence (w/ Construction Easement Only)	Estimated Cost Per Benefitted Residence w/ Easements	Reasonable Allowance Per Residence	Reasonable Total Allowance	Reasonable w/o Easements	Reasonable w/ Construction Easements Only	Reasonable w/ all easements
56.S27	11	$57,180	$62,976	$71,919	***$82,356***	***$89,267***	***$102,324***	***$37,000***	***$407,000***	***NO***	***NO***	***NO***
		$160,964	$175,580	$200,636								
		$687,777	$743,385	$853,012								
		$905,921	***$981,941***	***$1,125,567***								
56.S31	2	$108,801	$140,931	$176,733	***$54,401***	***$70,466***	***$88,367***	***$41,000***	***$82,000***	***NO***	***NO***	***NO***
		$108,801	***$140,931***	***$176,733***								
56.S35	31	$35,260	$47,440	$58,402	***$24,237***	***$27,097***	***$31,256***	***$33,000***	***$1,023,000***	***YES***	***YES***	***YES***
		$716,099	$792,560	$910,529								
		$751,359	***$840,000***	***$968,930***								
56.S41	4	$215,157	$237,228	$271,281	***$53,789***	***$59,307***	***$67,820***	***$33,000***	***$132,000***	***NO***	***NO***	***NO***
		$215,157	***$237,228***	***$271,281***								
56.S47	10	$420,284	$463,397	$529,914	***$68,891***	***$75,668***	***$86,546***	***$35,000***	***$350,000***	***NO***	***NO***	***NO***
		$268,626	$293,280	$335,544								
		$688,910	***$756,677***	***$865,458***								
56.S20	7	$148,836	$148,836	$148,836	***$188,231***	***$188,231***	***$188,231***	***$37,000***	***$259,000***	***NO***	***NO***	***NO***
		$190,315	$190,315	$190,315								
		$978,467	$978,467	$978,467								
		$1,317,618	***$1,317,618***	***$1,317,618***								
56.S34	1	$283,589	$283,589	$283,589	***$422,462***	***$422,462***	***$422,462***	***$47,000***	***$47,000***	***NO***	***NO***	***NO***
		$138,873	$138,873	$138,873								
		$422,462	***$422,462***	***$422,462***								
56.S34 Option	1	$61,131	$67,636	$77,673	***$188,825***	***$207,439***	***$238,235***	***$49,000***	***$49,000***	***NO***	***NO***	***NO***
		$127,693	$139,803	$160,562								
		$188,825	***$207,439***	***$238,235***								

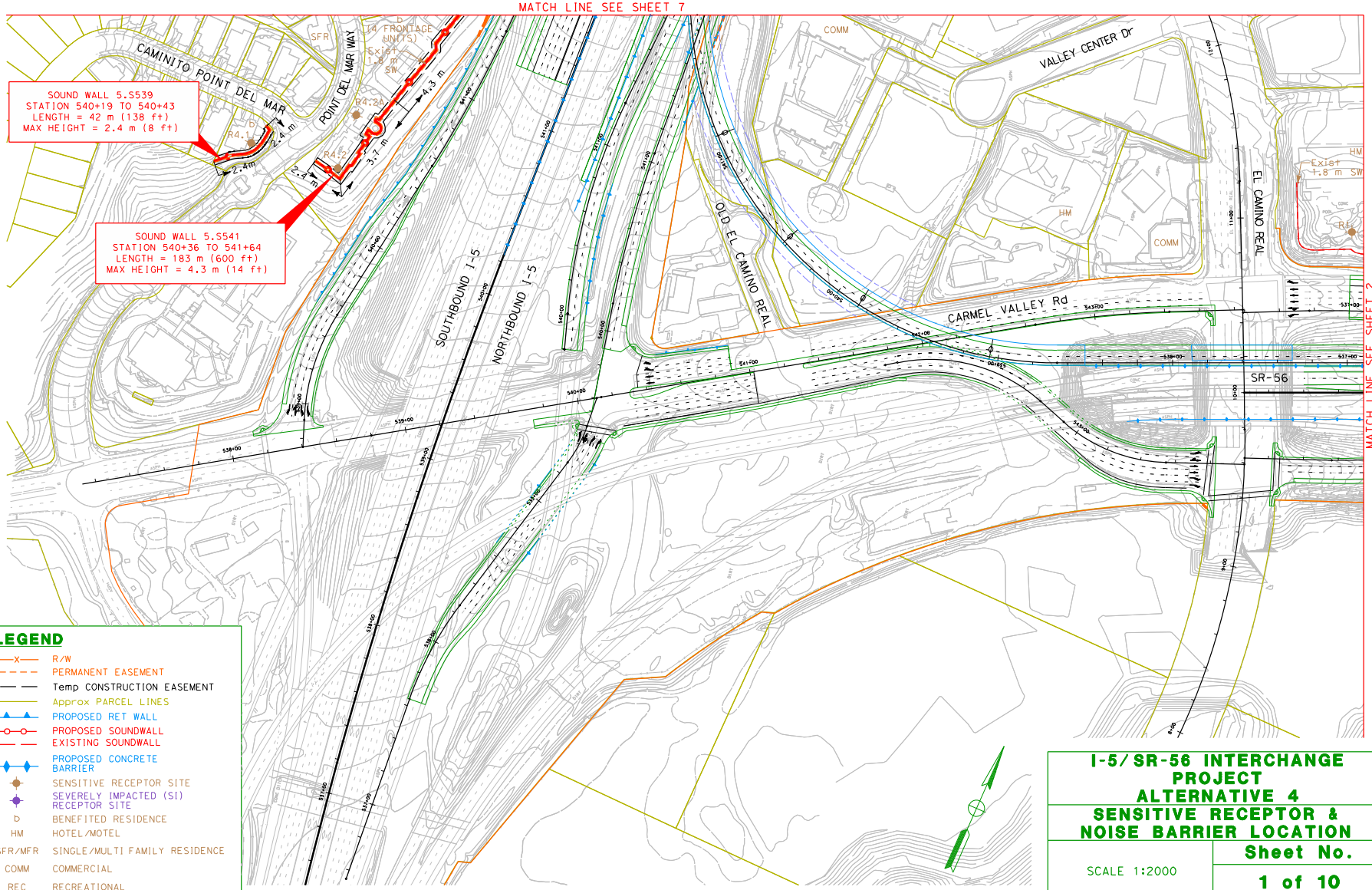
I-5 (ALTERNATIVE 4) - COST ANALYSIS

NOISE BARRIER	# OF BENEFITED RESIDENCES	WALL CHARACTERISTICS				QUANTITIES						EASEMENTS		
		Height	Length of Sound Wall	Length of Sound Wall on Retaining Wall	Length of Sound Wall Not on Retaining Wall	Excavation Depth	Excavation Width	Excavation and Backfill	Demolition of wood fence	Demolition of existing sound walls/property walls	Minor Concrete Sound Wall (Spread or Trench Footing)	Temporary Construction Easements	Footing Easements	Total Easements
		(m)	(m)	(m)	(m)	(m)	(m)	(m3)	(m)	(m2)	(m3)	(m2)	(m2)	(m2)
05.S539	1	2.4	42	0	42	0.9	1.9	72	0	76	17	126	55	181
05.S541	5	2.4	18	0	18	0.9	1.9	30	0	32	7	53	23	75
		3.7	71	0	71	0.9	2.4	154	0	128	39	214	128	342
		4.3	94	0	94	0.9	2.6	221	0	170	58	283	189	472
05.S551	23	4.3	98	0	98	0.9	2.6	230	0	236	60	295	197	492
		4.9	983	0	983	0.9	2.9	2565	0	2358	689	2948	2260	5208
05.S557	10	2.4	56	0	56	0.9	1.9	96	0	0	22	169	73	242
		3.0	162	0	162	0.9	2.1	307	0	0	74	487	243	730
05.S561	6	2.4	156	0	156	0.9	1.9	267	0	281	62	468	203	671
05.S563	4	2.4	130	0	130	0.9	1.9	222	0	0	51	389	169	558
05.S567	13	2.4	299	0	299	0.9	1.9	511	0	0	119	559	300	859
05.S569	3	2.4	29	0	29	0.9	1.9	50	0	0	12	44	19	63
		3.7	33	0	33	0.9	2.4	71	0	0	18	49	30	79
		4.3	44	0	44	0.9	2.6	104	0	0	27	67	44	111
05.S568	9	2.4	215	0	215	0.9	1.9	368	0	0	85	790	246	1036

NOISE BARRIER	# OF BENEFITED RESIDENCES	CONSTRUCTION COSTS					ADDITIONAL COSTS				EASEMENT COSTS		
		Sound Wall Masonry Cost	Minor Concrete Sound Wall Cost	Excavation and Backfill Cost	Demolition Cost - wood fence	Demolition Cost - sound wall/property wall	Clearing & Grubbing	Landscaping Cost	Traffic Control Cost	SWPPP Cost	Construction Easements	Footing Easements	Total Easements
		($200/m2)	($750/m3)	($125/m3)	($40/m)	($32/m2)	(8% of Wall Cost)	(10% of Wall Cost)	(5% of Wall Cost)	(5% of Wall Cost)	($140/m2)	($360/m2)	
05.S539	1	$25,200	$12,490	$8,978	$0	$2,419	$3,927	$4,909	$2,454	$2,454	$17,640	$19,656	$37,296
		$25,200	***$12,490***	***$8,978***	***$0***	***$2,419***	***$3,927***	***$4,909***	***$2,454***	***$2,454***	***$17,640***	***$19,656***	***$37,296***
05.S541	5	$10,500	$5,204	$3,741	$0	$1,008	$1,636	$2,045	$1,023	$1,023	$7,350	$8,190	$15,540
		$61,318	$29,358	$19,251	$0	$4,107	$9,123	$11,403	$5,702	$5,702	$29,946	$46,202	$76,148
		$92,512	$43,188	$27,612	$0	$5,437	$13,500	$16,875	$8,437	$8,437	$39,648	$67,968	$107,616
		$164,330	***$77,750***	***$50,604***	***$0***	***$10,552***	***$24,259***	***$30,324***	***$15,162***	***$15,162***	***$76,944***	***$122,360***	***$199,304***
05.S551	23	$96,334	$44,972	$28,753	$0	$7,549	$14,209	$17,761	$8,880	$8,880	$41,286	$70,776	$112,062
		$1,080,970	$517,023	$320,606	$0	$75,471	$159,526	$199,407	$99,704	$99,704	$412,734	$813,676	$1,226,410
		$1,177,304	***$561,995***	***$349,359***	***$0***	***$83,021***	***$173,734***	***$217,168***	***$108,584***	***$108,584***	***$454,020***	***$884,452***	***$1,338,472***
05.S557	10	$33,780	$16,742	$12,034	$0	$0	$5,005	$6,256	$3,128	$3,128	$23,646	$26,348	$49,994
		$116,856	$55,689	$38,343	$0	$0	$16,871	$21,089	$10,544	$10,544	$68,166	$87,642	$155,808
		$150,636	***$72,431***	***$50,378***	***$0***	***$0***	***$21,876***	***$27,344***	***$13,672***	***$13,672***	***$91,812***	***$113,990***	***$205,802***
05.S561	6	$93,638	$46,409	$33,358	$0	$8,989	$14,592	$18,239	$9,120	$9,120	$65,546	$73,037	$138,584
		$93,638	***$46,409***	***$33,358***	***$0***	***$8,989***	***$14,592***	***$18,239***	***$9,120***	***$9,120***	***$65,546***	***$73,037***	***$138,584***
05.S563	4	$77,865	$38,592	$27,739	$0	$0	$11,536	$14,420	$7,210	$7,210	$54,506	$60,735	$115,240
		$77,865	***$38,592***	***$27,739***	***$0***	***$0***	***$11,536***	***$14,420***	***$7,210***	***$7,210***	***$54,506***	***$60,735***	***$115,240***
05.S567	13	$179,457	$88,943	$63,932	$0	$0	$26,587	$33,233	$16,617	$16,617	$78,211	$108,083	$186,294
		$179,457	***$88,943***	***$63,932***	***$0***	***$0***	***$26,587***	***$33,233***	***$16,617***	***$16,617***	***$78,211***	***$108,083***	***$186,294***
05.S569	3	$17,520	$8,683	$6,242	$0	$0	$2,596	$3,244	$1,622	$1,622	$6,132	$6,833	$12,965
		$28,208	$13,505	$8,856	$0	$0	$4,046	$5,057	$2,528	$2,528	$6,888	$10,627	$17,515
		$43,512	$20,313	$12,987	$0	$0	$6,145	$7,681	$3,841	$3,841	$9,324	$15,984	$25,308
		$89,240	***$42,502***	***$28,085***	***$0***	***$0***	***$12,786***	***$15,983***	***$7,991***	***$7,991***	***$22,344***	***$33,444***	***$55,788***
05.S568	9	$129,060	$63,965	$45,978	$0	$0	$19,120	$23,900	$11,950	$11,950	$110,579	$88,546	$199,125
		$129,060	***$63,965***	***$45,978***	***$0***	***$0***	***$19,120***	***$23,900***	***$11,950***	***$11,950***	***$110,579***	***$88,546***	***$199,125***

NOISE BARRIER	# OF BENEFITED RESIDENCES	TOTAL COSTS			COST PER BENEFITTED RESIDENCE			COST ALLOWANCE		REASONABLENESS		
		Estimated Total Cost (w/o Easements)	Estimated Total Cost (w/ Construction Easement Only)	Estimated Total Cost w/ Easements	Estimated Cost/Benefited Residence (w/o Easements)	Estimated Cost/Benefited Residence (w/ Construction Easement Only)	Estimated Cost Per Benefitted Residence w/ Easements	Reasonable Allowance Per Residence	Reasonable Total Allowance	Reasonable w/o Easements	Reasonable w/ Construction Easements Only	Reasonable w/ all easements
05.S539	1	$62,831	$80,471	$100,127	***$62,831***	***$80,471***	***$100,127***	***$37,000***	***$37,000***	***NO***	***NO***	***NO***
		$62,831	***$80,471***	***$100,127***								
05.S541	5	$26,179	$33,529	$41,719	***$77,628***	***$93,017***	***$117,489***	***$45,000***	***$225,000***	***NO***	***NO***	***NO***
		$145,963	$175,909	$222,111								
		$215,999	$255,647	$323,615								
		$388,142	***$465,086***	***$587,446***								
05.S551	23	$227,339	$268,625	$339,401	***$120,859***	***$140,599***	***$179,053***	***$47,000***	***$1,081,000***	***NO***	***NO***	***NO***
		$2,552,410	$2,965,144	$3,778,820								
		$2,779,749	***$3,233,769***	***$4,118,220***								
05.S557	10	$80,072	$103,718	$130,067	***$35,001***	***$44,182***	***$55,581***	***$43,000***	***$430,000***	***YES***	***NO***	***NO***
		$269,937	$338,103	$425,745								
		$350,009	***$441,821***	***$555,812***								
05.S561	6	$233,465	$299,012	$372,049	***$38,911***	***$49,835***	***$62,008***	***$41,000***	***$246,000***	***YES***	***NO***	***NO***
		$233,465	***$299,012***	***$372,049***								
05.S563	4	$184,571	$239,077	$299,811	***$46,143***	***$59,769***	***$74,953***	***$47,000***	***$188,000***	***YES***	***NO***	***NO***
		$184,571	***$239,077***	***$299,811***								
05.S567	13	$425,385	$503,596	$611,679	***$32,722***	***$38,738***	***$47,052***	***$49,000***	***$637,000***	***YES***	***YES***	***YES***
		$425,385	***$503,596***	***$611,679***								
05.S569	3	$41,529	$47,661	$54,494	***$68,193***	***$75,641***	***$86,789***	***$43,000***	***$129,000***	***NO***	***NO***	***NO***
		$64,729	$71,617	$82,244								
		$98,319	$107,643	$123,627								
		$204,578	***$226,922***	***$260,366***								
05.S568	9	$305,924	$416,503	$505,048	***$33,992***	***$46,278***	***$56,116***	***$37,000***	***$333,000***	***YES***	***NO***	***NO***
		$305,924	***$416,503***	***$505,048***								

ALTERNATIVE 4
EXHIBITS



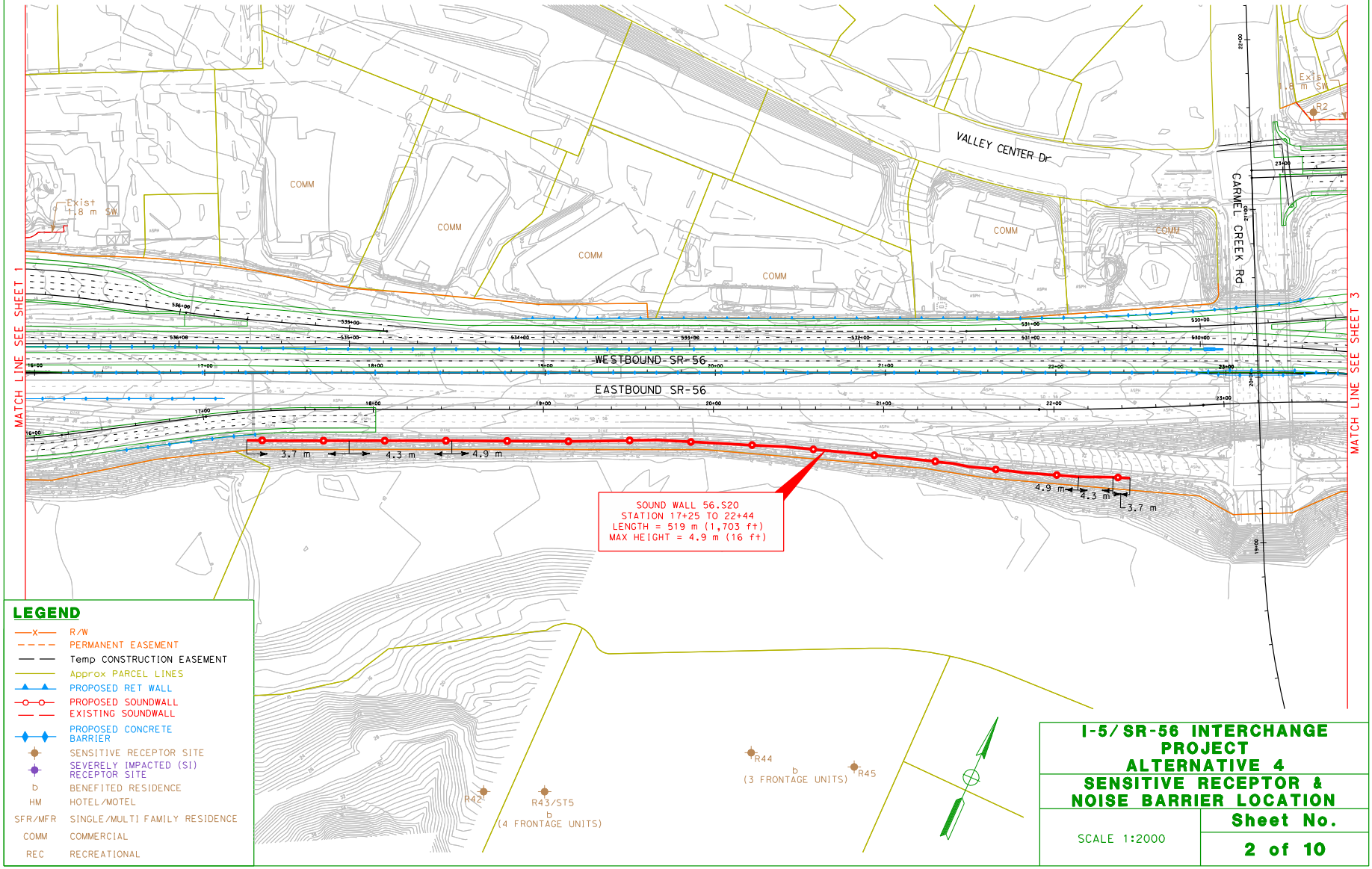
I-5/ SR-56 INTERCHANGE PROJECT ALTERNATIVE 4

SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

SCALE 1:2000

Sheet No.

1 of 10



LEGEND

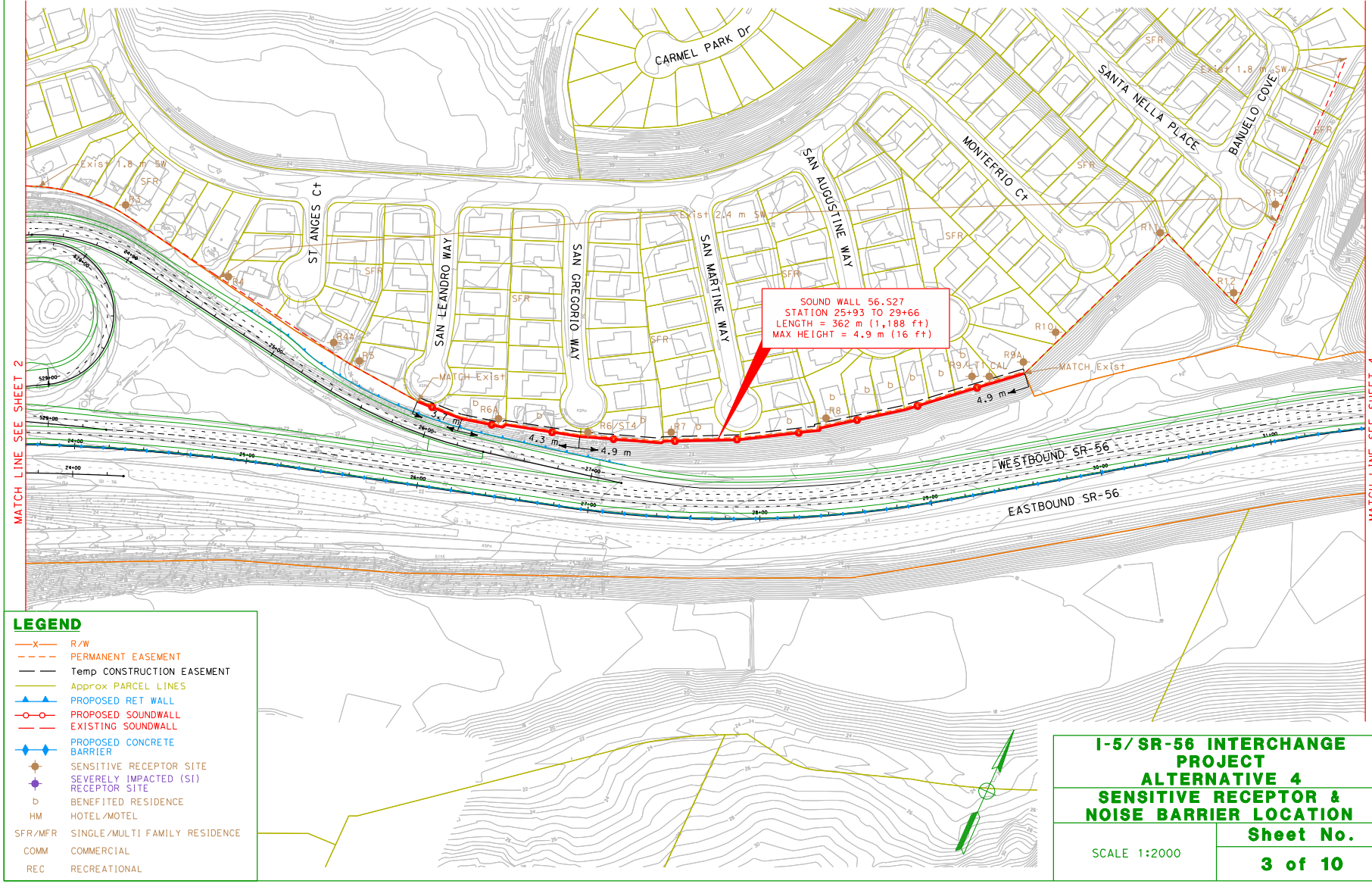
—x—	R/W
- - - -	PERMANENT EASEMENT
— —	Temp CONSTRUCTION EASEMENT
	Approx PARCEL LINES
	PROPOSED RET WALL
—o—o—	PROPOSED SOUNDWALL
— —	EXISTING SOUNDWALL
	PROPOSED CONCRETE BARRIER
	SENSITIVE RECEPTOR SITE
	SEVERELY IMPACTED (SI) RECEPTOR SITE
b	BENEFITED RESIDENCE
HM	HOTEL/MOTEL
SFR/MFR	SINGLE/MULTI FAMILY RESIDENCE
COMM	COMMERCIAL
REC	RECREATIONAL

I-5/ SR-56 INTERCHANGE PROJECT
ALTERNATIVE 4
SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

SCALE 1:2000

Sheet No.

2 of 10



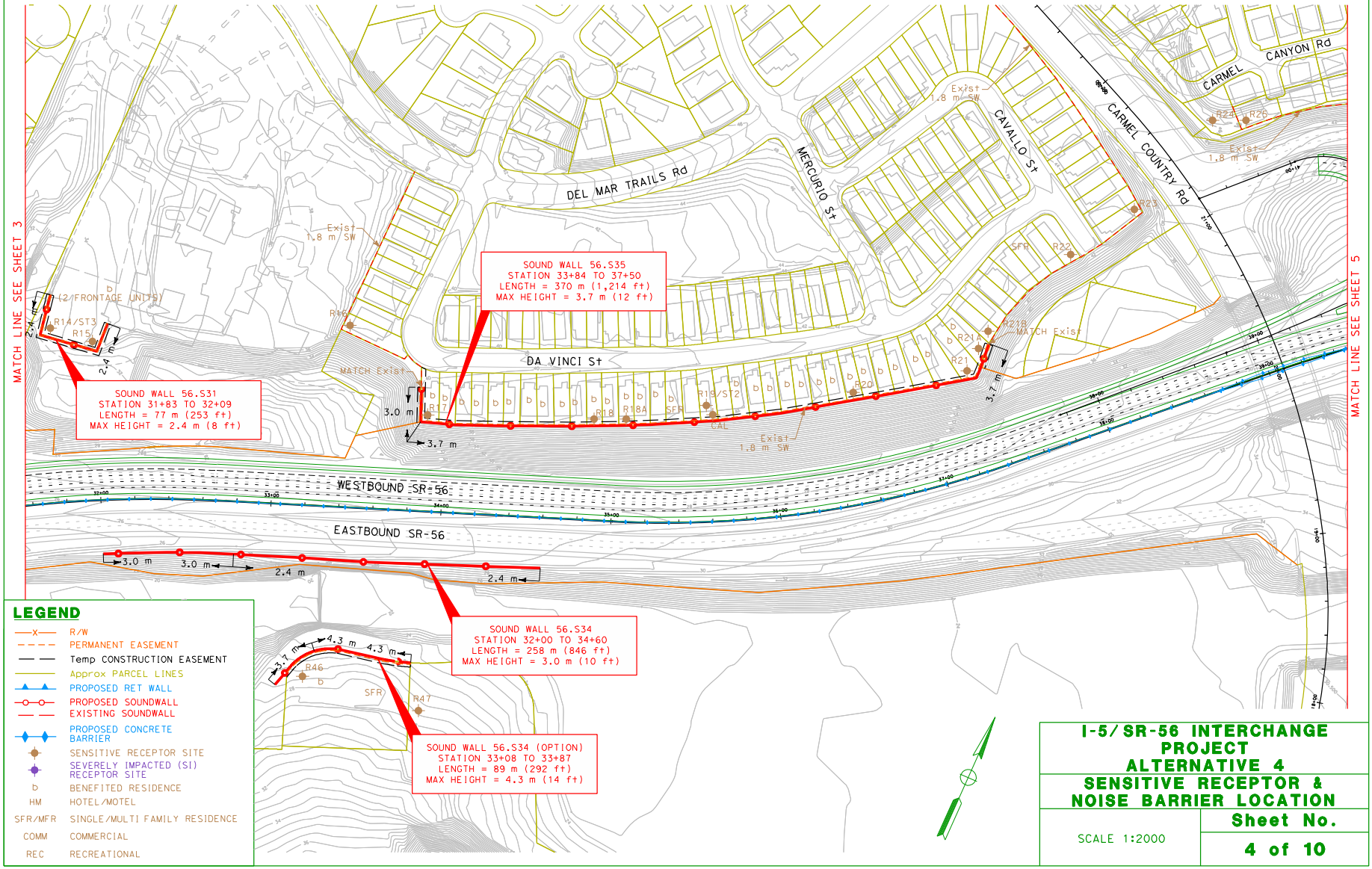
LEGEND

- R/W
- PERMANENT EASEMENT
- Temp CONSTRUCTION EASEMENT
- Approx PARCEL LINES
- PROPOSED RET WALL
- PROPOSED SOUNDWALL
- EXISTING SOUNDWALL
- PROPOSED CONCRETE BARRIER
- SENSITIVE RECEPTOR SITE
- SEVERELY IMPACTED (SI) RECEPTOR SITE
- b — BENEFITED RESIDENCE
- HM — HOTEL/MOTEL
- SFR/MFR — SINGLE/MULTI FAMILY RESIDENCE
- COMM — COMMERCIAL
- REC — RECREATIONAL

I-5/ SR-56 INTERCHANGE PROJECT
ALTERNATIVE 4
SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

SCALE 1:2000

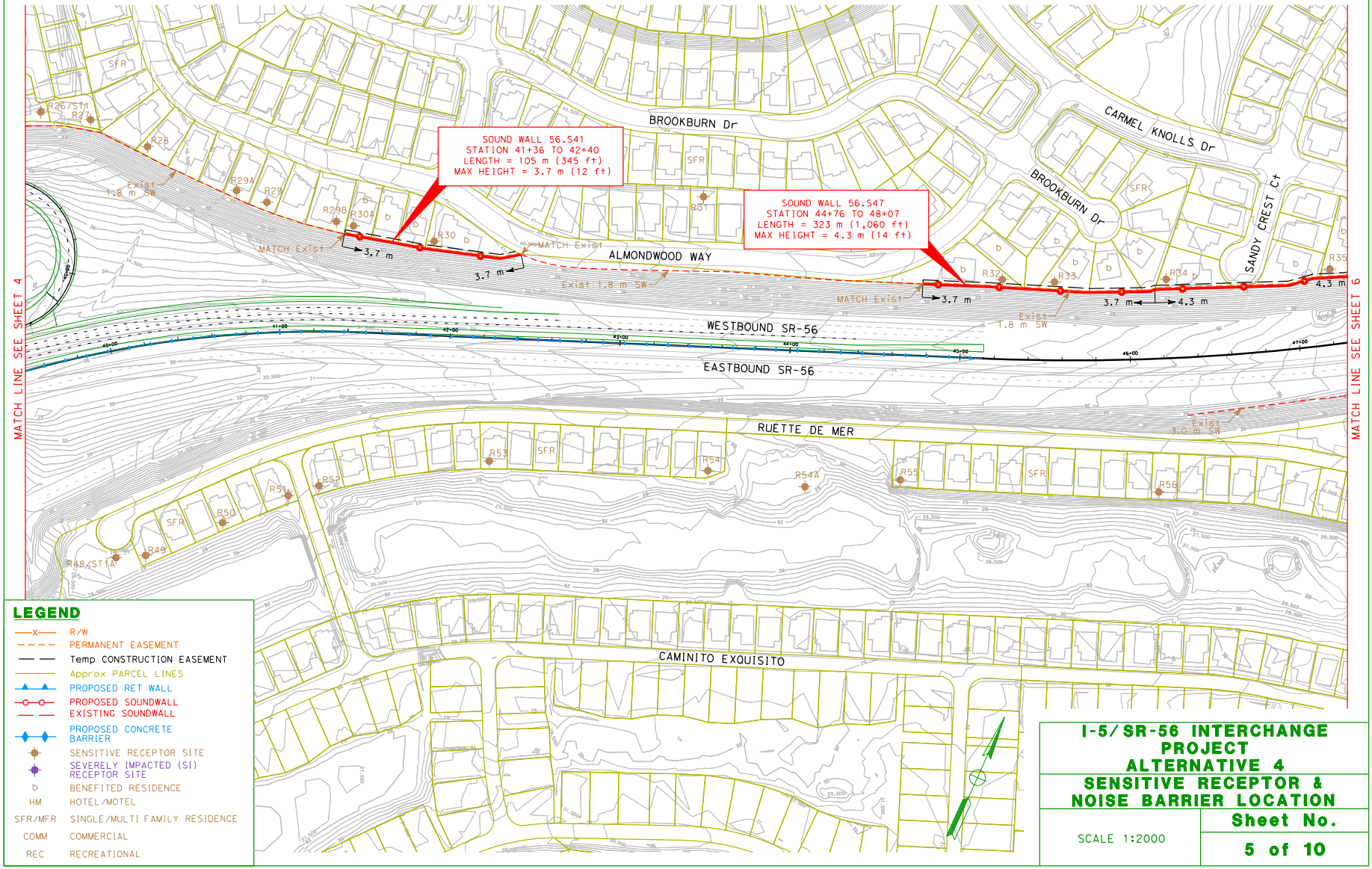
Sheet No.
3 of 10



I-5/ SR-56 INTERCHANGE PROJECT
ALTERNATIVE 4
SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

SCALE 1:2000

Sheet No.
4 of 10



I-5/ SR-56 INTERCHANGE PROJECT
ALTERNATIVE 4
SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

SCALE 1:2000

Sheet No.

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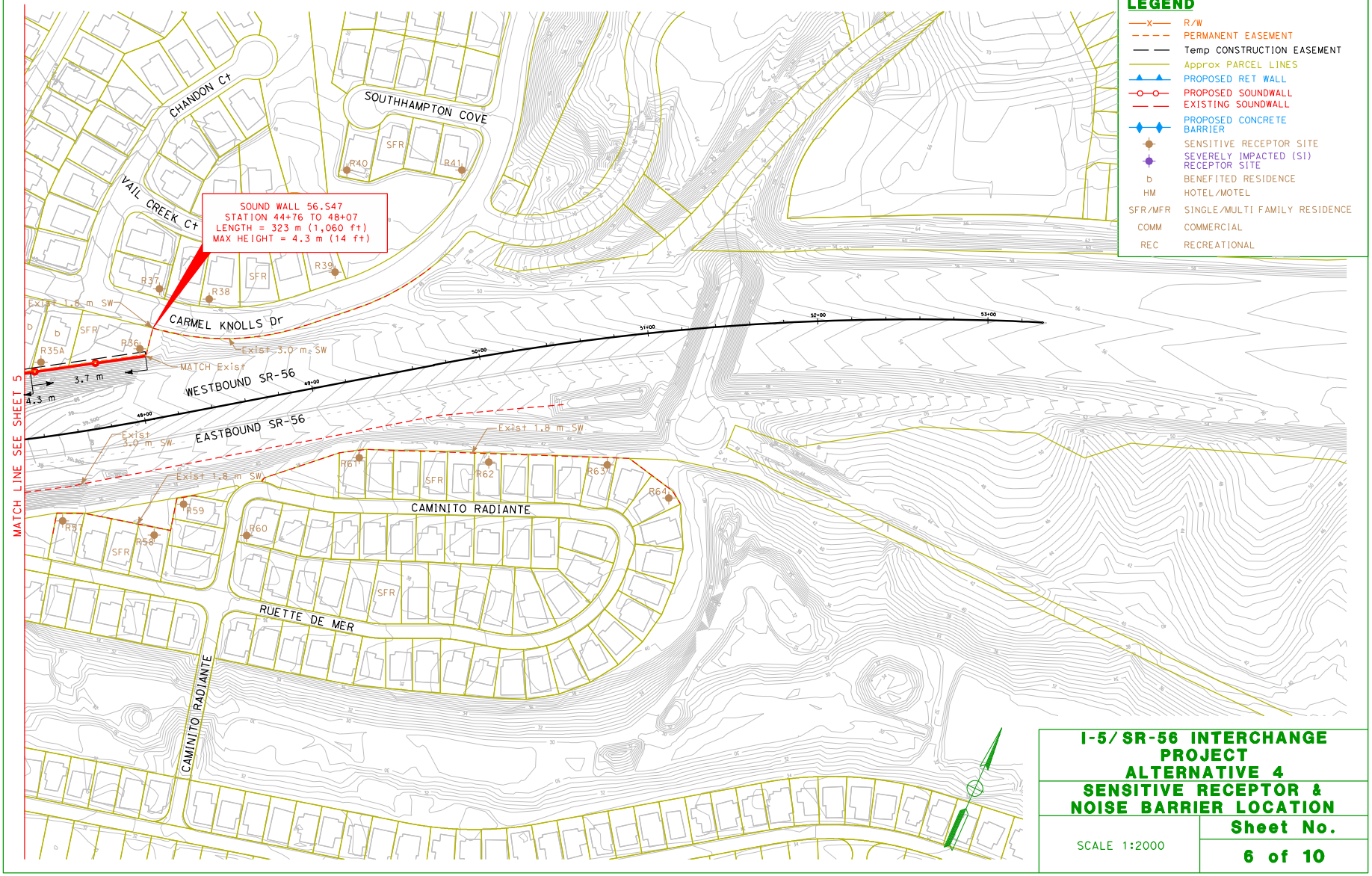
LEGEND
R/W
PERMANENT EASEMENT
Temp CONSTRUCTION EASEMENT
Approx PARCEL LINES
PROPOSED RET WALL
PROPOSED SOUNDWALL
EXISTING SOUNDWALL
PROPOSED CONCRETE BARRIER
SENSITIVE RECEPTOR SITE
SEVERELY IMPACTED (SI) RECEPTOR SITE
b BENEFITED RESIDENCE
HM HOTEL/MOTEL
SFR/MFR SINGLE/MULTI FAMILY RESIDENCE
COMM COMMERCIAL
REC RECREATIONAL
SOUND WALL 56.S47
STATION 44+76 TO 48+07
LENGTH = 323 m (1,060 ft)
MAX HEIGHT = 4.3 m (14 ft)
MATCH LINE SEE SHEET 5
CHANDON Ct
SOUTHHAMPTON COVE
VAIL CREEK Ct
CARMEL KNOLLS Dr
WESTBOUND SR-56
EASTBOUND SR-56
CAMINITO RADIANTE
RUETTE DE MER
CAMINITO RADIANTE
Exist 1.8 m SW
Exist 3.0 m SW
MATCH Exist
3.7 m
4.3 m
R35A
R36
R37
R38
R39
R40
R41
R57
R58
R59
R60
R61
R62
R63
R64
SFR
48+00
49+00
50+00
51+00
52+00
53+00
I-5/SR-56 INTERCHANGE PROJECT
ALTERNATIVE 4
SENSITIVE RECEPTOR & NOISE BARRIER LOCATION
SCALE 1:2000
Sheet No.
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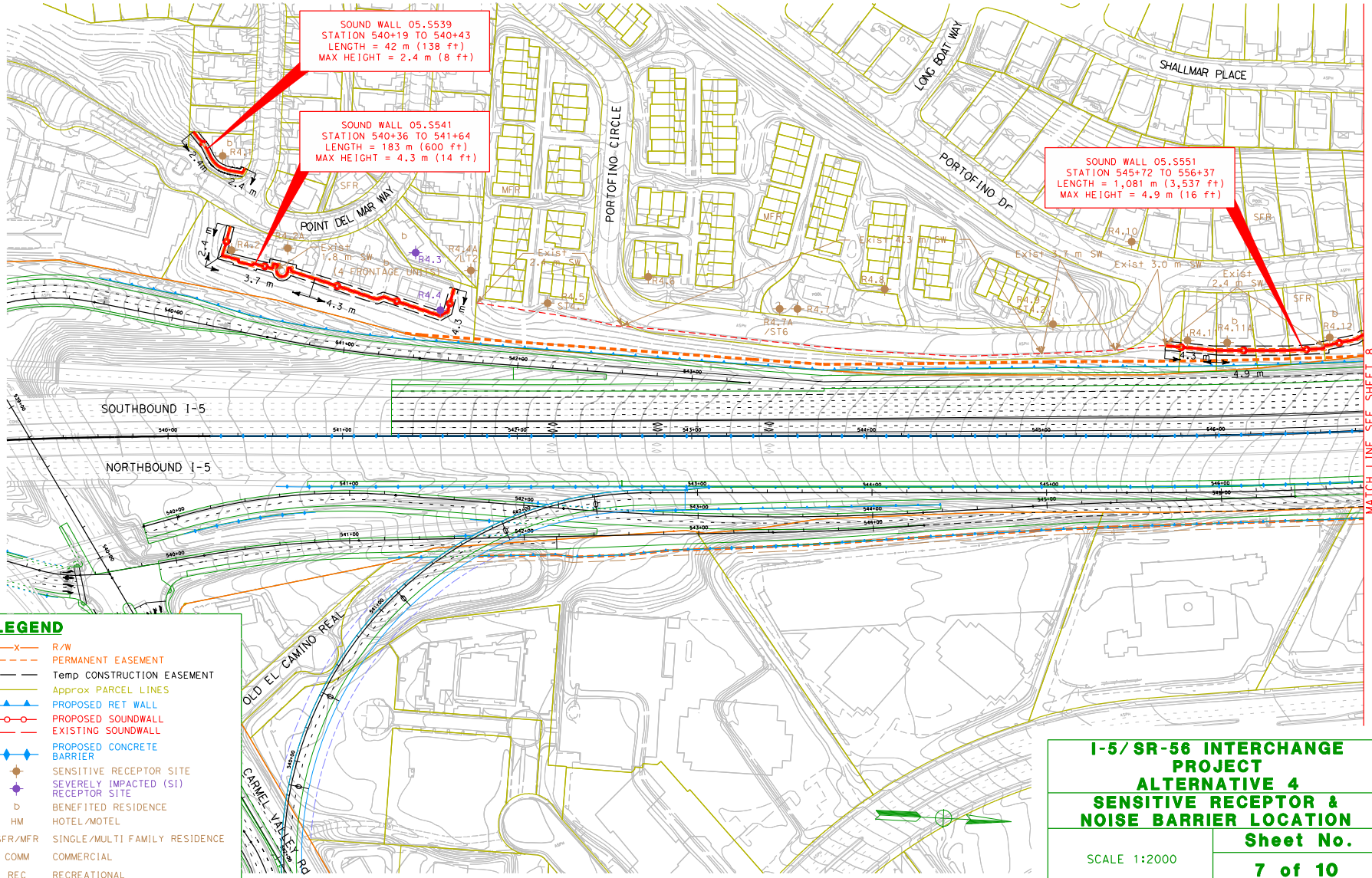

I-5/ SR-56 INTERCHANGE PROJECT
ALTERNATIVE 4
SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

SCALE 1:2000

Sheet No.
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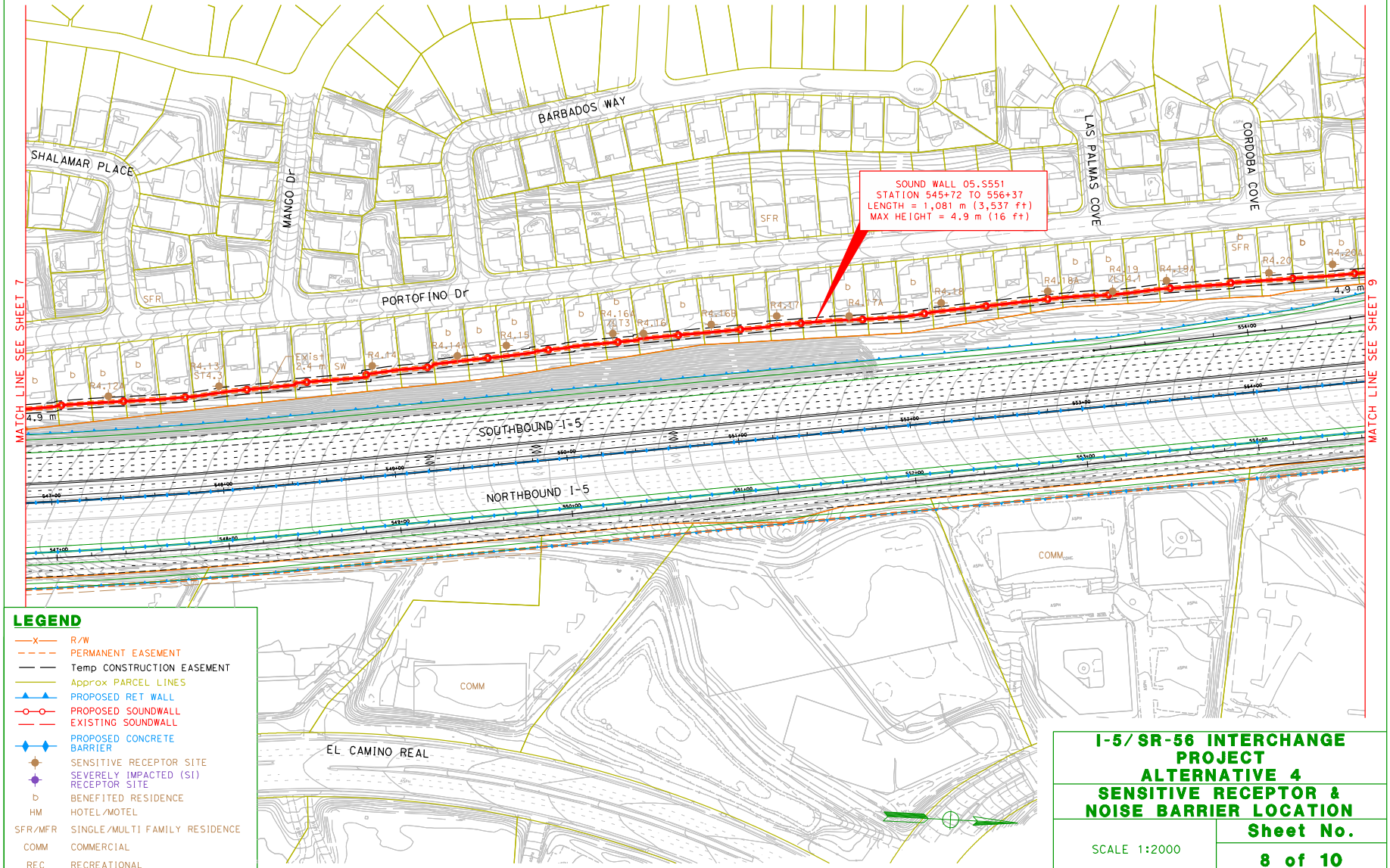

I-5/SR-56 INTERCHANGE PROJECT
ALTERNATIVE 4
SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

SCALE 1:2000

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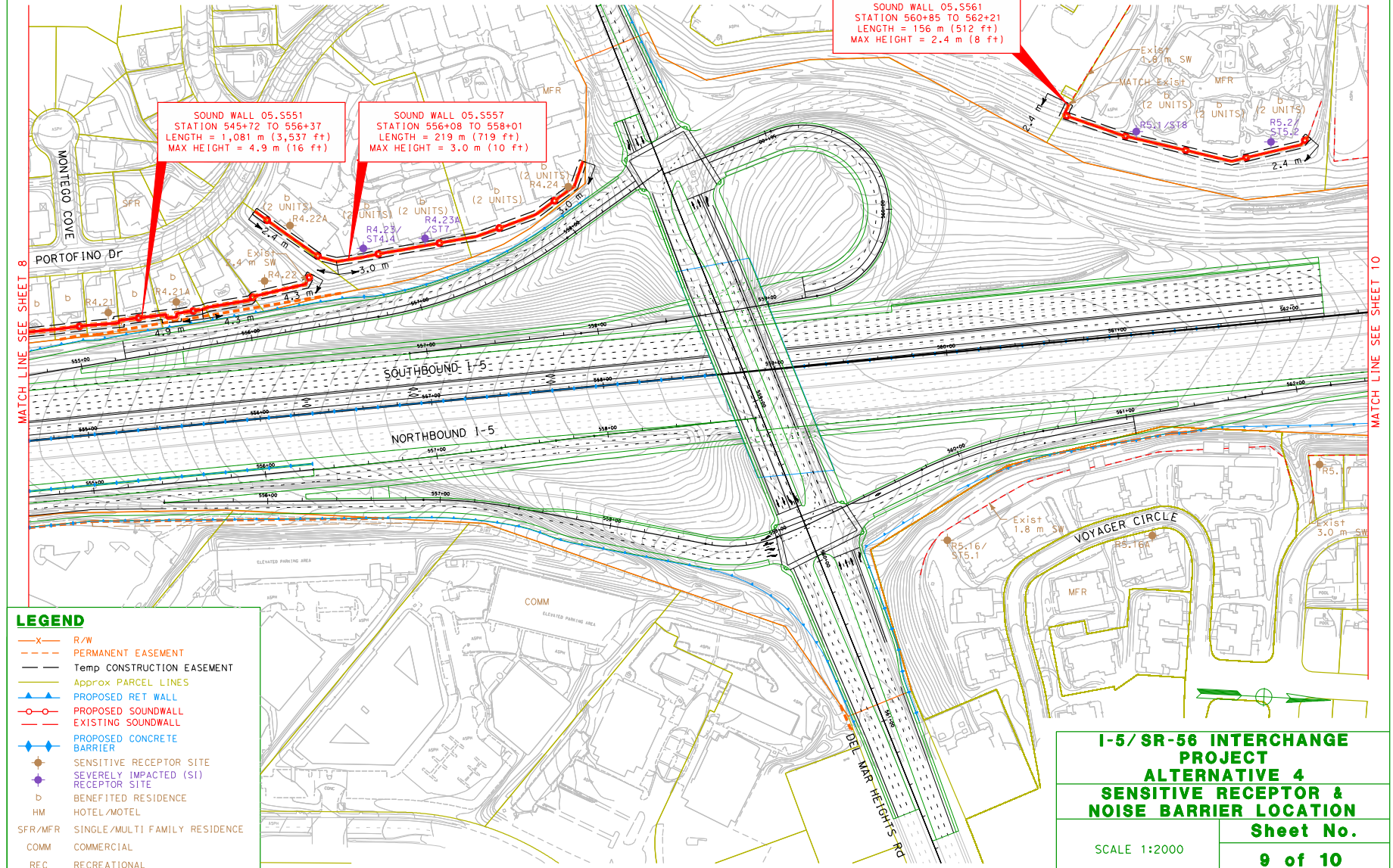

I-5/SR-56 INTERCHANGE PROJECT
ALTERNATIVE 4
SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

SCALE 1:2000

Sheet No.
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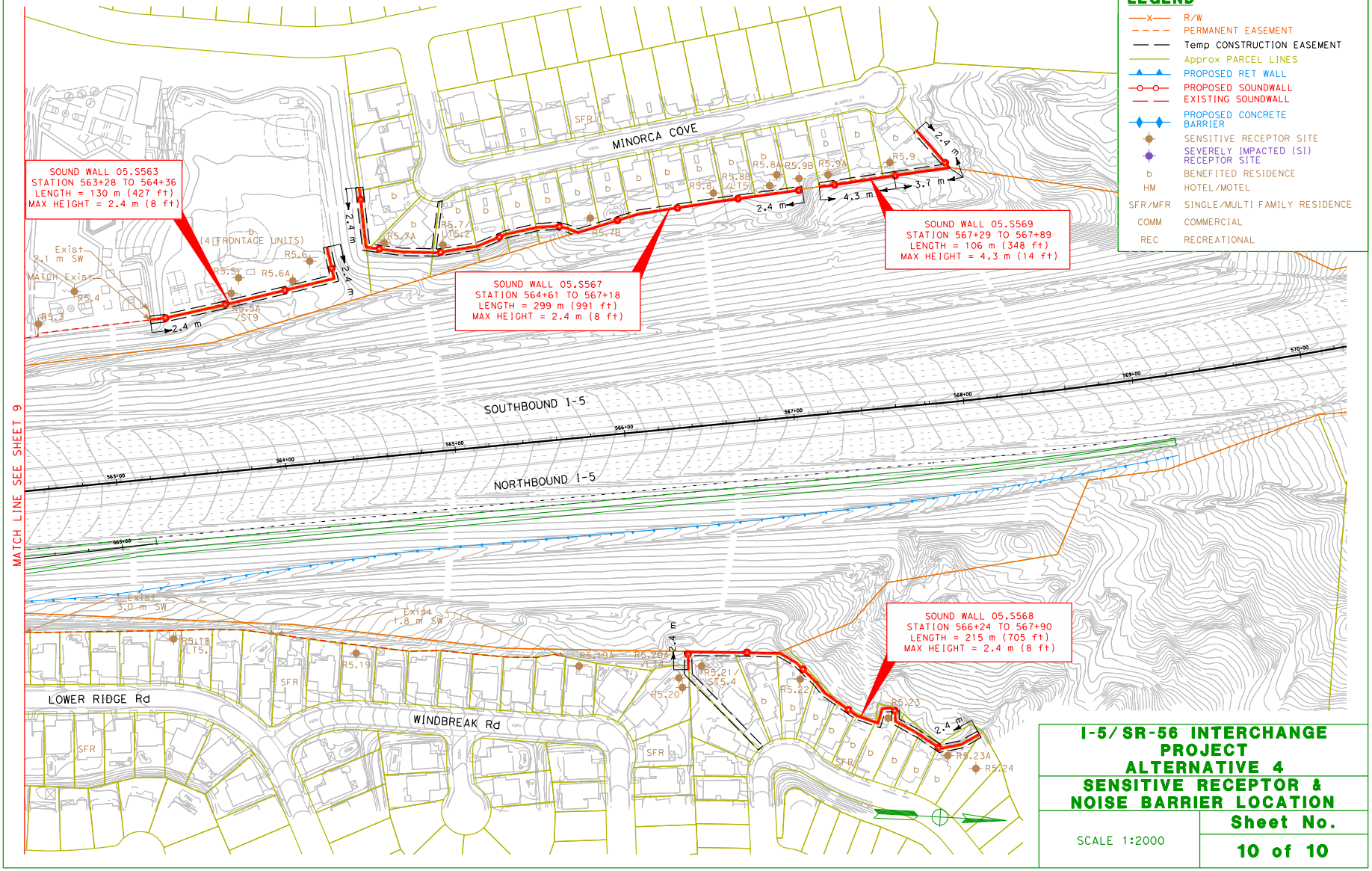
LEGEND
R/W
PERMANENT EASEMENT
Temp CONSTRUCTION EASEMENT
Approx PARCEL LINES
PROPOSED RET WALL
PROPOSED SOUNDWALL
EXISTING SOUNDWALL
PROPOSED CONCRETE BARRIER
SENSITIVE RECEPTOR SITE
SEVERELY IMPACTED (SI) RECEPTOR SITE
b BENEFITED RESIDENCE
HM HOTEL/MOTEL
SFR/MFR SINGLE/MULTI FAMILY RESIDENCE
COMM COMMERCIAL
REC RECREATIONAL
SOUND WALL 05.S563
STATION 563+28 TO 564+36
LENGTH = 130 m (427 ft)
MAX HEIGHT = 2.4 m (8 ft)
SOUND WALL 05.S567
STATION 564+61 TO 567+18
LENGTH = 299 m (991 ft)
MAX HEIGHT = 2.4 m (8 ft)
SOUND WALL 05.S569
STATION 567+29 TO 567+89
LENGTH = 106 m (348 ft)
MAX HEIGHT = 4.3 m (14 ft)
SOUND WALL 05.S568
STATION 566+24 TO 567+90
LENGTH = 215 m (705 ft)
MAX HEIGHT = 2.4 m (8 ft)
MATCH LINE SEE SHEET 9
MINORCA COVE
SOUTHBOUND I-5
NORTHBOUND I-5
LOWER RIDGE Rd
WINDBREAK Rd
SFR
(4 FRONTAGE UNITS)
Exist 2.1 m SW
MATCH Exist
Exist 3.0 m SW
Exist 1.8 m SW
2.4 m
3.7 m
4.3 m
I-5/ SR-56 INTERCHANGE PROJECT
ALTERNATIVE 4
SENSITIVE RECEPTOR & NOISE BARRIER LOCATION
SCALE 1:2000
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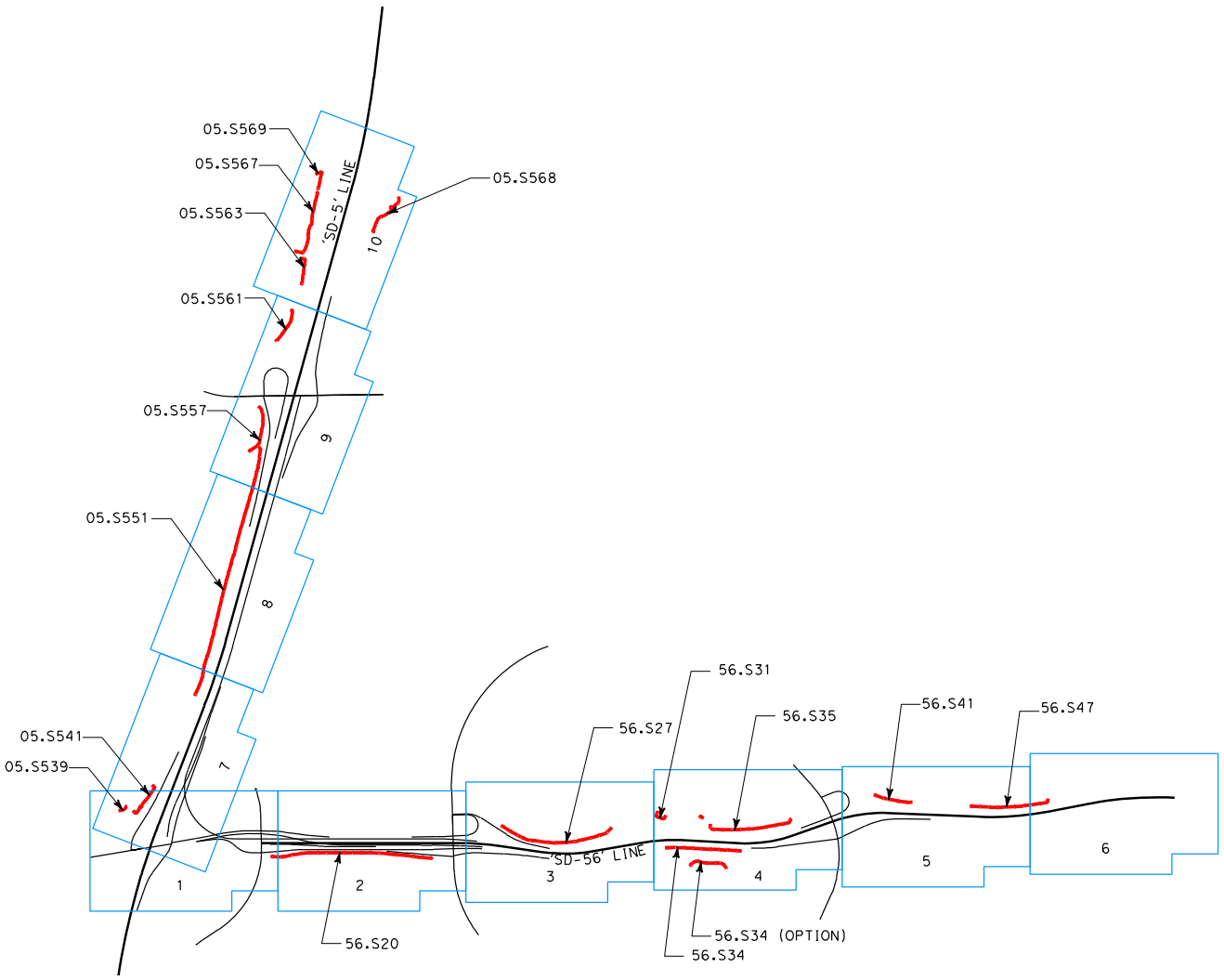
ALTERNATIVE 5
OVERVIEW

ALTERNATIVE 5: LIST OF BARRIERS

SHEET 1
NONE
SHEET 2
NOISE BARRIER 56.S20
SHEET 3
NOISE BARRIER 56.S27
SHEET 4
NOISE BARRIER 56.S31
NOISE BARRIER 56.S34
NOISE BARRIER 56.S34 (OPTION)
NOISE BARRIER 56.S35
SHEET 5
NOISE BARRIER 56.S41
NOISE BARRIER 56.S47
SHEET 6
NOISE BARRIER 56.S47 (CONTINUED)
SHEET 7
NOISE BARRIER 05.S539
NOISE BARRIER 05.S541
NOISE BARRIER 05.S551
SHEET 8
NOISE BARRIER 05.S551 (CONTINUED)
SHEET 9
NOISE BARRIER 05.S551 (CONTINUED)
NOISE BARRIER 05.S557
NOISE BARRIER 05.S561
SHEET 10
NOISE BARRIER 05.S563
NOISE BARRIER 05.S567
NOISE BARRIER 05.S568
NOISE BARRIER 05.S569



I-5/SR-56 INTERCHANGE PROJECT ALTERNATIVE 5

KEYMAP

NO SCALE

Sheet No.

1 of 1

ALTERNATIVE 5
BARRIER REPORT

Noise Barrier 56.S27 (Alternative 5)

General

Type: Sound wall

SR 56 Station limits: 25+06 to 29+94

Receptor sites: R5 to R9A

Severely Impacted Receptors: None

Height: 4.3 to 4.9 meters (14 to 16 feet)

Location: Westbound SR 56; see Sheet 3

Benefited units: 13 Single-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 69 dBA

Compared to existing (year 2009): Five dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$481,000
Estimated Total Cost without Easements:	$1,232,027
Estimated Total Cost with Construction Easements only:	$1,335,284
Estimated Total Cost with all Easements:	$1,530,294

Reasonable Cost Allowance/Benefited Unit:	$37,000
Estimated Cost/Benefited Unit without Easements:	$94,771
Estimated Cost/Benefited Unit with Construction Easements only:	$102,714
Estimated Cost/Benefited Unit with all Easements:	$117,715

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 3 of the Alternative 5 exhibits, noise barrier 56.S27 would be located on private property and Caltrans right of way along the westbound side of SR-56, east of I-5. This area is represented by receiver sites R5 to R9A. The sound wall would extend for approximately 492 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 4.3 meters (14 feet) and 4.9 meters (16 feet). The proposed noise barrier would replace an existing 8-foot high glass/block soundwall. The wall would benefit approximately 13 single-family residences and is considered feasible. The estimated construction cost of 56.S27, without easements is 156 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 178 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 218 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 56.S27 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 56.S27. No severely impacted receptors exist at this location. Construction of noise barrier 56.S27 is not recommended.

Noise Barrier 56.S31 (Alternative 5)

General

Type: Sound wall

SR 56 Station limits: 31+83 to 32+09

Receptor sites: R14 to R15

Severely Impacted Receptors: None

Height: 2.4 meters (8 feet)

Location: Westbound SR 56; see Sheet 4

Benefited units: Two Frontage Units

Predicted Noise Levels if Project Built without Abatement

Year 2030: 71 dBA

Compared to existing (year 2009): Seven dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$82,000
Estimated Total Cost without Easements:	$108,801
Estimated Total Cost with Construction Easements only:	$140,931
Estimated Total Cost with all Easements:	$176,733

Reasonable Cost Allowance/Benefited Unit:	$41,000
Estimated Cost/Benefited Unit without Easements:	$54,401
Estimated Cost/Benefited Unit with Construction Easements only:	$70,466
Estimated Cost/Benefited Unit with all Easements:	$88,367

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 4 of the Alternative 5 exhibits, noise barrier 56.S31 would be located on private property along the westbound side of SR-56, east of I-5. This area is represented by receiver sites R14 through R15. The sound wall would extend for approximately 77 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 meters (8 feet). The wall would benefit the Notre Dame Academy playground and is considered feasible. The estimated construction cost of 56.S31, without easements is 33 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 72 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 116 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 56.S31 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 56.S31. No severely impacted receptors exist at this location. Construction of noise barrier 56.S31 is not recommended.

Noise Barrier 56.S35 (Alternative 5)

General

Type: Sound wall

SR 56 Station limits: 33+36 to 33+56, 33+84 to 37+50

Receptor sites: R16 to R21A

Severely Impacted Receptors: None

Height: 3.0 to 3.7 meters (10 to 12 feet)

Location: Westbound SR 56; see Sheet 4

Benefited units: 36 Single-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 68 dBA

Compared to existing (year 2009): Three dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$1,332,000
Estimated Total Cost without Easements:	$798,571
Estimated Total Cost with Construction Easements only:	$894,445
Estimated Total Cost with all Easements:	$1,035,256

Reasonable Cost Allowance/Benefited Unit:	$37,000
Estimated Cost/Benefited Unit without Easements:	$21,933
Estimated Cost/Benefited Unit with Construction Easements only:	$24,846
Estimated Cost/Benefited Unit with all Easements:	$28,757

Reasonable without Easements:	Yes
Reasonable with Construction Easements only:	Yes
Reasonable with all Easements:	Yes

Discussion

As shown in Sheet 4 of the Alternative 5 exhibits, noise barrier 56.S35 would be located on private property and Caltrans right-of-way along the westbound side of SR-56, east of I-5. This area is represented by receiver sites R16 through R21A. The noise barrier would extend for approximately 392 meters. The heights of the barrier required to achieve a 5 dBA or more insertion loss at the critical design receiver would be 3.0 meters (10 feet) and 3.7 meters (12 feet). The proposed noise barrier would replace an existing 6-foot block property wall located on the right of way and property line. The wall would benefit 36 single-family residences and is considered feasible. The estimated construction cost of 56.S35, without easements is 41 percent below the reasonable allowance. When only temporary construction easements are included, the estimated cost is below the reasonable allowance by 33 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 22 percent below the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 56.S35 is feasible and reasonable. No severely impacted receptors exist at this location. Construction of noise barrier 56.S35 is recommended.

Noise Barrier 56.S41 (Alternative 5)

General

Type: Sound wall

SR 56 Station limits: 40+87 to 42+40

Receptor sites: R29 to R30

Severely Impacted Receptors: None

Height: 3.0 to 3.7 meters (10 to 12 feet)

Location: Westbound SR 56; see Sheet 5

Benefited units: Seven Single-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 66 dBA

Compared to existing (year 2009): Three dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$245,000
Estimated Total Cost without Easements:	$325,727
Estimated Total Cost with Construction Easements only:	$360,251
Estimated Total Cost with all Easements:	$411,632

Reasonable Cost Allowance/Benefited Unit:	$35,000
Estimated Cost/Benefited Unit without Easements:	$46,532
Estimated Cost/Benefited Unit with Construction Easements only:	$51,464
Estimated Cost/Benefited Unit with all Easements:	$58,805

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 5 of the Alternative 5 exhibits, noise barrier 56.S41 would be located on private property and Caltrans right of way along the westbound side of SR-56, east of I-5. This area is represented by receiver sites R29 through R30. The sound wall would extend for approximately 164 meters. The height of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 3.0 to 3.7 meters (10 to 12 feet). The proposed noise barrier would replace an existing 6-foot high block property wall located on the right of way line. The wall would benefit seven single-family residences and is considered feasible. The estimated construction cost of 56.S41, without easements is 33 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 47 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 68 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 56.S41 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 56.S41. No severely impacted receptors exist at this location. Construction of noise barrier 56.S41 is not recommended.

Noise Barrier 56.S47 (Alternative 5)

General

Type: Sound wall

SR 56 Station limits: 44+76 to 48+15

Receptor sites: R32 to R36

Severely Impacted Receptors: None

Height: 3.0 to 4.3 meters (10 to 14 feet)

Location: Westbound SR 56; see Sheets 5 and 6

Benefited units: 11 Single-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 68 dBA

Compared to existing (year 2007): One dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$385,000
Estimated Total Cost without Easements:	$723,601
Estimated Total Cost with Construction Easements only:	$794,896
Estimated Total Cost with all Easements:	$909,036

Reasonable Cost Allowance/Benefited Unit:	$35,000
Estimated Cost/Benefited Unit without Easements:	$65,782
Estimated Cost/Benefited Unit with Construction Easements only:	$72,263
Estimated Cost/Benefited Unit with all Easements:	$82,640

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheets 5 and 6 of the Alternative 5 exhibits, noise barrier 56.S47 would be located on private property and Caltrans right of way along the westbound side of SR-56, east of I-5. This area is represented by receiver sites R32 through R36. The sound wall would extend for approximately 339 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 3.0 meters (10 feet) to 4.3 meters (14 feet). The proposed noise barrier would replace an existing 6-foot high block property wall located on the right of way line and would connect to an existing soundwall. The wall would benefit 11 single-family residences and is considered feasible. The estimated construction cost of 56.S47, without easements is 88 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 106 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 136 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 56.S47 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 56.S47. No severely impacted receptors exist at this location. Construction of noise barrier 56.S47 is not recommended.

Noise Barrier 56.S20 (Alternative 5)

General

Type: Sound wall

SR 56 Station limits: 15+63 to 22+34

Receptor sites: R42 to R43

Severely Impacted Receptors: None

Height: 3.7 to 4.9 meters (12 to 16 feet)

Location: Eastbound SR 56; see Sheets 1 and 2

Benefited units: Four Frontage Units

Predicted Noise Levels if Project Built without Abatement

Year 2030: 66 dBA

Compared to existing (year 2009): Three dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$140,000
Estimated Total Cost without Easements:	$1,748,163
Estimated Total Cost with Construction Easements only:	$1,748,163
Estimated Total Cost with all Easements:	$1,748,163

Reasonable Cost Allowance/Benefited Unit:	$35,000
Estimated Cost/Benefited Unit without Easements:	$437,041
Estimated Cost/Benefited Unit with Construction Easements only:	$437,041
Estimated Cost/Benefited Unit with all Easements:	$437,041

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 2 of the Alternative 5 exhibits, noise barrier 56.S20 would be located on Caltrans right of way along the eastbound side of SR-56, east of I-5. This area is represented by receiver sites R42 through R43. The sound wall would extend for approximately 670 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 3.7 meters (12 feet) to 4.9 meters (16 feet). The proposed noise barrier would be located on an existing earthen berm located on the right of way line. The proposed barrier would impact an existing environmentally sensitive area (ESA) known as the Carmel Valley Restoration and Enhancement Project (CVREP). The wall would benefit four frontage units and is considered feasible. The estimated construction cost of 56.S20, without easements is 1,149 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 1,149 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 1,149 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 56.S20 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 56.S20. No severely impacted receptors exist at this location. Construction of noise barrier 56.S20 is not recommended.

Noise Barrier 56.S34 (Alternative 5)

General

Type: Sound wall

SR 56 Station limits: 32+00 to 35+40

Receptor sites: R46 to R47

Severely Impacted Receptors: None

Height: 2.4 to 3.0 meters (8 to 10 feet)

Location: Eastbound SR 56; see Sheet 4

Benefited units: Two Single-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 71 dBA

Compared to existing (year 2009): Five dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$94,000
Estimated Total Cost without Easements:	$518,354
Estimated Total Cost with Construction Easements only:	$518,354
Estimated Total Cost with all Easements:	$518,354

Reasonable Cost Allowance/Benefited Unit:	$47,000
Estimated Cost/Benefited Unit without Easements:	$259,177
Estimated Cost/Benefited Unit with Construction Easements only:	$259,177
Estimated Cost/Benefited Unit with all Easements:	$259,177

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 4 of the Alternative 5 exhibits, noise barrier 56.S34 would be located on Caltrans right of way along the eastbound side of SR-56, east of I-5. This area is represented by receiver sites R46 to R47. The sound wall would extend for approximately 318 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 meters (8 feet) to 3.0 meters (10 feet). The proposed noise barrier would be located on an existing earthen berm located on the right of way line. The proposed barrier would impact an existing environmentally sensitive area (ESA) known as the Carmel Valley Restoration and Enhancement Project (CVREP). The wall would benefit two single-family residences and is considered feasible. The estimated construction cost of 56.S34, without easements is 451 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 451 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 451 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 56.S34 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 56.S34. No severely impacted receptors exist at this location. Construction of noise barrier 56.S34 is not recommended.

Noise Barrier 56.S34 Option (Alternative 5)

General

Type: Sound wall

SR 56 Station limits: 33+08 to 34+60

Receptor sites: R46

Severely Impacted Receptors: None

Height: 3.7 to 4.3 meters (12 to 14 feet)

Location: Eastbound SR 56; see Sheet 4

Benefited units: Two Single-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 71 dBA

Compared to existing (year 2009): Five dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$98,000
Estimated Total Cost without Easements:	$369,499
Estimated Total Cost with Construction Easements only:	$405,680
Estimated Total Cost with all Easements:	$465,908

Reasonable Cost Allowance/Benefited Unit:	$49,000
Estimated Cost/Benefited Unit without Easements:	$184,750
Estimated Cost/Benefited Unit with Construction Easements only:	$202,840
Estimated Cost/Benefited Unit with all Easements:	$232,954

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

An option to noise barrier 56.S34 was developed that analyzed the feasibility of constructing a noise barrier on the private property. As shown on Sheet 4 of the Alternative 5 exhibits, noise barrier 56.S34 Option would be located on private property along the eastbound side of SR-56, east of I-5. This area is represented by receiver sites R46 to R47. The sound wall would extend for approximately 171 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 3.7 meters (12 feet) to 4.3 meters (14 feet). The wall would benefit two single-family residences and is considered feasible. The estimated construction cost of 56.S34 Option, without easements is 277 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 314 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 375 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 56.S34 Option is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 56.S34 Option. No severely impacted receptors exist at this location. Construction of noise barrier 56.S34 Option is not recommended.

Noise Barrier 05.S539 (Alternative 5)

General

Type: Sound wall

I-5 Station limits: 540+19 to 540+43

Receptor sites: R4.1

Severely Impacted Receptors: None

Height: 2.4 meters (8 feet)

Location: Southbound I-5; see Sheet 7

Benefited units: One Single-Family Residence

Predicted Noise Levels if Project Built without Abatement

Year 2030: 72 dBA

Compared to existing (year 2009): Two dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$37,000
Estimated Total Cost without Easements:	$62,831
Estimated Total Cost with Construction Easements only:	$80,471
Estimated Total Cost with all Easements:	$100,127

Reasonable Cost Allowance/Benefited Unit:	$37,000
Estimated Cost/Benefited Unit without Easements:	$62,831
Estimated Cost/Benefited Unit with Construction Easements only:	$80,471
Estimated Cost/Benefited Unit with all Easements:	$100,127

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 7 of the Alternative 5 exhibits, noise barrier 05.S539 would be located on private property along the southbound side of I-5, north of SR 56. This area is represented by receiver site R4.1. The sound wall would extend for approximately 42 meters. The height of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 meters (8 feet). The proposed noise barrier would replace an existing 8-foot property wall. The wall would benefit approximately one single-family residence. The sound wall is considered feasible. The estimated construction cost of 05.S539, without easements is 70 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 117 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 171 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 05.S539 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 05.S539. No severely impacted receptors exist at this location. Construction of noise barrier 05.S539 is not recommended.

Noise Barrier 05.S541 (Alternative 5)

General

Type: Sound wall

I-5 Station limits: 540+36 to 541+64

Receptor sites: R4.2 to R4.4

Severely Impacted Receptors: Two

Height: 2.4 to 4.3 meters (8 to 14 feet)

Location: Southbound I-5; see Sheet 7

Benefited units: One Single-Family Residence and Four Frontage Units

Predicted Noise Levels if Project Built without Abatement

Year 2030: 75 dBA

Compared to existing (year 2009): Five dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$225,000
Estimated Total Cost without Easements:	$388,142
Estimated Total Cost with Construction Easements only:	$465,086
Estimated Total Cost with all Easements:	$587,446

Reasonable Cost Allowance/Benefited Unit:	$45,000
Estimated Cost/Benefited Unit without Easements:	$77,628
Estimated Cost/Benefited Unit with Construction Easements only:	$93,017
Estimated Cost/Benefited Unit with all Easements:	$117,489

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 7 of the Alternative 5 exhibits, noise barrier 05.S541 would be located on private property along the southbound side of I-5, north of SR 56. This area is represented by receiver sites R4.2 to R4.4. The sound wall would extend for approximately 183 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 meters (8 feet) to 4.3 meters (14 feet). The proposed noise barrier would replace an existing 8-foot property wall. The wall would benefit approximately one single-family residence and four frontage units. The sound wall is considered feasible. The estimated construction cost of 05.S541, without easements is 73 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 107 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 161 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 05.S541 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 05.S541. Two severely impacted receptors exist at this location. Due to the existence of severely impacted receptors (R4.3 and R4.4), it is recommended that the noise barrier be constructed with FHWA approval under unusual and extraordinary abatement.

Noise Barrier 05.S551 (Alternative 5)

General

Type: Sound wall

I-5 Station limits: 545+72 to 556+37

Receptor sites: R4.11A to R4.21A

Severely Impacted Receptors: None

Height: 4.3 to 4.9 meters (14 to 16 feet)

Location: Southbound I-5; see Sheets 7, 8, and 9

Benefited units: 21 Single-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 70 dBA

Compared to existing (year 2009): Two dBA decrease

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$987,000
Estimated Total Cost without Easements:	$2,716,619
Estimated Total Cost with Construction Easements only:	$3,170,681
Estimated Total Cost with all Easements:	$4,031,164

Reasonable Cost Allowance/Benefited Unit:	$47,000
Estimated Cost/Benefited Unit without Easements:	$129,363
Estimated Cost/Benefited Unit with Construction Easements only:	$150,985
Estimated Cost/Benefited Unit with all Easements:	$191,960

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheets 7, 8, and 9 of the Alternative 5 exhibits, noise barrier 05.S551 would be located on private property along the southbound side of I-5, north of SR 56. This area is represented by receiver sites R4.11A to R4.21A. The sound wall would extend for approximately 1,081 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 4.3 meters (14 feet) and 4.9 meters (16 feet). The proposed noise barrier would replace an existing 8-foot sound wall. The wall would benefit approximately 21 single-family residences. The sound wall is considered feasible. The estimated construction cost of 05.S551, without easements is 175 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 221 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 308 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 05.S551 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 05.S551. No severely impacted receptors exist at this location. Construction of noise barrier 05.S551 is not recommended.

Noise Barrier 05.S557 (Alternative 5)

General

Type: Sound wall

I-5 Station limits: 556+08 to 558+01

Receptor sites: R4.22A to R4.24

Severely Impacted Receptors: Two

Height: 2.4 to 3.0 meters (8 to 10 feet)

Location: Southbound I-5; see Sheet 9

Benefited units: 10 Multi-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 79 dBA

Compared to existing (year 2009): Two dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$430,000
Estimated Total Cost without Easements:	$350,009
Estimated Total Cost with Construction Easements only:	$441,821
Estimated Total Cost with all Easements:	$555,812

Reasonable Cost Allowance/Benefited Unit:	$43,000
Estimated Cost/Benefited Unit without Easements:	$35,001
Estimated Cost/Benefited Unit with Construction Easements only:	$44,182
Estimated Cost/Benefited Unit with all Easements:	$55,581

Reasonable without Easements:	Yes
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 9 of the Alternative 5 exhibits, noise barrier 05.S557 would be located on private property along the southbound side of I-5, north of SR 56. This area is represented by receiver sites R4.22A to R4.24. The sound wall would extend for approximately 219 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 meters (8 feet) and 3.0 meters (10 feet). The wall would benefit approximately 10 multi-family residences. The sound wall is considered feasible. The estimated construction cost of 05.S557, without easements is 19 percent below the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 3 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 29 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 05.S557 is not recommended as proposed because the wall is not constructible. Due to the existence of severely impacted receptors (R4.23 and R4.23A), it is recommended that the severely impacted receptors receive abatement with FHWA approval under unusual and extraordinary abatement.

Noise Barrier 05.S561 (Alternative 5)

General

Type: Sound wall

I-5 Station limits: 560+85 to 562+21

Receptor sites: R5.1 to R5.2

Severely Impacted Receptors: Two

Height: 2.4 (8 feet)

Location: Southbound I-5; see Sheet 9

Benefited units: Six Multi-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 75 dBA

Compared to existing (year 2009): No dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$246,000
Estimated Total Cost without Easements:	$233,465
Estimated Total Cost with Construction Easements only:	$299,012
Estimated Total Cost with all Easements:	$372,049

Reasonable Cost Allowance/Benefited Unit:	$41,000
Estimated Cost/Benefited Unit without Easements:	$38,911
Estimated Cost/Benefited Unit with Construction Easements only:	$49,835
Estimated Cost/Benefited Unit with all Easements:	$62,008

Reasonable without Easements:	Yes
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 9 of the Alternative 5 exhibits, noise barrier 05.S561 would be located on private property along the southbound side of I-5, north of SR 56. This area is represented by receiver sites R5.1 to R5.2. The sound wall would extend for approximately 156 meters. The height of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 meters (8 feet). The wall would benefit approximately six multi-family residences. The sound wall is considered feasible. The estimated construction cost of 05.S561, without easements is 5 percent below the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 22 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 51 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 05.S561 is feasible and conditionally reasonable. Two severely impacted receptors exist at this location. Due to the existence of severely impacted receptors (R5.1 and R5.2), it is recommended that the noise barrier be constructed with FHWA approval under unusual and extraordinary abatement.

Noise Barrier 05.S563 (Alternative 5)

General

Type: Sound wall

I-5 Station limits: 563+28 to 564+36

Receptor sites: R5.5A to R5.6A

Severely Impacted Receptors: None

Height: 2.4 meters (8 feet)

Location: Southbound I-5; see Sheet 10

Benefited units: Four Frontage Units

Predicted Noise Levels if Project Built without Abatement

Year 2030: 69 dBA

Compared to existing (year 2009): Six dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$188,000
Estimated Total Cost without Easements:	$184,571
Estimated Total Cost with Construction Easements only:	$239,077
Estimated Total Cost with all Easements:	$299,811

Reasonable Cost Allowance/Benefited Unit:	$47,000
Estimated Cost/Benefited Unit without Easements:	$46,143
Estimated Cost/Benefited Unit with Construction Easements only:	$59,769
Estimated Cost/Benefited Unit with all Easements:	$74,953

Reasonable without Easements:	Yes
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 10 of the Alternative 5 exhibits, noise barrier 05.S563 would be located on private property along the southbound side of I-5, north of SR 56. This area is represented by receiver sites R5.5A to R5.6A. The sound wall would extend for approximately 130 meters. The height of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 meters (8 feet). The wall would benefit approximately four frontage units. The sound wall is considered feasible. The estimated construction cost of 05.S563, without easements is 2 percent below the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 27 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 59 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 05.S563 is not recommended unless negotiation with the property owners would result in estimated costs that do not exceed the reasonable allowance. This may be accomplished if the property owners are willing to donate easements by signing a waiver of just compensation. If the total cost cannot be reduced to less than or equal to the reasonable allowance, construction is not recommended. No severely impacted receptors exist at this location.

Noise Barrier 05.S567 (Alternative 5)

General

Type: Sound wall

I-5 Station limits: 564+61 to 567+18

Receptor sites: R5.7A to R5.8B

Severely Impacted Receptors: None

Height: 2.4 meters (8 feet)

Location: Southbound I-5; see Sheet 10

Benefited units: 13 Single-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 74 dBA

Compared to existing (year 2009): Two dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$637,000
Estimated Total Cost without Easements:	$425,385
Estimated Total Cost with Construction Easements only:	$503,596
Estimated Total Cost with all Easements:	$611,679

Reasonable Cost Allowance/Benefited Unit:	$49,000
Estimated Cost/Benefited Unit without Easements:	$32,722
Estimated Cost/Benefited Unit with Construction Easements only:	$38,738
Estimated Cost/Benefited Unit with all Easements:	$47,052

Reasonable without Easements:	Yes
Reasonable with Construction Easements only:	Yes
Reasonable with all Easements:	Yes

Discussion

As shown on Sheet 10 of the Alternative 5 exhibits, noise barrier 05.S567 would be located on private property and Caltrans right of way along the southbound side of I-5, north of SR 56. This area is represented by receiver sites R5.7A to R5.8B. The sound wall would extend for approximately 299 meters. The heights of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 meters (8 feet). The wall would benefit approximately 13 single-family residences. The sound wall is considered feasible. The estimated construction cost of 05.S567, without easements is 33 percent below the reasonable allowance. When only temporary construction easements are included, the estimated cost is below the reasonable allowance by 21 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 4 percent below the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 05.S567 is feasible and reasonable. No severely impacted receptors exist at this location. Construction of noise barrier 05.S567 is recommended.

Noise Barrier 05.S569 (Alternative 5)

General

Type: Sound wall

I-5 Station limits: 567+29 to 567+89

Receptor sites: R5.9A to R5.9

Severely Impacted Receptors: None

Height: 2.4 to 4.3 meters (8 to 14 feet)

Location: Southbound I-5; see Sheet 10

Benefited units: Three Single-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 67 dBA

Compared to existing (year 2009): No dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$129,000
Estimated Total Cost without Easements:	$204,578
Estimated Total Cost with Construction Easements only:	$226,922
Estimated Total Cost with all Easements:	$260,366

Reasonable Cost Allowance/Benefited Unit:	$43,000
Estimated Cost/Benefited Unit without Easements:	$68,193
Estimated Cost/Benefited Unit with Construction Easements only:	$75,641
Estimated Cost/Benefited Unit with all Easements:	$86,789

Reasonable without Easements:	No
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 10 of the Alternative 5 exhibits, noise barrier 05.S569 would be located on private property and Caltrans right of way along the southbound side of I-5, north of SR 56. This area is represented by receiver sites R5.9A to R5.9. The sound wall would extend for approximately 106 meters. The height of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 to 4.3 meters (8 to 14 feet). The wall would benefit approximately three single-family residences. The sound wall is considered feasible. The estimated construction cost of 05.S569, without easements is 59 percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 76 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 102 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 05.S569 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier 05.S569. No severely impacted receptors exist at this location. Construction of noise barrier 05.S569 is not recommended.

Noise Barrier 05.S568 (Alternative 5)

General

Type: Sound wall

I-5 Station limits: 566+24 to 567+90

Receptor sites: R5.22 to R5.23A

Severely Impacted Receptors: None

Height: 2.4 meters (8 feet)

Location: Northbound I-5; see Sheet 10

Benefited units: Nine Single-Family Residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 69 dBA

Compared to existing (year 2009): No dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Yes
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$333,000
Estimated Total Cost without Easements:	$305,924
Estimated Total Cost with Construction Easements only:	$416,503
Estimated Total Cost with all Easements:	$505,048

Reasonable Cost Allowance/Benefited Unit:	$37,000
Estimated Cost/Benefited Unit without Easements:	$33,992
Estimated Cost/Benefited Unit with Construction Easements only:	$46,278
Estimated Cost/Benefited Unit with all Easements:	$56,116

Reasonable without Easements:	Yes
Reasonable with Construction Easements only:	No
Reasonable with all Easements:	No

Discussion

As shown on Sheet 10 of the Alternative 5 exhibits, noise barrier 05.S568 would be located on private property and Caltrans right of way along the northbound side of I-5, north of SR 56. This area is represented by receiver sites R5.22 to R5.23A. The sound wall would extend for approximately 215 meters. The height of the barrier required to achieve a five dBA or more insertion loss at the critical design receiver would be 2.4 meters (8 feet). The wall would benefit approximately nine single-family residences. The sound wall is considered feasible. The estimated construction cost of 05.S568, without easements is 8 percent below the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 25 percent. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 52 percent above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier 05.S568 is not recommended unless negotiation with the property owners would result in estimated costs that do not exceed the reasonable allowance. This may be accomplished if the property owners are willing to donate easements by signing a waiver of just compensation. If the total cost cannot be reduced to less than or equal to the reasonable allowance, construction is not recommended. No severely impacted receptors exist at this location.

ALTERNATIVE 5
COST ANALYSIS

SR 56 (ALTERNATIVE 5) - COST ANALYSIS

NOISE BARRIER	# OF BENEFITED RESIDENCES	WALL CHARACTERISTICS				QUANTITIES							EASEMENTS		
		Height	Length of Sound Wall	Length of Sound Wall on Retaining Wall	Length of Sound Wall Not on Retaining Wall	Excavation Depth	Excavation Width	Excavation and Backfill	Berm Embankment	Demolition of wood fence	Demolition of existing sound walls/property walls	Minor Concrete Sound Wall (Spread or Trench Footing)	Temporary Construction Easements	Footing Easements	Total Easements
		(m)	(m)	(m)	(m)	(m)	(m)	(m3)	(m3)	(m)	(m2)	(m3)	(m2)	(m2)	(m2)
56.S27	13	4.3	158	0	158	0.9	2.6	371	0	0	380	97	238	158	396
		4.9	333	0	333	0.9	2.9	870	0	0	800	234	500	383	883
56.S31	2	2.4	77	0	77	0.9	1.9	131	0	0	0	30	230	99	329
56.S35	36	3.0	42	0	42	0.9	2.1	80	0	0	76	19	203	63	266
		3.7	350	0	350	0.9	2.4	756	0	0	630	192	546	328	874
56.S41	7	3.0	35	0	35	0.9	2.1	66	0	0	63	16	52	26	79
		3.7	130	0	130	0.9	2.4	280	0	0	233	71	194	117	311
56.S47	11	3.0	17	0	17	0.9	2.1	32	0	0	30	8	25	13	38
		3.7	182	0	182	0.9	2.4	394	0	0	328	100	273	164	437
		4.3	140	0	140	0.9	2.6	329	0	0	253	86	211	140	351
56.S20	4	3.7	18	0	18	0.9	2.4	38	102	0	0	10	0	0	0
		4.3	61	0	61	0.9	2.6	143	356	0	0	37	0	0	0
		4.9	592	0	592	0.9	2.9	1544	3461	0	0	415	0	0	0
56.S34	2	2.4	241	0	241	0.9	1.9	413	1412	0	0	96	0	0	0
		3.0	77	0	77	0.9	2.1	145	448	0	0	35	0	0	0
56.S34 Option	2	3.7	50	0	50	0.9	2.4	108	0	0	0	27	75	45	120
		4.3	122	0	122	0.9	2.6	286	0	0	0	75	184	122	306

NOISE BARRIER	# OF BENEFITED RESIDENCES	CONSTRUCTION COSTS						ADDITIONAL COSTS				EASEMENT COSTS		
		Sound Wall Masonry Cost	Minor Concrete Sound Wall Cost	Excavation and Backfill Cost	Berm Embankment Cost	Demolition Cost - wood fence	Demolition Cost - sound wall/property wall	Clearing & Grubbing	Landscaping Cost	Traffic Control Cost	SWPPP Cost	Construction Easements	Footing Easements	Total Easements
		($200/m2)	($750/m3)	($125/m3)	($40/m3)	($40/m)	($32/m2)	(8% of Wall Cost)	(10% of Wall Cost)	(5% of Wall Cost)	(5% of Wall Cost)	($140/m2)	($360/m2)	
56.S27	13	$155,232	$72,468	$46,332	$0	$0	$12,165	$22,896	$28,620	$14,310	$14,310	$33,264	$57,024	$90,288
		$366,630	$175,357	$108,739	$0	$0	$25,597	$54,106	$67,632	$33,816	$33,816	$69,993	$137,986	$207,979
		$521,862	***$247,825***	***$155,071***	***$0***	***$0***	***$37,763***	***$77,002***	***$96,252***	***$48,126***	***$48,126***	***$103,257***	***$195,010***	***$298,267***
56.S31	2	$45,900	$22,749	$16,352	$0	$0	$0	$6,800	$8,500	$4,250	$4,250	$32,130	$35,802	$67,932
		$45,900	***$22,749***	***$16,352***	***$0***	***$0***	***$0***	***$6,800***	***$8,500***	***$4,250***	***$4,250***	***$32,130***	***$35,802***	***$67,932***
56.S35	36	$30,456	$14,514	$9,993	$0	$0	$2,436	$4,592	$5,740	$2,870	$2,870	$28,413	$22,842	$51,255
		$300,828	$144,030	$94,446	$0	$0	$20,148	$44,756	$55,945	$27,973	$27,973	$76,461	$117,968	$194,429
		$331,284	***$158,544***	***$104,439***	***$0***	***$0***	***$22,585***	***$49,348***	***$61,685***	***$30,843***	***$30,843***	***$104,874***	***$140,810***	***$245,684***
56.S41	7	$25,128	$11,975	$8,245	$0	$0	$2,010	$3,789	$4,736	$2,368	$2,368	$7,329	$9,423	$16,752
		$111,370	$53,322	$34,965	$0	$0	$7,459	$16,569	$20,712	$10,356	$10,356	$27,195	$41,958	$69,153
		$136,498	***$65,297***	***$43,210***	***$0***	***$0***	***$9,469***	***$20,358***	***$25,447***	***$12,724***	***$12,724***	***$34,524***	***$51,381***	***$85,905***
56.S47	11	$12,168	$5,799	$3,993	$0	$0	$973	$1,835	$2,293	$1,147	$1,147	$3,549	$4,563	$8,112
		$156,692	$75,021	$49,194	$0	$0	$10,495	$23,312	$29,140	$14,570	$14,570	$38,262	$59,033	$97,295
		$137,592	$64,233	$41,067	$0	$0	$8,087	$20,078	$25,098	$12,549	$12,549	$29,484	$50,544	$80,028
		$306,452	***$145,053***	***$94,254***	***$0***	***$0***	***$19,555***	***$45,225***	***$56,531***	***$28,266***	***$28,266***	***$71,295***	***$114,140***	***$185,435***
56.S20	4	$15,050	$7,206	$4,725	$2,048	$0	$0	$2,322	$2,903	$1,451	$1,451	$0	$0	$0
		$59,682	$27,862	$17,813	$7,125	$0	$0	$8,999	$11,248	$5,624	$5,624	$0	$0	$0
		$650,760	$311,256	$193,010	$69,217	$0	$0	$97,939	$122,424	$61,212	$61,212	$0	$0	$0
		$725,492	***$346,323***	***$215,548***	***$78,390***	***$0***	***$0***	***$109,260***	***$136,575***	***$68,288***	***$68,288***	***$0***	***$0***	***$0***
56.S34	2	$144,840	$71,786	$51,599	$28,244	$0	$0	$23,718	$29,647	$14,823	$14,823	$0	$0	$0
		$55,152	$26,283	$18,097	$8,962	$0	$0	$8,680	$10,849	$5,425	$5,425	$0	$0	$0
		$199,992	***$98,070***	***$69,696***	***$37,206***	***$0***	***$0***	***$32,397***	***$40,496***	***$20,248***	***$20,248***	***$0***	***$0***	***$0***
56.S34 Option	2	$42,875	$20,528	$13,461	$0	$0	$0	$6,149	$7,686	$3,843	$3,843	$10,470	$16,153	$26,623
		$119,983	$56,013	$35,811	$0	$0	$0	$16,945	$21,181	$10,590	$10,590	$25,711	$44,076	$69,786
		$162,859	***$76,540***	***$49,272***	***$0***	***$0***	***$0***	***$23,094***	***$28,867***	***$14,434***	***$14,434***	***$36,180***	***$60,229***	***$96,409***

NOISE BARRIER	# OF BENEFITED RESIDENCES	TOTAL COSTS			COST PER BENEFITTED RESIDENCE			COST ALLOWANCE		REASONABLENESS		
		Estimated Total Cost (w/o Easements)	Estimated Total Cost (w/ Construction Easement Only)	Estimated Total Cost w/ Easements	Estimated Cost/Benefited Residence (w/o Easements)	Estimated Cost/Benefited Residence (w/ Construction Easement Only)	Estimated Cost Per Benefitted Residence w/ Easements	Reasonable Allowance Per Residence	Reasonable Total Allowance	Reasonable w/o Easements	Reasonable w/ Construction Easements Only	Reasonable w/ all easements
56.S27	13	$366,332	$399,596	$456,620	***$94,771***	***$102,714***	***$117,715***	***$37,000***	***$481,000***	***NO***	***NO***	***NO***
		$865,695	$935,688	$1,073,674								
		$1,232,027	***$1,335,284***	***$1,530,294***								
56.S31	2	$108,801	$140,931	$176,733	***$54,401***	***$70,466***	***$88,367***	***$41,000***	***$82,000***	***NO***	***NO***	***NO***
		$108,801	***$140,931***	***$176,733***								
56.S35	36	$73,472	$101,885	$124,727	***$21,933***	***$24,846***	***$28,757***	***$37,000***	***$1,332,000***	***YES***	***YES***	***YES***
		$716,099	$792,560	$910,529								
		$789,571	***$894,445***	***$1,035,256***								
56.S41	7	$60,619	$67,948	$77,371	***$46,532***	***$51,464***	***$58,805***	***$35,000***	***$245,000***	***NO***	***NO***	***NO***
		$265,108	$292,303	$334,261								
		$325,727	***$360,251***	***$411,632***								
56.S47	11	$29,354	$32,903	$37,466	***$65,782***	***$72,263***	***$82,640***	***$35,000***	***$385,000***	***NO***	***NO***	***NO***
		$372,994	$411,256	$470,289								
		$321,253	$350,737	$401,281								
		$723,601	***$794,896***	***$909,036***								
56.S20	4	$37,156	$37,156	$37,156	***$437,041***	***$437,041***	***$437,041***	***$35,000***	***$140,000***	***NO***	***NO***	***NO***
		$143,977	$143,977	$143,977								
		$1,567,030	$1,567,030	$1,567,030								
		$1,748,163	***$1,748,163***	***$1,748,163***								
56.S34	2	$379,481	$379,481	$379,481	***$259,177***	***$259,177***	***$259,177***	***$47,000***	***$94,000***	***NO***	***NO***	***NO***
		$138,873	$138,873	$138,873								
		$518,354	***$518,354***	***$518,354***								
56.S34 Option	2	$98,386	$108,855	$125,008	***$184,750***	***$202,840***	***$232,954***	***$49,000***	***$98,000***	***NO***	***NO***	***NO***
		$271,113	$296,824	$340,900								
		$369,499	***$405,680***	***$465,908***								

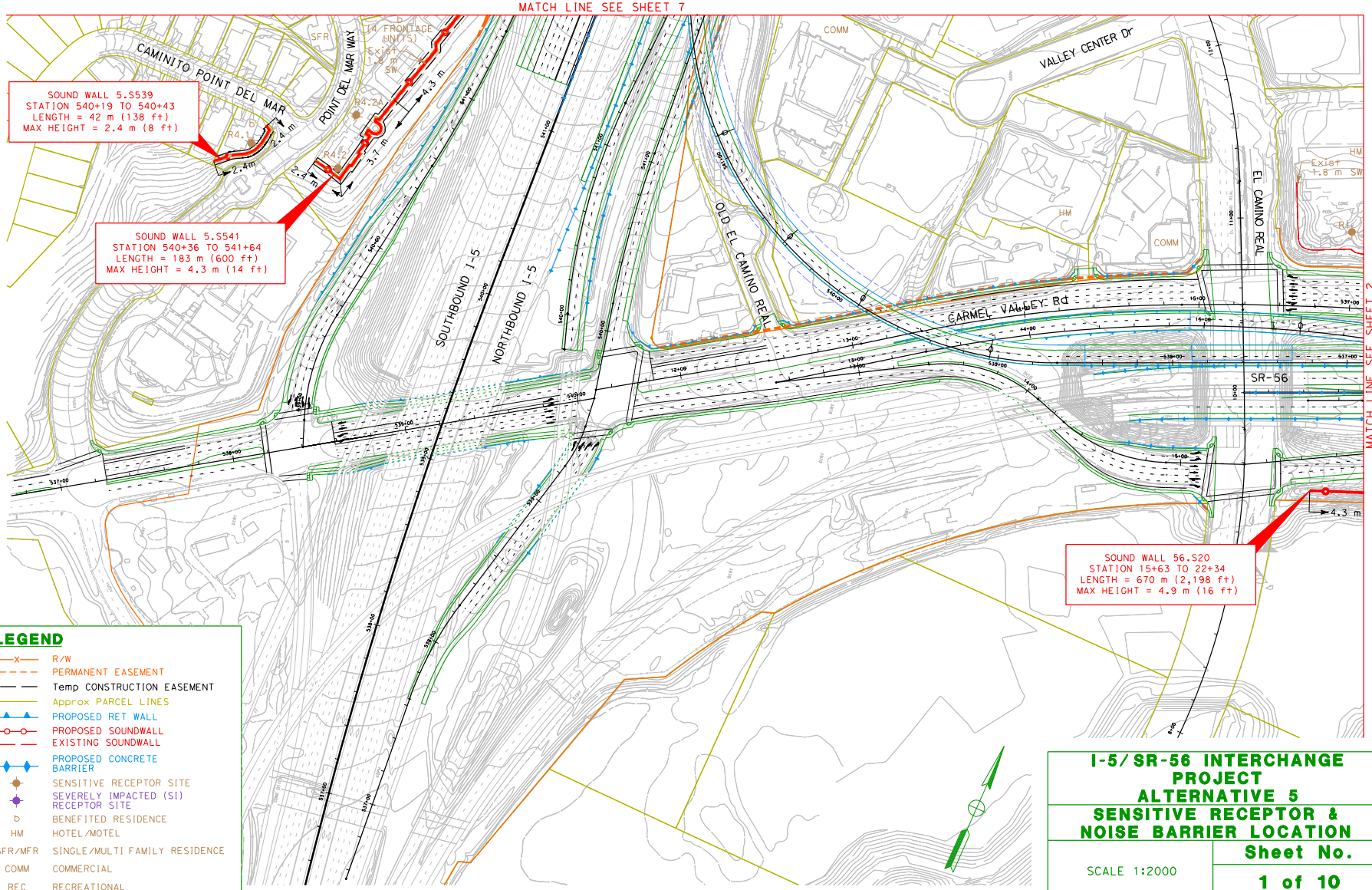
I-5 (ALTERNATIVE 5) - COST ANALYSIS

NOISE BARRIER	# OF BENEFITED RESIDENCES	WALL CHARACTERISTICS				QUANTITIES						EASEMENTS		
		Height	Length of Sound Wall	Length of Sound Wall on Retaining Wall	Length of Sound Wall Not on Retaining Wall	Excavation Depth	Excavation Width	Excavation and Backfill	Demolition of wood fence	Demolition of existing sound walls/property walls	Minor Concrete Sound Wall (Spread or Trench Footing)	Temporary Construction Easements	Footing Easements	Total Easements
		(m)	(m)	(m)	(m)	(m)	(m)	(m3)	(m)	(m2)	(m3)	(m2)	(m2)	(m2)
05.S539	1	2.4	42	0	42	0.9	1.9	72	0	76	17	126	55	181
05.S541	5	2.4	18	0	18	0.9	1.9	30	0	32	7	53	23	75
		3.7	71	0	71	0.9	2.4	154	0	128	39	214	128	342
		4.3	94	0	94	0.9	2.6	221	0	170	58	283	189	472
05.S551	21	4.3	321	0	321	0.9	2.6	751	0	770	196	963	642	1605
		4.9	760	0	760	0.9	2.9	1984	0	1824	533	2280	1748	4029
05.S557	10	2.4	56	0	56	0.9	1.9	96	0	0	22	169	73	242
		3.0	162	0	162	0.9	2.1	307	0	0	74	487	243	730
05.S561	6	2.4	156	0	156	0.9	1.9	267	0	281	62	468	203	671
05.S563	4	2.4	130	0	130	0.9	1.9	222	0	0	51	389	169	558
05.S567	13	2.4	299	0	299	0.9	1.9	511	0	0	119	559	300	859
05.S569	3	2.4	29	0	29	0.9	1.9	50	0	0	12	44	19	63
		3.7	33	0	33	0.9	2.4	71	0	0	18	49	30	79
		4.3	44	0	44	0.9	2.6	104	0	0	27	67	44	111
05.S568	9	2.4	215	0	215	0.9	1.9	368	0	0	85	790	246	1036

NOISE BARRIER	# OF BENEFITED RESIDENCES	CONSTRUCTION COSTS					ADDITIONAL COSTS				EASEMENT COSTS		
		Sound Wall Masonry Cost	Minor Concrete Sound Wall Cost	Excavation and Backfill Cost	Demolition Cost - wood fence	Demolition Cost - sound wall/property wall	Clearing & Grubbing	Landscaping Cost	Traffic Control Cost	SWPPP Cost	Construction Easements	Footing Easements	Total Easements
		($200/m2)	($750/m3)	($125/m3)	($40/m)	($32/m2)	(8% of Wall Cost)	(10% of Wall Cost)	(5% of Wall Cost)	(5% of Wall Cost)	($140/m2)	($360/m2)	
05.S539	1	$25,200	$12,490	$8,978	$0	$2,419	$3,927	$4,909	$2,454	$2,454	$17,640	$19,656	$37,296
		$25,200	***$12,490***	***$8,978***	***$0***	***$2,419***	***$3,927***	***$4,909***	***$2,454***	***$2,454***	***$17,640***	***$19,656***	***$37,296***
05.S541	5	$10,500	$5,204	$3,741	$0	$1,008	$1,636	$2,045	$1,023	$1,023	$7,350	$8,190	$15,540
		$61,318	$29,358	$19,251	$0	$4,107	$9,123	$11,403	$5,702	$5,702	$29,946	$46,202	$76,148
		$92,512	$43,188	$27,612	$0	$5,437	$13,500	$16,875	$8,437	$8,437	$39,648	$67,968	$107,616
		$164,330	***$77,750***	***$50,604***	***$0***	***$10,552***	***$24,259***	***$30,324***	***$15,162***	***$15,162***	***$76,944***	***$122,360***	***$199,304***
05.S551	21	$314,580	$146,858	$93,893	$0	$24,653	$46,399	$57,998	$28,999	$28,999	$134,820	$231,120	$365,940
		$836,110	$399,908	$247,983	$0	$58,376	$123,390	$154,238	$77,119	$77,119	$319,242	$629,363	$948,605
		$1,150,690	***$546,765***	***$341,875***	***$0***	***$83,028***	***$169,789***	***$212,236***	***$106,118***	***$106,118***	***$454,062***	***$860,483***	***$1,314,545***
05.S557	10	$33,780	$16,742	$12,034	$0	$0	$5,005	$6,256	$3,128	$3,128	$23,646	$26,348	$49,994
		$116,856	$55,689	$38,343	$0	$0	$16,871	$21,089	$10,544	$10,544	$68,166	$87,642	$155,808
		$150,636	***$72,431***	***$50,378***	***$0***	***$0***	***$21,876***	***$27,344***	***$13,672***	***$13,672***	***$91,812***	***$113,990***	***$205,802***
05.S561	6	$93,638	$46,409	$33,358	$0	$8,989	$14,592	$18,239	$9,120	$9,120	$65,546	$73,037	$138,584
		$93,638	***$46,409***	***$33,358***	***$0***	***$8,989***	***$14,592***	***$18,239***	***$9,120***	***$9,120***	***$65,546***	***$73,037***	***$138,584***
05.S563	4	$77,865	$38,592	$27,739	$0	$0	$11,536	$14,420	$7,210	$7,210	$54,506	$60,735	$115,240
		$77,865	***$38,592***	***$27,739***	***$0***	***$0***	***$11,536***	***$14,420***	***$7,210***	***$7,210***	***$54,506***	***$60,735***	***$115,240***
05.S567	13	$179,457	$88,943	$63,932	$0	$0	$26,587	$33,233	$16,617	$16,617	$78,211	$108,083	$186,294
		$179,457	***$88,943***	***$63,932***	***$0***	***$0***	***$26,587***	***$33,233***	***$16,617***	***$16,617***	***$78,211***	***$108,083***	***$186,294***
05.S569	3	$17,520	$8,683	$6,242	$0	$0	$2,596	$3,244	$1,622	$1,622	$6,132	$6,833	$12,965
		$28,208	$13,505	$8,856	$0	$0	$4,046	$5,057	$2,528	$2,528	$6,888	$10,627	$17,515
		$43,512	$20,313	$12,987	$0	$0	$6,145	$7,681	$3,841	$3,841	$9,324	$15,984	$25,308
		$89,240	***$42,502***	***$28,085***	***$0***	***$0***	***$12,786***	***$15,983***	***$7,991***	***$7,991***	***$22,344***	***$33,444***	***$55,788***
05.S568	9	$129,060	$63,965	$45,978	$0	$0	$19,120	$23,900	$11,950	$11,950	$110,579	$88,546	$199,125
		$129,060	***$63,965***	***$45,978***	***$0***	***$0***	***$19,120***	***$23,900***	***$11,950***	***$11,950***	***$110,579***	***$88,546***	***$199,125***

NOISE BARRIER	# OF BENEFITED RESIDENCES	TOTAL COSTS			COST PER BENEFITTED RESIDENCE			COST ALLOWANCE		REASONABLENESS		
		Estimated Total Cost (w/o Easements)	Estimated Total Cost (w/ Construction Easement Only)	Estimated Total Cost w/ Easements	Estimated Cost/Benefited Residence (w/o Easements)	Estimated Cost/Benefited Residence (w/ Construction Easement Only)	Estimated Cost Per Benefitted Residence w/ Easements	Reasonable Allowance Per Residence	Reasonable Total Allowance	Reasonable w/o Easements	Reasonable w/ Construction Easements Only	Reasonable w/ all easements
05.S539	1	$62,831	$80,471	$100,127	***$62,831***	***$80,471***	***$100,127***	***$37,000***	***$37,000***	***NO***	***NO***	***NO***
		$62,831	***$80,471***	***$100,127***								
05.S541	5	$26,179	$33,529	$41,719	***$77,628***	***$93,017***	***$117,489***	***$45,000***	***$225,000***	***NO***	***NO***	***NO***
		$145,963	$175,909	$222,111								
		$215,999	$255,647	$323,615								
		$388,142	***$465,086***	***$587,446***								
05.S551	21	$742,378	$877,198	$1,108,318	***$129,363***	***$150,985***	***$191,960***	***$47,000***	***$987,000***	***NO***	***NO***	***NO***
		$1,974,241	$2,293,483	$2,922,846								
		$2,716,619	***$3,170,681***	***$4,031,164***								
05.S557	10	$80,072	$103,718	$130,067	***$35,001***	***$44,182***	***$55,581***	***$43,000***	***$430,000***	***YES***	***NO***	***NO***
		$269,937	$338,103	$425,745								
		$350,009	***$441,821***	***$555,812***								
05.S561	6	$233,465	$299,012	$372,049	***$38,911***	***$49,835***	***$62,008***	***$41,000***	***$246,000***	***YES***	***NO***	***NO***
		$233,465	***$299,012***	***$372,049***								
05.S563	4	$184,571	$239,077	$299,811	***$46,143***	***$59,769***	***$74,953***	***$47,000***	***$188,000***	***YES***	***NO***	***NO***
		$184,571	***$239,077***	***$299,811***								
05.S567	13	$425,385	$503,596	$611,679	***$32,722***	***$38,738***	***$47,052***	***$49,000***	***$637,000***	***YES***	***YES***	***YES***
		$425,385	***$503,596***	***$611,679***								
05.S569	3	$41,529	$47,661	$54,494	***$68,193***	***$75,641***	***$86,789***	***$43,000***	***$129,000***	***NO***	***NO***	***NO***
		$64,729	$71,617	$82,244								
		$98,319	$107,643	$123,627								
		$204,578	***$226,922***	***$260,366***								
05.S568	9	$305,924	$416,503	$505,048	***$33,992***	***$46,278***	***$56,116***	***$37,000***	***$333,000***	***YES***	***NO***	***NO***
		$305,924	***$416,503***	***$505,048***								

ALTERNATIVE 5
EXHIBITS



I-5/ SR-56 INTERCHANGE PROJECT ALTERNATIVE 5

SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

SCALE 1:2000

Sheet No.

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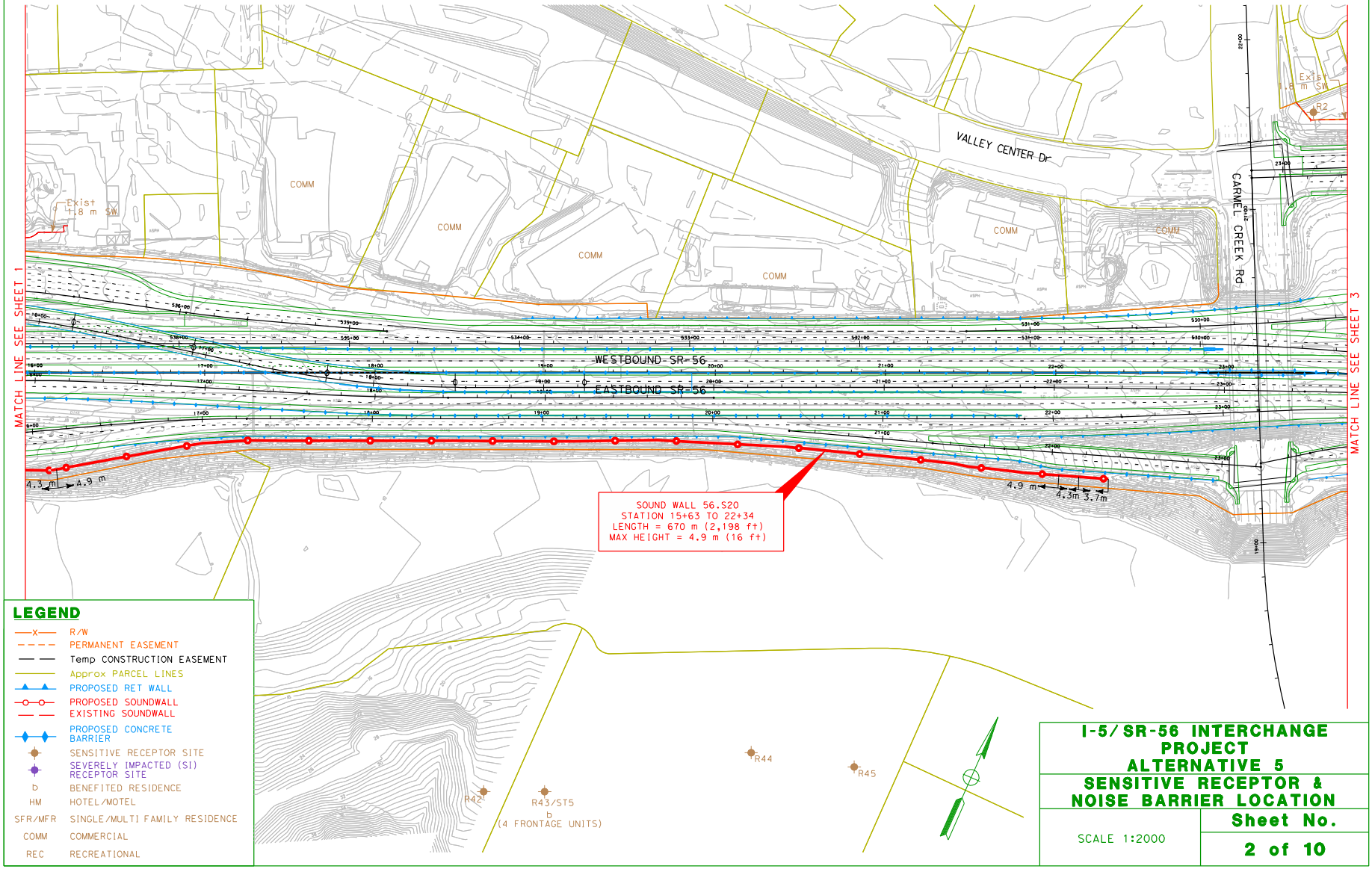

LEGEND

—x—	R/W
- - - -	PERMANENT EASEMENT
— —	Temp CONSTRUCTION EASEMENT
	Approx PARCEL LINES
	PROPOSED RET WALL
—o—o—	PROPOSED SOUNDWALL
— —	EXISTING SOUNDWALL
	PROPOSED CONCRETE BARRIER
	SENSITIVE RECEPTOR SITE
	SEVERELY IMPACTED (SI) RECEPTOR SITE
b	BENEFITED RESIDENCE
HM	HOTEL/MOTEL
SFR/MFR	SINGLE/MULTI FAMILY RESIDENCE
COMM	COMMERCIAL
REC	RECREATIONAL

I-5/ SR-56 INTERCHANGE PROJECT
ALTERNATIVE 5
SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

SCALE 1:2000

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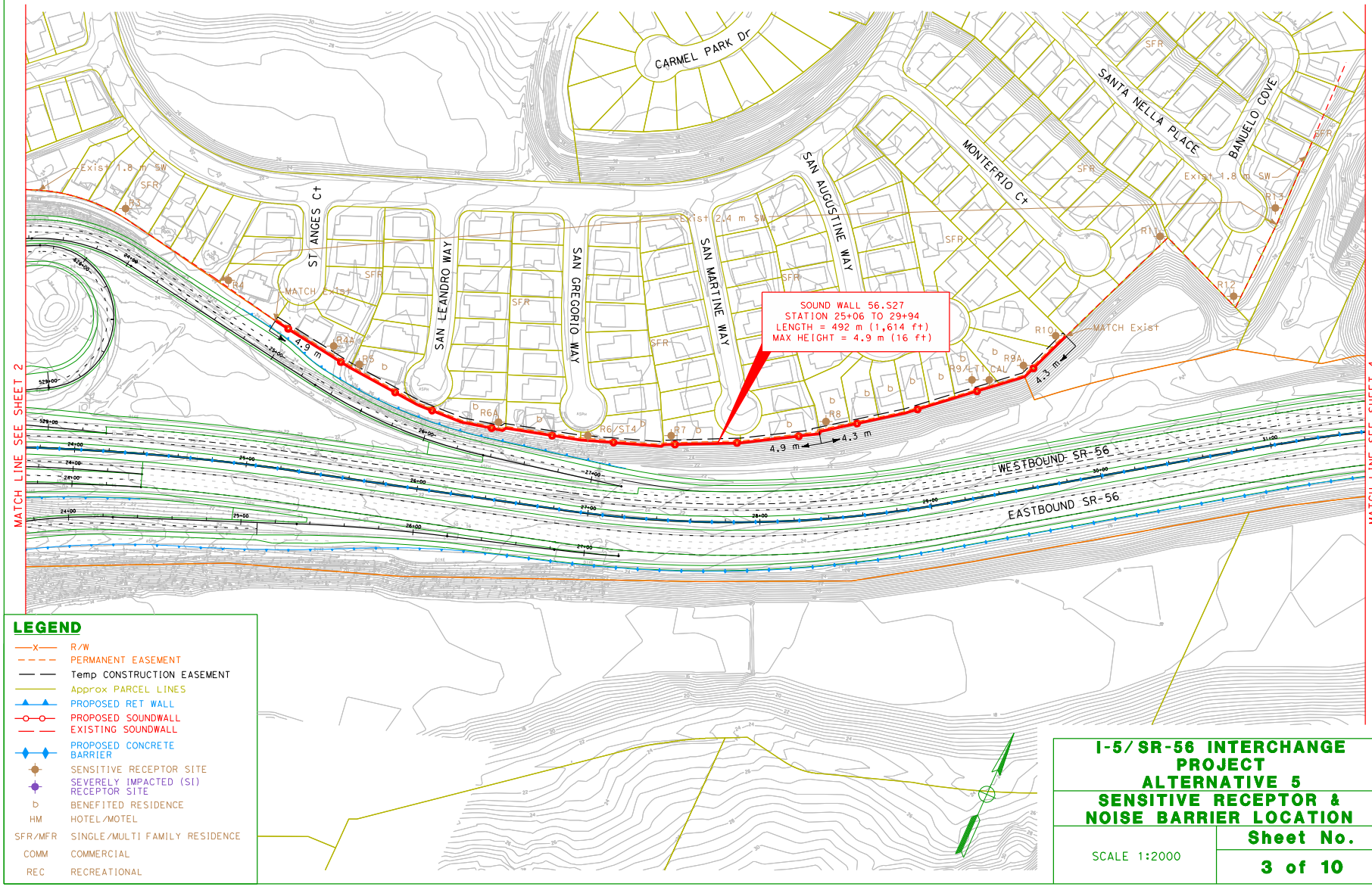

LEGEND

- R/W
- PERMANENT EASEMENT
- Temp CONSTRUCTION EASEMENT
- Approx PARCEL LINES
- PROPOSED RET WALL
- PROPOSED SOUNDWALL
- EXISTING SOUNDWALL
- PROPOSED CONCRETE BARRIER
- SENSITIVE RECEPTOR SITE
- SEVERELY IMPACTED (SI) RECEPTOR SITE
- b — BENEFITED RESIDENCE
- HM — HOTEL/MOTEL
- SFR/MFR — SINGLE/MULTI FAMILY RESIDENCE
- COMM — COMMERCIAL
- REC — RECREATIONAL

I-5/ SR-56 INTERCHANGE PROJECT ALTERNATIVE 5

SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

SCALE 1:2000

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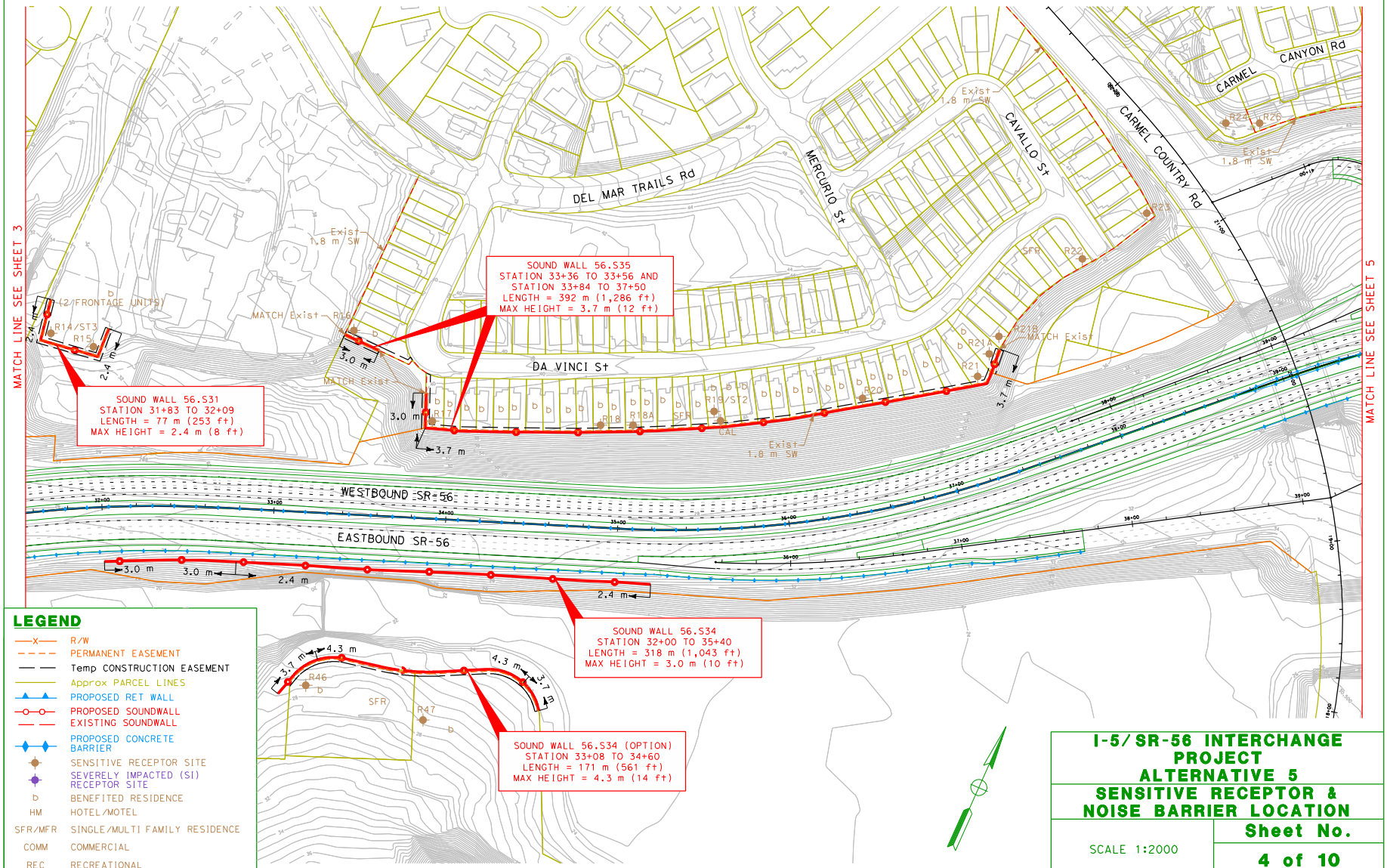

I-5/ SR-56 INTERCHANGE PROJECT
ALTERNATIVE 5
SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

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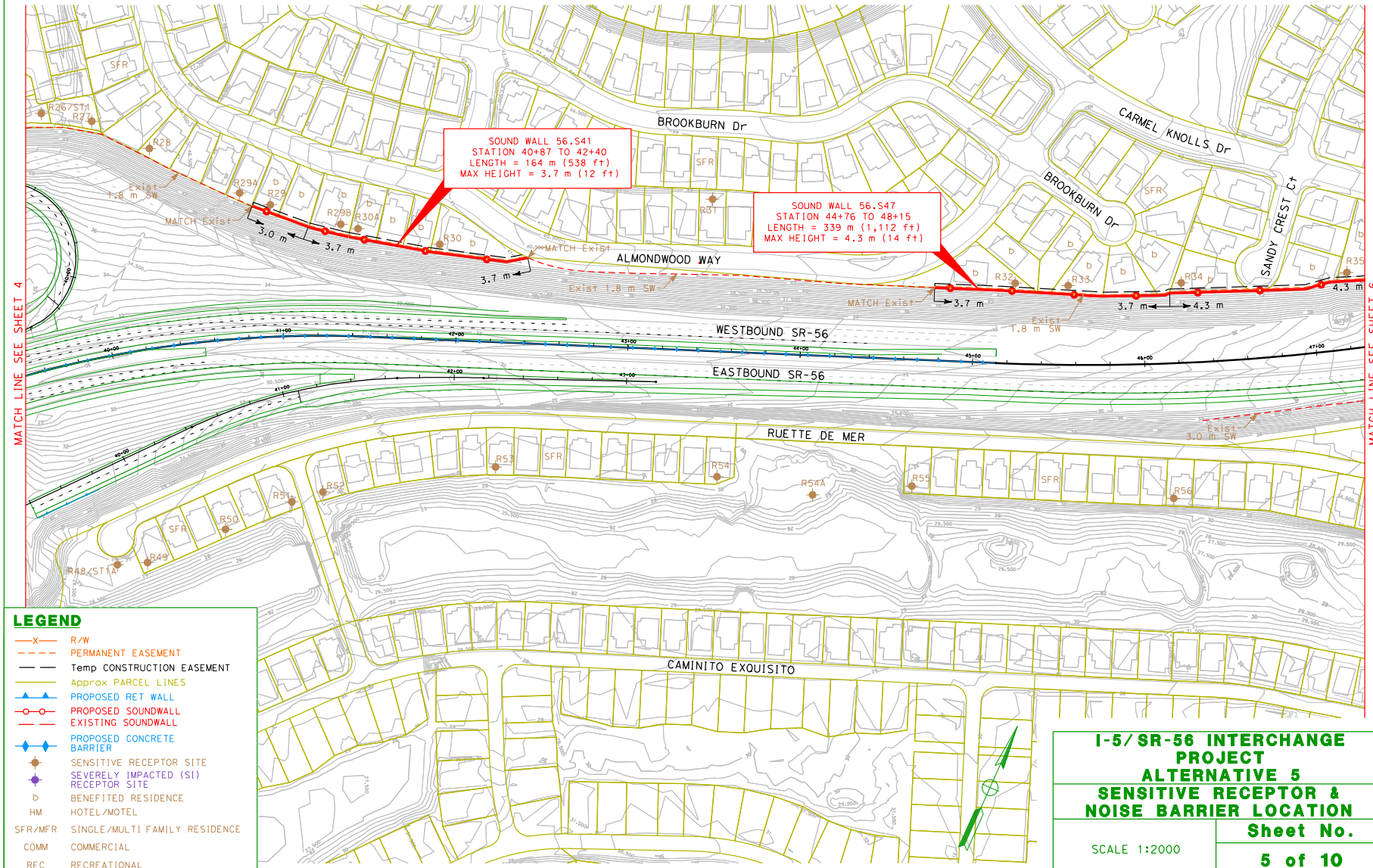

I-5/ SR-56 INTERCHANGE PROJECT
ALTERNATIVE 5
SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

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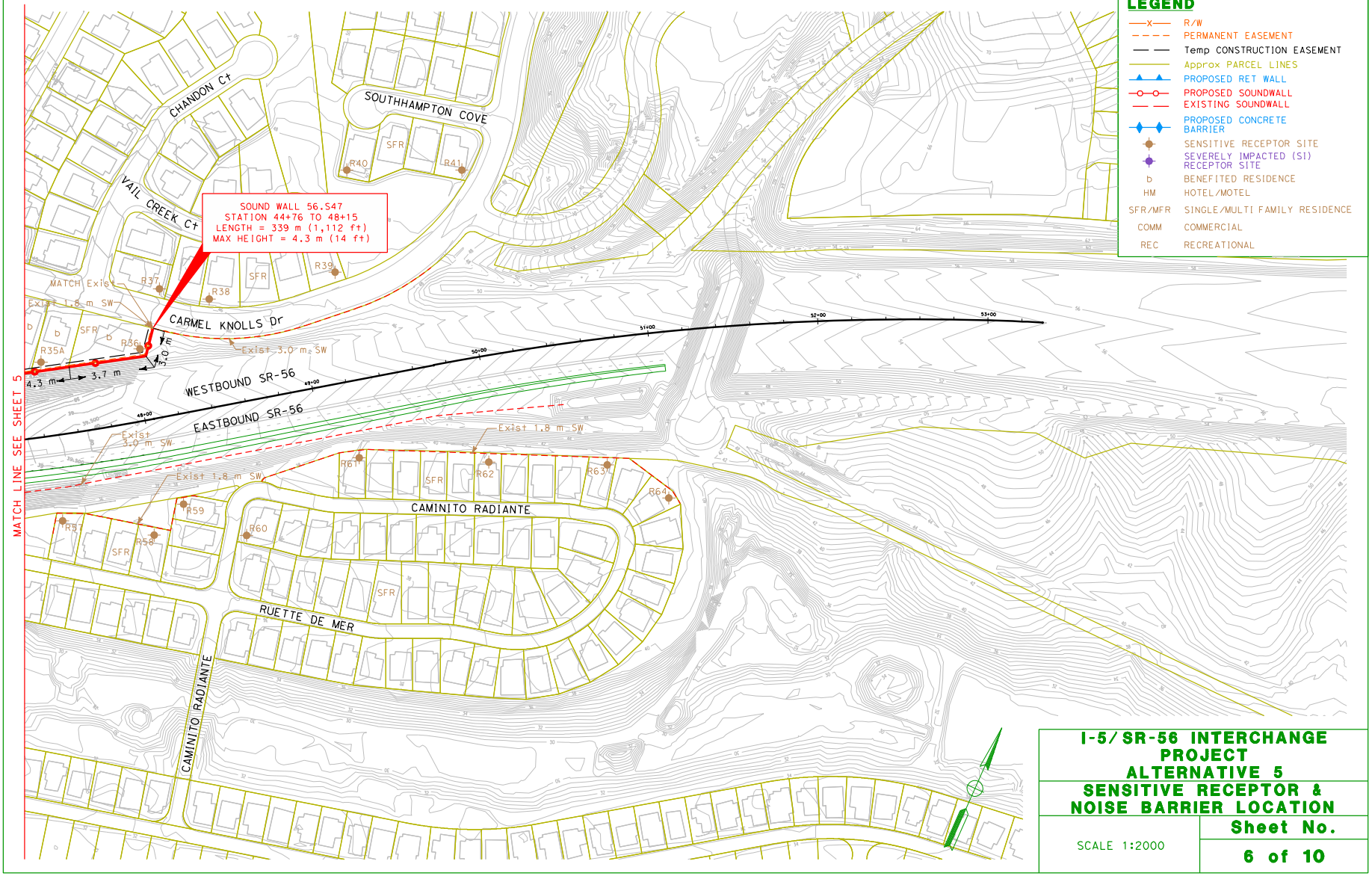
LEGEND
R/W
PERMANENT EASEMENT
Temp CONSTRUCTION EASEMENT
Approx PARCEL LINES
PROPOSED RET WALL
PROPOSED SOUNDWALL
EXISTING SOUNDWALL
PROPOSED CONCRETE BARRIER
SENSITIVE RECEPTOR SITE
SEVERELY IMPACTED (SI) RECEPTOR SITE
b BENEFITED RESIDENCE
HM HOTEL/MOTEL
SFR/MFR SINGLE/MULTI FAMILY RESIDENCE
COMM COMMERCIAL
REC RECREATIONAL
SOUND WALL 56.S47
STATION 44+76 TO 48+15
LENGTH = 339 m (1,112 ft)
MAX HEIGHT = 4.3 m (14 ft)
CHANDON Ct
SOUTHHAMPTON COVE
VAIL CREEK Ct
CARMEL KNOLLS Dr
WESTBOUND SR-56
EASTBOUND SR-56
CAMINITO RADIANTE
RUETTE DE MER
CAMINITO RADIANTE
MATCH LINE SEE SHEET 5
MATCH Exist
Exist 1.8 m SW
Exist 3.0 m SW
Exist 1.8 m SW
Exist 1.8 m SW
4.3 m
3.7 m
3.0
SFR
b
R35A
R36
R37
R38
R39
R40
R41
R57
R58
R59
R60
R61
R62
R63
R64
48+00
49+00
50+00
51+00
52+00
53+00
I-5/ SR-56 INTERCHANGE PROJECT
ALTERNATIVE 5
SENSITIVE RECEPTOR & NOISE BARRIER LOCATION
SCALE 1:2000
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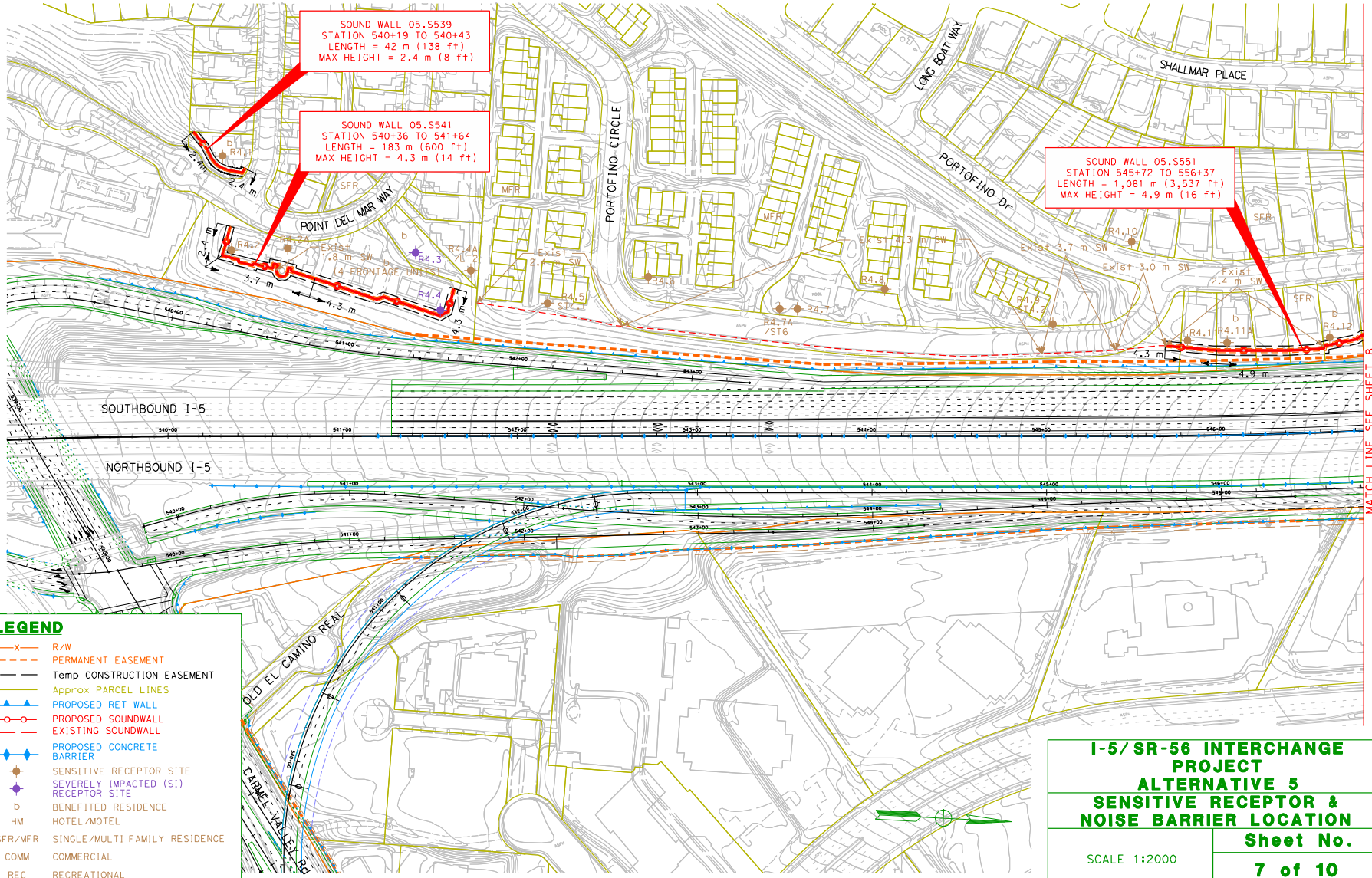

I-5/ SR-56 INTERCHANGE PROJECT
ALTERNATIVE 5
SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

SCALE 1:2000

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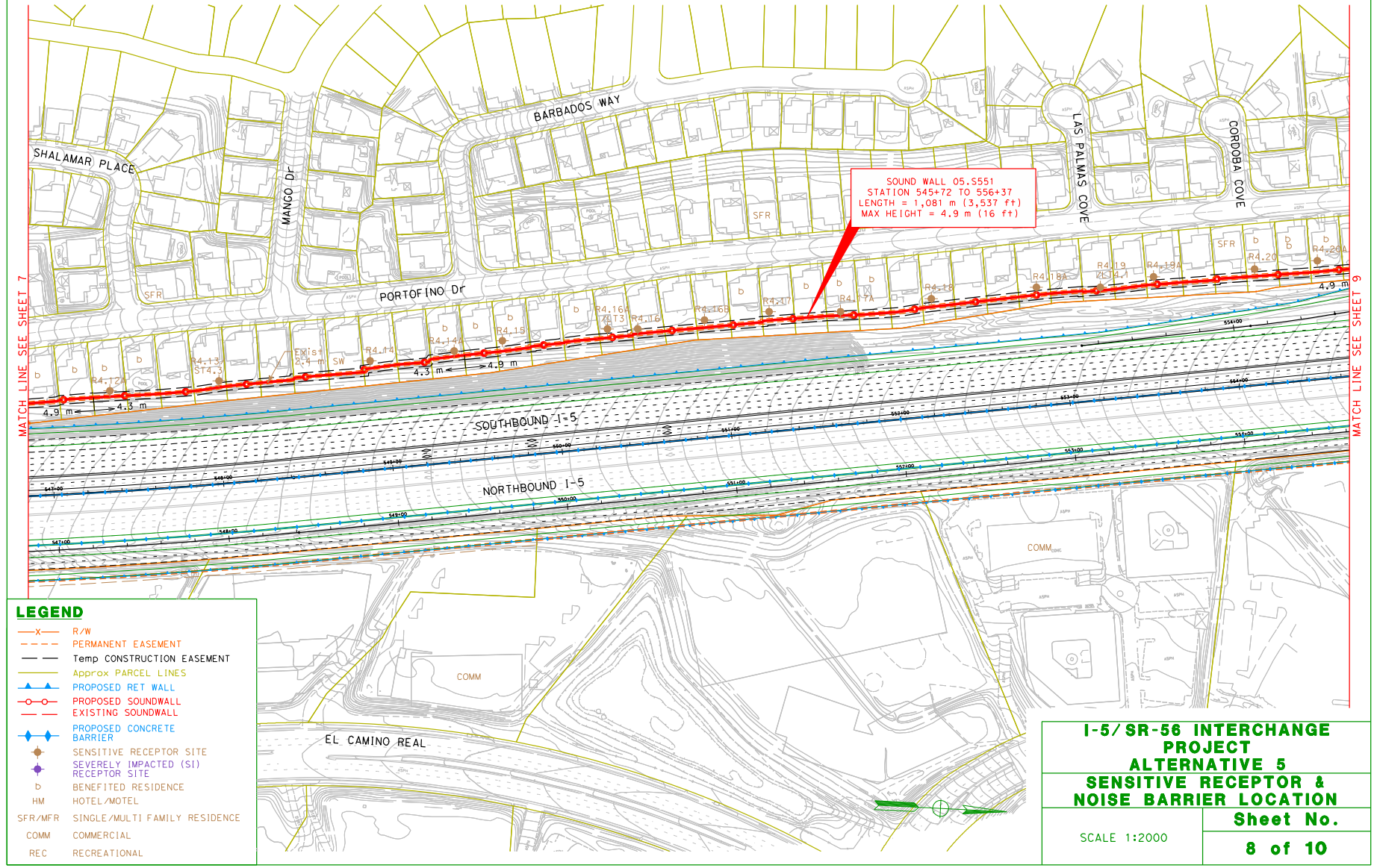

I-5/SR-56 INTERCHANGE PROJECT
ALTERNATIVE 5
SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

SCALE 1:2000

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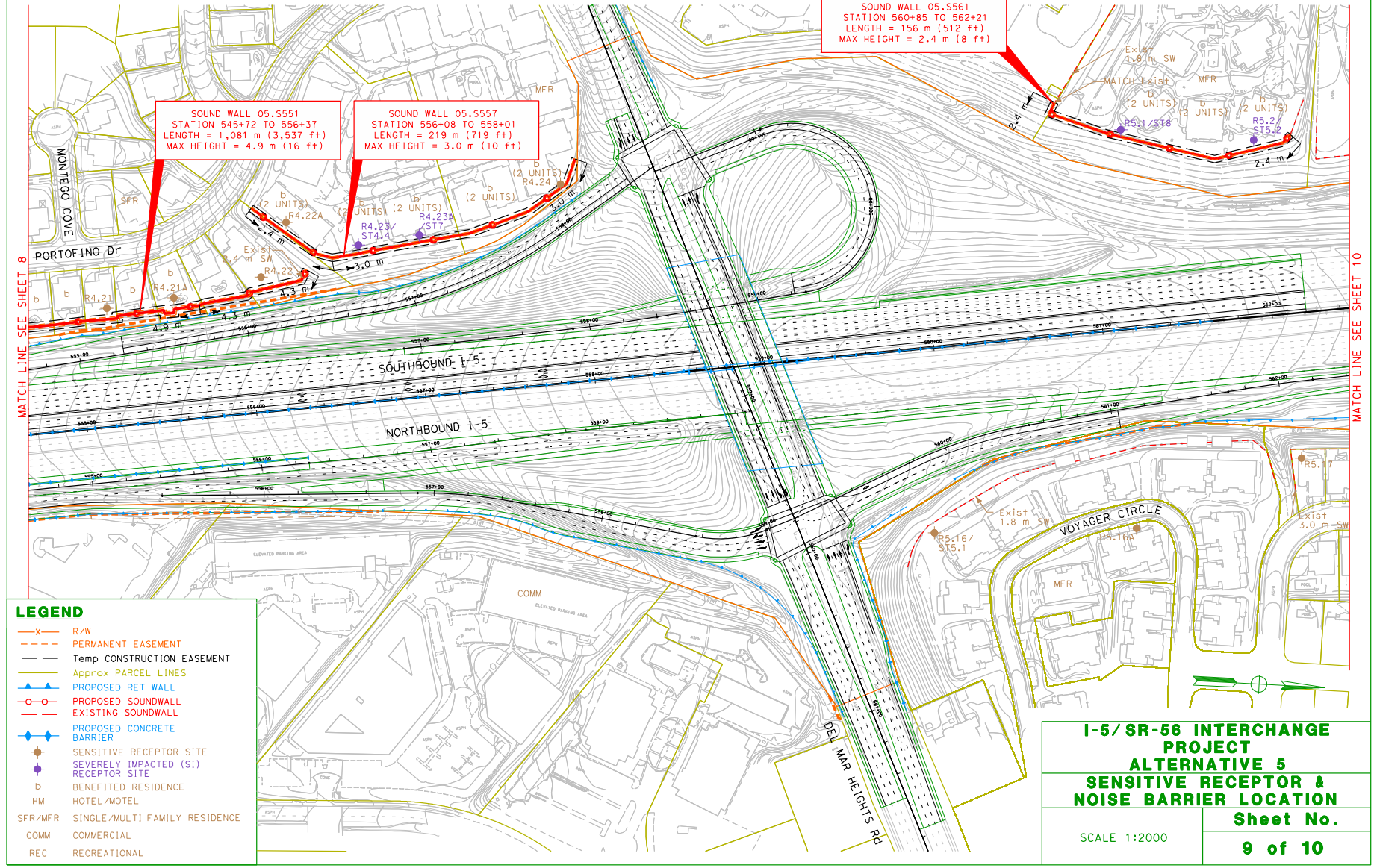

I-5/ SR-56 INTERCHANGE PROJECT ALTERNATIVE 5

SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

SCALE 1:2000

Sheet No.

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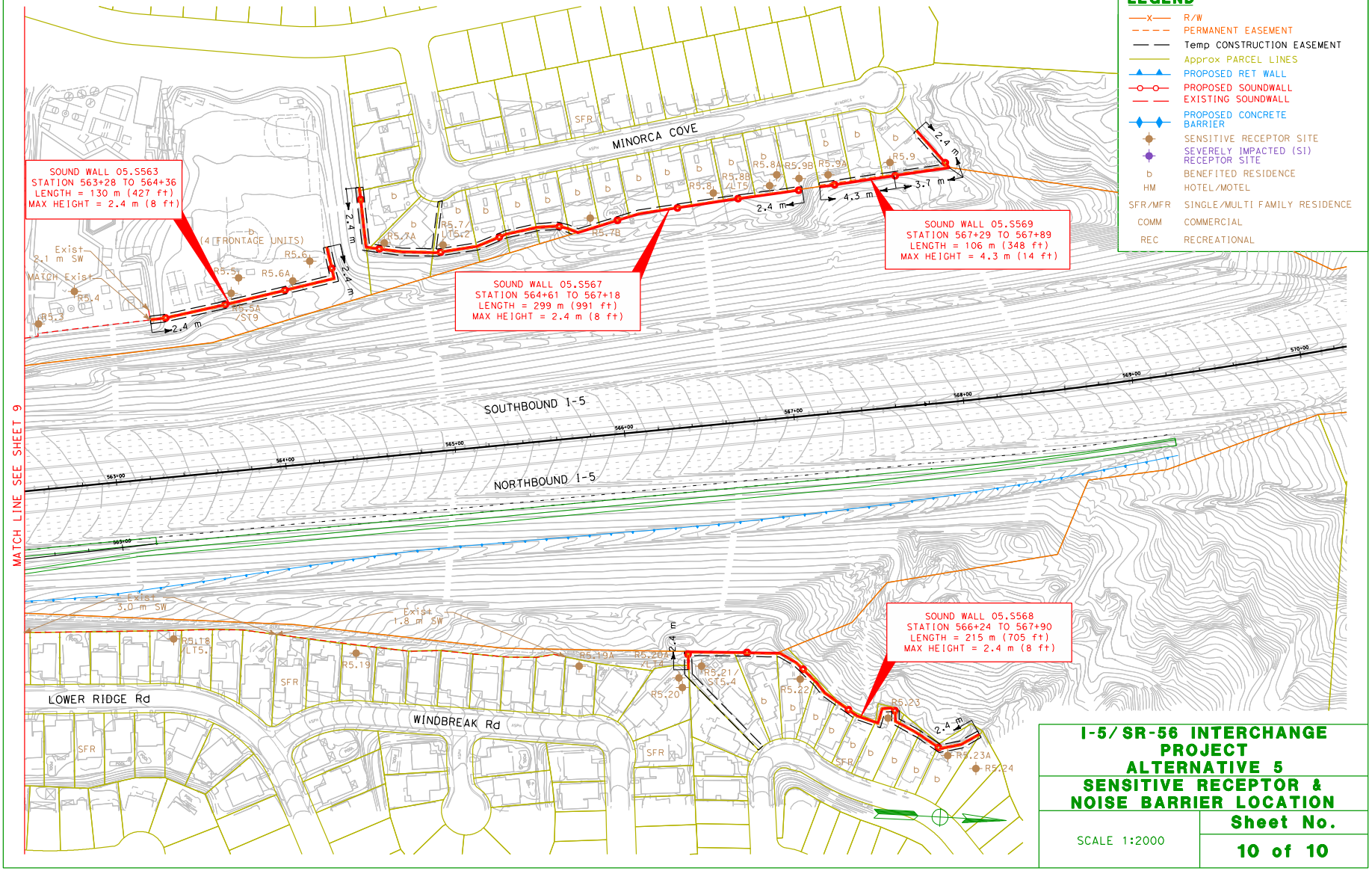
LEGEND
R/W
PERMANENT EASEMENT
Temp CONSTRUCTION EASEMENT
Approx PARCEL LINES
PROPOSED RET WALL
PROPOSED SOUNDWALL
EXISTING SOUNDWALL
PROPOSED CONCRETE BARRIER
SENSITIVE RECEPTOR SITE
SEVERELY IMPACTED (SI) RECEPTOR SITE
b BENEFITED RESIDENCE
HM HOTEL/MOTEL
SFR/MFR SINGLE/MULTI FAMILY RESIDENCE
COMM COMMERCIAL
REC RECREATIONAL
SOUND WALL 05.S563
STATION 563+28 TO 564+36
LENGTH = 130 m (427 ft)
MAX HEIGHT = 2.4 m (8 ft)
SOUND WALL 05.S567
STATION 564+61 TO 567+18
LENGTH = 299 m (991 ft)
MAX HEIGHT = 2.4 m (8 ft)
SOUND WALL 05.S569
STATION 567+29 TO 567+89
LENGTH = 106 m (348 ft)
MAX HEIGHT = 4.3 m (14 ft)
SOUND WALL 05.S568
STATION 566+24 TO 567+90
LENGTH = 215 m (705 ft)
MAX HEIGHT = 2.4 m (8 ft)
MATCH LINE SEE SHEET 9
SOUTHBOUND I-5
NORTHBOUND I-5
MINORCA COVE
LOWER RIDGE Rd
WINDBREAK Rd
SFR
(4 FRONTAGE UNITS)
Exist 2.1 m SW
MATCH Exist
Exist 3.0 m SW
Exist 1.8 m SW
2.4 m
3.7 m
4.3 m
I-5/ SR-56 INTERCHANGE PROJECT
ALTERNATIVE 5
SENSITIVE RECEPTOR & NOISE BARRIER LOCATION
SCALE 1:2000
Sheet No.
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