Preliminary Noise Abatement Decision Report (NADR)

Volume 1 of 2

Interstate 5 North Coast Corridor Project

June 2007

Prepared for:
Caltrans – District 11

Prepared by:
Dokken Engineering

PRELIMINARY

NOISE ABATEMENT DECISION REPORT

INTERSTATE 5 NORTH COAST CORRIDOR PROJECT

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Addendum
For Noise Barriers S686 b/c, S863, and S603 Option 1

August 27, 2013

The Preliminary Noise Abatement Decision Report (NADR) prepared for the I-5 North Coast Corridor Project is hereby amended to recommend construction of noise barriers S686b/c, and S863. Construction of these noise barriers was not recommended originally by the Preliminary NADR dated June 2007. The NADR is also hereby revised to recommend a revision to the original design of noise barrier S603 Option 1. This noise barrier is now proposed to be segmented into two noise barriers S603 Option 1A, S603A and S603B with a gap in between.

Noise Barriers S686 b/c

These noise barriers would be located on private property along the northbound side of I-5, north of Encinitas Boulevard. Construction of noise barriers S686b/c was deemed to be not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barriers S686b/c. Construction of these noise barriers was therefore not recommended. The number of benefited residences was determined to be eight when the Preliminary NADR was prepared. However, based upon closer review of these residences, it was found that each of them is a townhome unit (two residences per unit). The number of benefited residences is therefore sixteen.

Since the number of benefited residences is now twice the number of residences originally counted, the estimated costs per benefited residence are now reduced by half. Therefore, as shown in the revised analysis shown below, the estimated cost per benefited residence (without easements, with construction easements only, and with all easements) would be less than the reasonable allowance per benefited residence making this noise barrier reasonable.

Construction of noise barriers S686b/c is feasible and reasonable, therefore it is recommended.

Noise Barriers S686 b/c

General

Type: Sound wall

I-5 Station limits: 684+90 to 685+82/685+88 to 686+28

Receptor sites: R11.26/R11.28

Severely Impacted Receptors: None

Height: 3.0 meters (10 feet)

Location: Environmental Segment 11; see exhibit

Benefited Units: 16 single-family residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 72 dBA

Compared to existing (year 2005): 5 to 6 dBA increase

Feasibility

5-dBA reduction: Yes

Noise reduction below NAC: Yes

Feasible: Yes

Reasonableness

Reasonable Total Cost Allowance: $640,000

Estimated Total Cost without Easements: $323,710

Estimated Total Cost with Construction Easements only: $393,010

Estimated Total Cost with all Easements: $478,480

Reasonable Cost Allowance/Benefited Unit: $40,000

Estimated Cost/Benefited Unit without Easements: $20,232

Estimated Cost/Benefited Unit with Construction Easements only: $24,563

Estimated Cost/Benefited Unit with all Easements: $29,905

Reasonable without Easements: Yes

Reasonable with Construction Easements only: Yes

Reasonable with all Easements: Yes

Discussion

As shown in Segment 11, Sheet 31, of this NADR, noise barriers S686b/c would be located on private property north of Encinitas Boulevard. This area is represented by receiver sites R11.26 and R11.28. The noise barriers would extend for approximately 154 meters (505 feet). The height of the barriers required to achieve an insertion loss of a 5 dBA or more at the critical design receiver would be 3.0 meters (10 feet). The walls would benefit 16 single-family residences and is considered feasible. The estimated cost of S686b/c with all easements would be less than the reasonable allowance.

Noise Abatement Decision

Construction of noise barriers S686b/c is both feasible and reasonable. Construction of noise barriers S686b/c is recommended.

Noise Barrier S863

This noise barrier would potentially be located on Caltrans right-of-way and shoulder of southbound I-5, between Brooks Street and Mission Avenue. Construction of noise barrier S863 was deemed to be not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier S863 at the time the Preliminary NADR was prepared. Construction of this noise barrier was therefore not recommended. However, based on the comments received from the public and the community and since there is a severely impacted receptor R20.7 (Oceanside High School Tennis Courts) that must be abated for, the decision was made to recommend construction of noise barrier S863.

Noise Barrier S603 (Option 1)

Noise barrier S603 Option 1 would be located along the southbound side of I-5, north of Via de la Valle. The noise barrier would provide a feasible reduction in highway traffic noise for 14 single-family and 20 multi-family residences, as well as St. Leo's Head Start Pre School and Santa Fe Christian School all represented by Receptors R6.4A and R6.4 to R6.11**.** The estimated construction cost of S603 (Option 1) including all easement costs, would be less than the reasonable cost allowance, and so would be reasonable. A solid noise barrier, however, would have the potential to block scenic coastal views for freeway motorists protected under the Coastal Act. For purposes of the noise analysis, the solid noise barrier has been identified in Table 3.15.13 of the Final EIR/EIS. For that reason, it is now recommended to create a gap in the noise barrier S603 (Option 1) for maintaining coastal views.

Noise Barrier S603A and S603B (Option 1A)

Noise barriers S603A and S603B will divide the noise barrier from Option 1 into two noise barriers with a gap that starts at station 601+00 and ends at station 604+80.

Noise barrier S603A would provide a feasible reduction in highway traffic noise for 12 multi-family residences represented by Receptors R6.4A and R6.4 and one single-family represented by R6.5. Noise barrier S603B would provide a feasible reduction in highway traffic noise for four multi-family residences, represented by Receptors R6.9A as well as Santa Fe Christian School represented by R6.10, and R6.11 which counts for seven Frequent Use Areas. Receptors R6.6 through R6.9 would not receive feasible noise reduction with gap in the noise barrier. The estimated construction cost of both S603A and S603B including all easement costs, would exceed the reasonable cost allowance. Since there are severely impacted receptors, including R6.10 and R.6.11 -representing Santa Fe Christian School- that must be abated for, the PDT decided to recommend construction of both S603A and S603B.

Noise Barrier S603A

General

Type: Sound wall

I-5 Station limits: 597+80 to 601+00

Receptor sites: R6.4A, R6.4, and R6.5

Severely Impacted Receptors: R6.4A, and R6.4

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

Location: Environmental Segment 6; see exhibit

Benefited Units: 12 multi-family residences, and one single-family residence

Predicted Noise Levels if Project Built without Abatement

Year 2030: 72 to 80 dBA

Compared to existing (year 2005): 5 to 10 dBA increase

Feasibility

5-dBA reduction: Yes

Noise reduction below NAC: No

Feasible: Yes

Reasonableness

Reasonable Total Cost Allowance: $598,000

Estimated Total Cost without Easements: $670,872

Estimated Total Cost with Construction Easements only: $819,822

Estimated Total Cost with all Easements: $998,421

Reasonable Cost Allowance/Benefited Unit: $46,000

Estimated Cost/Benefited Unit without Easements: $51,606

Estimated Cost/Benefited Unit with Construction Easements only: $63,063

Estimated Cost/Benefited Unit with all Easements: $76,802

Reasonable without Easements: No

Reasonable with Construction Easements only: No

Reasonable with all Easements: No

Noise Barrier S603B

General

Type: Sound wall

I-5 Station limits: 604+80 to 608+15

Receptor sites: R6.9A, R6.10, and R6.11

Severely Impacted Receptors: R6.10, and R6.11

Height: 3.0 meters (10 feet)

Location: Environmental Segment 6; see exhibit

Benefited Units: 4 multi-family residences, and one school (7 frontage units)

Predicted Noise Levels if Project Built without Abatement

Year 2030: 73 to 75 dBA

Compared to existing (year 2005): Negative 1 to 6 dBA increase

Feasibility

5-dBA reduction: Yes

Noise reduction below NAC: No

Feasible: Yes

Reasonableness

Reasonable Total Cost Allowance: $440,000

Estimated Total Cost without Easements: $460,429

Estimated Total Cost with Construction Easements only: $548,179

Estimated Total Cost with all Easements: $656,404

Reasonable Cost Allowance/Benefited Unit: $40,000

Estimated Cost/Benefited Unit without Easements: $41,857

Estimated Cost/Benefited Unit with Construction Easements only: $49,834

Estimated Cost/Benefited Unit with all Easements: $59,673

Reasonable without Easements: No

Reasonable with Construction Easements only: No

Reasonable with all Easements: No

Discussion

As shown in Segment 6, Revised Sheets 19 and 20, of this NADR, noise barriers 603A and B (Option 1A) would be located on Caltrans right-of-way along the southbound side of I-5, north of Via de la Valle.

Noise Barrier 603A

The area of noise barrier S603A is represented by receivers R6.4A and R6.4 and one single-family represented by R6.5. The heights of the barrier required to achieve a 5 dBA or more insertion loss at the critical design receiver would be 2.4 meters (8 feet) to 3.7 meters (12 feet).

Noise Barrier 603B

The area of noise barrier S603B is represented by receivers R6.9A as well as Santa Fe Christian School represented by R6.10, and R6.11 which counts for seven frequent use areas. The heights of the barrier required to achieve a 5 dBA or more insertion loss at the critical design receiver would be 3 meters (10 feet). Receptors R6.6 through R6.9 would not receive feasible noise reduction with gap in the noise barrier.

Noise Abatement Decision

Noise Barrier 603A

Construction of noise barrier S603A is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier S603A. However, since there are severely impacted receptors that must be abated for, the PDT made the determination to construct this noise barrier.

Noise Barrier 603B

Construction of noise barrier S603B is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier S603B. However, since there are severely impacted receptors that must be abated for, the PDT made the determination to construct the noise barrier.

PRELIMINARY
NOISE ABATEMENT DECISION REPORT
INTERSTATE 5 NORTH COAST CORRIDOR PROJECT

11-SD-5
KP R54.9/R87.9
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It is understood that if pertinent parameters change substantially during the final project design, the preliminary noise abatement/mitigation design may be changed or eliminated from the final project design. A final decision on noise abatement/mitigation will be made upon completion of the project design.

PERSONNEL

Arturo Jacobo	Caltrans, Project Manager
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Ted Evans	Caltrans, Project Design Engineer
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PRELIMINARY NOISE ABATEMENT DECISION REPORT
FOR PROPOSED INTERSTATE 5 NORTH COAST CORRIDOR 10+4+Buffer
IMPROVEMENT PROJECT
IN THE COUNTY OF SAN DIEGO

This report documents the decision of the overall feasibility and reasonableness of providing the abatement measures. The purpose of this report is to determine which noise abatement measure(s) are proposed with this project for each location where a traffic noise impact has been identified.

Jason Lemons
Consultant Project Engineer
Dokken Engineering

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INTRODUCTION

This report contains the preliminary noise abatement decisions as defined in the Caltrans Traffic Noise Protocol for the Interstate 5 North Coast Corridor Project. The requirements for noise abatement are based on Title 23, Code of Federal Regulations, Part 772 of the Federal Highway Administration (FHWA) standards, and the Caltrans Traffic Noise Analysis Protocol (Protocol). Under these regulations, noise abatement measures must be considered when future predicted noise levels with the project "approach or exceed" the Noise Abatement Criteria (NAC) or when the predicted noise levels with the project substantially exceed existing noise levels. One-decibel (1 dBA) L_{eq} (h) within the NAC is considered "approaching," and a 12-decibel (12 dBA) increase is considered "substantial." Primary considerations 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. Prior to 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 non-acoustical factors relating to geometric standards (e.g. sight distances), 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 of 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 greater than the allowance, the preliminary determination is that abatement is not reasonable.

The Noise Abatement Decision Report (NADR) presents the preliminary noise abatement decision based on acoustical and non-acoustical feasibility factors and the relationship between noise abatement allowances and the engineer's cost estimate. The 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 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 environmental document, the final noise abatement decision is made and is indicated in the final environmental document. The preliminary noise abatement decision will become the final noise abatement decision unless compelling information received during the public review or the final design process indicates that it should be changed.

It is understood that if pertinent parameters change substantially during the final project design, the preliminary noise abatement/mitigation design may be changed or eliminated from the final project design. Another decision on noise abatement/mitigation will be made upon completion of the project design.

PURPOSE OF THE NOISE ABATEMENT DECISION REPORT

The purpose of the NADR is to:

- summarize the conclusions of the noise study report relating to acoustical feasibility and the reasonable allowances for abatement evaluated,
- present the engineer's cost estimate for evaluated abatement,
- present the engineer's evaluation of non-acoustical feasibility issues,
- present the preliminary noise abatement decision, and
- present preliminary information on secondary effects of abatement (impacts on cultural resources, scenic views, hazardous materials, biology, etc.).

PROJECT DESCRIPTION

The Interstate 5 North Coast Project extends from La Jolla Village Drive along Interstate 5 (I-5) and Mira Mesa Boulevard along Interstate 805 (I-805), in the city of San Diego, to the Harbor Drive Interchange in the City of Oceanside. The four main alternatives for the project are the 8+4+Buffer, the 8+4+Barrier, the 10+4+Buffer, and the 10+4+Barrier. The 8+4+Buffer alternative proposes to add four high-occupancy vehicle (HOV) lanes (two in either direction) separated from the mixed-flow lanes by a striped buffer. The 8+4+Barrier alternative proposes to add four HOV lanes (two in either direction) separated by a concrete barrier. The 10+4+Buffer alternative proposes to add four HOV lanes (two in either direction) separated by the mixed-flow lanes with a striped buffer plus an additional two mixed-flow lanes (one in either direction). The 10+4+Barrier proposes to add four HOV lanes (two in either direction) separated by the mixed-flow lanes by a concrete barrier plus an additional two mixed-flow lanes (one in either direction). This report is based upon the 10+4+Buffer. The purpose of the I-5 North Coast Corridor project is to relieve traffic congestion, traffic delays, and traffic queues caused by population growth and planned land use development for the planned project year of 2030.

NOISE IMPACT ANALYSIS

A Noise Study Report dated April 2007 by Parsons was prepared for this project and is hereby incorporated into this report by reference. The Noise Study Report 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 criteria for the areas adjacent to I-5. In the future, traffic noise levels will continue to exceed the current noise abatement criteria in many areas.

Noise abatement must be considered at impacted receptors where areas of frequent human use occur. 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 a

lowered noise level would be of benefit. Sound barriers ranging in height from approximately 2.4 to 4.9 meters (8 to 16 feet) would reduce the noise levels by at least 5 dBA at many of the residences. Eighty-four proposed noise barriers, identified in relation to a nearby stationing on the I-5 alignment, are preliminarily considered feasible in the Noise Study Report based on the FHWA/Caltrans Noise Abatement Criteria. All eighty-four barriers are further evaluated in this Noise Abatement Decision Report.

NOISE ABATEMENT MEASURES CONSIDERED

The Noise Study Report prepared for this project evaluated traffic noise impacts to all sensitive receptor sites along the alignment and provided barrier recommendations to abate noise impacts based on location only. All noise barriers were analyzed as sound walls. A reasonableness analysis was completed and the cost breakdowns for each wall are included in the Noise Barrier Analysis section of this document. Worksheets "A", which calculate the reasonable cost allowance for each sound wall, are included in the Noise Study Report.

EXISTING LAND USE AND NOISE SENSITIVE LOCATIONS

Existing land uses adjacent to the project are characterized by the following: commercial, office, and industrial structures, schools, churches, hotels and motels, mobile homes, 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. For many of the land uses that surround the interstate, the noise levels are already at or above the NAC. Noise levels continue to increase in many areas for the projected year of 2030 whether or not the project is built. Most of the noise comes from the traffic on the freeway rather than from background or local traffic noise. The residential and recreational receptors are classified as Category "B" receptors with a Noise Abatement Criteria (NAC) of 67 dBA L_{eq} for the exterior; the commercial, office, and industrial receptors are category "C" with a NAC of 72 dBA L_{eq} for the exterior; the educational receptors are category "E" with a NAC of 52 dBA L_{eq} for the interior.

Some of the proposed sound walls will replace existing sound walls, property walls or wood fences. Some of these existing barriers will be replaced due to the construction impacts from

the North Coast Project, however most of the existing barriers would be replaced due to insufficient sound attenuation.

FEASIBILITY CRITERIA

The feasibility of a noise abatement measure is defined as an engineering consideration. A minimum 5 dBA 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.

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 is calculated using the standard methodology (see Table 1). A base allowance of $32,000 (Caltrans, 2006) per benefited residence is allotted. An additional allowance per benefited residence is added based on the following:

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

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:

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 wall under consideration.

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 wall based upon historical construction costs for each item of work. The source used is the Caltrans 2005 Contract Cost Data (CCD) book which is published annually by Caltrans Division of Engineering Services – Office Engineer. The Office Engineer tracks standard contract item unit prices for bids opened in 2005 throughout the state of

TABLE 1. COST ALLOWANCE PER RESIDENCE										
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
1.S475	$32,000	73	$4000	3	$2000	5	$0	YES	$10,000	$48,000
2.S518	$32,000	70	$4000	1	$0	7	$2000	NO	$0	$38,000
3.S526	$32,000	72	$4000	2	$0	9	$4000	NO	$0	$40,000
3.S528	$32,000	67	$2000	1	$0	5	$0	NO	$0	$34,000
4.S541	$32,000	72	$4000	3	$2000	5	$0	NO	$0	$38,000
4.S543	$32,000	73	$4000	4	$2000	6	$2000	YES	$10,000	$50,000
4.S551	$32,000	75	$6000	1	$0	7	$2000	YES	$10,000	$50,000
4.S557	$32,000	78	$6000	1	$0	7	$2000	NO	$0	$40,000
5.S561	$32,000	74	$4000	3	$2000	6	$2000	NO	$0	$40,000
5.S563	$32,000	71	$4000	3	$2000	5	$0	YES	$10,000	$48,000
5.S565	$32,000	71	$4000	3	$2000	7	$2000	YES	$10,000	$50,000
5.S567	$32,000	73	$4000	1	$0	6	$2000	YES	$10,000	$48,000
5.S568	$32,000	74	$4000	4	$2000	6	$2000	NO	$0	$40,000
5.S569	$32,000	72	$4000	1	$0	5	$0	YES	$10,000	$46,000
5.S573	$32,000	73	$4000	5	$2000	5	$0	NO	$0	$38,000
5.S589	$32,000	74	$4000	0	$0	6	$2000	YES	$10,000	$48,000
6.S602 (Option1)	$32,000	75	$6000	2	$0	9	$4000	NO	$0	$42,000
6.S602 (Option2)	$32,000	75	$6000	4	$2000	7	$2000	NO	$0	$42,000
6.S603 (Option 1)	$32,000	80	$8000	9	$4000	7	$2000	NO	$0	$46,000
6.S603 (Option 2)	$32,000	73	$4000	6	$2000	5	$0	NO	$0	$38,000
7.S613	$32,000	74	$4000	3	$2000	5	$0	NO	$0	$38,000
7.S614	$32,000	74	$4000	3	$2000	6	$2000	YES	$10,000	$50,000
7.S622 (Option 1)	$32,000	76	$6000	2	$0	7	$2000	YES	$10,000	$50,000
7.S622 (Option 2)	$32,000	76	$6000	2	$0	7	$2000	YES	$10,000	$50,000
8.S631	$32,000	73	$4000	5	$2000	5	$0	YES	$10,000	$48,000
8.S633	$32,000	78	$6000	6	$2000	8	$2000	YES	$10,000	$52,000
8.S635	$32,000	77	$6000	6	$2000	5	$0	YES	$10,000	$50,000
8.S640	$32,000	73	$4000	2	$0	5	$0	YES	$10,000	$46,000
8.S647	$32,000	74	$4000	5	$2000	6	$2000	NO	$0	$40,000
8.S644/646	$32,000	79	$8000	0	$0	7	$2000	YES	$10,000	$52,000
9.S653	$32,000	77	$6000	7	$2000	9	$4000	YES	$10,000	$54,000
9.S652	$32,000	75	$6000	4	$2000	6	$2000	NO	$0	$42,000
9.S654 (Option 1)	$32,000	75	$6000	5	$2000	5	$0	NO	$0	$40,000
9.S654 (Option 2)	$32,000	75	$6000	5	$2000	7	$2000	NO	$0	$42,000
9.S658	$32,000	79	$8000	6	$2000	5	$0	YES	$10,000	$52,000
10.S671	$32,000	79	$8000	2	$0	7	$2000	NO	$0	$42,000
10.S675	$32,000	76	$6000	8	$4000	6	$2000	YES	$10,000	$54,000
10.S664	$32,000	77	$6000	1	$0	7	$2000	YES	$10,000	$50,000
10.S670	$32,000	73	$4000	4	$2000	5	$0	YES	$10,000	$48,000
11.S680	$32,000	74	$4000	2	$0	6	$2000	NO	$0	$38,000
11.S686A	$32,000	77	$6000	7	$2000	6	$2000	NO	$0	$42,000
11.S686B/C	$32,000	72	$4000	5	$2000	7	$2000	NO	$0	$40,000
11.S688	$32,000	75	$6000	6	$2000	5	$0	YES	$10,000	$50,000
11.S689	$32,000	81	$8000	3	$2000	11	$4000	YES	$10,000	$56,000
11.S692	$32,000	78	$6000	6	$2000	9	$4000	YES	$10,000	$54,000
12.S702	$32,000	74	$4000	6	$2000	5	$0	YES	$10,000	$48,000
12.S706	$32,000	71	$4000	3	$2000	5	$0	YES	$10,000	$48,000
12.S709	$32,000	75	$6000	3	$2000	7	$2000	NO	$0	$42,000
12.S719	$32,000	74	$4000	2	$0	5	$0	NO	$0	$36,000
13.S723	$32,000	77	$6000	2	$0	6	$2000	YES	$10,000	$50,000
13.S729	$32,000	70	$4000	4	$2000	5	$0	NO	$0	$38,000
13.S730	$32,000	69	$2000	2	$0	7	$2000	NO	$0	$36,000
13.S736	$32,000	76	$6000	4	$2000	7	$2000	NO	$0	$42,000
13.S737	$32,000	72	$4000	4	$2000	7	$2000	YES	$10,000	$50,000
14.S750	$32,000	77	$6000	4	$2000	8	$2000	YES	$10,000	$52,000
15.S783	$32,000	73	$4000	2	$0	5	$0	NO	$0	$36,000
16.S796	$32,000	72	$4000	5	$2000	6	$2000	YES	$10,000	$50,000
16.S798	$32,000	81	$8000	1	$0	10	$4000	YES	$10,000	$54,000
16.S799	$32,000	75	$6000	2	$0	5	$0	YES	$10,000	$48,000
16.S801	$32,000	78	$6000	4	$2000	8	$2000	NO	$0	$42,000
16.S802	$32,000	79	$8000	4	$2000	8	$2000	YES	$10,000	$54,000
17.S810	$32,000	76	$6000	7	$2000	9	$4000	YES	$10,000	$54,000
17.S811	$32,000	77	$6000	3	$2000	10	$4000	YES	$10,000	$54,000
18.S818	$32,000	73	$4000	7	$2000	5	$0	YES	$10,000	$48,000
18.S821	$32,000	82	$8000	12	$6000	11	$4000	NO	$0	$50,000
18.S822	$32,000	79	$8000	8	$4000	8	$2000	YES	$10,000	$56,000
18.S826	$32,000	75	$6000	7	$2000	5	$0	YES	$10,000	$50,000
18.S827	$32,000	76	$6000	8	$4000	10	$4000	YES	$10,000	$56,000
18.S829	$32,000	73	$4000	2	$0	5	$0	YES	$10,000	$46,000
19.S835	$32,000	81	$8000	8	$4000	10	$4000	YES	$10,000	$58,000
19.S836	$32,000	76	$6000	7	$2000	8	$2000	YES	$10,000	$52,000
19.S840	$32,000	75	$6000	8	$4000	5	$0	YES	$10,000	$52,000
19.S841	$32,000	80	$8000	7	$2000	8	$2000	YES	$10,000	$54,000
19.S845	$32,000	77	$6000	8	$4000	7	$2000	YES	$10,000	$54,000
19.S846	$32,000	76	$6000	8	$4000	7	$2000	YES	$10,000	$54,000
19.S849	$32,000	71	$4000	3	$2000	6	$2000	YES	$10,000	$50,000
20.S855	$32,000	69	$2000	4	$2000	5	$0	NO	$0	$36,000
20.S859	$32,000	75	$6000	2	$0	5	$0	YES	$10,000	$48,000
20.S862	$32,000	77	$6000	1	$0	6	$2000	YES	$10,000	$50,000
20.S863	$32,000	77	$6000	2	$0	7	$2000	YES	$10,000	$50,000
21.S868	$32,000	74	$4000	-4	$0	6	$2000	YES	$10,000	$48,000
21.S871	$32,000	78	$6000	2	$0	7	$2000	YES	$10,000	$50,000
21.S875	$32,000	73	$4000	5	$2000	7	$2000	YES	$10,000	$50,000
22.S882	$32,000	82	$8000	2	$0	13	$6000	YES	$10,000	$56,000
22.S884	$32,000	78	$6000	2	$0	9	$4000	YES	$10,000	$52,000

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

1) Masonry Cost
2) Footing Cost
3) Structural Excavation and Backfill Costs
4) Demolition Costs
5) Clearing and Grubbing Costs
6) Landscaping Costs
7) Traffic Control Costs
8) Storm Water Pollution Prevention Program (SWPPP) implementation Costs
9) Easement Costs

These costs are described in the following sections.

Sound Wall Masonry Cost:

According to the measurement and payment section for sound wall masonry all reinforcing steel, cell fill material, scaffolding and other construction related costs to constructing the masonry portion of a sound wall are included in the Caltrans unit price. The CCD Item code is 518002 Sound Wall (Masonry Block) and the average price per m^2 is approximately $\$200/m^2$. A conservative **$\$210/m^2$** was used in this analysis.

Sound Wall Footing (Minor Concrete) Cost:

According to the Caltrans SSP, sound wall 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. Item 510050 Minor Concrete in the CCD book gives an average unit price of $\$680/m^3$ in 2005. A conservative **$\$700/m^3$** was used for the unit price of minor concrete.

Sound Wall 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. Due to the nature of a sound wall, 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 for structure excavation and structure backfill. There is an item code for structure excavation (Sound Wall)

which has a unit price of $40/m^3 and structure backfill (Sound Wall) which has a unit price of $50/m^3. The combination of these two unit prices is $90/m^3, and a conservative **$100/m^3** was used in this analysis.

Demolition Costs:

Certain sound walls that have been proposed for this project require the removal of existing walls or fences. The cost of the demolition of existing sound or property walls is found by using a derived unit price of **$40/m^2**, which was found by combining costs of past projects for Item 150828 Remove Sound Wall in the CCD book. The demolition cost for wooden walls is found by using a unit cost of **$20/linear meter** which was derived from past projects in 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. All of these costs are considered to be a percentage of the total construction cost of the wall 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 wall, landscaping is designated as 10%, 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 walls 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 derived from an appraisal performed by Hendrickson Appraisal Company, Inc. for the City of Solana Beach (March 15, 2005) and were used in the determination of easement costs for the I-5 retaining walls. Permanent easements include both footing easements and right-of-way acquisition. Unit costs of **$370/m^2** and **$1000/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 wall and is determined by using the spread 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 wall alignment for typical construction equipment/methods to be applied to the wall. 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 **$150/m^2.**

Sound Walls on Retaining Walls:

Some sound walls analyzed in this report have been aligned to be constructed on the top of proposed retaining walls. All easements for portions of the sound walls located on the retaining walls are assumed to be the responsibility of the retaining walls. In addition, there is no footing for these portions of the sound walls. However, 5% of the total masonry cost will be added to the total estimated construction price to account for the increase in thickness of the retaining walls needed to hold these sound walls.

DETERMINATION OF RECOMMENDATIONS

Determination of Reasonableness:

During the preliminary NADR reasonableness is solely based on cost. Costs and allowances are compared on a "per benefited residence" basis. The total cost of the sound wall 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 wall under consideration. If the estimated cost is higher than the allowance, the wall is determined to be not reasonable. If the wall is reasonable to construct but becomes not reasonable when either type of easement is added, it may be possible to construct the wall provided that the necessary easements are donated by the property owner or owners.

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 expected 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. 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. Unusual and extraordinary abatement must reduce noise by at least 5 dB to be considered feasible from an acoustical perspective.

CONCLUSIONS AND RECOMMENDATIONS

Interdisciplinary technical meetings were held to reach the recommendations stated in this document. The walls that were determined to be preliminarily recommended will be further analyzed within the environmental document. During the environmental document 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. Table 2 summarizes 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) phase 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. The public meetings should inform the owners of general information about the NADR process, where the abatement that affects

their property is located, what the abatement feature would look like, and what the noise level would be at their property with & without the proposed abatement.

Once the environmental document is finalized and the PS&E process begins it is recommended that Caltrans representatives meet with the 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. 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 wall is no longer considered reasonable.

Table 2 – Summary of Noise Abatement Decisions

Sound Wall	# of Benefited Residences	Reasonable w/o Easements	Reasonable w/ Construction Easements Only	Reasonable w/ all easements	Existence of Severely Impacted Receptors	Preliminarily Recommended[1]
1.S475	2	NO	NO	NO	NO	NO
2.S518	30	YES	NO	NO	NO	YES
3.S526	28	NO	NO	NO	NO	NO
3.S528	2	NO	NO	NO	NO	NO
4.S541	4	NO	NO	NO	NO	NO
4.S543	6	YES	YES	NO	NO	YES
4.S551	51	NO	NO	NO	YES	FOR SI ONLY
4.S557	10	NO	NO	NO	YES	FOR SI ONLY
5.S561	6	NO	NO	NO	NO	NO
5.S563	3	NO	NO	NO	NO	NO
5.S565	4	NO	NO	NO	NO	NO
5.S567	7	YES	YES	NO	NO	YES
5.S568	11	NO	NO	NO	NO	NO
5.S569	3	NO	NO	NO	NO	NO
5.S573	8	NO	NO	NO	NO	NO
6.S589	8	NO	NO	NO	NO	NO
6.S602 (Option 1)	30	NO	NO	NO	YES	FOR ONE SI ONLY
6.S602 (Option 2)	6	NO	NO	NO	YES	YES
6.S603 (Option 1)	44	YES	YES	YES	YES	YES
6.S603 (Option 2)	3	NO	NO	NO	NO	NO
7.S614	4	YES	YES	YES	NO	YES
7.S622 (Option 1)	32	NO	NO	NO	YES	NO (see S622 Option 2)
7.S622 (Option 2)	9	NO	NO	NO	YES	YES
System 8.1						
8.S631	22	YES	YES	YES	NO	YES
8.S633	21	YES	YES	YES	YES	YES
8.S635	8	YES	YES	YES	YES	YES
8.S640	2	NO	NO	NO	NO	NO
8.S647	5	NO	NO	NO	NO	NO
8.S644/646	12	NO	NO	NO	YES	YES (See Discussion for walls)
9.S653	4	NO	NO	NO	YES	FOR SI ONLY

[1] NO = Not recommended for construction because not reasonable with or without easements and no severely impacted receptors exist for wall.
YES = Preliminarily recommended for construction because wall is reasonable either with or without easements or wall is to abate for severely impacted receptors.
FOR SI ONLY = Unusual and extraordinary abatement will be provided for only the severely impacted receptors represented by this wall.

Sound Wall	# of Benefited Residences	Reasonable w/o Easements	Reasonable w/ Construction Easements Only	Reasonable w/ all easements	Existence of Severely Impacted Receptors	Preliminarily Recommended[1]
9.S652	6	YES	NO	NO	YES	YES/FOR SI ONLY
9.S654 (Option 1)	9	NO	NO	NO	YES	NO (see S654 Option 2)
9.S654 (Option 2)	1	NO	NO	NO	YES	YES
9.S658	20	NO	NO	NO	YES	YES
10.S671	11	NO	NO	NO	YES	YES
10.S675	18	YES	NO	NO	YES	YES
10.S664	14	NO	NO	NO	YES	FOR SI ONLY
10.S670	2	NO	NO	NO	NO	NO
11.S680	42	YES	NO	NO	NO	YES
11.S686a	2	NO	NO	NO	YES	YES
11.S686b/c	8	NO	NO	NO	NO	NO
11.S688	1	NO	NO	NO	YES	YES
11.S689	26	NO	NO	NO	YES	YES (if individual abatement is not agreed upon)
11.S692	16	NO	NO	NO	YES	YES
12.S702	1	NO	NO	NO	NO	NO
12.S706	1	NO	NO	NO	NO	NO
12.S709	25	NO	NO	NO	YES	FOR SI ONLY
12.S719	1	NO	NO	NO	NO	NO
13.S723	2	NO	NO	NO	YES	FOR SI ONLY
13.S729	12	YES	NO	NO	NO	YES
13.S730	8	NO	NO	NO	NO	NO
13.S736	78	YES	YES	YES	YES	YES
13.S737	17	NO	NO	NO	NO	NO
14.S750	92	YES	NO	NO	YES	YES
15.S783	1	NO	NO	NO	NO	NO
16.S796	4	NO	NO	NO	NO	NO
16.S798	13	YES	YES	YES	YES	YES
16.S799	10	NO	NO	NO	YES	FOR SI ONLY
16.S801	16	YES	YES	YES	YES	YES
16.S802	22	YES	YES	YES	YES	YES
17.S810	41	YES	YES	YES	YES	YES
17.S811	144	YES	YES	YES	YES	YES
17.S818	1	NO	NO	NO	NO	NO
18.S821	51	YES	YES	YES	YES	YES
18.S822	21	NO	NO	NO	YES	YES
18.S826	1	NO	NO	NO	YES	YES
18.S827	3	NO	NO	NO	YES	YES
18.S829	1	NO	NO	NO	NO	NO

[1] NO = Not recommended for construction because not reasonable with or without easements and no severely impacted receptors exist for wall.

YES = Preliminarily recommended for construction because wall is reasonable either with or without easements or wall is to abate for severely impacted receptors.

FOR SI ONLY = Unusual and extraordinary abatement will be provided for only the severely impacted receptors represented by this wall.

Sound Wall	# of Benefited Residences	Reasonable w/o Easements	Reasonable w/ Construction Easements Only	Reasonable w/ all easements	Existence of Severely Impacted Receptors	Preliminarily Recommended[1]
19.S835	16	YES	YES	NO	YES	YES
19.S836	3	NO	NO	NO	YES	YES
19.S840	12	NO	NO	NO	NO	NO
19.S841	22	YES	NO	NO	YES	YES
19.S845	10	YES	YES	YES	NO	YES
19.S846	18	YES	NO	NO	YES	YES
19.S849	21	YES	YES	YES	NO	YES
20.S855	5	NO	NO	NO	NO	NO
20.S859	2	NO	NO	NO	YES	FOR SI ONLY
20.S862	6	NO	NO	NO	YES	YES
20.S863	26	NO	NO	NO	YES	NO (Existing wall will be replaced by project)
21.S868	10	YES	YES	YES	NO	YES
21.S871	27	YES	YES	YES	YES	YES
21.S875	5	NO	NO	NO	NO	NO
22.S882	11	YES	YES	YES	YES	YES
22.S884	9	YES	YES	YES	YES	YES

[1] NO = Not recommended for construction because not reasonable with or without easements and no severely impacted receptors exist for wall.

YES = Preliminarily recommended for construction because wall is reasonable either with or without easements or wall is to abate for severely impacted receptors.

FOR SI ONLY = Unusual and extraordinary abatement will be provided for only the severely impacted receptors represented by this wall.

REPORT FORMAT

The I-5 Corridor is broken up into twenty-two segments to be analyzed for noise abatement. The preliminary analysis of all proposed sound walls, which includes relevant data and a discussion on each wall along with exhibits and cost analysis, can be found in their respective tabbed segments. A key map and a list of the sound walls follow this section to aid in the determination of the general location of each segment with respect to I-5.

SEGMENT BREAKDOWN

SEGMENT 1
- NOISE BARRIER S475

SEGMENT 2
- NOISE BARRIER S518

SEGMENT 3
- NOISE BARRIER S526
- NOISE BARRIER S528

SEGMENT 4
- NOISE BARRIER S541
- NOISE BARRIER S543
- NOISE BARRIER S551
- NOISE BARRIER S557

SEGMENT 5
- NOISE BARRIER S561
- NOISE BARRIER S563
- NOISE BARRIER S565
- NOISE BARRIER S567
- NOISE BARRIER S568
- NOISE BARRIER S569
- NOISE BARRIER S573

SEGMENT 6
- NOISE BARRIER S589
- NOISE BARRIER S602 (OPTION 1)
- NOISE BARRIER S602 (OPTION 2)
- NOISE BARRIER S603 (OPTION 1)
- NOISE BARRIER S603 (OPTION 2)

SEGMENT 7
- NOISE BARRIER S614
- NOISE BARRIER S622 (OPTION 1)
- NOISE BARRIER S622 (OPTION 2)

SEGMENT 8
- NOISE BARRIER S631
- NOISE BARRIER S633
- NOISE BARRIER S635
- NOISE BARRIER S640
- NOISE BARRIER S647
- NOISE BARRIER S644/646

SEGMENT 9
- NOISE BARRIER S653
- NOISE BARRIER S652
- NOISE BARRIER S654 (OPTION 1)
- NOISE BARRIER S654 (OPTION 2)
- NOISE BARRIER S658

SEGMENT 10
- NOISE BARRIER S671
- NOISE BARRIER S675
- NOISE BARRIER S664
- NOISE BARRIER S670

SEGMENT 11
- NOISE BARRIER S680
- NOISE BARRIER S686A
- NOISE BARRIER S686B/C
- NOISE BARRIER S688
- NOISE BARRIER S689
- NOISE BARRIER S692

SEGMENT 12
- NOISE BARRIER S702
- NOISE BARRIER S706
- NOISE BARRIER S709

SEGMENT 13
- NOISE BARRIER S719
- NOISE BARRIER S723
- NOISE BARRIER S729
- NOISE BARRIER S730
- NOISE BARRIER S736
- NOISE BARRIER S737

SEGMENT 14
- NOISE BARRIER S750

SEGMENT 15
- NOISE BARRIER S783

SEGMENT 16
- NOISE BARRIER S796
- NOISE BARRIER S798
- NOISE BARRIER S799
- NOISE BARRIER S801
- NOISE BARRIER S802

SEGMENT 17
- NOISE BARRIER S810
- NOISE BARRIER S811

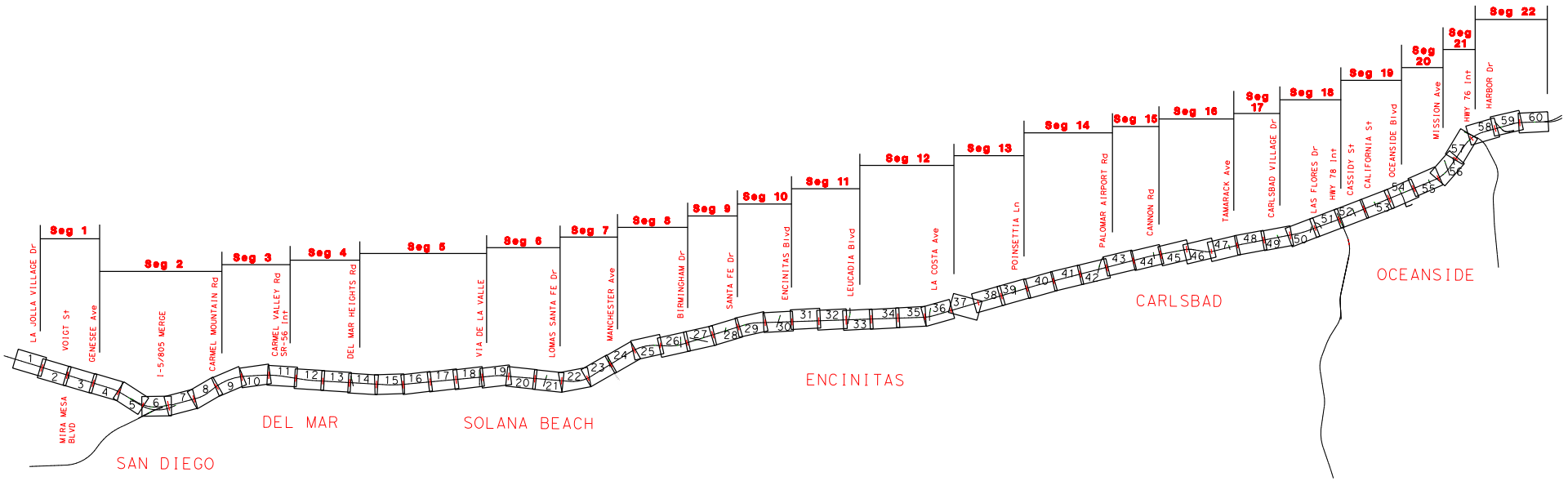
SEGMENT 18
- NOISE BARRIER S818
- NOISE BARRIER S821
- NOISE BARRIER S822
- NOISE BARRIER S826
- NOISE BARRIER S827
- NOISE BARRIER S829

SEGMENT 19
- NOISE BARRIER S835
- NOISE BARRIER S836
- NOISE BARRIER S840
- NOISE BARRIER S841
- NOISE BARRIER S845
- NOISE BARRIER S846
- NOISE BARRIER S849

SEGMENT 20
- NOISE BARRIER S855
- NOISE BARRIER S859
- NOISE BARRIER S862
- NOISE BARRIER S863

SEGMENT 21
- NOISE BARRIER S868
- NOISE BARRIER S871
- NOISE BARRIER S875

SEGMENT 22
- NOISE BARRIER S882
- NOISE BARRIER S884



INTERSTATE 5
NORTH COAST CORRIDOR

NOISE BARRIER SHEET AND SEGMENT KEY MAP

Caltrans Metric

Noise Barrier Analysis

Segment 1

Noise Barrier S475

General

Type: Sound wall

I-5 Station limits: 472+60 to 476+25

Receptor sites: R1.4

Severely Impacted Receptors: None

Height: 4.9 meters (16 feet)

Location: Environmental Segment 1; see exhibit

Benefited units: Two university housing units

Predicted Noise Levels if Project Built without Abatement

Year 2030: 73 dBA

Compared to existing (year 2005): Three dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	No
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$96,000
Estimated Total Cost without Easements:	$1,140,388
Estimated Total Cost with Construction Easements only:	$1,140,388
Estimated Total Cost with all Easements:	$1,140,388

Reasonable Cost Allowance/Benefited Unit:	$48,000
Estimated Cost/Benefited Unit without Easements:	$570,194
Estimated Cost/Benefited Unit with Construction Easements only:	$570,194
Estimated Cost/Benefited Unit with all Easements:	$570,194

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

Discussion

As shown in Segment 1, Sheet 2, of this NADR, noise barrier S475 would be located on a frontage road along the southbound side of I-5, north of La Jolla Village Drive. This area is represented by receiver site R1.4. The noise barrier would extend for approximately 360 meters (1,181 feet). The height of the barrier required to achieve a 5 dBA or more insertion loss at the critical design receiver would be 4.9 meters (16 feet). The wall would benefit two University housing units and is considered feasible. There are no apparent easements that need to be acquired in order to construct S475. The estimated cost of S475 would be 1088% above the reasonable allowance and so is not considered reasonable.

Noise Abatement Decision

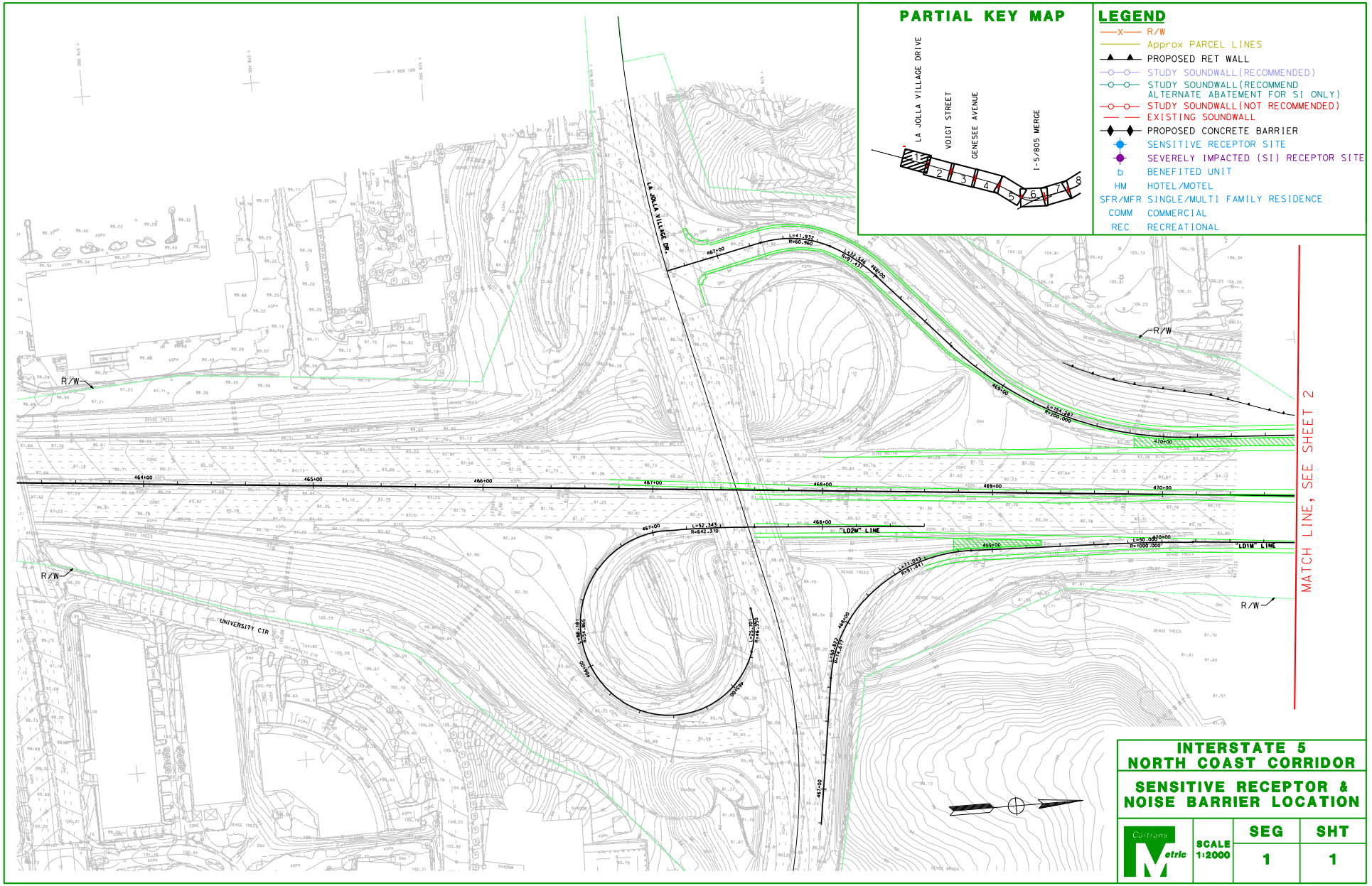
Construction of noise barrier S475 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier S475. No severely impacted receptors exist for this wall that need to be abated for. Construction of noise barrier S475 is not recommended.

SEGMENT 1 - COST ANALYSIS

Sound Wall	# 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	Temporary Construction Easements	Footing Easements	Total Easements
		(m)	(m)	(m)	(m)	(m)	(m)	(cu m)	(m)	(cu m)	(cu m)	(sq m)	(sq m)	(sq m)
1.S475	2	4.9	360	0	360	1.22	2.9	1,274	0	0	497	0	0	0

Sound Wall	# 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
		($210/sq m)	($700/cu m)	($100/cu m)	($20/m)	($40/cu m)	(8% of Wall Cost)	(10% of Wall Cost)	(5% of Wall Cost)	(5% of Wall Cost)	($150/sq m)	($370/sq m)	
1.S475	2	$415,800	$347,760	$127,368	$0	$0	$71,274	$89,093	$44,546	$44,546	$0	$0	$0

Sound Wall	# 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
1.S475	2	**$1,140,388**	**$1,140,388**	**$1,140,388**	**$570,194**	**$570,194**	**$570,194**	**$48,000**	**$96,000**	**NO**	**NO**	**NO**


PARTIAL KEY MAP
LA JOLLA VILLAGE DRIVE
VOIGT STREET
GENESEE AVENUE
I-5/805 MERGE
1
2
3
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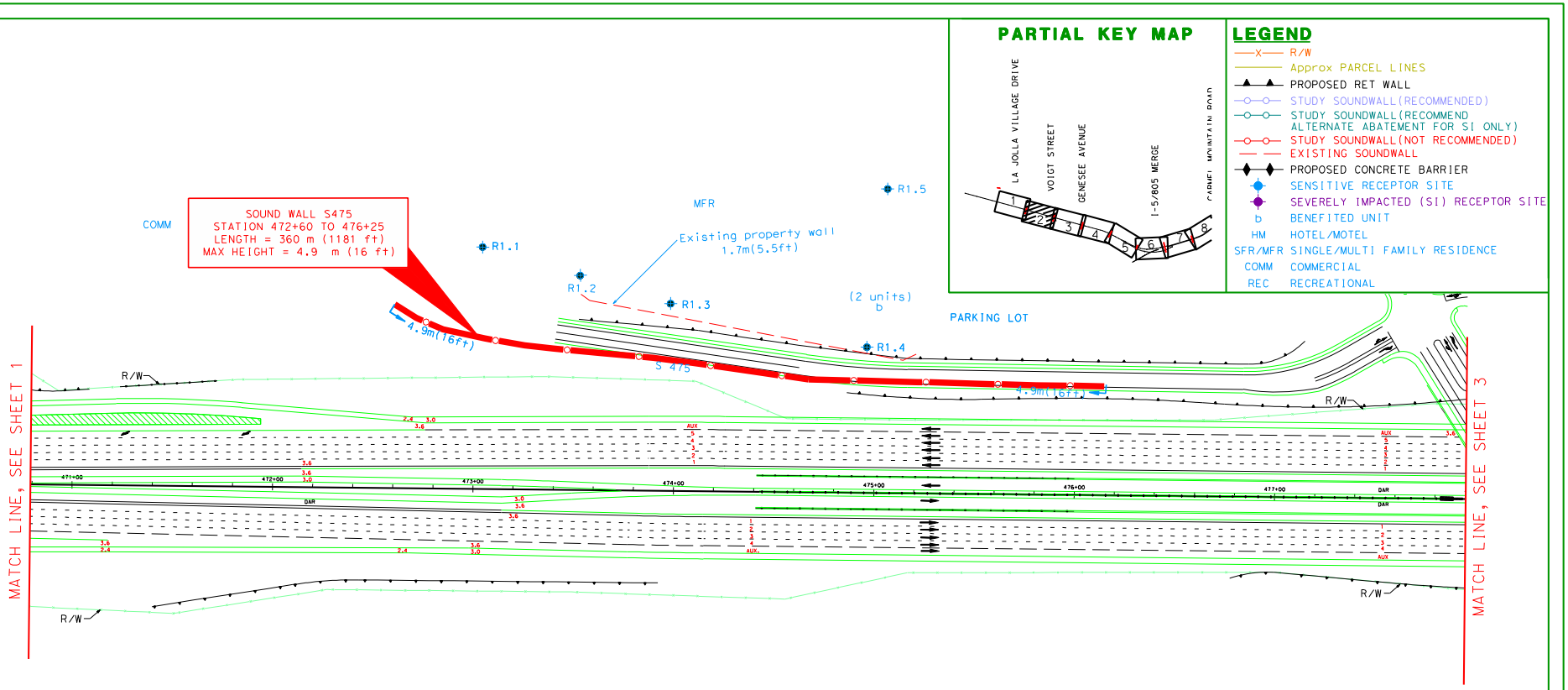
7
8
LEGEND
R/W
Approx PARCEL LINES
PROPOSED RET WALL
STUDY SOUNDWALL(RECOMMENDED)
STUDY SOUNDWALL(RECOMMEND ALTERNATE ABATEMENT FOR SI ONLY)
STUDY SOUNDWALL(NOT RECOMMENDED)
EXISTING SOUNDWALL
PROPOSED CONCRETE BARRIER
SENSITIVE RECEPTOR SITE
SEVERELY IMPACTED (SI) RECEPTOR SITE
b BENEFITED UNIT
HM HOTEL/MOTEL
SFR/MFR SINGLE/MULTI FAMILY RESIDENCE
COMM COMMERCIAL
REC RECREATIONAL
LA JOLLA VILLAGE DR.
UNIVERSITY CTR
"LD2M" LINE
"LD1M" LINE
R/W
MATCH LINE, SEE SHEET 2
INTERSTATE 5
NORTH COAST CORRIDOR
SENSITIVE RECEPTOR &
NOISE BARRIER LOCATION
Caltrans
Metric
SCALE
1:2000
SEG
1
SHT
1

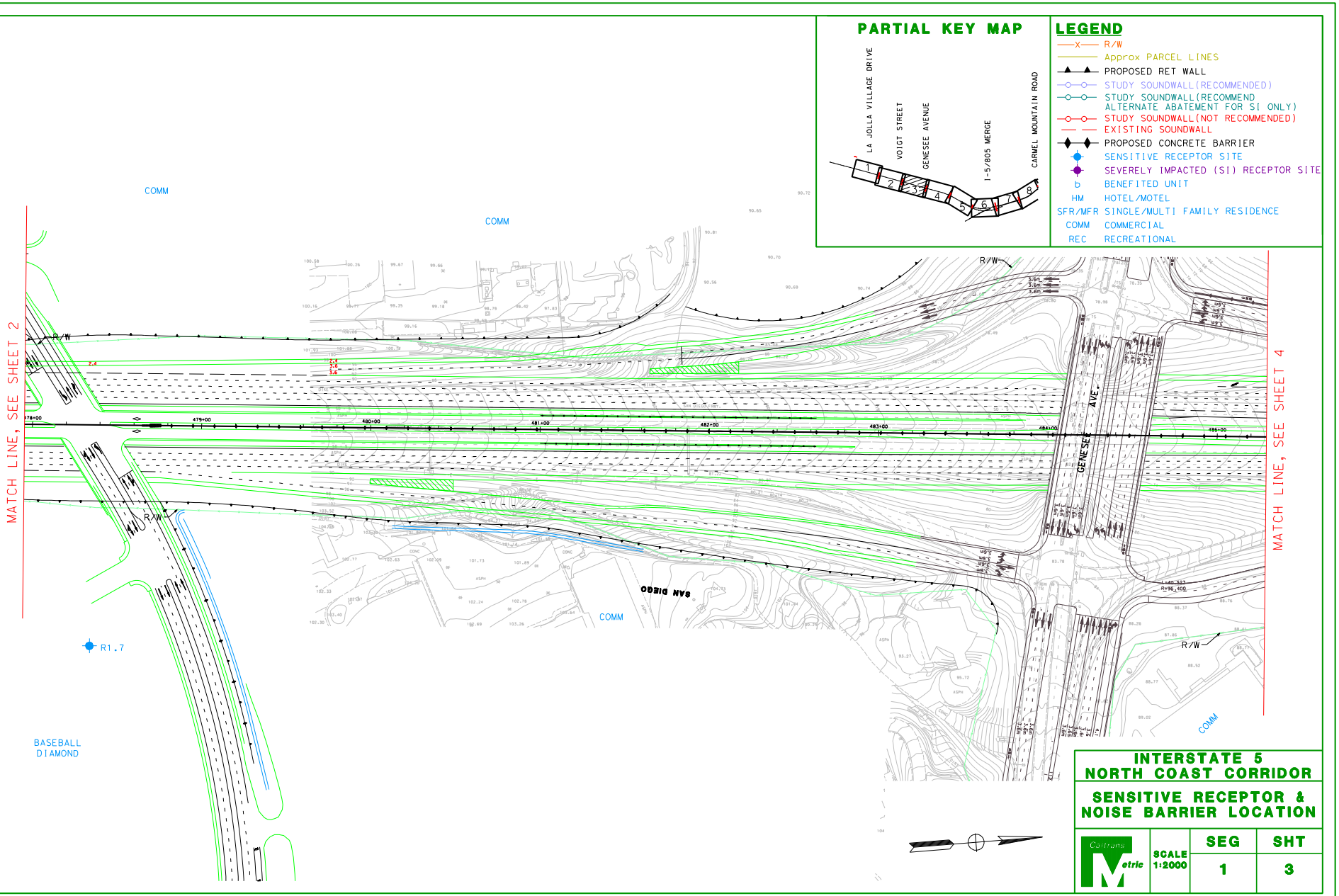


NOTE: TOPOGRAPHICAL DATA UNAVAILABLE FOR THIS SHEET.

INTERSTATE 5
NORTH COAST CORRIDOR

SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

Caltrans Metric	SCALE 1:2000	SEG	SHT
		1	2


PARTIAL KEY MAP
LA JOLLA VILLAGE DRIVE
VOIGT STREET
GENESEE AVENUE
I-5/805 MERGE
CARMEL MOUNTAIN ROAD
1
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3
4
5
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LEGEND
R/W
Approx PARCEL LINES
PROPOSED RET WALL
STUDY SOUNDWALL(RECOMMENDED)
STUDY SOUNDWALL(RECOMMEND ALTERNATE ABATEMENT FOR SI ONLY)
STUDY SOUNDWALL(NOT RECOMMENDED)
EXISTING SOUNDWALL
PROPOSED CONCRETE BARRIER
SENSITIVE RECEPTOR SITE
SEVERELY IMPACTED (SI) RECEPTOR SITE
b BENEFITED UNIT
HM HOTEL/MOTEL
SFR/MFR SINGLE/MULTI FAMILY RESIDENCE
COMM COMMERCIAL
REC RECREATIONAL
MATCH LINE, SEE SHEET 2
MATCH LINE, SEE SHEET 4
COMM
COMM
COMM
COMM
R/W
R/W
R/W
R/W
R1.7
BASEBALL DIAMOND
SAN DIEGO
GENESEE AVE
478+00
479+00
480+00
481+00
482+00
483+00
484+00
485+00
INTERSTATE 5
NORTH COAST CORRIDOR
SENSITIVE RECEPTOR & NOISE BARRIER LOCATION
Caltrans Metric
SCALE 1:2000
SEG 1
SHT 3

Segment 2

Noise Barrier S518

General

Type: Sound wall

I-5 Station limits: 517+00 to 520+58

Receptor sites: R2.1 to R2.5

Severely Impacted Receptors: None

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

Location: Environmental Segment 2; see exhibit

Benefited units: 30 multi-family residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 66 to 70 dBA

Compared to existing (year 2005): One to two dBA increase

Feasibility

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

Reasonableness

Reasonable Total Cost Allowance:	$1,140,000
Estimated Total Cost without Easements:	$1,084,326
Estimated Total Cost with Construction Easements only:	$1,276,881
Estimated Total Cost with all Easements:	$1,433,640

Reasonable Cost Allowance/Benefited Unit:	$38,000
Estimated Cost/Benefited Unit without Easements:	$36,144
Estimated Cost/Benefited Unit with Construction Easements only:	$42,563
Estimated Cost/Benefited Unit with all Easements:	$47,788

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

Discussion

As shown in Segment 2, Sheet 8, of this NADR, noise barrier S518 would be located on private property and Caltrans right-of-way along the northbound side of I-5, south of Carmel Mountain Road. This area is represented by receiver sites R2.1 through R2.5. The sound wall would extend for approximately 428 meters (1404 feet) with one return and would replace an existing 1.8 meter (6 foot) glass/block property wall. The heights of the sound wall required to achieve a 5 dBA or more insertion loss at the critical receiver would be 3.0 meters (10 feet) and 3.7 meters (12 feet). The wall would benefit approximately 30 multi-family residences and is considered feasible. The estimated construction cost of S518, without easements would be less than the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 12%. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 26% above the reasonable allowance.

Noise Abatement Decision

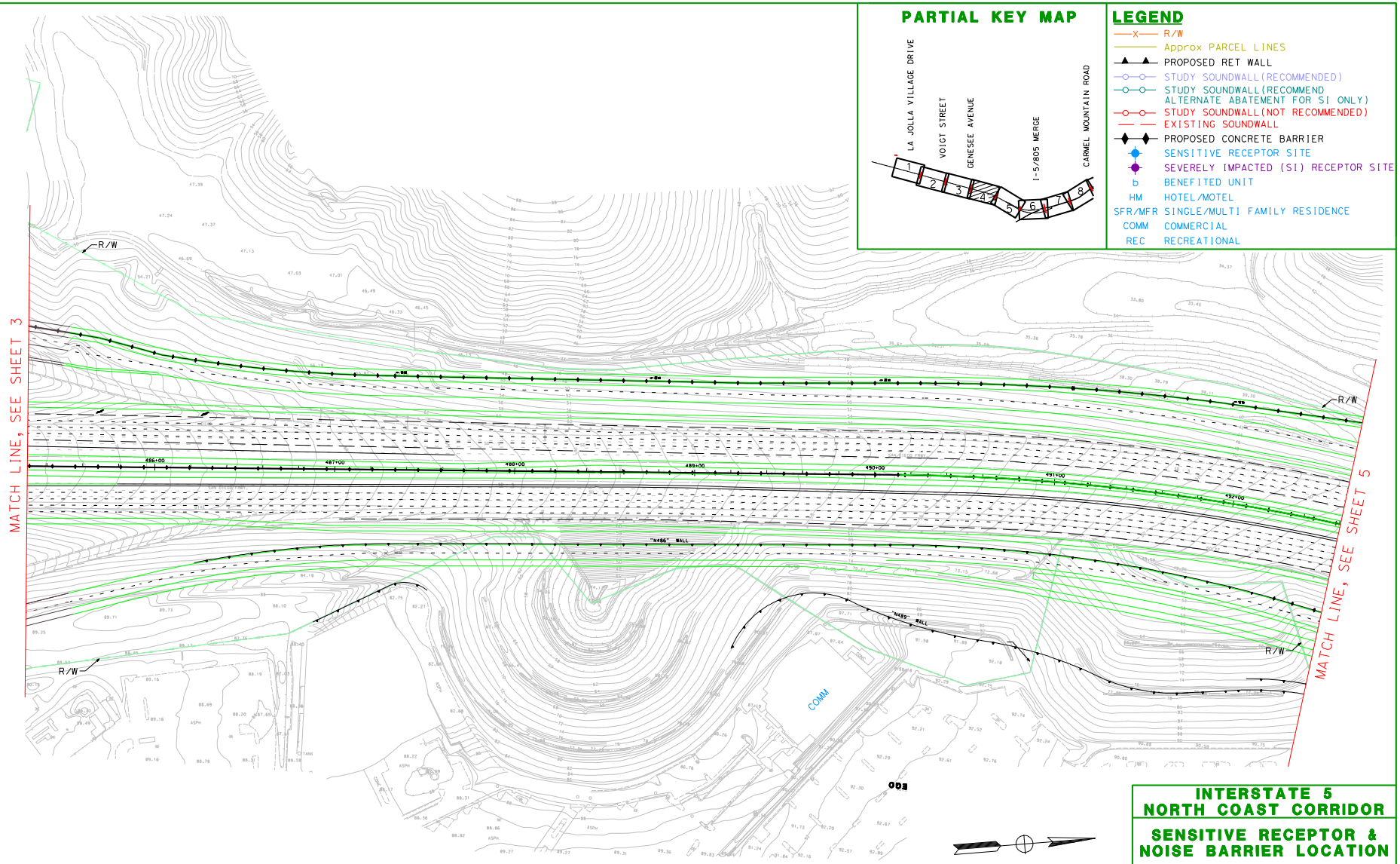
Construction of S518 is recommended if negotiation with the property owners would result in estimated costs that do not exceed the reasonable allowance. This may be accomplished if the property owners are willing to donate easements by signing a waiver of just compensation. If the total cost cannot be reduced to less than or equal to the reasonable allowance, construction is not recommended.

SEGMENT 2 - COST ANALYSIS

Sound Wall	# 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	Temporary Construction Easements	Footing Easements	Total Easements
		(m)	(m)	(m)	(m)	(m)	(m)	(cu m)	(m)	(cu m)	(cu m)	(sq m)	(sq m)	(sq m)
2.S518		3.0	61	0	61	1.22	2.1	156	0	110	55	183	46	228
		3.7	367	0	367	1.22	2.4	1,075	0	661	396	1,101	378	1,479
	30													

Sound Wall	# 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
		($210/sq m)	($700/cu m)	($100/cu m)	($20/m)	($40/cu m)	(8% of Wall Cost)	(10% of Wall Cost)	(5% of Wall Cost)	(5% of Wall Cost)	($150/sq m)	($370/sq m)	
2.S518		$46,040	$38,367	$15,603	$0	$4,385	$8,352	$10,439	$5,220	$5,220	$27,405	$16,900	$44,305
		$331,401	$277,452	$107,458	$0	$26,424	$59,419	$74,273	$37,137	$37,137	$165,150	$139,860	$305,010
	30												

Sound Wall	# 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
2.S518		$133,625	$161,030	$177,930								
		$950,700	$1,115,850	$1,255,710								
	30	**$1,084,326**	**$1,276,881**	**$1,433,640**	**$36,144**	**$42,563**	**$47,788**	**$38,000**	**$1,140,000**	**YES**	**NO**	**NO**


PARTIAL KEY MAP
LA JOLLA VILLAGE DRIVE
VOIGT STREET
GENESEE AVENUE
I-5/805 MERGE
CARMEL MOUNTAIN ROAD
1
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7
8
LEGEND
R/W
Approx PARCEL LINES
PROPOSED RET WALL
STUDY SOUNDWALL(RECOMMENDED)
STUDY SOUNDWALL(RECOMMEND ALTERNATE ABATEMENT FOR SI ONLY)
STUDY SOUNDWALL(NOT RECOMMENDED)
EXISTING SOUNDWALL
PROPOSED CONCRETE BARRIER
SENSITIVE RECEPTOR SITE
SEVERELY IMPACTED (SI) RECEPTOR SITE
b BENEFITED UNIT
HM HOTEL/MOTEL
SFR/MFR SINGLE/MULTI FAMILY RESIDENCE
COMM COMMERCIAL
REC RECREATIONAL
MATCH LINE, SEE SHEET 3
MATCH LINE, SEE SHEET 5
R/W
"N486" WALL
"N489" WALL
COMM
INTERSTATE 5
NORTH COAST CORRIDOR
SENSITIVE RECEPTOR &
NOISE BARRIER LOCATION
Caltrans
Metric
SCALE
1:2000
SEG
2
SHT
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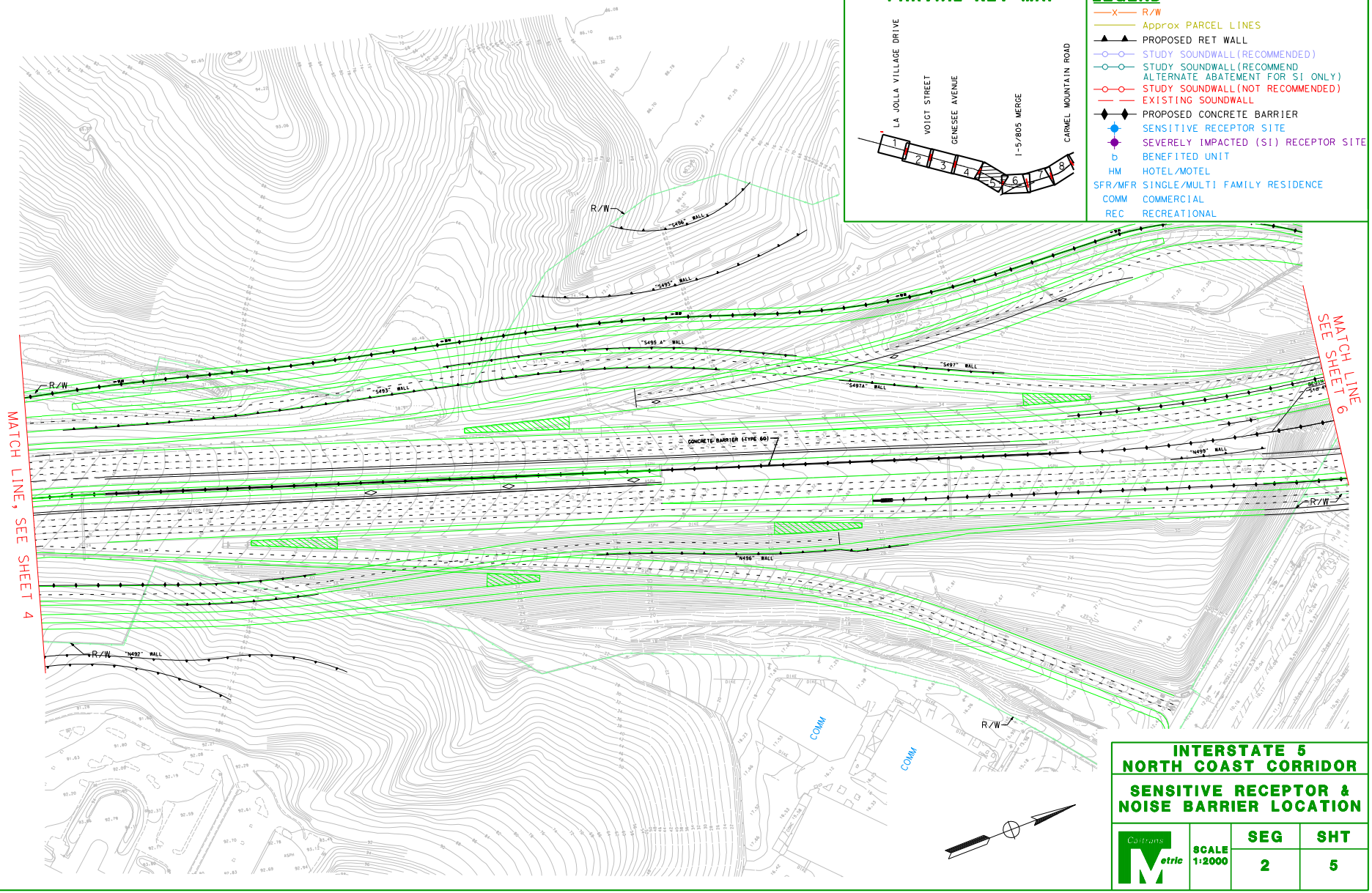
PARTIAL KEY MAP
LA JOLLA VILLAGE DRIVE
VOIGT STREET
GENESEE AVENUE
I-5/805 MERGE
CARMEL MOUNTAIN ROAD
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5
6
7
8
LEGEND
R/W
Approx PARCEL LINES
PROPOSED RET WALL
STUDY SOUNDWALL(RECOMMENDED)
STUDY SOUNDWALL(RECOMMEND ALTERNATE ABATEMENT FOR SI ONLY)
STUDY SOUNDWALL(NOT RECOMMENDED)
EXISTING SOUNDWALL
PROPOSED CONCRETE BARRIER
SENSITIVE RECEPTOR SITE
SEVERELY IMPACTED (SI) RECEPTOR SITE
b BENEFITED UNIT
HM HOTEL/MOTEL
SFR/MFR SINGLE/MULTI FAMILY RESIDENCE
COMM COMMERCIAL
REC RECREATIONAL
MATCH LINE, SEE SHEET 4
MATCH LINE SEE SHEET 6
R/W
"5496" WALL
"5495" WALL
"5495 A" WALL
"5493" WALL
"5497" WALL
"5497A" WALL
"N498" WALL
CONCRETE BARRIER (TYPE 60)
"N496" WALL
"N492" WALL
COMM
COMM
INTERSTATE 5
NORTH COAST CORRIDOR
SENSITIVE RECEPTOR &
NOISE BARRIER LOCATION
Caltrans
Metric
SCALE
1:2000
SEG
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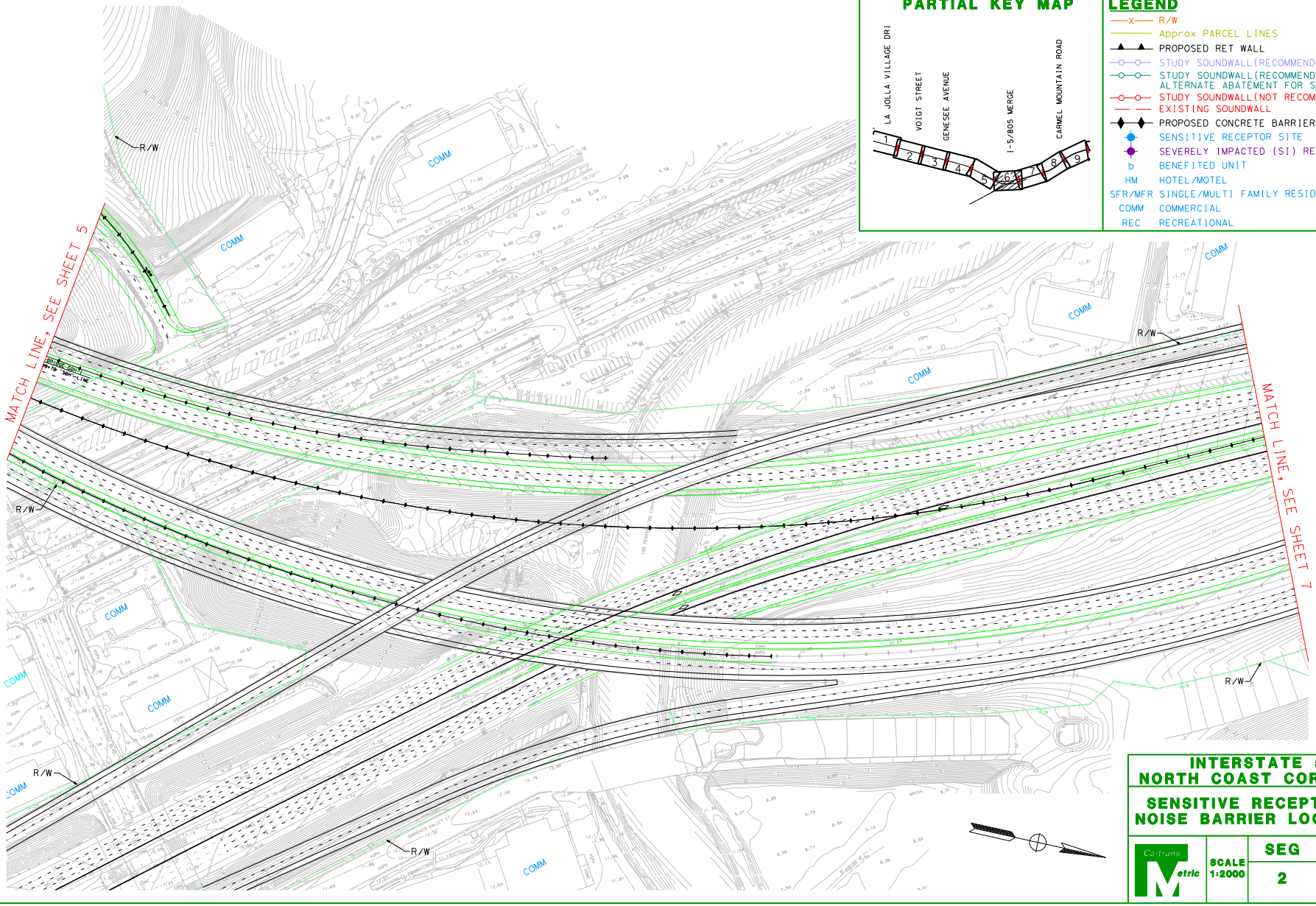
SHT
5


PARTIAL KEY MAP
LA JOLLA VILLAGE DRI
VOIGT STREET
GENESEE AVENUE
I-5/805 MERGE
CARMEL MOUNTAIN ROAD
1
2
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9
LEGEND
R/W
Approx PARCEL LINES
PROPOSED RET WALL
STUDY SOUNDWALL(RECOMMENDED)
STUDY SOUNDWALL(RECOMMEND ALTERNATE ABATEMENT FOR SI ONLY)
STUDY SOUNDWALL(NOT RECOMMENDED)
EXISTING SOUNDWALL
PROPOSED CONCRETE BARRIER
SENSITIVE RECEPTOR SITE
SEVERELY IMPACTED (SI) RECEPTOR SITE
b BENEFITED UNIT
HM HOTEL/MOTEL
SFR/MFR SINGLE/MULTI FAMILY RESIDENCE
COMM COMMERCIAL
REC RECREATIONAL
MATCH LINE, SEE SHEET 5
MATCH LINE, SEE SHEET 7
R/W
COMM
INTERSTATE 5
NORTH COAST CORRIDOR
SENSITIVE RECEPTOR &
NOISE BARRIER LOCATION
Caltrans
Metric
SCALE
1:2000
SEG
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SHT
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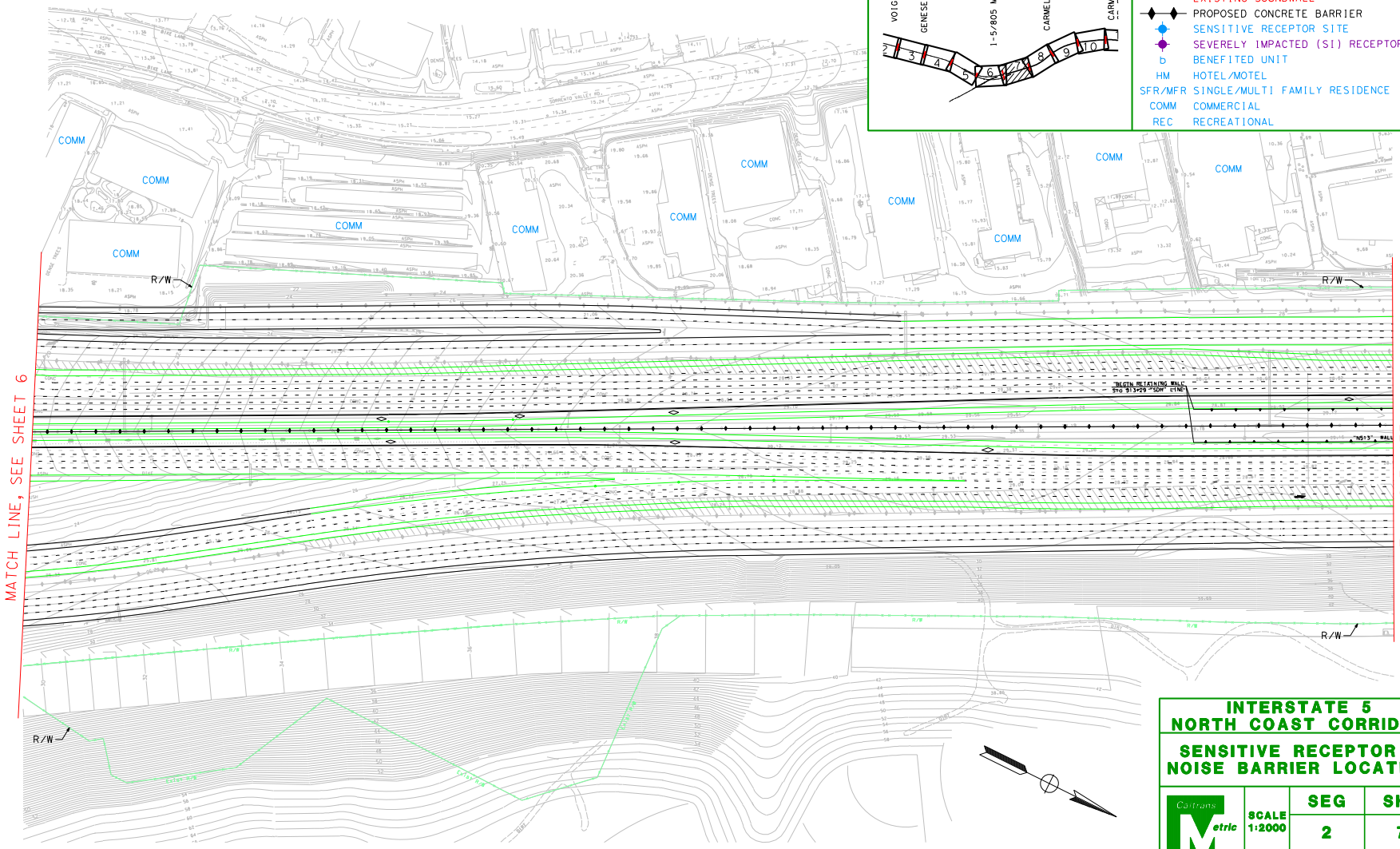
PARTIAL KEY MAP
VOIGT STREET
GENESEE AVENUE
I-5/805 MERGE
CARMEL MOUNTAIN ROAD
CARMEL VALLEY ROAD
1
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4
5
6
7
8
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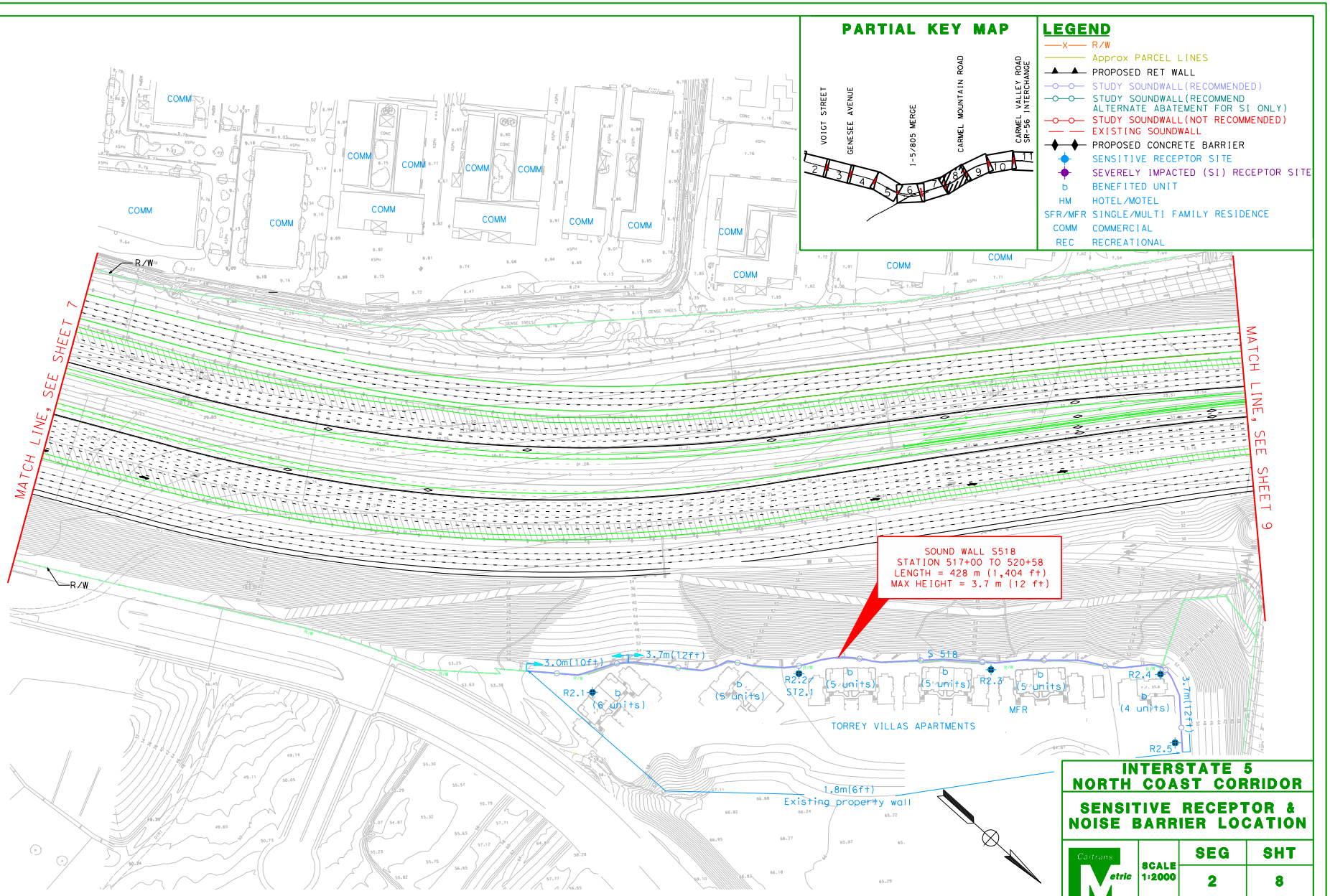
10
LEGEND
R/W
Approx PARCEL LINES
PROPOSED RET WALL
STUDY SOUNDWALL(RECOMMENDED)
STUDY SOUNDWALL(RECOMMEND ALTERNATE ABATEMENT FOR SI ONLY)
STUDY SOUNDWALL(NOT RECOMMENDED)
EXISTING SOUNDWALL
PROPOSED CONCRETE BARRIER
SENSITIVE RECEPTOR SITE
SEVERELY IMPACTED (SI) RECEPTOR SITE
b BENEFITED UNIT
HM HOTEL/MOTEL
SFR/MFR SINGLE/MULTI FAMILY RESIDENCE
COMM COMMERCIAL
REC RECREATIONAL
COMM
R/W
MATCH LINE, SEE SHEET 6
MATCH LINE, SEE SHEET 8
INTERSTATE 5
NORTH COAST CORRIDOR
SENSITIVE RECEPTOR &
NOISE BARRIER LOCATION
Caltrans
Metric
SCALE
1:2000
SEG
2
SHT
7


PARTIAL KEY MAP
VOIGT STREET
GENESEE AVENUE
I-5/805 MERGE
CARMEL MOUNTAIN ROAD
CARMEL VALLEY ROAD SR-56 INTERCHANGE
1
2
3
4
5
6
7
8
9
10
11
LEGEND
R/W
Approx PARCEL LINES
PROPOSED RET WALL
STUDY SOUNDWALL(RECOMMENDED)
STUDY SOUNDWALL(RECOMMEND ALTERNATE ABATEMENT FOR SI ONLY)
STUDY SOUNDWALL(NOT RECOMMENDED)
EXISTING SOUNDWALL
PROPOSED CONCRETE BARRIER
SENSITIVE RECEPTOR SITE
SEVERELY IMPACTED (SI) RECEPTOR SITE
b BENEFITED UNIT
HM HOTEL/MOTEL
SFR/MFR SINGLE/MULTI FAMILY RESIDENCE
COMM COMMERCIAL
REC RECREATIONAL
MATCH LINE, SEE SHEET 7
MATCH LINE, SEE SHEET 9
R/W
SOUND WALL S518
STATION 517+00 TO 520+58
LENGTH = 428 m (1,404 ft)
MAX HEIGHT = 3.7 m (12 ft)
3.0m(10ft)
3.7m(12ft)
S 518
R2.1
(6 units)
(5 units)
R2.2
S12.1
(5 units)
(5 units)
R2.3
(5 units)
MFR
R2.4
(4 units)
3.7m(12ft)
R2.5
TORREY VILLAS APARTMENTS
1.8m(6ft)
Existing property wall
COMM
INTERSTATE 5
NORTH COAST CORRIDOR
SENSITIVE RECEPTOR &
NOISE BARRIER LOCATION
Caltrans
Metric
SCALE
1:2000
SEG
2
SHT
8

Segment 3

Noise Barrier S526

General

Type: Sound wall

I-5 Station limits: 522+80 to 527+15

Receptor sites: R3.2 through R3.10, and R3.10A

Severely Impacted Receptors: None

Height: 3.0 meters (10 feet), 3.7 meters (12 feet), and 4.3 m (14 feet)

Location: Environmental Segment 3; see exhibit

Benefited units: 28 single-family residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 58 to 72 dBA

Compared to existing (year 2005): Negative two to four dBA increase:

Feasibility

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

Reasonableness

Reasonable Total Cost Allowance:	$1,120,000
Estimated Total Cost without Easements:	$1,412,115
Estimated Total Cost with Construction Easements only:	$1,671,874
Estimated Total Cost with all Easements:	$2,004,741

Reasonable Cost Allowance/Benefited Unit:	$40,000
Estimated Cost/Benefited Unit without Easements:	$50,433
Estimated Cost/Benefited Unit with Construction Easements only:	$59,710
Estimated Cost/Benefited Unit with all Easements:	$71,598

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

Discussion

As shown in Segment 3, Sheet 9, of this NADR, noise barrier S526 would be located on private property and Caltrans right-of-way along the northbound side of I-5, north of Carmel Mountain Road. This area is represented by receiver sites R3.2 through R3.10, and R3.10A. The noise barrier would extend for approximately 577 meters (1,893 feet) and would replace an existing 1.8 meter (6 foot) glass/block property wall. 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), 3.7 meters (12 feet), and 4.3 meters (14 feet). The wall would benefit 28 single-family residences and is considered feasible. The estimated cost of S526, when all easements are assumed eliminated, would be 26% above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 49%. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 79% above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier S526 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier S526. No severely impacted receptors exist for this wall that need to be abated for. Construction of noise barrier S526 is not recommended.

Noise Barrier S528

General

Type: Sound wall

I-5 Station limits: 528+45 to 529+30

Receptor sites: R3.13 through R3.14

Severely Impacted Receptors: None

Height: 3.0 meters (10 feet)

Location: Environmental Segment 3; see exhibit.

Benefited units: Two single-family residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 65 to 67 dBA

Compared to existing (year 2005): One dBA increase

Feasibility

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

Reasonableness

Reasonable Total Cost Allowance:	$68,000
Estimated Total Cost without Easements:	$261,107
Estimated Total Cost with Construction Easements only:	$314,657
Estimated Total Cost with all Easements:	$380,702

Reasonable Cost Allowance/Benefited Unit:	$34,000
Estimated Cost/Benefited Unit without Easements:	$130,553
Estimated Cost/Benefited Unit with Construction Easements only:	$157,328
Estimated Cost/Benefited Unit with all Easements:	$190,351

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

Discussion

As shown in Segment 3, Sheets 9 and 10, of this NADR, noise barrier S528 would be located on private property along the northbound side of I-5, north of Carmel Mountain Road. This area is represented by receiver sites R3.13 and R3.14. The noise barrier would extend for approximately 119 meters (390 feet) and would replace an existing 1.8 meter (6 foot) glass/block property wall. The height of the barrier required to achieve a minimum 5 dBA insertion loss would be 3.0 meters (10 feet). The wall would benefit two single-family residences and is considered feasible. The estimated cost of S528, when all easements are assumed eliminated, would be 284% above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 363%. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 460% above the reasonable allowance.

Noise Abatement Decision

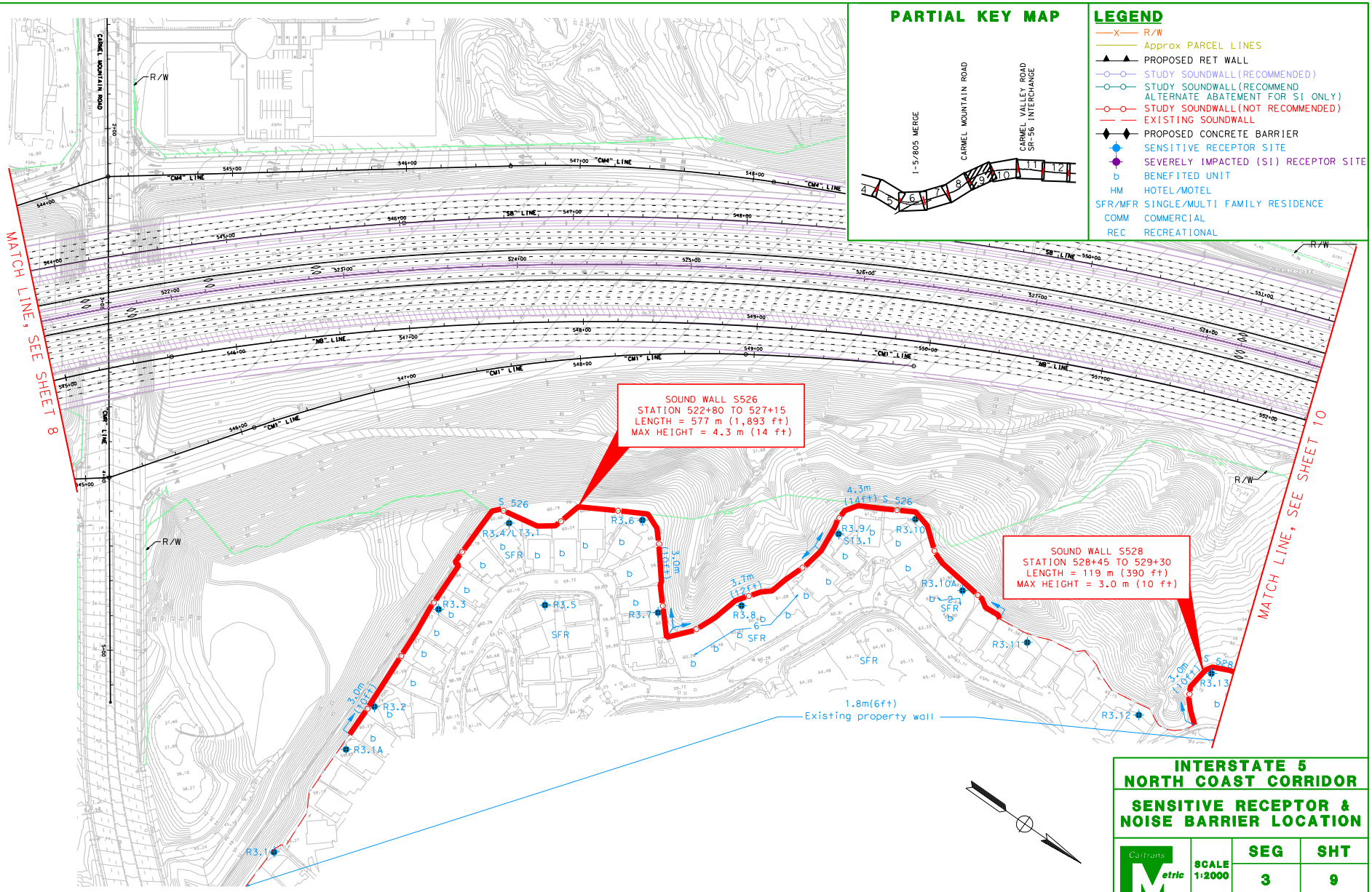
Construction of noise barrier S528 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier S528. No severely impacted receptors exist for this wall that need to be abated for. Construction of noise barrier S528 is not recommended.

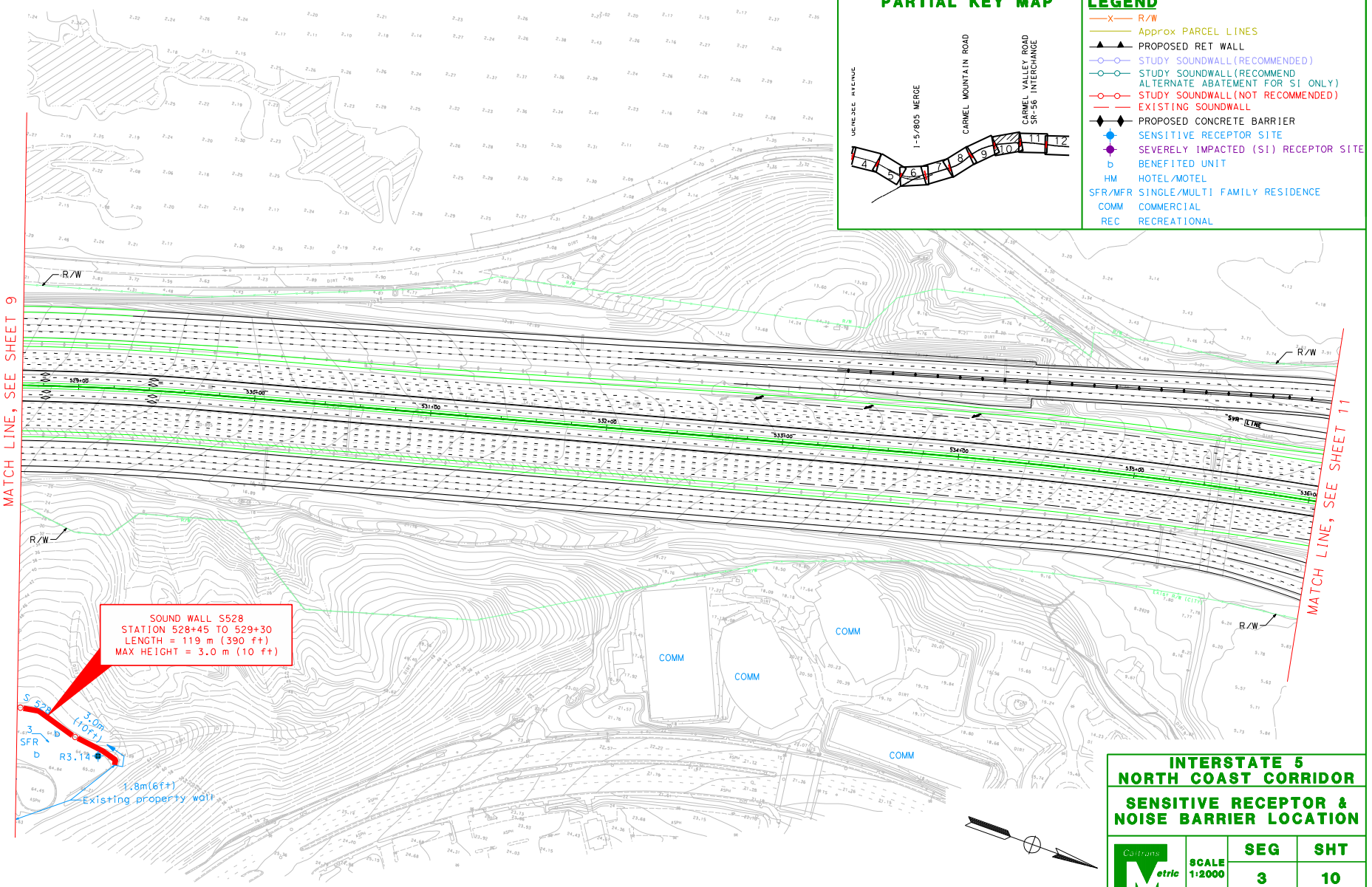
SEGMENT 3 - COST ANALYSIS

Sound Wall	# 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	Temporary Construction Easements	Footing Easements	Total Easements
		(m)	(m)	(m)	(m)	(m)	(m)	(cu m)	(m)	(cu m)	(cu m)	(sq m)	(sq m)	(sq m)
3.S526		3.0	324	0	324	1.22	2.1	830	0	583	292	972	414	1,386
		3.7	104	0	104	1.22	2.4	305	0	188	113	313	188	500
		4.3	149	0	149	1.22	2.6	473	0	268	179	447	298	745
	28													
3.S528	2	3.0	119	0	119	1.22	2.1	305	0	214	107	357	179	536

Sound Wall	# 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
		($210/sq m)	($700/cu m)	($100/cu m)	($20/m)	($40/cu m)	(8% of Wall Cost)	(10% of Wall Cost)	(5% of Wall Cost)	(5% of Wall Cost)	($150/sq m)	($370/sq m)	
3.S526		$245,059	$204,216	$83,048	$0	$23,339	$44,453	$55,566	$27,783	$27,783	$145,800	$153,180	$298,980
		$94,132	$78,808	$30,523	$0	$7,506	$16,877	$21,097	$10,548	$10,548	$46,910	$69,426	$116,336
		$153,372	$125,202	$47,279	$0	$10,732	$26,927	$33,658	$16,829	$16,829	$67,050	$110,260	$177,310
	28												
3.S528	2	$89,964	$74,970	$30,488	$0	$8,568	$16,319	$20,399	$10,199	$10,199	$53,550	$66,045	$119,595

Sound Wall	# 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
3.S526		$711,247	$857,047	$1,010,227								
		$270,039	$316,949	$386,375								
		$430,828	$497,878	$608,138								
	28	**$1,412,115**	**$1,671,874**	**$2,004,741**	**$50,433**	**$59,710**	**$71,598**	**$40,000**	**$1,120,000**	**NO**	**NO**	**NO**
3.S528	2	**$261,107**	**$314,657**	**$380,702**	**$130,553**	**$157,328**	**$190,351**	**$34,000**	**$68,000**	**NO**	**NO**	**NO**


PARTIAL KEY MAP
I-5/805 MERGE
CARMEL MOUNTAIN ROAD
CARMEL VALLEY ROAD SR-56 INTERCHANGE
LEGEND
R/W
Approx PARCEL LINES
PROPOSED RET WALL
STUDY SOUNDWALL(RECOMMENDED)
STUDY SOUNDWALL(RECOMMEND ALTERNATE ABATEMENT FOR SI ONLY)
STUDY SOUNDWALL(NOT RECOMMENDED)
EXISTING SOUNDWALL
PROPOSED CONCRETE BARRIER
SENSITIVE RECEPTOR SITE
SEVERELY IMPACTED (SI) RECEPTOR SITE
b BENEFITED UNIT
HM HOTEL/MOTEL
SFR/MFR SINGLE/MULTI FAMILY RESIDENCE
COMM COMMERCIAL
REC RECREATIONAL
MATCH LINE, SEE SHEET 8
MATCH LINE, SEE SHEET 10
SOUND WALL S526
STATION 522+80 TO 527+15
LENGTH = 577 m (1,893 ft)
MAX HEIGHT = 4.3 m (14 ft)
SOUND WALL S528
STATION 528+45 TO 529+30
LENGTH = 119 m (390 ft)
MAX HEIGHT = 3.0 m (10 ft)
4.3m (14ft) S 526
3.0m (10ft) S 528
1.8m(6ft) Existing property wall
R3.1A
R3.2
R3.3
R3.4/LT3.1
R3.5
R3.6
R3.7
R3.8
R3.9/LT3.1
R3.10
R3.10A
R3.11
R3.12
R3.13
SFR
R/W
INTERSTATE 5
NORTH COAST CORRIDOR
SENSITIVE RECEPTOR & NOISE BARRIER LOCATION
Caltrans Metric
SCALE 1:2000
SEG 3
SHT 9


PARTIAL KEY MAP
GENESEE AVENUE
I-5/805 MERGE
CARMEL MOUNTAIN ROAD
CARMEL VALLEY ROAD SR-56 INTERCHANGE
4
5
6
7
8
9
10
11
12
LEGEND
R/W
Approx PARCEL LINES
PROPOSED RET WALL
STUDY SOUNDWALL(RECOMMENDED)
STUDY SOUNDWALL(RECOMMEND ALTERNATE ABATEMENT FOR SI ONLY)
STUDY SOUNDWALL(NOT RECOMMENDED)
EXISTING SOUNDWALL
PROPOSED CONCRETE BARRIER
SENSITIVE RECEPTOR SITE
SEVERELY IMPACTED (SI) RECEPTOR SITE
b BENEFITED UNIT
HM HOTEL/MOTEL
SFR/MFR SINGLE/MULTI FAMILY RESIDENCE
COMM COMMERCIAL
REC RECREATIONAL
MATCH LINE, SEE SHEET 9
MATCH LINE, SEE SHEET 11
R/W
SOUND WALL S528
STATION 528+45 TO 529+30
LENGTH = 119 m (390 ft)
MAX HEIGHT = 3.0 m (10 ft)
S 528
3.0m (10ft)
3 SFR
b
R3.14
1.8m(6ft)
Existing property wall
COMM
INTERSTATE 5
NORTH COAST CORRIDOR
SENSITIVE RECEPTOR & NOISE BARRIER LOCATION
Caltrans
Metric
SCALE 1:2000
SEG 3
SHT 10

Segment 4

Noise Barrier S541

General

Type: Sound wall

I-5 Station limits: 540+30 to 541+65

Receptor sites: R4.2 and R4.4

Severely Impacted Receptors: None

Height: 3.0 meters (10 feet)

Location: Environmental Segment 4; see exhibit.

Benefited Units: One recreational area (four frontage units)

Predicted Noise Levels if Project Built without Abatement

Year 2030: 71 to 73 dBA

Compared to existing (year 2005): Three to four dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Is at the NAC
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$152,000
Estimated Total Cost without Easements:	$402,377
Estimated Total Cost with Construction Easements only:	$484,727
Estimated Total Cost with all Easements:	$586,292

Reasonable Cost Allowance/Benefited Unit:	$38,000
Estimated Cost/Benefited Unit without Easements:	$100,594
Estimated Cost/Benefited Unit with Construction Easements only:	$121,182
Estimated Cost/Benefited Unit with all Easements:	$146,573

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

Discussion

As shown in Segment 4, Sheet 11, of this NADR, noise barrier S541 would be located on the southbound side of I-5, north of Carmel Valley Road. This area is represented by receiver sites R4.2 and R4.4. The noise barrier would extend for approximately 183 meters (600 feet) with two returns and would replace an existing 1.8 to 2.1 meter (6 to 7 foot) property wall. The height of the barrier required to achieve a minimum 5 dBA insertion loss would be 3.0 meters (10 feet). The wall would benefit one recreational area and is considered feasible. The estimated cost of S541, when all easements are assumed eliminated, would be 165% above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 219%. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 286% above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier S541 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier S541. No severely impacted receptors exist for this wall that need to be abated for. Construction of noise barrier S541 is not recommended.

Noise Barrier S543

General

Type: Sound wall

I-5 Station limits: 541+75 to 542+55

Receptor sites: R4.5

Severely Impacted Receptors: None

Height: 4.3 meters (14 feet)

Location: Environmental Segment 4; see exhibit.

Benefited Units: Six multi-family residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 73 dBA

Compared to existing (year 2005): Four dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Is at the NAC
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$300,000
Estimated Total Cost without Easements:	$230,372
Estimated Total Cost with Construction Easements only:	$265,922
Estimated Total Cost with all Easements:	$324,382

Reasonable Cost Allowance/Benefited Unit:	$50,000
Estimated Cost/Benefited Unit without Easements:	$38,395
Estimated Cost/Benefited Unit with Construction Easements only:	$44,320
Estimated Cost/Benefited Unit with all Easements:	$54,064

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

Discussion

As shown in Segment 4, Sheet 11, of this NADR, noise barrier S543 would be located on the southbound side of I-5, north of Carmel Valley Road. This area is represented by receiver site R4.5. The noise barrier would extend for approximately 79 meters (259 feet) and would replace an existing 2.3 meter (7.5 foot) glass/block property wall. The height of the barrier required to achieve a minimum 5 dBA insertion loss would be 4.3 meters (14 feet). The wall would benefit six multi-family residences and is considered feasible. The estimated cost of S543, without easements or with construction easements only, would be less than the reasonable allowance. The estimated cost of the wall with all easements included would be eight percent above the reasonable allowance.

Noise Abatement Decision

Construction of S543 may be recommended if 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.

Noise Barrier S551

General

Type: Sound wall

I-5 Station limits: 545+45 to 556+40

Receptor sites: R4.11 through R4.22

Severely Impacted Receptors: R4.11

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

Location: Environmental Segment 4; see exhibit.

Benefited Units: 51 single-family residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 66 to 75 dBA

Compared to existing (year 2005): Zero to two dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	No
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$2,550,000
Estimated Total Cost without Easements:	$3,161,149
Estimated Total Cost with Construction Easements only:	$3,657,049
Estimated Total Cost with all Easements:	$4,462,391

Reasonable Cost Allowance/Benefited Unit:	$50,000
Estimated Cost/Benefited Unit without Easements:	$61,983
Estimated Cost/Benefited Unit with Construction Easements only:	$71,707
Estimated Cost/Benefited Unit with all Easements:	$87,498

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

Discussion

As shown in Segment 4, Sheets 12 and 13, of this NADR, noise barrier S551 would be located on private property along the southbound side of I-5, between Carmel Valley Road and Del Mar Heights. This area is represented by receiver sites R4.11 through R4.22. The noise barrier would extend for approximately 1,102 meters (3,615 feet) and would replace an existing 2.1 meter (7.0 foot) glass/block property wall. The heights of the barrier would extend from 3.7 meters (12 feet) to 4.3 meters (14 feet) in order to achieve the a 5 dBA or more insertion loss required at the critical design receiver. The wall would benefit 51 single-family residences and is considered feasible. The estimated cost of S551, when all easements are assumed eliminated, would be 24% above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 43%. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 75% above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier S551 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier S551. However, there exists a severely impacted receptor that must be abated for. It is recommended that S551 not be constructed as proposed, with the stipulation that the severely impacted receptor, R4.11, receive interior abatement.

Noise Barrier S557

General

Type: Sound wall

I-5 Station limits: 556+05 to 558+05

Receptor sites: R4.22A, R4.23, R4.24

Severely Impacted Receptors: R4.23

Height: 3.0 meters (10 feet)

Location: Environmental Segment 4; see exhibit.

Benefited Units: Ten multi-family residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 71 to 78 dBA

Compared to existing (year 2005): Zero to one dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	No
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$400,000
Estimated Total Cost without Easements:	$569,646
Estimated Total Cost with Construction Easements only:	$691,596
Estimated Total Cost with all Easements:	$828,681

Reasonable Cost Allowance/Benefited Unit:	$40,000
Estimated Cost/Benefited Unit without Easements:	$56,965
Estimated Cost/Benefited Unit with Construction Easements only:	$69,160
Estimated Cost/Benefited Unit with all Easements:	$82,868

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

Discussion

As shown in Segment 4, Sheet 13, of this NADR, noise barrier S557 would be located on private property along the southbound side of I-5, south of Del Mar Heights. This area is represented by receiver sites R4.22A, R4.23, and R4.24. The noise barrier would extend for approximately 271 meters (889 feet). The height 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). The wall would benefit ten multi-family residences and is considered feasible. The estimated cost of S557, when all easements are assumed eliminated, would be 42% above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 73%. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 107% above the reasonable allowance.

Noise Abatement Decision

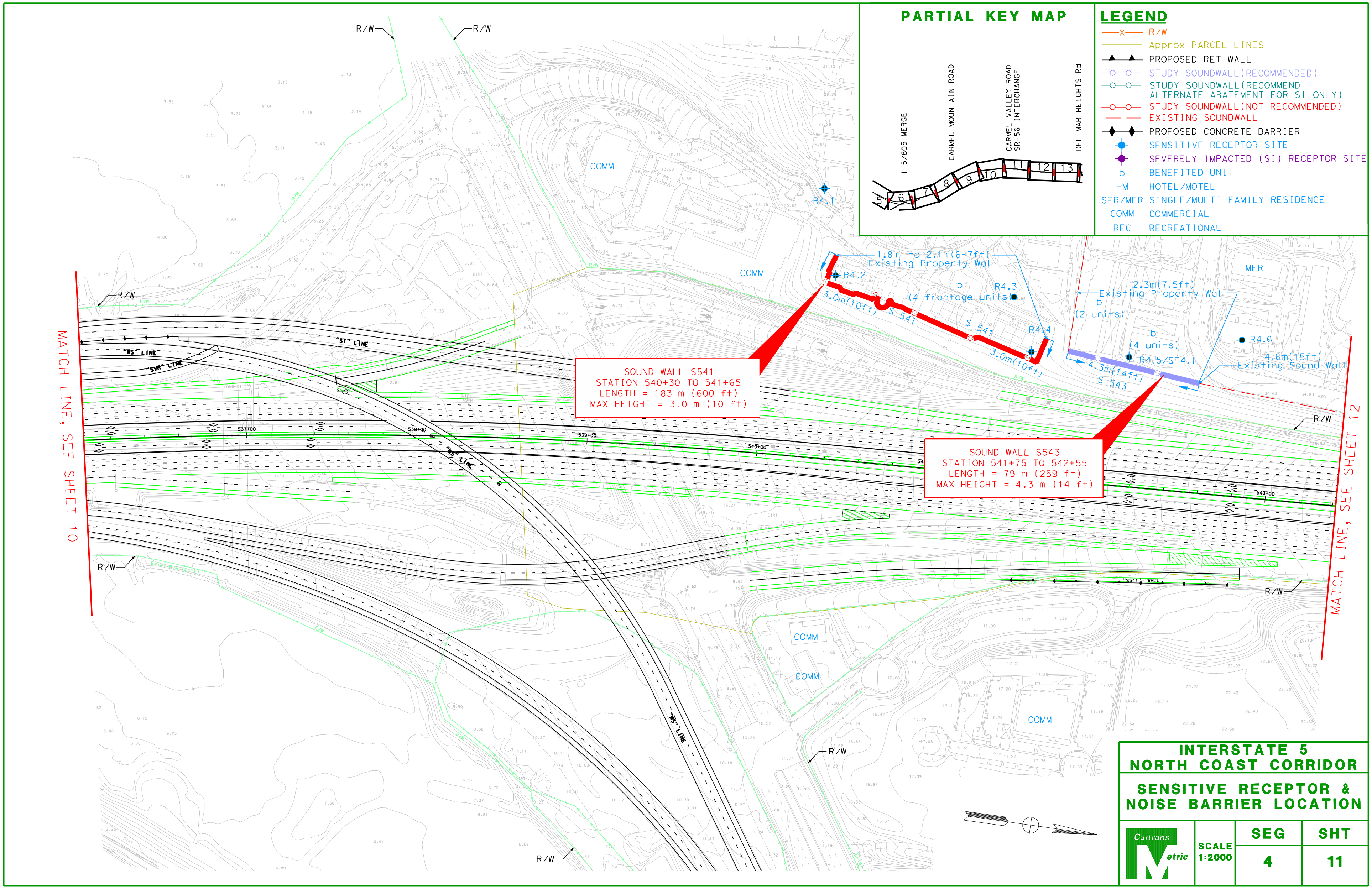
Construction of noise barrier S557 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier S557. However, there exists a severely impacted receptor that must be abated for. It is recommended that S557 not be constructed as proposed, with the stipulation that the severely impacted receptor, R4.23, receive individual abatement.

SEGMENT 4 - COST ANALYSIS

Sound Wall	# 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	Temporary Construction Easements	Footing Easements	Total Easements
		(m)	(m)	(m)	(m)	(m)	(m)	(cu m)	(m)	(cu m)	(cu m)	(sq m)	(sq m)	(sq m)
4.S541	4	3.0	183	0	183	1.22	2.1	469	0	346	165	549	275	824
4.S543	6	4.3	79	0	79	1.22	2.6	251	0	182	95	237	158	395
4.S551		3.7	137	0	137	1.22	2.4	401	0	288	148	411	247	658
		4.3	965	0	965	1.22	2.6	3,061	0	2,027	1,158	2,895	1,930	4,825
	51													
4.S557	10	3.0	271	0	271	1.22	2.1	694	0	0	244	813	371	1,184

Sound Wall	# 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
		($210/sq m)	($700/cu m)	($100/cu m)	($20/m)	($40/cu m)	(8% of Wall Cost)	(10% of Wall Cost)	(5% of Wall Cost)	(5% of Wall Cost)	($150/sq m)	($370/sq m)	
4.S541	4	$138,348	$115,290	$46,885	$0	$13,835	$25,149	$31,436	$15,718	$15,718	$82,350	$101,565	$183,915
4.S543	6	$81,291	$66,360	$25,059	$0	$7,268	$14,398	$17,998	$8,999	$8,999	$35,550	$58,460	$94,010
4.S551		$123,711	$103,572	$40,114	$0	$11,508	$22,312	$27,890	$13,945	$13,945	$61,650	$91,242	$152,892
		$992,985	$810,600	$306,098	$0	$81,060	$175,259	$219,074	$109,537	$109,537	$434,250	$714,100	$1,148,350
	51												
4.S557	10	$204,876	$170,730	$69,430	$0	$0	$35,603	$44,504	$22,252	$22,252	$121,950	$137,085	$259,035

Sound Wall	# 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
4.S541	4	**$402,377**	**$484,727**	**$586,292**	**$100,594**	**$121,182**	**$146,573**	**$38,000**	**$152,000**	**NO**	**NO**	**NO**
4.S543	6	**$230,372**	**$265,922**	**$324,382**	**$38,395**	**$44,320**	**$54,064**	**$50,000**	**$300,000**	**YES**	**YES**	**NO**
4.S551		$356,998	$418,648	$509,890								
		$2,804,151	$3,238,401	$3,952,501								
	51	**$3,161,149**	**$3,657,049**	**$4,462,391**	**$61,983**	**$71,707**	**$87,498**	**$50,000**	**$2,550,000**	**NO**	**NO**	**NO**
4.S557	10	**$569,646**	**$691,596**	**$828,681**	**$56,965**	**$69,160**	**$82,868**	**$40,000**	**$400,000**	**NO**	**NO**	**NO**



LEGEND

—x—	R/W
——	Approx PARCEL LINES
▲—▲	PROPOSED RET WALL
○—○	STUDY SOUNDWALL (RECOMMENDED)
○—○	STUDY SOUNDWALL (RECOMMEND ALTERNATE ABATEMENT FOR SI ONLY)
○—○	STUDY SOUNDWALL (NOT RECOMMENDED)
— —	EXISTING SOUNDWALL
◆—◆	PROPOSED CONCRETE BARRIER
●	SENSITIVE RECEPTOR SITE
●	SEVERELY IMPACTED (SI) RECEPTOR SITE
b	BENEFITED UNIT
HM	HOTEL/MOTEL
SFR/MFR	SINGLE/MULTI FAMILY RESIDENCE
COMM	COMMERCIAL
REC	RECREATIONAL

INTERSTATE 5
NORTH COAST CORRIDOR

SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

Caltrans Metric

SCALE	SEG	SHT
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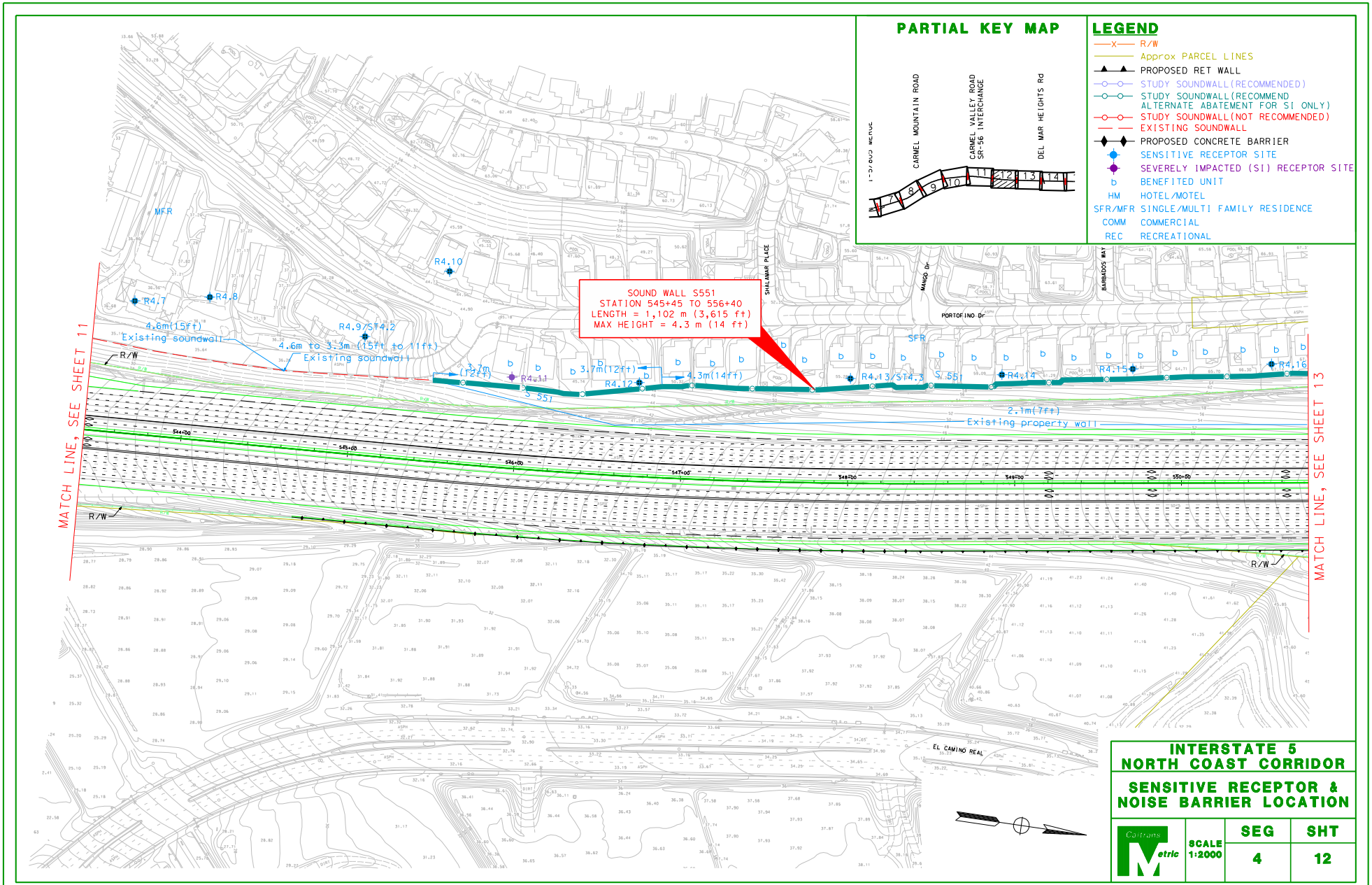
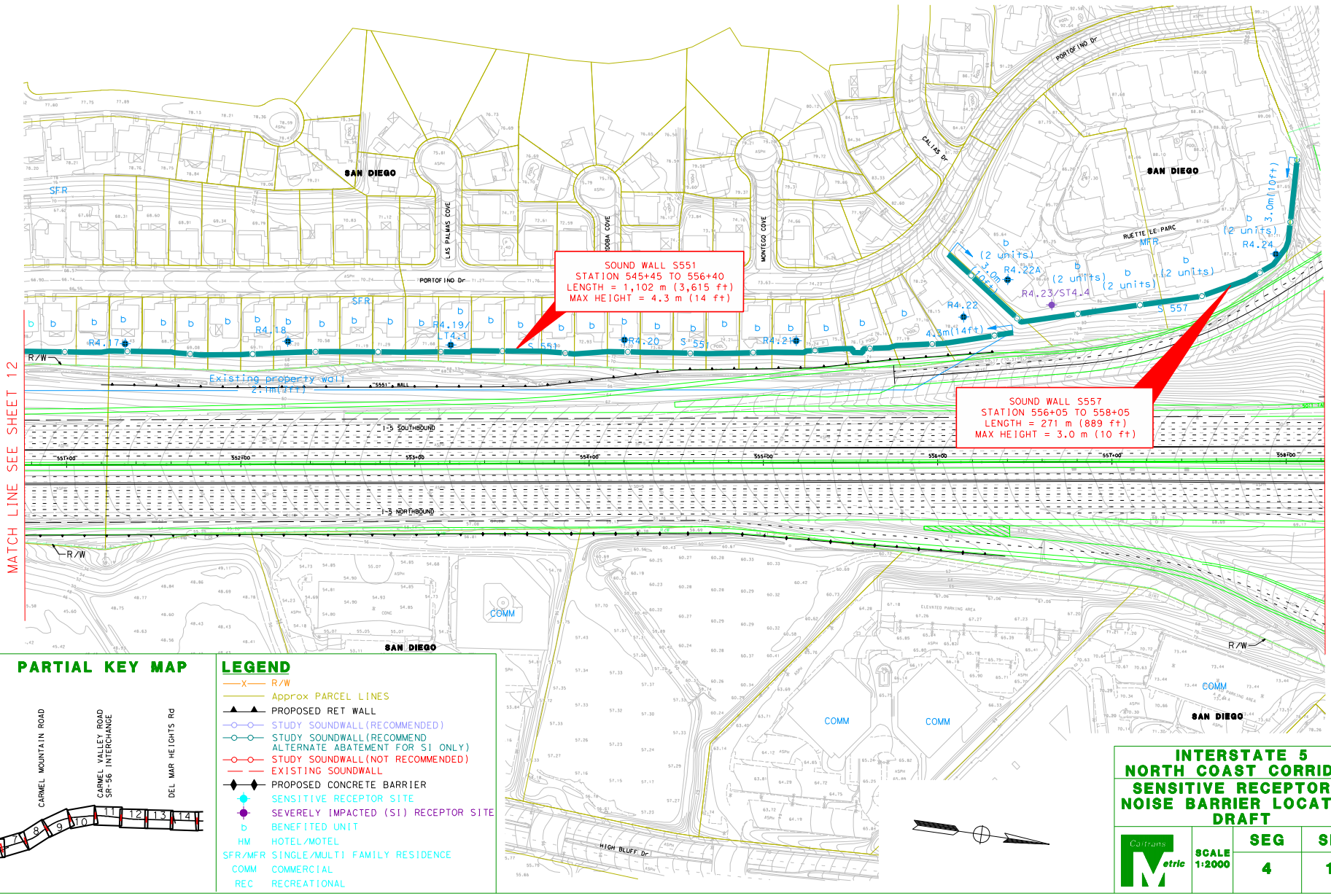


INTERSTATE 5 NORTH COAST CORRIDOR

SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

Caltrans Metric	SCALE 1:2000	SEG 4	SHT 12



PARTIAL KEY MAP

LEGEND

- R/W
- Approx PARCEL LINES
- PROPOSED RET WALL
- STUDY SOUNDWALL(RECOMMENDED)
- STUDY SOUNDWALL(RECOMMEND ALTERNATE ABATEMENT FOR SI ONLY)
- STUDY SOUNDWALL(NOT RECOMMENDED)
- EXISTING SOUNDWALL
- PROPOSED CONCRETE BARRIER
- SENSITIVE RECEPTOR SITE
- SEVERELY IMPACTED (SI) RECEPTOR SITE
- b BENEFITED UNIT
- HM HOTEL/MOTEL
- SFR/MFR SINGLE/MULTI FAMILY RESIDENCE
- COMM COMMERCIAL
- REC RECREATIONAL

INTERSTATE 5 NORTH COAST CORRIDOR

SENSITIVE RECEPTOR & NOISE BARRIER LOCATION DRAFT

Caltrans Metric

SCALE 1:2000

SEG	SHT
4	13

Segment 5

Noise Barrier S561

General

Type: Sound wall

I-5 Station limits: 560+75 to 562+20

Receptor sites: R5.1 and R5.2

Severely Impacted Receptors: None

Height: 2.4 meters (8 feet)

Location: Environmental Segment 5; see exhibit.

Benefited Units: Six multi-family residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 73 to 74 dBA

Compared to existing (year 2005): Three dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	No
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$240,000*
Estimated Total Cost without Easements:	$268,496
Estimated Total Cost with Construction Easements only:	$335,546
Estimated Total Cost with all Easements:	$407,215

Reasonable Cost Allowance/Benefited Unit:	$40,000*
Estimated Cost/Benefited Unit without Easements:	$44,749
Estimated Cost/Benefited Unit with Construction Easements only:	$55,924
Estimated Cost/Benefited Unit with all Easements:	$67,869

* The reasonable allowances found by Dokken Engineering for this sound wall differ from those given in the Noise Study Report. The values found by Dokken have been used in the reasonableness analysis for this wall.

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

Discussion

As shown in Segment 5, Sheet 14, of this NADR, noise barrier S561 would be located on private property along the southbound side of I-5, north of Del Mar Heights. This area is represented by receiver sites R5.1 and R5.2. The noise barrier would extend for approximately 149 meters (489 feet). The height of the barrier required to achieve a 5 dBA or more insertion loss at the critical design receiver would be 2.4 meters (8 feet). The wall would benefit six multi-family residences and is considered feasible. The estimated cost of S561, when all easements are assumed eliminated, would be 12% above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 40%. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 70% above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier S561 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier S561. No severely impacted receptors exist for this wall that need to be abated for. Construction of noise barrier S561 is not recommended.

Noise Barrier S563

General

Type: Sound wall

I-5 Station limits: 562+35 to 563+30

Receptor sites: R5.3

Severely Impacted Receptors: None

Height: 3.7 meters (12 feet)

Location: Environmental Segment 5; see exhibit.

Benefited Units: One school (three frontage units)

Predicted Noise Levels if Project Built without Abatement

Year 2030: 71 dBA

Compared to existing (year 2005): Three dBA increase

Feasibility

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

Reasonableness

Reasonable Total Cost Allowance:	$144,000
Estimated Total Cost without Easements:	$249,340
Estimated Total Cost with Construction Easements only:	$292,990
Estimated Total Cost with all Easements:	$357,592

Reasonable Cost Allowance/Benefited Unit:	$48,000
Estimated Cost/Benefited Unit without Easements:	$83,113
Estimated Cost/Benefited Unit with Construction Easements only:	$97,663
Estimated Cost/Benefited Unit with all Easements:	$119,197

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

Discussion

As shown in Segment 5, Sheet 14, of this NADR, noise barrier S563 would be located on school property along the southbound side of I-5, north of Del Mar Heights. This area is represented by receiver site R5.3. The noise barrier would extend for approximately 97 meters (318 feet) and would replace an existing 1.8 meter (6 foot) property wall. The height of the barrier required to achieve an insertion loss of 5 dBA or more at the critical design receiver would be 3.7 meters (12 feet). The wall would benefit one school and is considered feasible. The estimated cost of S563, when all easements are assumed eliminated, would be 73% above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 103%. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 148% above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier S563 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier S563. No severely impacted receptors exist for this wall that need to be abated for. Construction of noise barrier S563 is not recommended.

Noise Barrier S565

General

Type: Sound wall

I-5 Station limits: 563+30 to 564+40

Receptor sites: R5.5 and R5.6

Severely Impacted Receptors: None

Height: 3.0 meters (10 feet)

Location: Environmental Segment 5; see exhibit.

Benefited Units: One school (four frontage units)

Predicted Noise Levels if Project Built without Abatement

Year 2030: 71 to 72 dBA

Compared to existing (year 2005): Three dBA increase

Feasibility

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

Reasonableness

Reasonable Total Cost Allowance:	$200,000
Estimated Total Cost without Easements:	$233,324
Estimated Total Cost with Construction Easements only:	$283,274
Estimated Total Cost with all Easements:	$344,879

Reasonable Cost Allowance/Benefited Unit:	$50,000
Estimated Cost/Benefited Unit without Easements:	$58,331
Estimated Cost/Benefited Unit with Construction Easements only:	$70,818
Estimated Cost/Benefited Unit with all Easements:	$86,220

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

Discussion

As shown in Segment 5, Sheet 14, of this NADR, noise barrier S565 would be located on school property along the southbound side of I-5, north of Del Mar Heights. This area is represented by receiver sites R5.5 and R5.6. The noise barrier would extend for approximately 111 meters (364 feet). The height of the barrier required to achieve an insertion loss of 5 dBA or more at the critical design receiver would be 3.0 meters (10 feet). The wall would benefit one school and is considered feasible. The estimated cost of S565, when all easements are assumed eliminated, would be 17% above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 42%. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 72% above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier S565 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier S565. No severely impacted receptors exist for this wall that need to be abated for. Construction of noise barrier S565 is not recommended.

Noise Barrier S567

General

Type: Sound wall

I-5 Station limits: 565+75 to 567+20

Receptor sites: R5.7A, R5.8, and R5.8A

Severely Impacted Receptors: None

Height: 2.4 meters (8 feet)

Location: Environmental Segment 5; see exhibit.

Benefited Units: Seven single-family residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 71 to 73 dBA

Compared to existing (year 2005): Zero to one dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Is at the NAC
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$336,000
Estimated Total Cost without Easements:	$252,278
Estimated Total Cost with Construction Easements only:	$315,278
Estimated Total Cost with all Easements:	$348,948

Reasonable Cost Allowance/Benefited Unit:	$48,000
Estimated Cost/Benefited Unit without Easements:	$36,040
Estimated Cost/Benefited Unit with Construction Easements only:	$45,040
Estimated Cost/Benefited Unit with all Easements:	$49,850

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

Discussion

As shown in Segment 5, Sheet 15, of this NADR, noise barrier S567 would be located on Caltrans right-of-way along the southbound side of I-5, north of Del Mar Heights. This area is represented by receiver sites R5.7A, R5.8, and R5.8A. The noise barrier would extend for approximately 140 meters (459 feet). The height of the barrier required to achieve a 5 dBA or more insertion loss at the critical design receiver would be 2.4 meters (8 feet). The wall would benefit seven single-family residences and is considered feasible. The estimated construction cost of S567, without easements or with construction easements only, would be less than the reasonable allowance. The estimated cost of the wall with all easements included would be four percent above the reasonable allowance.

Noise Abatement Decision

Construction of S567 may be recommended if 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 of S567 is not recommended.

Noise Barrier S568

General

Type: Sound wall

I-5 Station limits: 566+25 to 567+90

Receptor sites: R5.21 through R5.23

Severely Impacted Receptors: None

Height: 2.4 meters (8 feet), 3.7 meters (12 feet), and 4.3 meters (14 feet)

Location: Environmental Segment 5; see exhibit.

Benefited Units: 11 single-family residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 69 to 74 dBA

Compared to existing (year 2005): Four dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	No
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$440,000
Estimated Total Cost without Easements:	$471,654
Estimated Total Cost with Construction Easements only:	$569,678
Estimated Total Cost with all Easements:	$675,865

Reasonable Cost Allowance/Benefited Unit:	$40,000
Estimated Cost/Benefited Unit without Easements:	$42,878
Estimated Cost/Benefited Unit with Construction Easements only:	$51,789
Estimated Cost/Benefited Unit with all Easements:	$61,442

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

Discussion

As shown in Segment 5, Sheet 15, of this NADR, noise barrier S568 would be located on private property and Caltrans right-of-way along the northbound side of I-5, north of Del Mar Heights. This area is represented by receiver sites R5.21 through R5.23. The noise barrier would extend for approximately 218 meters (715 feet). The height of the barrier required to achieve a 5 dBA or more insertion loss at the critical design receiver would be 2.4 meters (8 feet), 3.7 meters (12 feet), and 4.3 meters (14 feet). The wall would benefit 11 single-family residences and is considered feasible. The estimated cost of S568, when all easements are assumed eliminated, would be seven percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 29%. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 54% above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier S568 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier S568. No severely impacted receptors exist for this wall that need to be abated for. Construction of noise barrier S568 is not recommended.

Noise Barrier S569

General

Type: Sound wall

I-5 Station limits: 567+30 to 568+10

Receptor sites: R5.9

Severely Impacted Receptors: None

Height: 4.9 meters (16 feet)

Location: Environmental Segment 5; see exhibit.

Benefited Units: Three single-family residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 72 dBA

Compared to existing (year 2005): One dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Is at the NAC
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$138,000
Estimated Total Cost without Easements:	$243,916
Estimated Total Cost with Construction Easements only:	$278,566
Estimated Total Cost with all Easements:	$311,330

Reasonable Cost Allowance/Benefited Unit:	$46,000
Estimated Cost/Benefited Unit without Easements:	$81,305
Estimated Cost/Benefited Unit with Construction Easements only:	$92,855
Estimated Cost/Benefited Unit with all Easements:	$103,777

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

Discussion

As shown in Segment 5, Sheet 15, of this NADR, noise barrier S569 would be located on Caltrans right-of-way along the southbound side of I-5, north of Del Mar Heights. This area is represented by receiver site R5.9. The noise barrier would extend for approximately 77 meters (253 feet). The height of the barrier required to achieve an insertion loss of 5 dBA or more at the critical design receiver would be 4.9 meters (16 feet). The wall would benefit three single-family residences and is considered feasible. The estimated cost of S569, when all easements are assumed eliminated, would be 77% above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 102%. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 126% above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier S569 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier S569. No severely impacted receptors exist for this wall that need to be abated for. Construction of noise barrier S569 is not recommended.

Noise Barrier S573

General

Type: Sound wall

I-5 Station limits: 570+45 to 577+00

Receptor sites: R5.10 through R5.14

Severely Impacted Receptors: None

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

Location: Environmental Segment 5; see exhibit.

Benefited Units: Eight single-family residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 68 to 73 dBA

Compared to existing (year 2005): Four to six dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	No
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$304,000
Estimated Total Cost without Easements:	$1,396,532
Estimated Total Cost with Construction Easements only:	$1,396,532
Estimated Total Cost with all Easements:	$1,396,532

Reasonable Cost Allowance/Benefited Unit:	$38,000
Estimated Cost/Benefited Unit without Easements:	$174,566
Estimated Cost/Benefited Unit with Construction Easements only:	$174,566
Estimated Cost/Benefited Unit with all Easements:	$174,566

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

Discussion

As shown in Segment 5, Sheets 15 and 16, of this NADR, noise barrier S573 would be located on Caltrans right-of-way along the southbound side of I-5, between Del Mar Heights and Via de la Valle. This area is represented by receiver sites R5.10 through R5.14. The noise barrier would extend for approximately 649 meters (2,129 feet) and would be partially founded on a proposed retaining wall. The heights of the barrier required to achieve an insertion loss of a 5 dBA or more at the critical design receiver would be 3.7 meters (12 feet), and 4.3 meters (14 feet). The wall would benefit eight single-family residences and is considered feasible. There are no apparent easements that need to be acquired in order to construct S573. The estimated cost of S573 would be 359% above the cost allowance and so is not considered reasonable.

Noise Abatement Decision

Construction of noise barrier S573 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier S573. No severely impacted receptors exist for this wall that need to be abated for. The District Landscape Architect has indicated that this sound wall would cause a visual impact. Construction of noise barrier S573 is not recommended.

Noise Barrier S589

General

Type: Sound wall

I-5 Station limits: 587+60 to 593+00

Receptor sites: R5.24 through R5.26

Severely Impacted Receptors: None

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

Location: Environmental Segment 5; see exhibit.

Benefited Units: Three Recreational Areas (Eight Frontage Units)

Predicted Noise Levels if Project Built without Abatement

Year 2030: 71 to 74 dBA

Compared to existing (year 2005): Zero dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	No
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$384,000
Estimated Total Cost without Easements:	$964,869
Estimated Total Cost with Construction Easements only:	$964,869
Estimated Total Cost with all Easements:	$964,869

Reasonable Cost Allowance/Benefited Unit:	$48,000
Estimated Cost/Benefited Unit without Easements:	$120,609
Estimated Cost/Benefited Unit with Construction Easements only:	$120,609
Estimated Cost/Benefited Unit with all Easements:	$120,609

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

Discussion

As shown in Segment 5, Sheet 18, of this NADR, noise barrier S589 would be located on the shoulder of the southbound side of I-5, just south of Via de la Valle. This area is represented by receiver sites R5.24 through R5.26. The noise barrier would extend for approximately 562 meters (1,844 feet) and would be partially founded on a proposed retaining wall. The height of the barrier required to achieve an insertion loss of 5 dBA or more at the critical design receiver would be 3.7 meters (12 feet) to 4.3 meters (14 feet). The wall would benefit three recreational areas and is considered feasible. There are no apparent easements that need to be acquired in order to construct S589. The estimated cost of S589 would be 151% above the cost allowance with or without easements and so is not considered reasonable.

Noise Abatement Decision

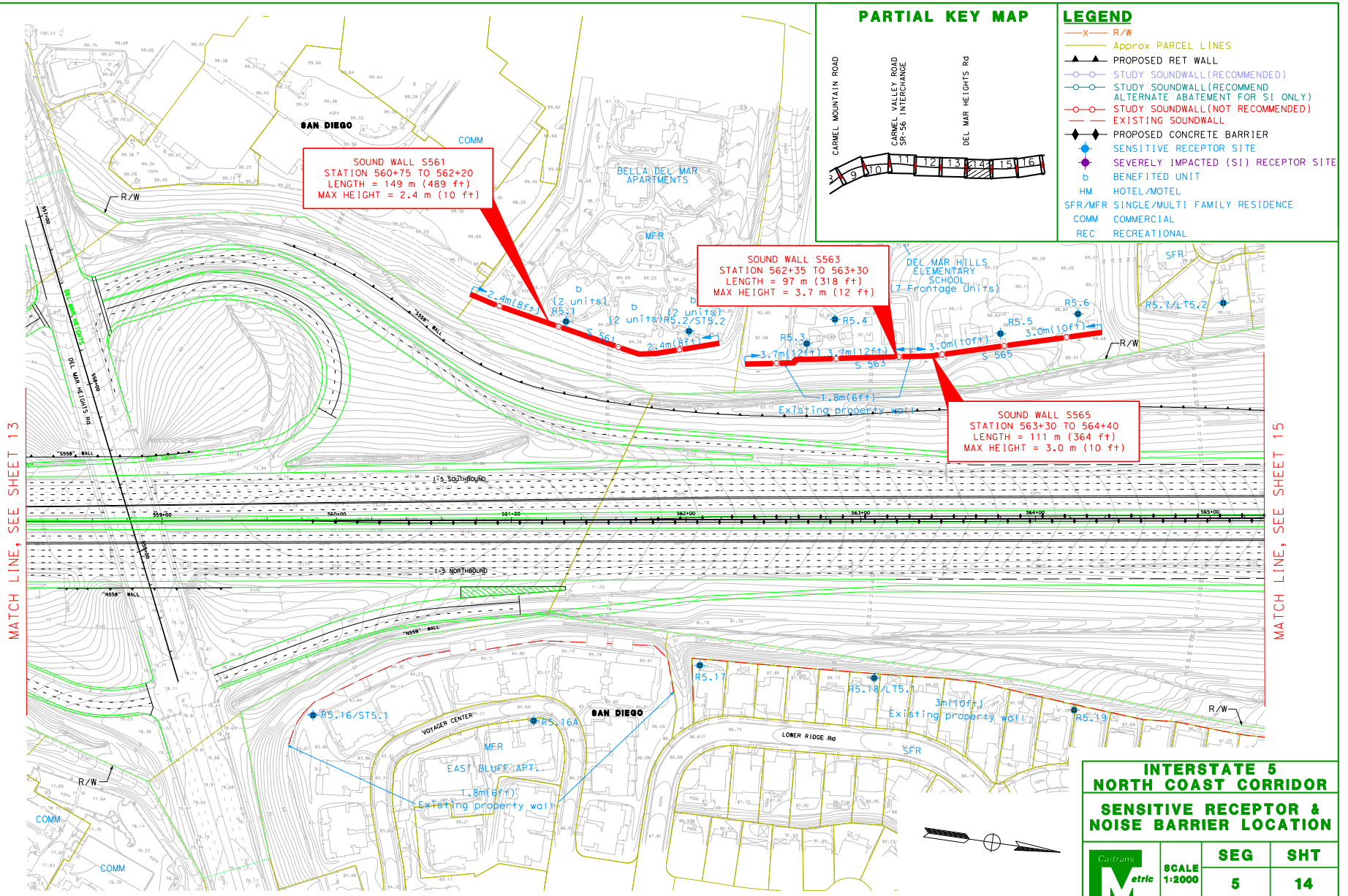
Construction of noise barrier S589 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier S589. No severely impacted receptors exist for this wall that need to be abated for. Construction of noise barrier S589 is not recommended.

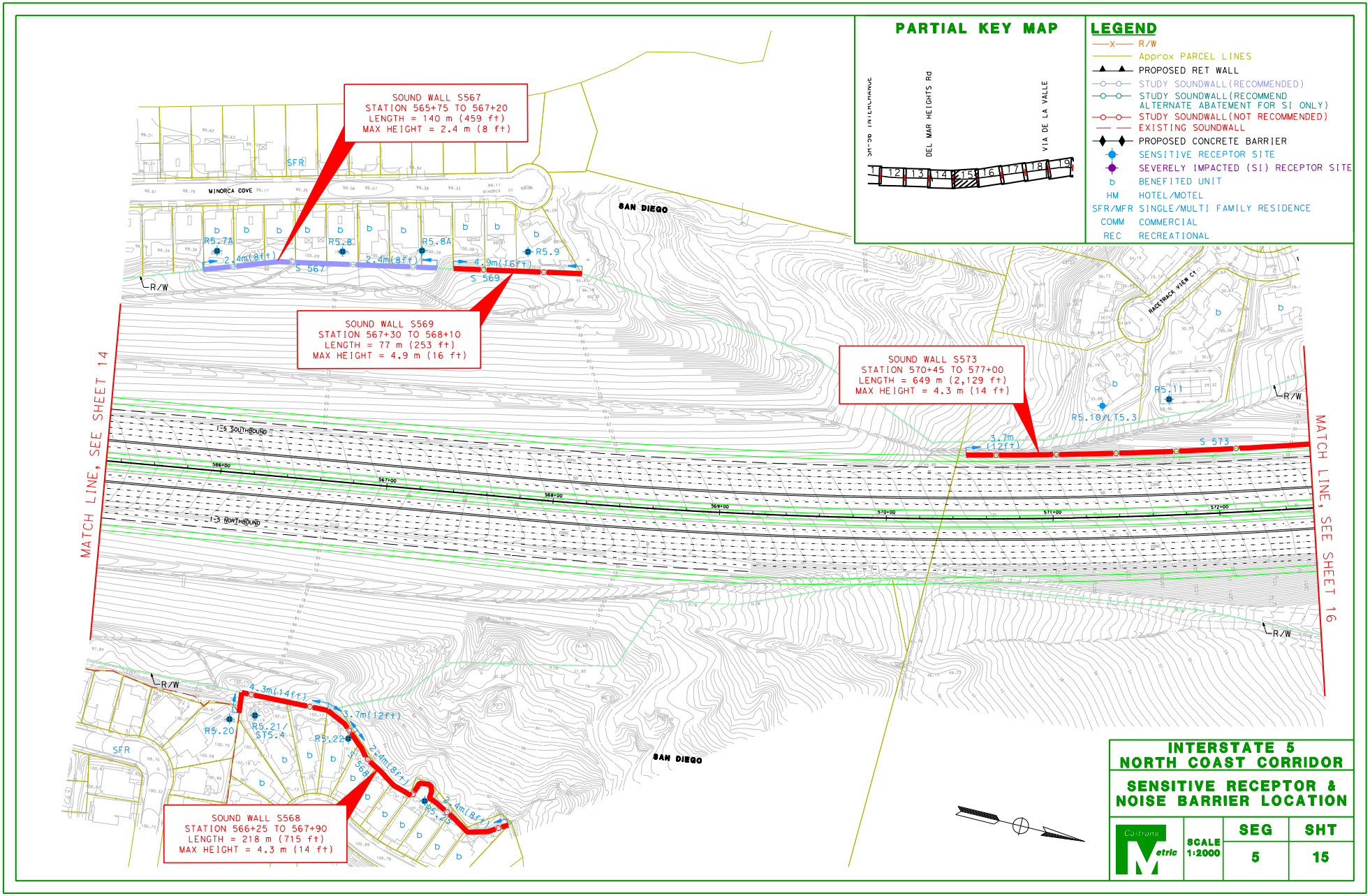
SEGMENT 5 - COST ANALYSIS

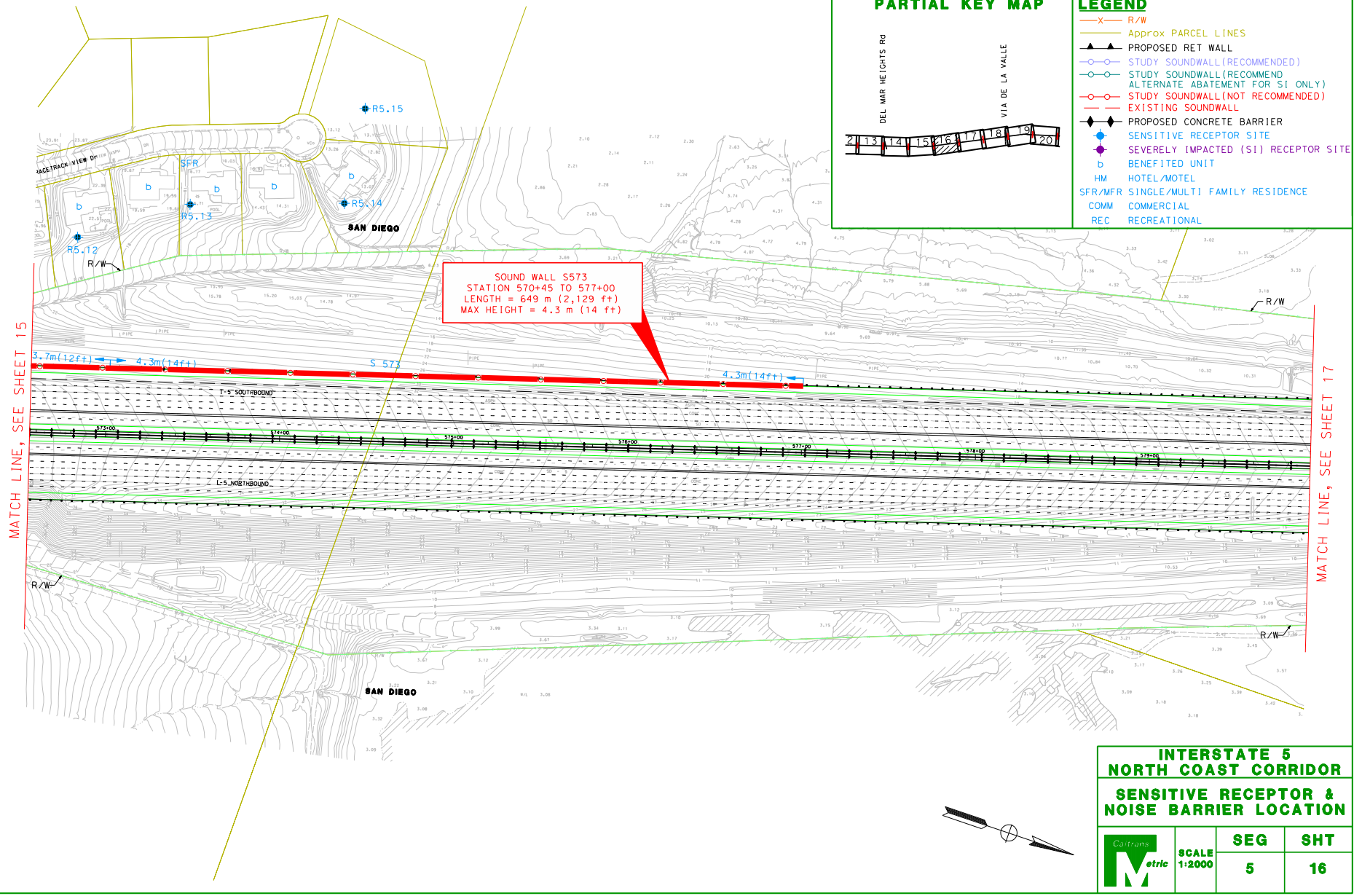
Sound Wall	# of Benefited Residences	WALL CHARACTERISTICS				QUANTITIES						EASEMENTS		
		Height	Length of Sound Wall	Length of Sound Wall on Retaining Wall	Length of Sound Wall Not on Retaining Wall	Excavation Depth	Excavation Width	Excavation and Backfill	Demolition of wood fence	Demolition of existing sound walls/property walls	Minor Concrete Sound Wall	Temporary Construction Easements	Footing Easements	Total Easements
		(m)	(m)	(m)	(m)	(m)	(m)	(cu m)	(m)	(cu m)	(cu m)	(sq m)	(sq m)	(sq m)
5.S561	6	2.4	149	0	149	1.22	1.9	345	0	0	116	447	194	641
5.S563	3	3.7	97	0	97	1.22	2.4	284	0	137	105	291	175	466
5.S565	4	3.0	111	0	111	1.22	2.1	284	0	0	100	333	167	500
5.S567	7	2.4	140	0	140	1.22	1.9	325	0	0	109	420	91	511
5.S568		4.3	65	0	65	1.22	2.6	206	0	0	78	195	78	273
		3.7	21	0	21	1.22	2.4	60	0	0	22	62	37	99
		2.4	132	0	132	1.22	1.9	306	0	0	103	397	172	568
	11													
5.S569	3	4.9	77	0	77	1.22	2.9	272	0	0	106	231	89	320
5.S573		3.7	251	193	58	1.22	2.4	170	0	0	63	0	0	0
		4.3	398	0	398	1.22	2.6	1,262	0	0	478	0	0	0
	8													
5.S589		3.7	239	0	239	1.22	2.4	700	0	0	258	0	0	0
		4.3	323	281	42	1.22	2.6	133	0	0	50	0	0	0
	8													

Sound Wall	# 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
		($210/sq m)	($700/cu m)	($100/cu m)	($20/m)	($40/cu m)	(8% of Wall Cost)	(10% of Wall Cost)	(5% of Wall Cost)	(5% of Wall Cost)	($150/sq m)	($370/sq m)	
5.S561	6	$93,870	$81,354	$34,538	$0	$0	$16,781	$20,976	$10,488	$10,488	$67,050	$71,669	$138,719
5.S563	3	$87,591	$73,332	$28,402	$0	$5,472	$15,584	$19,480	$9,740	$9,740	$43,650	$64,602	$108,252
5.S565	4	$83,916	$69,930	$28,438	$0	$0	$14,583	$18,228	$9,114	$9,114	$49,950	$61,605	$111,555
5.S567	7	$88,200	$76,440	$32,452	$0	$0	$15,767	$19,709	$9,855	$9,855	$63,000	$33,670	$96,670
5.S568		$66,885	$54,600	$20,618	$0	$0	$11,368	$14,210	$7,105	$7,105	$29,250	$28,860	$58,110
		$18,629	$15,596	$6,040	$0	$0	$3,221	$4,027	$2,013	$2,013	$9,284	$13,740	$23,023
		$83,286	$72,181	$30,644	$0	$0	$14,889	$18,611	$9,306	$9,306	$59,490	$63,588	$123,078
	11												
5.S569	3	$88,935	$74,382	$27,243	$0	$0	$15,245	$19,056	$9,528	$9,528	$34,650	$32,764	$67,414
5.S573		$204,778	$43,848	$16,982	$0	$0	$4,910	$6,138	$3,069	$3,069	$0	$0	$0
		$409,542	$334,320	$126,246	$0	$0	$69,609	$87,011	$43,505	$43,505	$0	$0	$0
	8												
5.S589		$215,817	$180,684	$69,979	$0	$0	$37,318	$46,648	$23,324	$23,324	$0	$0	$0
		$306,252	$35,280	$13,322	$0	$0	$3,691	$4,614	$2,307	$2,307	$0	$0	$0
	8												

Sound Wall	# 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
5.S561	6	**$268,496**	**$335,546**	**$407,215**	**$44,749**	**$55,924**	**$67,869**	**$40,000**	**$240,000**	**NO**	**NO**	**NO**
5.S563	3	**$249,340**	**$292,990**	**$357,592**	**$83,113**	**$97,663**	**$119,197**	**$48,000**	**$144,000**	**NO**	**NO**	**NO**
5.S565	4	**$233,324**	**$283,274**	**$344,879**	**$58,331**	**$70,818**	**$86,220**	**$50,000**	**$200,000**	**NO**	**NO**	**NO**
5.S567	7	**$252,278**	**$315,278**	**$348,948**	**$36,040**	**$45,040**	**$49,850**	**$48,000**	**$336,000**	**YES**	**YES**	**NO**
5.S568		$181,892	$211,142	$240,002								
		$51,540	$60,824	$74,563								
		$238,222	$297,712	$361,300								
	11	**$471,654**	**$569,678**	**$675,865**	**$42,878**	**$51,789**	**$61,442**	**$40,000**	**$440,000**	**NO**	**NO**	**NO**
5.S569	3	**$243,916**	**$278,566**	**$311,330**	**$81,305**	**$92,855**	**$103,777**	**$46,000**	**$138,000**	**NO**	**NO**	**NO**
5.S573		$282,794	$282,794	$282,794								
		$1,113,738	$1,113,738	$1,113,738								
	8	**$1,396,532**	**$1,396,532**	**$1,396,532**	**$174,566**	**$174,566**	**$174,566**	**$38,000**	**$304,000**	**NO**	**NO**	**NO**
5.S589		$597,095	$597,095	$597,095								
		$367,775	$367,775	$367,775								
	8	**$964,869**	**$964,869**	**$964,869**	**$120,609**	**$120,609**	**$120,609**	**$48,000**	**$384,000**	**NO**	**NO**	**NO**


PARTIAL KEY MAP
CARMEL MOUNTAIN ROAD
CARMEL VALLEY ROAD SR-56 INTERCHANGE
DEL MAR HEIGHTS Rd
LEGEND
R/W
Approx PARCEL LINES
PROPOSED RET WALL
STUDY SOUNDWALL(RECOMMENDED)
STUDY SOUNDWALL(RECOMMEND ALTERNATE ABATEMENT FOR SI ONLY)
STUDY SOUNDWALL(NOT RECOMMENDED)
EXISTING SOUNDWALL
PROPOSED CONCRETE BARRIER
SENSITIVE RECEPTOR SITE
SEVERELY IMPACTED (SI) RECEPTOR SITE
b BENEFITED UNIT
HM HOTEL/MOTEL
SFR/MFR SINGLE/MULTI FAMILY RESIDENCE
COMM COMMERCIAL
REC RECREATIONAL
SOUND WALL S561
STATION 560+75 TO 562+20
LENGTH = 149 m (489 ft)
MAX HEIGHT = 2.4 m (10 ft)
SOUND WALL S563
STATION 562+35 TO 563+30
LENGTH = 97 m (318 ft)
MAX HEIGHT = 3.7 m (12 ft)
SOUND WALL S565
STATION 563+30 TO 564+40
LENGTH = 111 m (364 ft)
MAX HEIGHT = 3.0 m (10 ft)
MATCH LINE, SEE SHEET 13
MATCH LINE, SEE SHEET 15
SAN DIEGO
BELLA DEL MAR APARTMENTS
DEL MAR HILLS ELEMENTARY SCHOOL
(7 Frontage Units)
VOYAGER CENTER
EAST BLUFF APT.
LOWER RIDGE Rd
DEL MAR HEIGHTS Rd
I-5 SOUTHBOUND
I-5 NORTHBOUND
R/W
COMM
SFR
MFR
INTERSTATE 5
NORTH COAST CORRIDOR
SENSITIVE RECEPTOR & NOISE BARRIER LOCATION
SCALE 1:2000
SEG 5
SHT 14

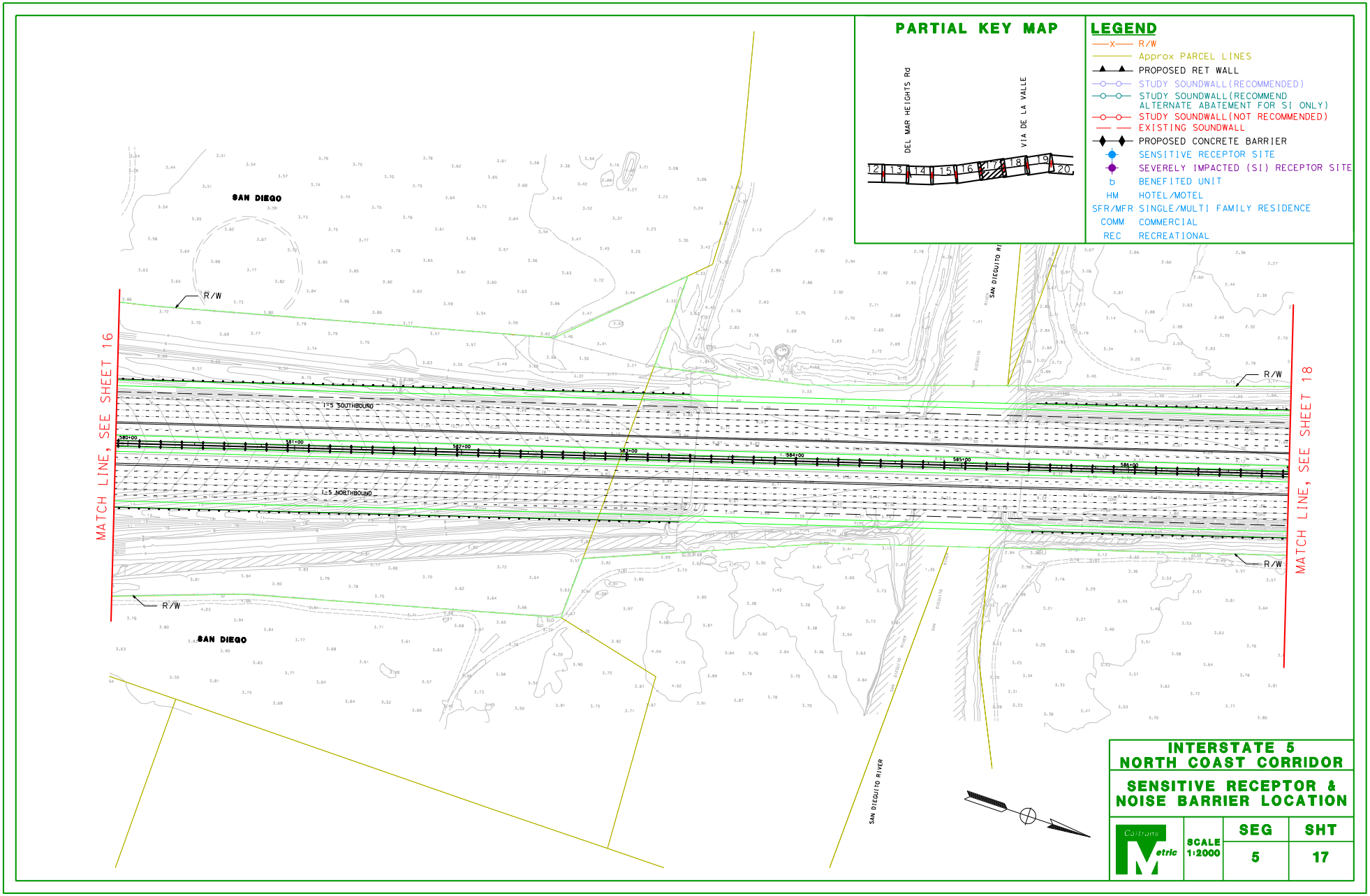

PARTIAL KEY MAP
SR-56 INTERCHANGE
DEL MAR HEIGHTS Rd
VIA DE LA VALLE
1 12 13 14 15 16 17 18 19
LEGEND
R/W
Approx PARCEL LINES
PROPOSED RET WALL
STUDY SOUNDWALL(RECOMMENDED)
STUDY SOUNDWALL(RECOMMEND ALTERNATE ABATEMENT FOR SI ONLY)
STUDY SOUNDWALL(NOT RECOMMENDED)
EXISTING SOUNDWALL
PROPOSED CONCRETE BARRIER
SENSITIVE RECEPTOR SITE
SEVERELY IMPACTED (SI) RECEPTOR SITE
b BENEFITED UNIT
HM HOTEL/MOTEL
SFR/MFR SINGLE/MULTI FAMILY RESIDENCE
COMM COMMERCIAL
REC RECREATIONAL
SOUND WALL S567
STATION 565+75 TO 567+20
LENGTH = 140 m (459 ft)
MAX HEIGHT = 2.4 m (8 ft)
SOUND WALL S569
STATION 567+30 TO 568+10
LENGTH = 77 m (253 ft)
MAX HEIGHT = 4.9 m (16 ft)
SOUND WALL S573
STATION 570+45 TO 577+00
LENGTH = 649 m (2,129 ft)
MAX HEIGHT = 4.3 m (14 ft)
SOUND WALL S568
STATION 566+25 TO 567+90
LENGTH = 218 m (715 ft)
MAX HEIGHT = 4.3 m (14 ft)
MATCH LINE, SEE SHEET 14
MATCH LINE, SEE SHEET 16
I-5 SOUTHBOUND
I-5 NORTHBOUND
MINORCA COVE
RACETRACK VIEW CT
SAN DIEGO
SFR
R5.7A
R5.8
R5.8A
R5.9
R5.10/LT5.3
R5.11
R5.20
R5.21/ST5.4
R5.22
R5.23
S 567
S 569
S 573
S 568
2.4m(8ft)
4.9m(16ft)
3.7m(12ft)
4.3m(14ft)
566+00
567+00
568+00
569+00
570+00
571+00
572+00
INTERSTATE 5
NORTH COAST CORRIDOR
SENSITIVE RECEPTOR &
NOISE BARRIER LOCATION
Caltrans
Metric
SCALE 1:2000
SEG 5
SHT 15

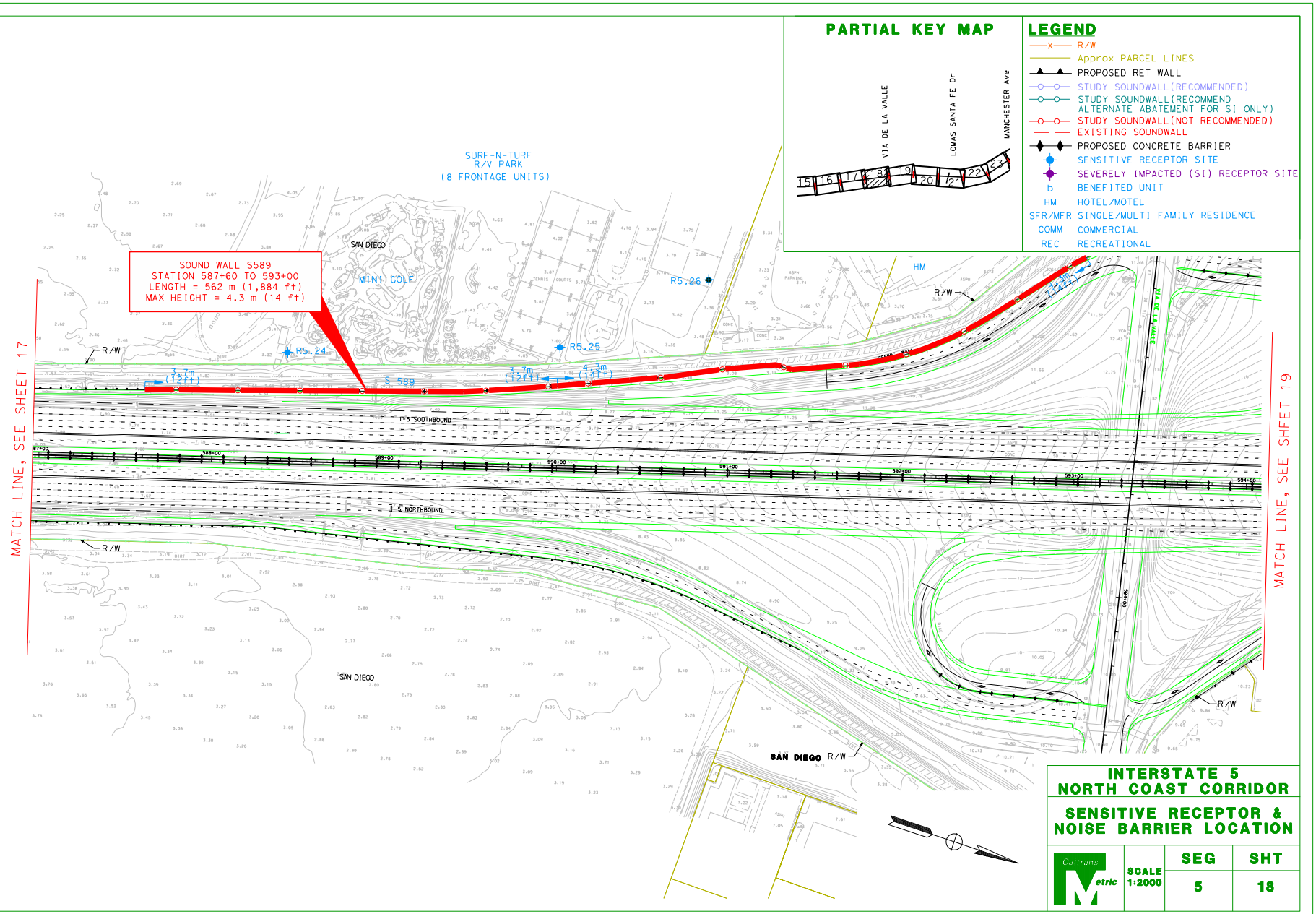


INTERSTATE 5
NORTH COAST CORRIDOR

SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

Caltrans Metric	SCALE 1:2000	SEG	SHT
		5	16


PARTIAL KEY MAP
DEL MAR HEIGHTS Rd
VIA DE LA VALLE
12
13
14
15
16
17
18
19
20
LEGEND
R/W
Approx PARCEL LINES
PROPOSED RET WALL
STUDY SOUNDWALL(RECOMMENDED)
STUDY SOUNDWALL(RECOMMEND ALTERNATE ABATEMENT FOR SI ONLY)
STUDY SOUNDWALL(NOT RECOMMENDED)
EXISTING SOUNDWALL
PROPOSED CONCRETE BARRIER
SENSITIVE RECEPTOR SITE
SEVERELY IMPACTED (SI) RECEPTOR SITE
b BENEFITED UNIT
HM HOTEL/MOTEL
SFR/MFR SINGLE/MULTI FAMILY RESIDENCE
COMM COMMERCIAL
REC RECREATIONAL
MATCH LINE, SEE SHEET 16
MATCH LINE, SEE SHEET 18
SAN DIEGO
I-5 SOUTHBOUND
I-5 NORTHBOUND
R/W
SAN DIEGUITO RIVER
580+00
581+00
582+00
583+00
584+00
585+00
586+00
INTERSTATE 5
NORTH COAST CORRIDOR
SENSITIVE RECEPTOR &
NOISE BARRIER LOCATION
Caltrans
Metric
SCALE
1:2000
SEG
5
SHT
17


PARTIAL KEY MAP
VIA DE LA VALLE
LOMAS SANTA FE Dr
MANCHESTER Ave
15
16
17
18
19
20
21
22
23
LEGEND
R/W
Approx PARCEL LINES
PROPOSED RET WALL
STUDY SOUNDWALL(RECOMMENDED)
STUDY SOUNDWALL(RECOMMEND ALTERNATE ABATEMENT FOR SI ONLY)
STUDY SOUNDWALL(NOT RECOMMENDED)
EXISTING SOUNDWALL
PROPOSED CONCRETE BARRIER
SENSITIVE RECEPTOR SITE
SEVERELY IMPACTED (SI) RECEPTOR SITE
b BENEFITED UNIT
HM HOTEL/MOTEL
SFR/MFR SINGLE/MULTI FAMILY RESIDENCE
COMM COMMERCIAL
REC RECREATIONAL
SURF-N-TURF R/V PARK (8 FRONTAGE UNITS)
SOUND WALL S589
STATION 587+60 TO 593+00
LENGTH = 562 m (1,884 ft)
MAX HEIGHT = 4.3 m (14 ft)
SAN DIEGO
MINI GOLF
HM
R/W
R5.24
R5.25
R5.26
S 589
3.7m (12ft)
3.7m (12ft)
4.3m (14ft)
I-5 SOUTHBOUND
I-5 NORTHBOUND
MATCH LINE, SEE SHEET 17
MATCH LINE, SEE SHEET 19
587+00
588+00
589+00
590+00
591+00
592+00
593+00
594+00
SAN DIEGO R/W
INTERSTATE 5
NORTH COAST CORRIDOR
SENSITIVE RECEPTOR &
NOISE BARRIER LOCATION
Caltrans
Metric
SCALE
1:2000
SEG
5
SHT
18

Segment 6

Noise Barrier S602 (Option 1)

General

Type: Sound wall

I-5 Station limits: 595+50 to 604+40

Receptor sites: R6.12A, R6.12 through R6.21

Severely Impacted Receptors: R6.12A, R6.17, R6.19, and R6.20

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

Location: Environmental Segment 6; see exhibit.

Benefited Units: 20 multi-family residences, ten single-family residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 65 to 76 dBA

Compared to existing (year 2005): Negative three to six dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	Is at the NAC
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$1,260,000
Estimated Total Cost without Easements:	$2,089,759
Estimated Total Cost with Construction Easements only:	$2,435,688
Estimated Total Cost with all Easements:	$2,827,296

Reasonable Cost Allowance/Benefited Unit:	$42,000
Estimated Cost/Benefited Unit without Easements:	$69,659
Estimated Cost/Benefited Unit with Construction Easements only:	$81,190
Estimated Cost/Benefited Unit with all Easements:	$94,243

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

Discussion

As shown in Segment 6, Sheets 19 and 20, of this NADR, noise barrier S602 (Option 1) would be located on private property and Caltrans right-of-way and the shoulder of the northbound side of I-5, north of Via de la Valle. This area is represented by receiver sites R6.12A, R6.12 through R6.21. The noise barrier would extend for approximately 887 meters (2,910 feet) and would be partially founded on a proposed retaining wall. The heights of the barrier required to achieve an insertion loss of 5 dBA or more at the critical design receiver would be 3.7 meters (12 feet) to 4.9 meters (16 feet). The wall would benefit 20 multi-family residences and ten single-family residences and is considered feasible. The estimated cost of S602 (Option 1), when all easements are assumed eliminated, would be 66% above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 93%. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 124% above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier S602 (Option1) is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier S602 (Option 1). However, there exist severely impacted receptors that must be abated for. The District Landscape Architect has indicated that this sound wall would cause a visual impact. Because of the number of severely impacted receptors for the area, a second iteration of S602 (Option 1) has been proposed as S602 (Option 2) and is described on the following pages. Construction of noise barrier S602 (Option 1) is not recommended as proposed, with the stipulation that individual abatement be provided for the severely impacted receptor, R6.12A.

Noise Barrier S602 (Option 2)

General

Type: Sound wall

I-5 Station limits: 600+00 to 604+40

Receptor sites: R6.17A, R6.17 to R6.20

Severely Impacted Receptors: R6.17, R6.19, and R6.20

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

Location: Environmental Segment 6; see exhibit.

Benefited Units: Six single-family residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 72 to 75 dBA

Compared to existing (year 2005): Zero to five dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	No
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$252,000
Estimated Total Cost without Easements:	$1,139,318
Estimated Total Cost with Construction Easements only:	$1,222,118
Estimated Total Cost with all Easements:	$1,286,701

Reasonable Cost Allowance/Benefited Unit:	$42,000
Estimated Cost/Benefited Unit without Easements:	$189,886
Estimated Cost/Benefited Unit with Construction Easements only:	$203,686
Estimated Cost/Benefited Unit with all Easements:	$214,450

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

Discussion

As shown in Segment 6, Sheets 19 and 20, of this NADR, noise barrier S602 (Option 2) would be located on Caltrans right-of-way and the shoulder of the northbound side of I-5, north of Via de la Valle. This area is represented by receiver sites R6.17A, R6.17 to R6.20. The noise barrier would extend for approximately 458 meters (1,503 feet) and would be partially founded on a proposed retaining wall. The heights of the barrier required to achieve an insertion loss of 5 dBA or more at the critical design receiver would be 3.7 meters (12 feet) to 4.9 meters (16 feet). The wall would benefit six single-family residences and is considered feasible. The estimated cost of S602 (Option 2), when all easements are assumed eliminated, would be 352% above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 385%. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 411% above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier S602 (Option 2) would be feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier S602 (Option 2). However, there exist severely impacted receptors that must be abated for. S602 (Option 2) avoids the potential visual impacts that may have resulted from the construction of S602 (Option 1). S602 (Option 2) is preliminarily recommended in order to abate for the severely impacted receptors, R6.17, R6.19, and R6.20.

Noise Barrier S603 (Option 1)

General

Type: Sound wall

I-5 Station limits: 597+80 to 608+15

Receptor sites: R6.4A, R6.4 through R6.11

Severely Impacted Receptors: R6.4A, R6.4, R6.10, and R6.11

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

Location: Environmental Segment 6; see exhibit

Benefited Units: 20 multi-family residences, 14 single-family residences, and two schools (ten frontage units)

Predicted Noise Levels if Project Built without Abatement

Year 2030: 68 to 80 dBA

Compared to existing (year 2005): Negative 1 to 10 dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	No
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$2,024,000
Estimated Total Cost without Easements:	$1,454,923
Estimated Total Cost with Construction Easements only:	$1,614,223
Estimated Total Cost with all Easements:	$1,717,564

Reasonable Cost Allowance/Benefited Unit:	$46,000
Estimated Cost/Benefited Unit without Easements:	$33,066
Estimated Cost/Benefited Unit with Construction Easements only:	$36,687
Estimated Cost/Benefited Unit with all Easements:	$39,036

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

Discussion

As shown in Segment 6, Sheets 19 and 20, of this NADR, noise barrier S603 (Option 1) would be located on Caltrans right-of-way along the southbound side of I-5, north of Via de la Valle. This area is represented by receiver sites R6.4A, and R6.4 through R6.11. The noise barrier would extend for approximately 1,047 meters (3,435 feet) and would be partially founded on a proposed retaining wall. The heights of the barrier required to achieve a 5 dBA or more insertion loss at the critical design receiver would be 2.4 meters (8 feet) to 3.7 meters (12 feet). The wall would benefit 20 multi-family residences, 14 single-family residences, and two schools and is considered feasible. The estimated construction cost of S603 (Option 1) with all easements would be less than the cost allowance and so is considered reasonable.

Noise Abatement Decision

Construction of noise barrier S603 (Option 1) is feasible and reasonable with all easement costs included. The District Landscape Architect has indicated that this sound wall would cause a visual impact. At this time, S603 (Option 1) is preliminarily recommended.

Noise Barrier S603 (Option 2)

General

Type: Sound wall

I-5 Station limits: 605+15 to 605+96

Receptor sites: R6.9A

Severely Impacted Receptors: None

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

Location: Environmental Segment 6; see exhibit

Benefited Units: Three multi-family residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 73 to 74 dBA

Compared to existing (year 2005): Five to six dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	No
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$114,000
Estimated Total Cost without Easements:	$380,574
Estimated Total Cost with Construction Easements only:	$441,774
Estimated Total Cost with all Easements:	$492,094

Reasonable Cost Allowance/Benefited Unit:	$38,000
Estimated Cost/Benefited Unit without Easements:	$126,858
Estimated Cost/Benefited Unit with Construction Easements only:	$147,258
Estimated Cost/Benefited Unit with all Easements:	$164,031

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

Discussion

As shown in Segment 6, Sheet 20, of this NADR, noise barrier S603 (Option 2) would be located on private property along the southbound side of I-5, north of Via de la Valle. This area is represented by receiver sites R6.9 and R6.9A. The noise barrier would extend for approximately 136 meters (446 feet) and would be partially founded on a proposed retaining wall. The heights of the barrier required to achieve a 5 dBA or more insertion loss at the critical design receiver would be 4.3 meters (14 feet). The wall would benefit three multi-family residences and is considered feasible. The estimated cost of S603 (Option 2), when all easements are assumed eliminated, would be 234% above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 288%. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 332% above the reasonable allowance.

Noise Abatement Decision

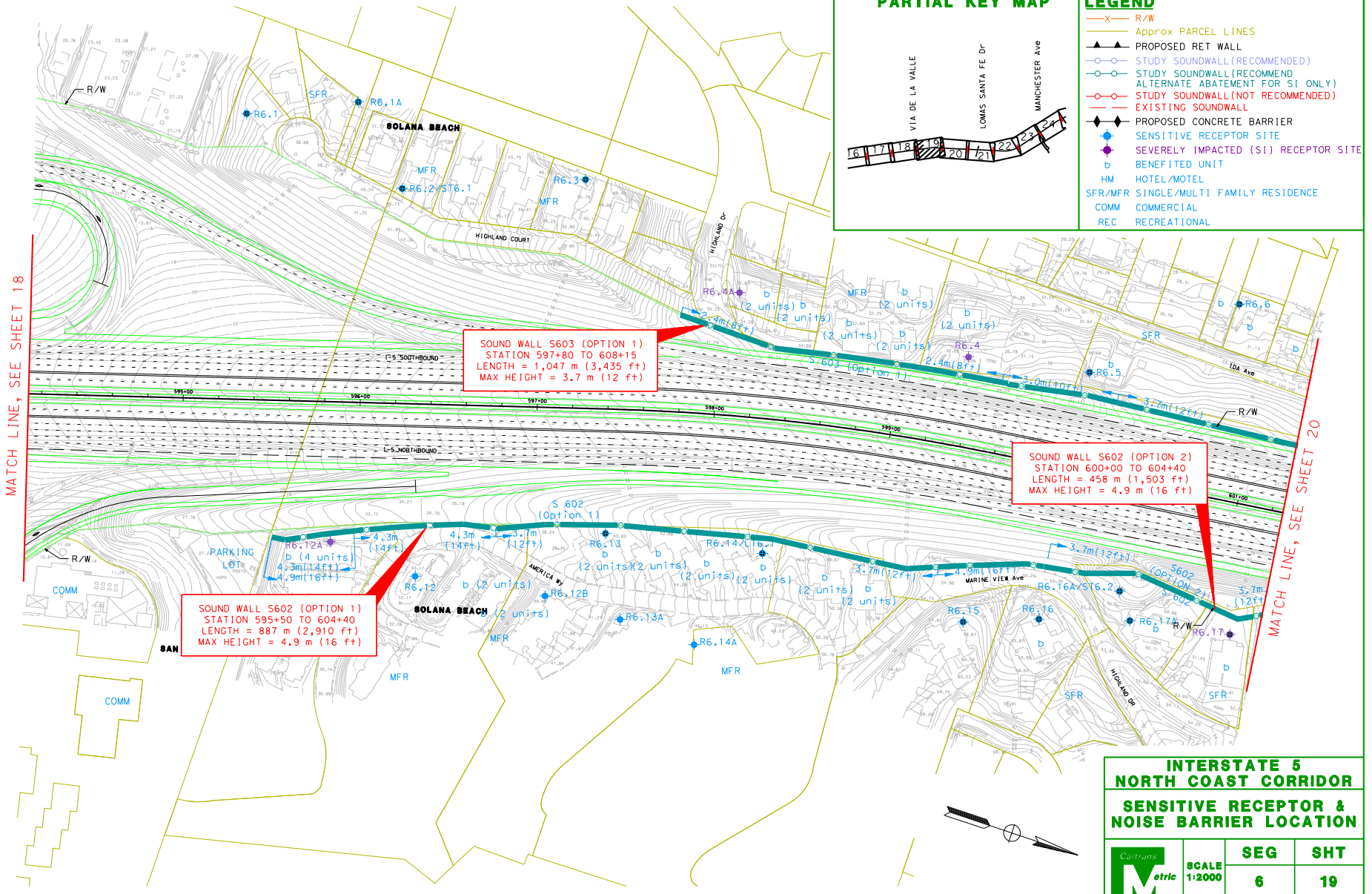
Construction of noise barrier S603 (Option 2) is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier S603 (Option 2). No severely impacted receptors exist for this wall that need to be abated for. Construction of noise barrier S603 (Option 2) is not recommended.

SEGMENT 6 - COST ANALYSIS

Sound Wall	# 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	Temporary Construction Easements	Footing Easements	Total Easements
		(m)	(m)	(m)	(m)	(m)	(m)	(cu m)	(m)	(cu m)	(cu m)	(sq m)	(sq m)	(sq m)
6.S602 (Option 1)		4.3 to 4.9	47	0	47	1.22	2.75	157	0	0	60	140	0	140
		4.3	80	0	80	1.22	2.6	254	0	0	96	240	160	400
		3.7	252	0	252	1.22	2.4	738	0	0	272	756	227	983
		4.9	508	210	298	1.22	2.9	1,054	0	0	411	1,170	672	1,842
	30													
6.S602 (Option 2)		3.7	139	0	139	1.22	2.4	407	0	0	150	417	125	542
		4.9	319	83	236	1.22	2.9	835	0	0	326	135	49	184
	6													
6.S603 (Option 1)		2.4	186	0	186	1.22	1.9	431	0	0	145	0	0	0
		3.0	67	0	67	1.22	2.1	172	0	0	60	201	50	251
		3.7	357	235	122	1.22	2.4	357	0	0	132	276	83	359
		3.0	437	242	195	1.22	2.1	500	0	0	176	585	146	731
	44													
6.S603 (Option 2)	3	4.3	136	0	136	1.22	2.6	431	0	0	163.2	408	136	544

Sound Wall	# 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
		($210/sq m)	($700/cu m)	($100/cu m)	($20/m)	($40/cu m)	(8% of Wall Cost)	(10% of Wall Cost)	(5% of Wall Cost)	(5% of Wall Cost)	($150/sq m)	($370/sq m)	
6.S602 (Option 1)		$51,029	$42,197	$15,678	$0	$0	$8,712	$10,890	$5,445	$5,445	$21,029	$0	$21,029
		$82,320	$67,200	$25,376	$0	$0	$13,992	$17,490	$8,745	$8,745	$36,000	$59,200	$95,200
		$227,556	$190,512	$73,786	$0	$0	$39,348	$49,185	$24,593	$24,593	$113,400	$83,916	$197,316
		$548,869	$287,868	$105,432	$0	$0	$44,215	$55,269	$27,634	$27,634	$175,500	$248,492	$423,992
	30												
6.S602 (Option 2)		$125,517	$105,084	$40,699	$0	$0	$21,704	$27,130	$13,565	$13,565	$62,550	$46,287	$108,837
		$344,664	$227,976	$83,497	$0	$0	$38,833	$48,542	$24,271	$24,271	$20,250	$18,297	$38,547
	6												
6.S603 (Option 1)		$117,180	$101,556	$43,115	$0	$0	$20,948	$26,185	$13,093	$13,093	$0	$0	$0
		$50,652	$42,210	$17,165	$0	$0	$8,802	$11,003	$5,501	$5,501	$30,150	$18,593	$48,743
		$291,258	$92,232	$35,722	$0	$0	$11,461	$14,326	$7,163	$7,163	$41,400	$30,636	$72,036
		$289,076	$122,850	$49,959	$0	$0	$16,488	$20,610	$10,305	$10,305	$87,750	$54,113	$141,863
	44												
6.S603 (Option 2)	3	$139,944	$114,240	$43,139	$0	$0	$23,786	$29,732	$14,866	$14,866	$61,200	$50,320	$111,520

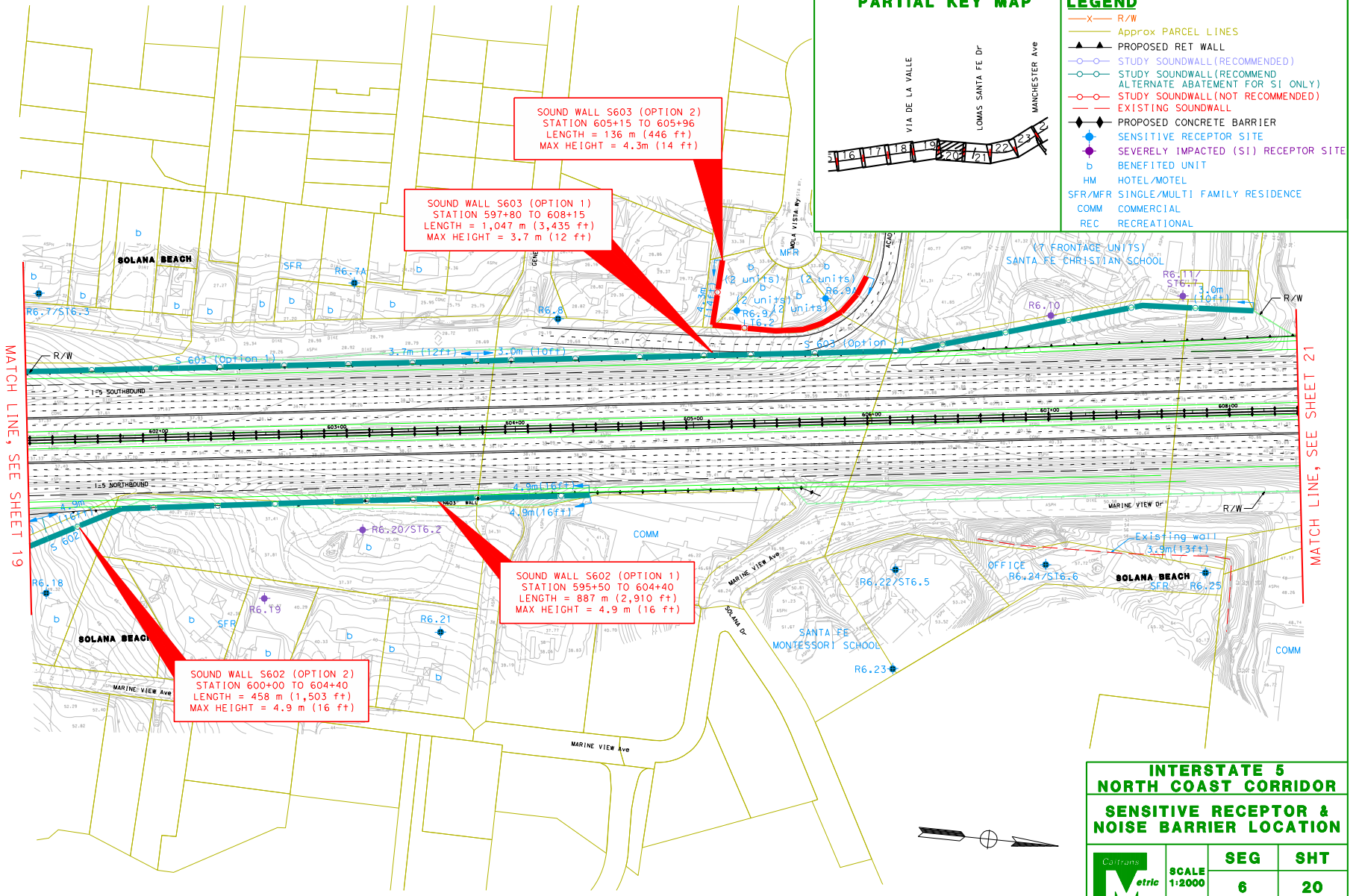
Sound Wall	# of Benefited Residences	TOTAL COSTS			COST PER BENEFITTED RESIDENCE			COST ALLOWANCE		REASONABLENESS		
		Estimated Total Cost (w/o Easements)	Estimated Total Cost (w/ Construction Easement Only)	Estimated Total Cost w/ Easements	Estimated Cost/Benefited Residence (w/o Easements)	Estimated 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
6.S602 (Option 1)		$139,397	$160,426	$160,426								
		$223,867	$259,867	$319,067								
		$629,573	$742,973	$826,889								
		$1,096,922	$1,272,422	$1,520,914								
	30	**$2,089,759**	**$2,435,688**	**$2,827,296**	**$69,659**	**$81,190**	**$94,243**	**$42,000**	**$1,260,000**	**NO**	**NO**	**NO**
6.S602 (Option 2)		$347,264	$409,814	$456,101								
		$792,053	$812,303	$830,600								
	6	**$1,139,318**	**$1,222,118**	**$1,286,701**	**$189,886**	**$203,686**	**$214,450**	**$42,000**	**$252,000**	**NO**	**NO**	**NO**
6.S603 (Option 1)		$335,169	$335,169	$335,169								
		$140,835	$170,985	$189,578								
		$459,325	$500,725	$531,361								
		$519,594	$607,344	$661,456								
	44	**$1,454,923**	**$1,614,223**	**$1,717,564**	**$33,066**	**$36,687**	**$39,036**	**$46,000**	**$2,024,000**	**YES**	**YES**	**YES**
6.S603 (Option 2)	3	**$380,574**	**$441,774**	**$492,094**	**$126,858**	**$147,258**	**$164,031**	**$38,000**	**$114,000**	**NO**	**NO**	**NO**



INTERSTATE 5
NORTH COAST CORRIDOR

SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

Caltrans	SCALE	SEG	SHT
Metric	1:2000	6	19


PARTIAL KEY MAP
VIA DE LA VALLE
LOMAS SANTA FE Dr
MANCHESTER Ave
LEGEND
R/W
Approx PARCEL LINES
PROPOSED RET WALL
STUDY SOUNDWALL(RECOMMENDED)
STUDY SOUNDWALL(RECOMMEND ALTERNATE ABATEMENT FOR SI ONLY)
STUDY SOUNDWALL(NOT RECOMMENDED)
EXISTING SOUNDWALL
PROPOSED CONCRETE BARRIER
SENSITIVE RECEPTOR SITE
SEVERELY IMPACTED (SI) RECEPTOR SITE
b BENEFITED UNIT
HM HOTEL/MOTEL
SFR/MFR SINGLE/MULTI FAMILY RESIDENCE
COMM COMMERCIAL
REC RECREATIONAL
SOUND WALL S603 (OPTION 2)
STATION 605+15 TO 605+96
LENGTH = 136 m (446 ft)
MAX HEIGHT = 4.3m (14 ft)
SOUND WALL S603 (OPTION 1)
STATION 597+80 TO 608+15
LENGTH = 1,047 m (3,435 ft)
MAX HEIGHT = 3.7 m (12 ft)
SOUND WALL S602 (OPTION 1)
STATION 595+50 TO 604+40
LENGTH = 887 m (2,910 ft)
MAX HEIGHT = 4.9 m (16 ft)
SOUND WALL S602 (OPTION 2)
STATION 600+00 TO 604+40
LENGTH = 458 m (1,503 ft)
MAX HEIGHT = 4.9 m (16 ft)
MATCH LINE, SEE SHEET 19
MATCH LINE, SEE SHEET 21
SOLANA BEACH
I-5 SOUTHBOUND
I-5 NORTHBOUND
MARINE VIEW Ave
SOLANA Dr
VISTA Dr
(7 FRONTAGE UNITS)
SANTA FE CHRISTIAN SCHOOL
SANTA FE MONTESSORI SCHOOL
OFFICE
COMM
SFR
MFR
R/W
S 603 (Option 1)
S 602
3.7m (12ft)
3.0m (10ft)
4.9m (16ft)
4.3m (14ft)
Existing wall 3.9m(13ft)
R6.7A
R6.7/ST6.3
R6.8
R6.9
R6.9A
R6.10
R6.11/ST6.4
R6.18
R6.19
R6.20/ST6.2
R6.21
R6.22/ST6.5
R6.23
R6.24/ST6.6
R6.25
(2 units)
16.2
INTERSTATE 5
NORTH COAST CORRIDOR
SENSITIVE RECEPTOR & NOISE BARRIER LOCATION
Caltrans Metric
SCALE 1:2000
SEG 6
SHT 20

Segment 7

Noise Barrier S614

General

Type: Sound wall

I-5 Station limits: 614+33 to 615+80

Receptor sites: R7.14

Severely Impacted Receptors: None

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

Location: Environmental Segment 7; see exhibit

Benefited Units: Four single-family residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 74 dBA

Compared to existing (year 2005): Three dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	No
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$200,000
Estimated Total Cost without Easements:	$110,718
Estimated Total Cost with Construction Easements only:	$110,718
Estimated Total Cost with all Easements:	$110,718

Reasonable Cost Allowance/Benefited Unit:	$50,000
Estimated Cost/Benefited Unit without Easements:	$27,680
Estimated Cost/Benefited Unit with Construction Easements only:	$27,680
Estimated Cost/Benefited Unit with all Easements:	$27,680

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

Discussion

As shown in Segment 7, Sheet 21, of this NADR, noise barrier S614 would be located on Caltrans right-of-way along the northbound side of I-5, north of Lomas Santa Fe Drive. This area is represented by receiver site R7.14. The noise barrier would extend for approximately 152 meters (499 feet) and would be partially founded on a proposed retaining wall. The heights of the barrier required to achieve an insertion loss of 5 dBA or more at the critical design receiver would be 2.4 meters (8 feet) and 3.0 meters (10 feet). The wall would benefit four single-family residences and is considered feasible. There are no apparent easements that need to be acquired in order to construct S614. The estimated cost of S614 would be less than the cost allowance and so is considered reasonable.

Noise Abatement Decision

Construction of noise barrier S614 is feasible and reasonable with all easements costs and is preliminarily recommended.

Noise Barrier S622 (Option 1)

General

Type: Sound wall

I-5 Station limits: 616+40 to 626+00

Receptor sites: R7.18, and R7.20 through R7.32

Severely Impacted Receptors: R7.23 through R7.26

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

Location: Environmental Segment 7; see exhibit

Benefited Units: 32 single-family residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 66 to 77 dBA

Compared to existing (year 2005): Zero to three dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	No
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$1,600,000
Estimated Total Cost without Easements:	$1,883,808
Estimated Total Cost with Construction Easements only:	$2,092,433
Estimated Total Cost with all Easements:	$2,261,800

Reasonable Cost Allowance/Benefited Unit:	$50,000
Estimated Cost/Benefited Unit without Easements:	$58,869
Estimated Cost/Benefited Unit with Construction Easements only:	$65,389
Estimated Cost/Benefited Unit with all Easements:	$70,681

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

Discussion

As shown in Segment 7, Sheets 22 and 23, of this NADR, noise barrier S622 (Option 1) would be located on Caltrans right-of-way and along the shoulder of the northbound side of I-5, south of Manchester Avenue. This area is represented by receiver sites R7.18 and R7.20 through R7.32. The noise barrier would extend for approximately 1,012 meters (3,320 feet) and would be partially founded on a proposed retaining wall. The heights of the barrier required to achieve an insertion loss of 5 dBA or more at the critical design receiver would be 3.0 meters (8 feet) to 4.3 meters (14 feet). The wall would benefit 32 single-family residences and is considered feasible. The estimated cost of S622 (Option 1), when all easements are assumed eliminated, would be 18% above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 31%. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 41% above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier S622 (Option 1) would be feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier S622 (Option 1). The District Landscape Architect has indicated that this sound wall would cause a visual impact. Construction of noise barrier S622 (Option 1) is not recommended. Because of the number of severely impacted receptors for the area, a second iteration of S622 has been proposed as S622 (Option 2) and is described on the following pages.

Noise Barrier S622 (Option 2)

General

Type: Sound wall

I-5 Station limits: 619+20 to 621+75

Receptor sites: R7.23 through R7.26

Severely Impacted Receptors: R7.23 through R7.26

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

Location: Environmental Segment 7; see exhibit

Benefited Units: Nine single-family residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 76 to 77 dBA

Compared to existing (year 2005): Two to three dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	No
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$450,000
Estimated Total Cost without Easements:	$555,435
Estimated Total Cost with Construction Easements only:	$640,485
Estimated Total Cost with all Easements:	$706,752

Reasonable Cost Allowance/Benefited Unit:	$50,000
Estimated Cost/Benefited Unit without Easements:	$61,715
Estimated Cost/Benefited Unit with Construction Easements only:	$71,165
Estimated Cost/Benefited Unit with all Easements:	$78,528

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

Discussion

As shown in Segment 7, Sheet 22, of this NADR, noise barrier S622 (Option 2) would be located on Caltrans right-of-way and along the shoulder of the northbound side of I-5, south of Manchester Avenue. The PDT for the I-5 NADR extracted S622 (Option 2) from a much longer wall, S622 (Option 1), that was determined to be not reasonable. As all of the severely impacted receptors for S622 (Option 1) were located next to each other, the PDT decided to truncate S622 (Option 1) to cover only the severely impacted receptors and call the new wall S622 (Option 2). The area of S622 (Option 2) is represented by receiver sites R7.23 through R7.26. The noise barrier would extend for approximately 273 meters (896 feet) and would be partially founded on a proposed retaining wall. The heights of the barrier required to achieve an insertion loss of 5 dBA or more at the critical design receiver would be 3.7 meters (12 feet) and 4.3 meters (14 feet). The wall would benefit nine single-family residences and is considered feasible. The estimated cost of S622 (Option 2), when all easements are assumed eliminated, would be 23% above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 42%. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 57% above the reasonable allowance.

Noise Abatement Decision

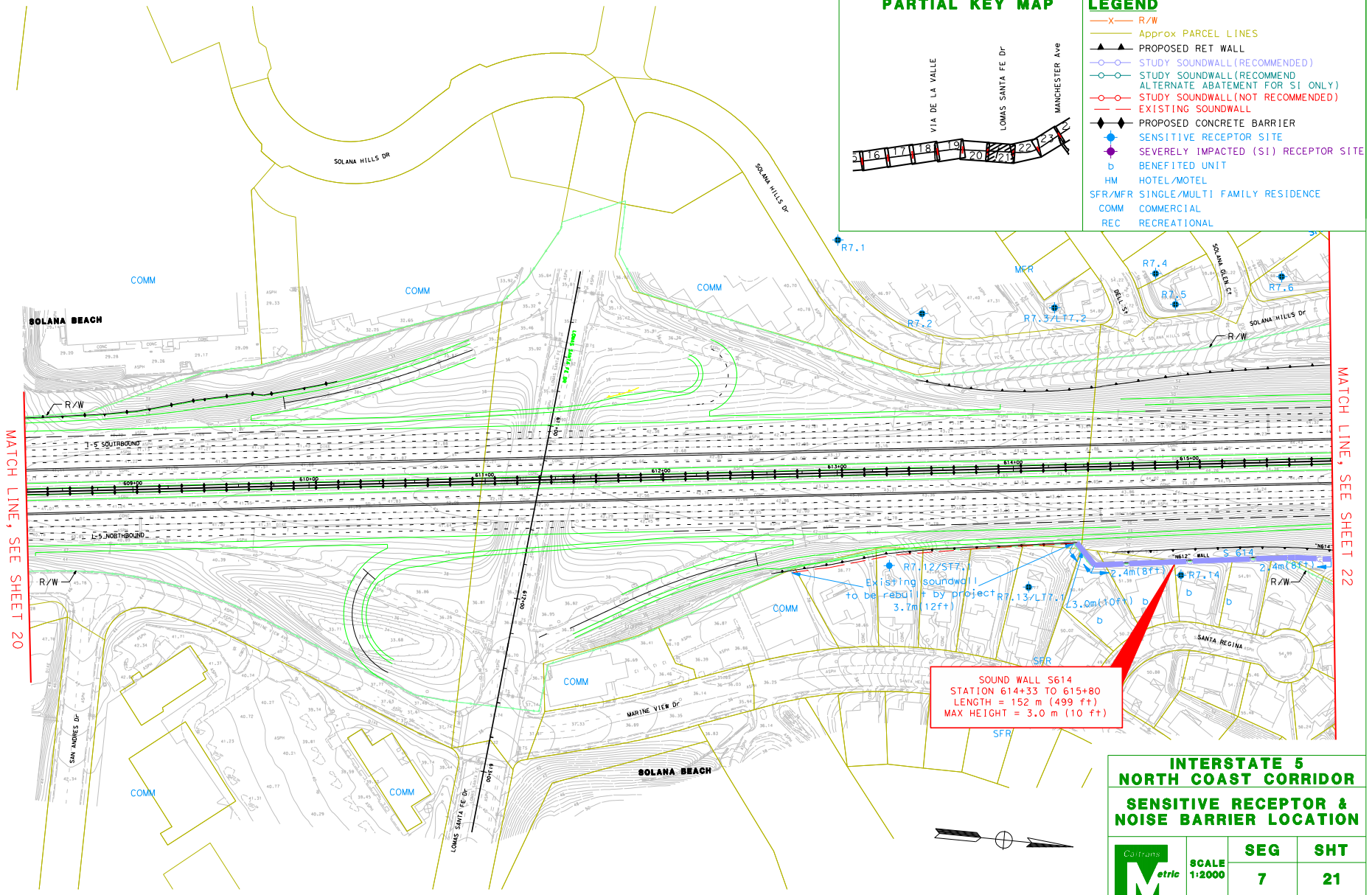
Construction of noise barrier S622 (Option 2) would be feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier S622 (Option 2). However, there exist severely impacted receptors that must be abated for. S622 (Option 2) is preliminarily recommended in order to abate for the severely impacted receptors, R7.23 through R7.26.

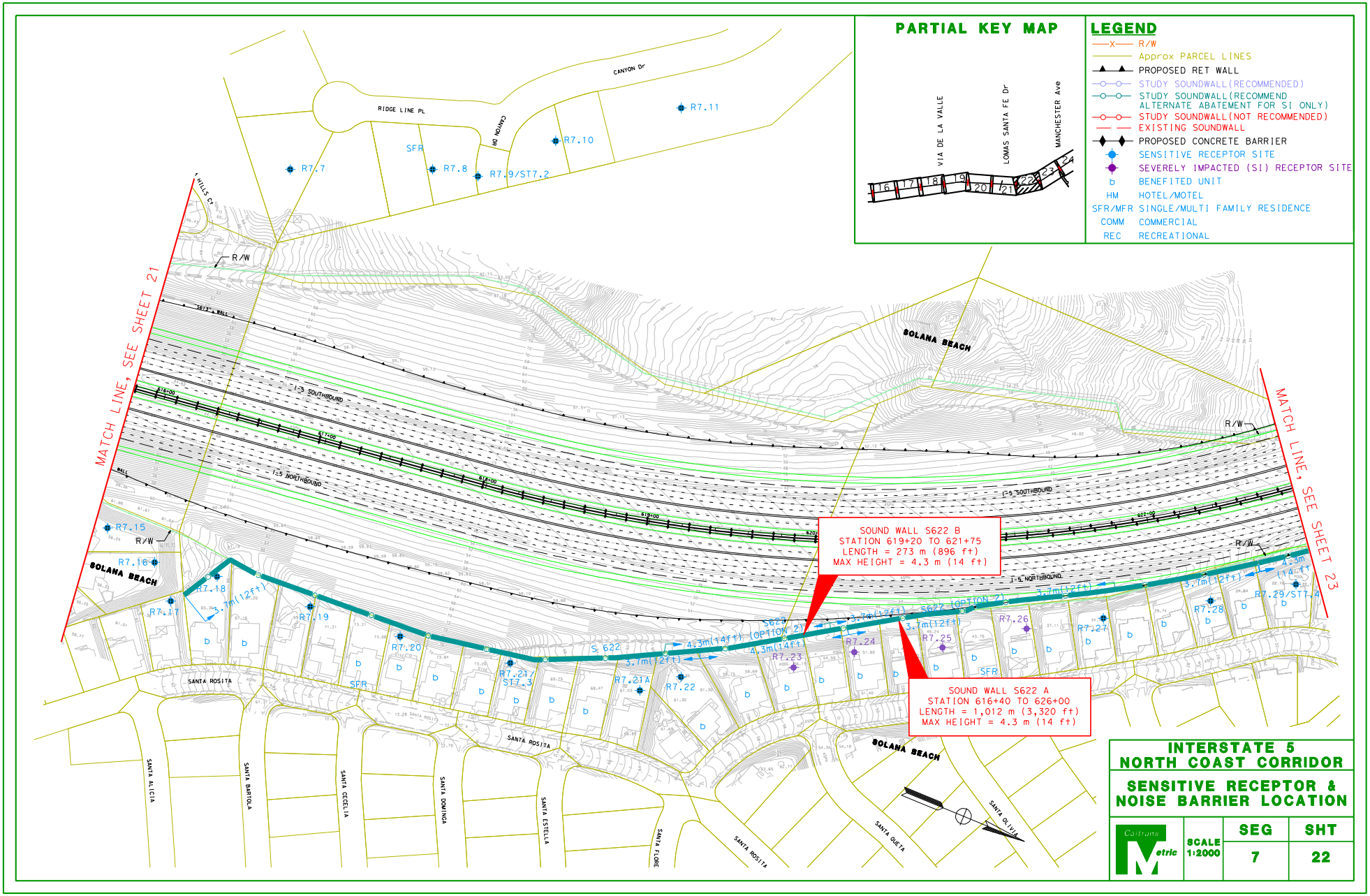
SEGMENT 7 - COST ANALYSIS

Sound Wall	# 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	Temporary Construction Easements	Footing Easements	Total Easements
		(m)	(m)	(m)	(m)	(m)	(m)	(cu m)	(m)	(cu m)	(cu m)	(sq m)	(sq m)	(sq m)
7.S614		3.0	16	16	0	1.22	2.1	0	0	0	0	0	0	0
		2.4	137	108	29	1.22	1.9	67	0	0	22	0	0	0
	4													
7.S622 (Option 1)		3.7	327	0	327	1.22	2.4	956	0	0	353	980	325	1,305
		4.3	90	0	90	1.22	2.6	285	0	0	108	270	90	360
		3.7	250	171	79	1.22	2.4	231	0	0	85	141	42	183
		4.3	247	204	43	1.22	2.6	136	0	0	52	0	0	0
		3.0	98	0	98	1.22	2.1	251	0	0	88	0	0	0
	32													
7.S622 (Option 2)		3.7	99	0	99	1.22	2.4	290	0	0	107	297	89	386
		4.3	174	84	90	1.22	2.6	285	0	0	108	270	90	360
	9													

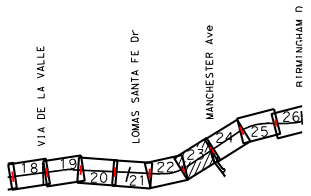
Sound Wall	# of Benefited Residences	CONSTRUCTION COSTS					ADDITIONAL COSTS				EASEMENT COSTS		
		Sound Wall Masonry Cost	Minor Concrete Sound Wall Cost	Excavation and Backfill Cost	Demolition Cost - wood fence	Demolition Cost - sound wall/property wall	Clearing & Grubbing	Landscaping Cost	Traffic Control Cost	SWPPP Cost	Construction Easements	Footing Easements	Total Easements
		($210/sq m)	($700/cu m)	($100/cu m)	($20/m)	($40/cu m)	(8% of Wall Cost)	(10% of Wall Cost)	(5% of Wall Cost)	(5% of Wall Cost)	($150/sq m)	($370/sq m)	
7.S614		$10,366	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
		$72,384	$15,714	$6,671	$0	$0	$1,595	$1,994	$997	$997	$0	$0	$0
	4												
7.S622 (Option 1)		$294,929	$246,917	$95,631	$0	$0	$50,998	$63,748	$31,874	$31,874	$146,975	$120,416	$267,391
		$92,610	$75,600	$28,548	$0	$0	$15,741	$19,676	$9,838	$9,838	$40,500	$33,300	$73,800
		$203,963	$59,724	$23,131	$0	$0	$7,251	$9,063	$4,532	$4,532	$21,150	$15,651	$36,801
		$234,193	$36,120	$13,640	$0	$0	$3,955	$4,943	$2,472	$2,472	$0	$0	$0
		$74,088	$61,740	$25,108	$0	$0	$12,875	$16,094	$8,047	$8,047	$0	$0	$0
	32												
7.S622 (Option 2)		$89,397	$74,844	$28,987	$0	$0	$15,458	$19,323	$9,661	$9,661	$44,550	$32,967	$77,517
		$164,978	$75,600	$28,548	$0	$0	$11,136	$13,920	$6,960	$6,960	$40,500	$33,300	$73,800
	9												

Sound Wall	# 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
7.S614		$10,366	$10,366	$10,366								
		$100,352	$100,352	$100,352								
	4	**$110,718**	**$110,718**	**$110,718**	**$27,680**	**$27,680**	**$27,680**	**$50,000**	**$200,000**	**YES**	**YES**	**YES**
7.S622 (Option 1)		$815,971	$962,946	$1,083,362								
		$251,850	$292,350	$325,650								
		$312,195	$333,345	$348,996								
		$297,794	$297,794	$297,794								
		$205,998	$205,998	$205,998								
	32	**$1,883,808**	**$2,092,433**	**$2,261,800**	**$58,869**	**$65,389**	**$70,681**	**$50,000**	**$1,600,000**	**NO**	**NO**	**NO**
7.S622 (Option 2)		$247,332	$291,882	$324,849								
		$308,103	$348,603	$381,903								
	9	**$555,435**	**$640,485**	**$706,752**	**$61,715**	**$71,165**	**$78,528**	**$50,000**	**$450,000**	**NO**	**NO**	**NO**


PARTIAL KEY MAP
VIA DE LA VALLE
LOMAS SANTA FE Dr
MANCHESTER Ave
LEGEND
R/W
Approx PARCEL LINES
PROPOSED RET WALL
STUDY SOUNDWALL(RECOMMENDED)
STUDY SOUNDWALL(RECOMMEND ALTERNATE ABATEMENT FOR SI ONLY)
STUDY SOUNDWALL(NOT RECOMMENDED)
EXISTING SOUNDWALL
PROPOSED CONCRETE BARRIER
SENSITIVE RECEPTOR SITE
SEVERELY IMPACTED (SI) RECEPTOR SITE
b BENEFITED UNIT
HM HOTEL/MOTEL
SFR/MFR SINGLE/MULTI FAMILY RESIDENCE
COMM COMMERCIAL
REC RECREATIONAL
SOLANA HILLS DR
SOLANA BEACH
COMM
MFR
SFR
R7.1
R7.2
R7.3/LT7.2
R7.4
R7.5
R7.6
R7.12/ST7.1
R7.13/LT7.1
R7.14
Existing soundwall to be rebuilt by project 3.7m(12ft)
2.4m(8ft)
3.0m(10ft) b
S 614
SOUND WALL S614
STATION 614+33 TO 615+80
LENGTH = 152 m (499 ft)
MAX HEIGHT = 3.0 m (10 ft)
I-5 SOUTHBOUND
I-5 NORTHBOUND
R/W
MARINE VIEW Dr
SAN ANDRES Dr
LOMAS SANTA FE Dr
SANTA REGINA
SOLANA GLEN Ct
MATCH LINE, SEE SHEET 20
MATCH LINE, SEE SHEET 22
INTERSTATE 5
NORTH COAST CORRIDOR
SENSITIVE RECEPTOR & NOISE BARRIER LOCATION
Caltrans
Metric
SCALE 1:2000
SEG 7
SHT 21

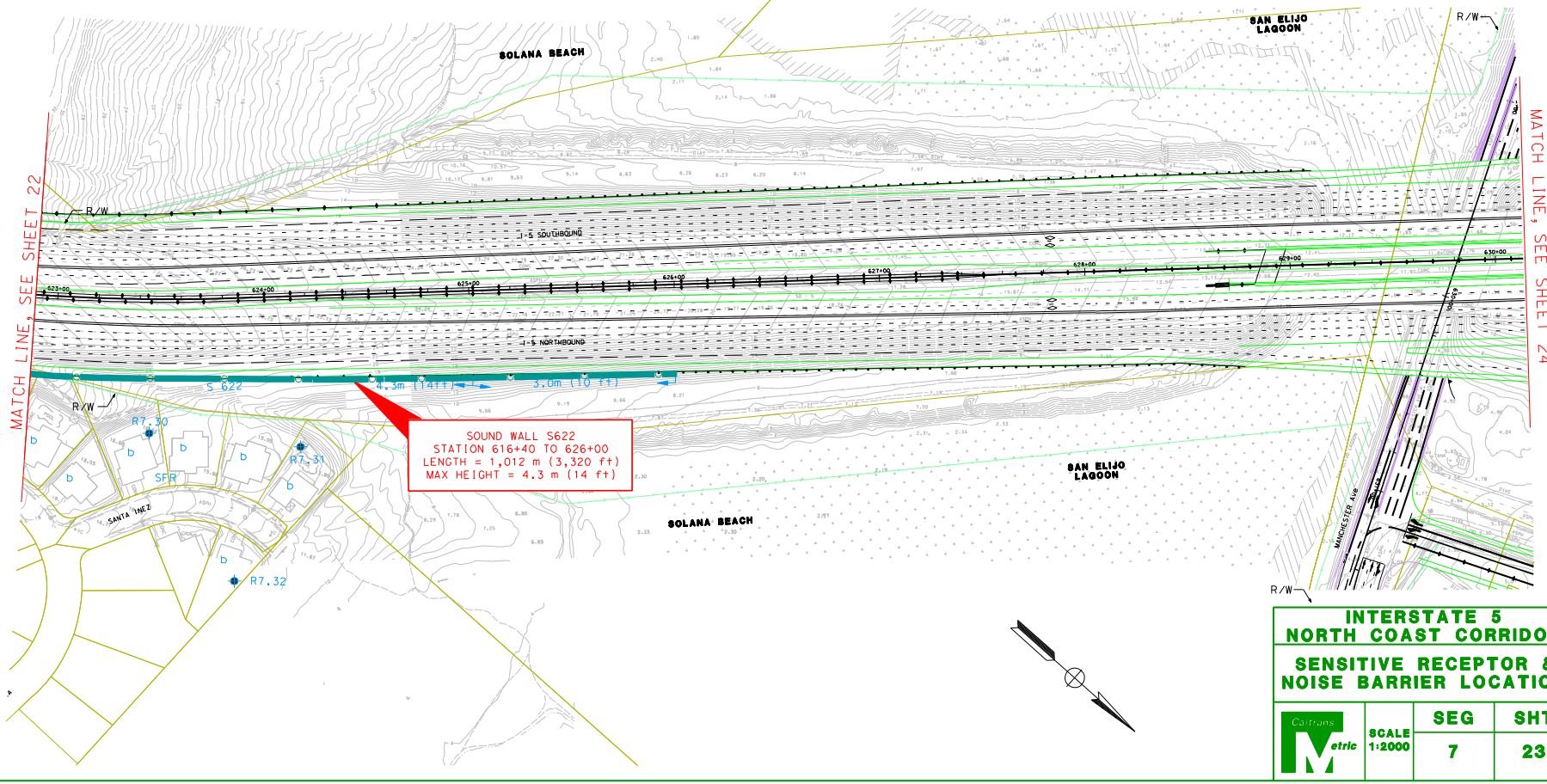

PARTIAL KEY MAP
VIA DE LA VALLE
LOMAS SANTA FE Dr
MANCHESTER Ave
16
17
18
19
20
21
22
23
24
LEGEND
R/W
Approx PARCEL LINES
PROPOSED RET WALL
STUDY SOUNDWALL(RECOMMENDED)
STUDY SOUNDWALL(RECOMMEND ALTERNATE ABATEMENT FOR SI ONLY)
STUDY SOUNDWALL(NOT RECOMMENDED)
EXISTING SOUNDWALL
PROPOSED CONCRETE BARRIER
SENSITIVE RECEPTOR SITE
SEVERELY IMPACTED (SI) RECEPTOR SITE
b BENEFITED UNIT
HM HOTEL/MOTEL
SFR/MFR SINGLE/MULTI FAMILY RESIDENCE
COMM COMMERCIAL
REC RECREATIONAL
MATCH LINE, SEE SHEET 21
MATCH LINE, SEE SHEET 23
SOLANA BEACH
I-5 SOUTHBOUND
I-5 NORTHBOUND
SOUND WALL S622 B
STATION 619+20 TO 621+75
LENGTH = 273 m (896 ft)
MAX HEIGHT = 4.3 m (14 ft)
SOUND WALL S622 A
STATION 616+40 TO 626+00
LENGTH = 1,012 m (3,320 ft)
MAX HEIGHT = 4.3 m (14 ft)
S622
S622 (OPTION 2)
4.3m(14ft)
3.7m(12ft)
3.7m(12ft)
R7.7
R7.8
R7.9/ST7.2
R7.10
R7.11
R7.15
R7.16
R7.17
R7.18
R7.19
R7.20
R7.21
ST7.3
R7.21A
R7.22
R7.23
R7.24
R7.25
R7.26
R7.27
R7.28
R7.29/ST7.4
SFR
RIDGE LINE PL
CANYON Dr
MILLS CT
SANTA ROSITA
SANTA ALICIA
SANTA BARTOLA
SANTA CECELIA
SANTA DOMINGA
SANTA ESTELLA
SANTA FLORE
SANTA OLIVIA
SANTA QUETA
INTERSTATE 5
NORTH COAST CORRIDOR
SENSITIVE RECEPTOR &
NOISE BARRIER LOCATION
Caltrans
Metric
SCALE
1:2000
SEG
7
SHT
22

PARTIAL KEY MAP



LEGEND

- R/W
- Approx PARCEL LINES
- PROPOSED RET WALL
- STUDY SOUNDWALL(RECOMMENDED)
- STUDY SOUNDWALL(RECOMMEND ALTERNATE ABATEMENT FOR SI ONLY)
- STUDY SOUNDWALL(NOT RECOMMENDED)
- EXISTING SOUNDWALL
- PROPOSED CONCRETE BARRIER
- SENSITIVE RECEPTOR SITE
- SEVERELY IMPACTED (SI) RECEPTOR SITE
- b BENEFITED UNIT
- HM HOTEL/MOTEL
- SFR/MFR SINGLE/MULTI FAMILY RESIDENCE
- COMM COMMERCIAL
- REC RECREATIONAL



INTERSTATE 5
NORTH COAST CORRIDOR

SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

Caltrans Metric	SCALE 1:2000	SEG	SHT
		7	23

Segment 8

System 8.1: Noise Barriers S631, S633, and S635

System 8.1 is a series of walls (S631, S633, and S635) that attenuate noise when analyzed together. The following pages review these walls individually, though in order for the full abatement to take place, the three walls must be constructed as one system. System 8.1 is feasible and reasonable on a basis of cost and is recommended for construction.

Noise Barrier S631

General

Type: Sound wall

I-5 Station limits: 630+90 to 632+25

Receptor sites: R8.1, R8.2 and R8.4A

Severely Impacted Receptors: None

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

Location: Environmental Segment 8; see exhibit

Benefited Units: 22 multi-family residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 68 to 73 dBA

Compared to existing (year 2005): Five to six dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	No
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$1,056,000
Estimated Total Cost without Easements:	$555,458
Estimated Total Cost with Construction Easements only:	$659,462
Estimated Total Cost with all Easements:	$807,239

Reasonable Cost Allowance/Benefited Unit:	$48,000
Estimated Cost/Benefited Unit without Easements:	$25,248
Estimated Cost/Benefited Unit with Construction Easements only:	$29,976
Estimated Cost/Benefited Unit with all Easements:	$36,693

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

Discussion

As shown in Segment 8, Sheet 24, of this NADR, noise barrier S631 would be located on private property along the southbound side of I-5, north of Manchester Avenue. This area is represented by receiver sites R8.1, R8.2 and R8.4A. The noise barrier would extend for approximately 231 meters (758 feet). The height of the barrier required to achieve an insertion loss of 5 dBA or more at the critical design receiver would be 3.0 meters (10 feet) and 3.7 meters (12 feet). The wall would benefit 22 multi-family residences and is considered feasible. The estimated construction cost of S631 with all easements would be less than the cost allowance and so is considered reasonable.

Noise Abatement Decision

Construction of noise barrier S631 with construction easements would be feasible and reasonable and is preliminarily recommended in conjunction with S633 and S635.

Noise Barrier S633

General

Type: Sound wall

I-5 Station limits: 631+66 to 634+10

Receptor sites: R8.3, R8.4, and R8.5

Severely Impacted Receptors: R8.4, R8.5

Height: 3.7 meters (12 feet)

Location: Environmental Segment 8; see exhibit

Benefited Units: One single family residence and 20 multi-family residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 74 to 78 dBA

Compared to existing (year 2005): Five to six dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	No
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$1,092,000
Estimated Total Cost without Easements:	$543,749
Estimated Total Cost with Construction Easements only:	$642,555
Estimated Total Cost with all Easements:	$771,426

Reasonable Cost Allowance/Benefited Unit:	$52,000
Estimated Cost/Benefited Unit without Easements:	$25,893
Estimated Cost/Benefited Unit with Construction Easements only:	$30,598
Estimated Cost/Benefited Unit with all Easements:	$36,735

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

Discussion

As shown in Segment 8, Sheet 24, of this NADR, noise barrier S633 would be located on private property and Caltrans right-of-way along the southbound side of I-5, just north of Manchester Avenue. This area is represented by receiver sites R8.3, R8.4 and R8.5. The noise barrier would extend for approximately 255 meters (837 feet) and would be partially founded on a proposed retaining wall. The height of the barrier required to achieve a 5 dBA or more insertion loss at the critical design receiver would be 3.7 meters (12 feet). The wall would benefit 20 multi-family residences and one single family residence, and is considered feasible. The estimated construction cost of S633 with all easements would be less than the cost allowance and so is considered reasonable.

Noise Abatement Decision

Construction of noise barrier S633 with all easements would be feasible and reasonable and is preliminarily recommended in conjunction with S631 and S635.

Noise Barrier S635

General

Type: Sound wall

I-5 Station limits: 634+00 to 634+97

Receptor sites: R8.6

Severely Impacted Receptors: R8.6

Height: 4.3 meters (14 feet)

Location: Environmental Segment 8; see exhibit

Benefited Units: Eight multi-family residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 77 dBA

Compared to existing (year 2005): Six dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	No
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$400,000
Estimated Total Cost without Easements:	$273,733
Estimated Total Cost with Construction Easements only:	$301,183
Estimated Total Cost with all Easements:	$346,323

Reasonable Cost Allowance/Benefited Unit:	$50,000
Estimated Cost/Benefited Unit without Easements:	$34,217
Estimated Cost/Benefited Unit with Construction Easements only:	$37,648
Estimated Cost/Benefited Unit with all Easements:	$43,290

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

Discussion

As shown in Segment 8, Sheet 24, of this NADR, noise barrier S635 would be located on the shoulder of the southbound side of I-5, just north of Manchester Avenue. This area is represented by receiver site R8.6. The noise barrier would extend for approximately 98 meters (322 feet). The height of the barrier required to achieve a 5 dBA or more insertion loss at the critical design receiver would be 4.3 meters (14 feet). The wall would benefit eight multi-family residences and is considered feasible. The estimated construction cost of S635 with all easements would be less than the cost allowance and so is considered reasonable.

Noise Abatement Decision

Construction of noise barrier S635 with all easements would be feasible and reasonable and is preliminarily recommended in conjunction with S631 and S633.

Noise Barrier S640

General

Type: Sound wall

I-5 Station limits: 639+55 to 640+90

Receptor sites: R8.18

Severely Impacted Receptors: None

Height: 4.3 meters (14 feet)

Location: Environmental Segment 8; see exhibit

Benefited Units: Two single-family residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 73 dBA

Compared to existing (year 2005): Two dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	No
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$92,000
Estimated Total Cost without Easements:	$358,187
Estimated Total Cost with Construction Easements only:	$415,787
Estimated Total Cost with all Easements:	$463,147

Reasonable Cost Allowance/Benefited Unit:	$46,000
Estimated Cost/Benefited Unit without Easements:	$179,094
Estimated Cost/Benefited Unit with Construction Easements only:	$207,894
Estimated Cost/Benefited Unit with all Easements:	$231,574

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

Discussion

As shown in Segment 8, Sheet 25, of this NADR, noise barrier S640 would be located on private property along the northbound side of I-5, north of Manchester Avenue. This area is represented by receiver site R8.18. The noise barrier would extend for approximately 128 meters (420 feet). The height of the barrier required to achieve an insertion loss of 5 dBA or more at the critical design receiver would be 4.3 meters (14 feet). The wall would benefit Two single-family residences and is considered feasible. The estimated cost of S640, when all easements are assumed eliminated, would be 289% above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 352%. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 403% above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier S640 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier S640. No severely impacted receptors exist for this wall that need to be abated for. Construction of noise barrier S640 is not recommended.

Noise Barrier S647

General

Type: Sound wall

I-5 Station limits: 647+00 to 649+20

Receptor sites: R8.10A and R8.11

Severely Impacted Receptors: None

Height: 4.3 meters (14 feet)

Location: Environmental Segment 8; see exhibit

Benefited Units: Five multi-family residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 70 to 74 dBA

Compared to existing (year 2005): Four to five dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	No
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$200,000
Estimated Total Cost without Easements:	$293,478
Estimated Total Cost with Construction Easements only:	$293,478
Estimated Total Cost with all Easements:	$293,478

Reasonable Cost Allowance/Benefited Unit:	$40,000
Estimated Cost/Benefited Unit without Easements:	$58,696
Estimated Cost/Benefited Unit with Construction Easements only:	$58,696
Estimated Cost/Benefited Unit with all Easements:	$58,696

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

Discussion

As shown in Segment 8, Sheets 25 and 26, of this NADR, noise barrier S647 would be located on the shoulder of the southbound side of I-5, just south of Birmingham Drive. This area is represented by receiver sites R8.10A and R8.11. The noise barrier would extend for approximately 212 meters (696 feet) and would be partially founded on a proposed retaining wall. The heights of the barrier required to achieve a 5 dBA or more insertion loss at the critical design receiver would be 4.3 meters (14 feet). The wall would benefit five multi-family residences and is considered feasible. There are no apparent easements that need to be acquired in order to construct S647. The estimated cost of S647 would be 47% above the cost allowance and so is not considered reasonable.

Noise Abatement Decision

Construction of noise barrier S647 would be feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier S647. No severely impacted receptors exist for this wall that need to be abated for. Construction of S647 is not recommended.

Noise Barrier S644/646

General

Type: Sound wall

I-5 Station limits: 645+10 to 647+50

Receptor sites: R8.23 through R8.26

Severely Impacted Receptors: R8.23 through R8.26

Height: 3.7 meters (12 feet), 4.9 meters (16 feet), and 3.0 meters (10 feet)

Location: Environmental Segment 8; see exhibit

Benefited Units: 12 single-family residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 76 to 79 dBA

Compared to existing (year 2005): Zero dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	No
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$624,000
Estimated Total Cost without Easements:	$680,765
Estimated Total Cost with Construction Easements only:	$809,915
Estimated Total Cost with all Easements:	$990,771

Reasonable Cost Allowance/Benefited Unit:	$52,000
Estimated Cost/Benefited Unit without Easements:	$56,730
Estimated Cost/Benefited Unit with Construction Easements only:	$67,493
Estimated Cost/Benefited Unit with all Easements:	$82,564

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

Discussion

As shown in Segment 8, Sheet 26, of this NADR, noise barrier S644/646 would be located on private property and Caltrans right-of-way along the northbound side of I-5, south of Birmingham Drive. This area is represented by receiver sites R8.23 through R8.26. S644/646 would extend for approximately 274 meters (899 feet). The heights of the barrier required to achieve an insertion loss of 5 dBA or more at the critical design receiver would be 3.7 meters (12 feet), 4.9 meters (16 feet) and 3.0 meters (10 feet). The walls would benefit 12 single-family residences and is considered feasible. The estimated cost of S644/646, when all easements are assumed eliminated, would be nine percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 30%. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 59% above the reasonable allowance.

Noise Abatement Decision

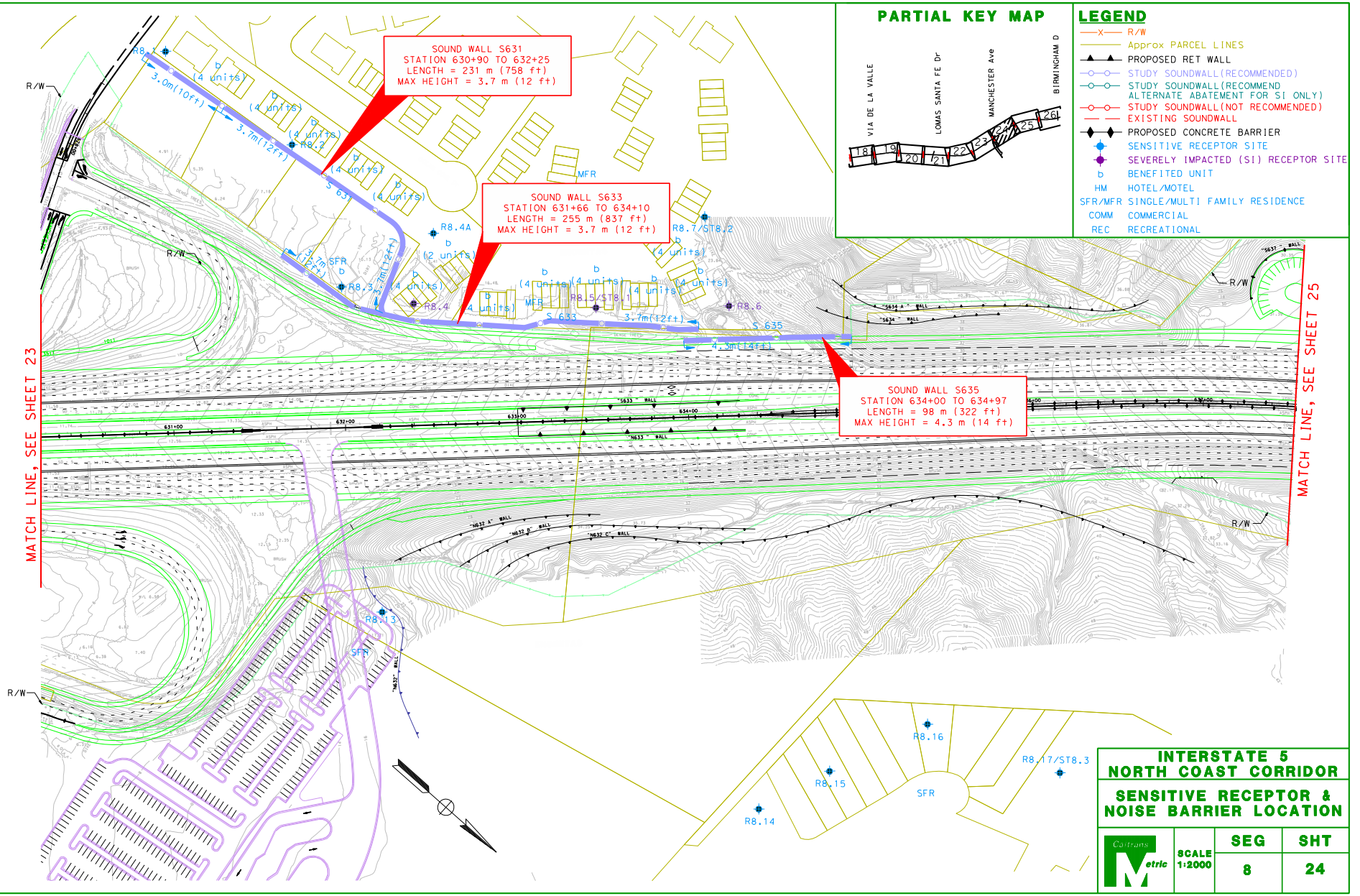
Construction of noise barrier S644/646 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier S644/646. However, there exist severely impacted receptors, R8.23, R8.24, R8.25, R8.26, that need to be abated for. Because of the poor soil quality in the area of the proposed wall, the construction of a noise barrier may not be possible. The PDT recommends the extension of the yards of the Benefited Units with the placement of the sound walls on the new pad.

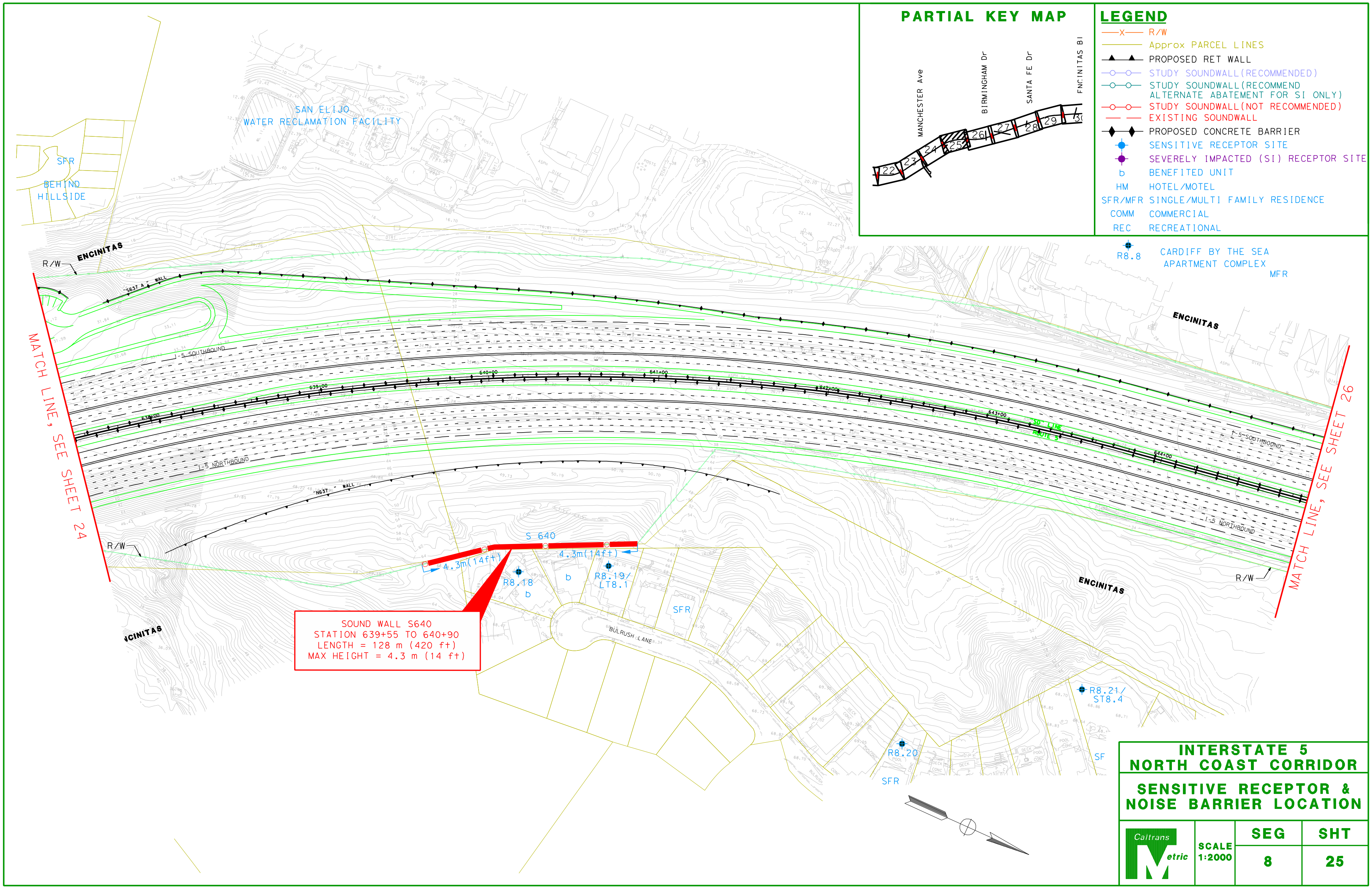
SEGMENT 8 - COST ANALYSIS

Sound Wall	# 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	Temporary Construction Easements	Footing Easements	Total Easements
		(m)	(m)	(m)	(m)	(m)	(m)	(cu m)	(m)	(cu m)	(cu m)	(sq m)	(sq m)	(sq m)
System 8.1														
8.S631		3.0	55	0	55	1.22	2.1	142	0	0	50	166	83	249
		3.7	176	0	176	1.22	2.4	515	0	0	190	527	316	844
	22													
8.S633	21	3.7	255	35	220	1.22	2.4	643	0	0	237	659	348	1007
8.S635	8	4.3	98	0	98	1.22	2.6	310	0	0	117	183	122	305
8.S640	2	4.3	128	0	128	1.22	2.6	406	0	0	154	384	128	512
8.S647	5	4.3	212	151	61	1.22	2.6	193	0	0	73	0	0	0
8.S644/646		3.7	53	0	53	1.22	2.4	155	0	0	57	159	95	254
		4.9	53	0	53	1.22	2.9	188	0	0	73	159	122	281
		3.0	181	0	181	1.22	2.1	464	0	0	163	543	272	815
	12													

Sound Wall	# 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
		($210/sq m)	($700/cu m)	($100/cu m)	($20/m)	($40/cu m)	(8% of Wall Cost)	(10% of Wall Cost)	(5% of Wall Cost)	(5% of Wall Cost)	($150/sq m)	($370/sq m)	
System 8.1													
8.S631		$41,875	$34,896	$14,191	$0	$0	$7,277	$9,096	$4,548	$4,548	$24,926	$30,741	$55,667
		$158,684	$132,852	$51,454	$0	$0	$27,439	$34,299	$17,149	$17,149	$79,079	$117,036	$196,115
	22												
8.S633	21	$207,691	$165,995	$64,290	$0	$0	$30,221	$37,776	$18,888	$18,888	$98,807	$128,871	$227,678
8.S635	8	$100,657	$82,169	$31,029	$0	$0	$17,108	$21,385	$10,693	$10,693	$27,450	$45,140	$72,590
8.S640	2	$131,712	$107,520	$40,602	$0	$0	$22,387	$27,983	$13,992	$13,992	$57,600	$47,360	$104,960
8.S647	5	$201,008	$51,240	$19,349	$0	$0	$6,252	$7,815	$3,907	$3,907	$0	$0	$0
8.S644/646		$47,859	$40,068	$15,518	$0	$0	$8,276	$10,345	$5,172	$5,172	$23,850	$35,298	$59,148
		$61,215	$51,198	$18,751	$0	$0	$10,493	$13,116	$6,558	$6,558	$23,850	$45,103	$68,953
		$136,836	$114,030	$46,372	$0	$0	$23,779	$29,724	$14,862	$14,862	$81,450	$100,455	$181,905
	12												

Sound Wall	# 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
System 8.1	51	**$1,372,940**	**$1,603,200**	**$1,924,989**	**$26,920**	**$31,435**	**$37,745**	**$49,961**	**$2,548,000**	**YES**	**YES**	**YES**
8.S631		$116,431	$141,356	$172,098								
		$439,027	$518,105	$635,142								
	22	**$555,458**	**$659,462**	**$807,239**	**$25,248**	**$29,976**	**$36,693**	**$48,000**	**$1,056,000**	**YES**	**YES**	**YES**
8.S633	21	**$543,749**	**$642,555**	**$771,426**	**$25,893**	**$30,598**	**$36,735**	**$52,000**	**$1,092,000**	**YES**	**YES**	**YES**
8.S635	8	**$273,733**	**$301,183**	**$346,323**	**$34,217**	**$37,648**	**$43,290**	**$50,000**	**$400,000**	**YES**	**YES**	**YES**
8.S640	2	**$358,187**	**$415,787**	**$463,147**	**$179,094**	**$207,894**	**$231,574**	**$46,000**	**$92,000**	**NO**	**NO**	**NO**
8.S647	5	**$293,478**	**$293,478**	**$293,478**	**$58,696**	**$58,696**	**$58,696**	**$40,000**	**$200,000**	**NO**	**NO**	**NO**
8.S644/646		$132,410	$156,260	$191,558								
		$167,890	$191,740	$236,843								
		$380,465	$461,915	$562,370								
	12	**$680,765**	**$809,915**	**$990,771**	**$56,730**	**$67,493**	**$82,564**	**$52,000**	**$624,000**	**NO**	**NO**	**NO**


SOUND WALL S631
STATION 630+90 TO 632+25
LENGTH = 231 m (758 ft)
MAX HEIGHT = 3.7 m (12 ft)
SOUND WALL S633
STATION 631+66 TO 634+10
LENGTH = 255 m (837 ft)
MAX HEIGHT = 3.7 m (12 ft)
SOUND WALL S635
STATION 634+00 TO 634+97
LENGTH = 98 m (322 ft)
MAX HEIGHT = 4.3 m (14 ft)
PARTIAL KEY MAP
VIA DE LA VALLE
LOMAS SANTA FE Dr
MANCHESTER Ave
BIRMINGHAM D
LEGEND
R/W
Approx PARCEL LINES
PROPOSED RET WALL
STUDY SOUNDWALL(RECOMMENDED)
STUDY SOUNDWALL(RECOMMEND ALTERNATE ABATEMENT FOR SI ONLY)
STUDY SOUNDWALL(NOT RECOMMENDED)
EXISTING SOUNDWALL
PROPOSED CONCRETE BARRIER
SENSITIVE RECEPTOR SITE
SEVERELY IMPACTED (SI) RECEPTOR SITE
b BENEFITED UNIT
HM HOTEL/MOTEL
SFR/MFR SINGLE/MULTI FAMILY RESIDENCE
COMM COMMERCIAL
REC RECREATIONAL
MATCH LINE, SEE SHEET 23
MATCH LINE, SEE SHEET 25
R/W
SFR
MFR
R8.1
R8.2
R8.3
R8.4
R8.4A
R8.6
R8.7/ST8.2
R8.13
R8.14
R8.15
R8.16
R8.17/ST8.3
3.0m(10ft)
3.7m(12ft)
4.3m(14ft)
S 631
S 633
S 635
(4 units)
(2 units)
INTERSTATE 5
NORTH COAST CORRIDOR
SENSITIVE RECEPTOR &
NOISE BARRIER LOCATION
Caltrans
Metric
SCALE
1:2000
SEG
8
SHT
24

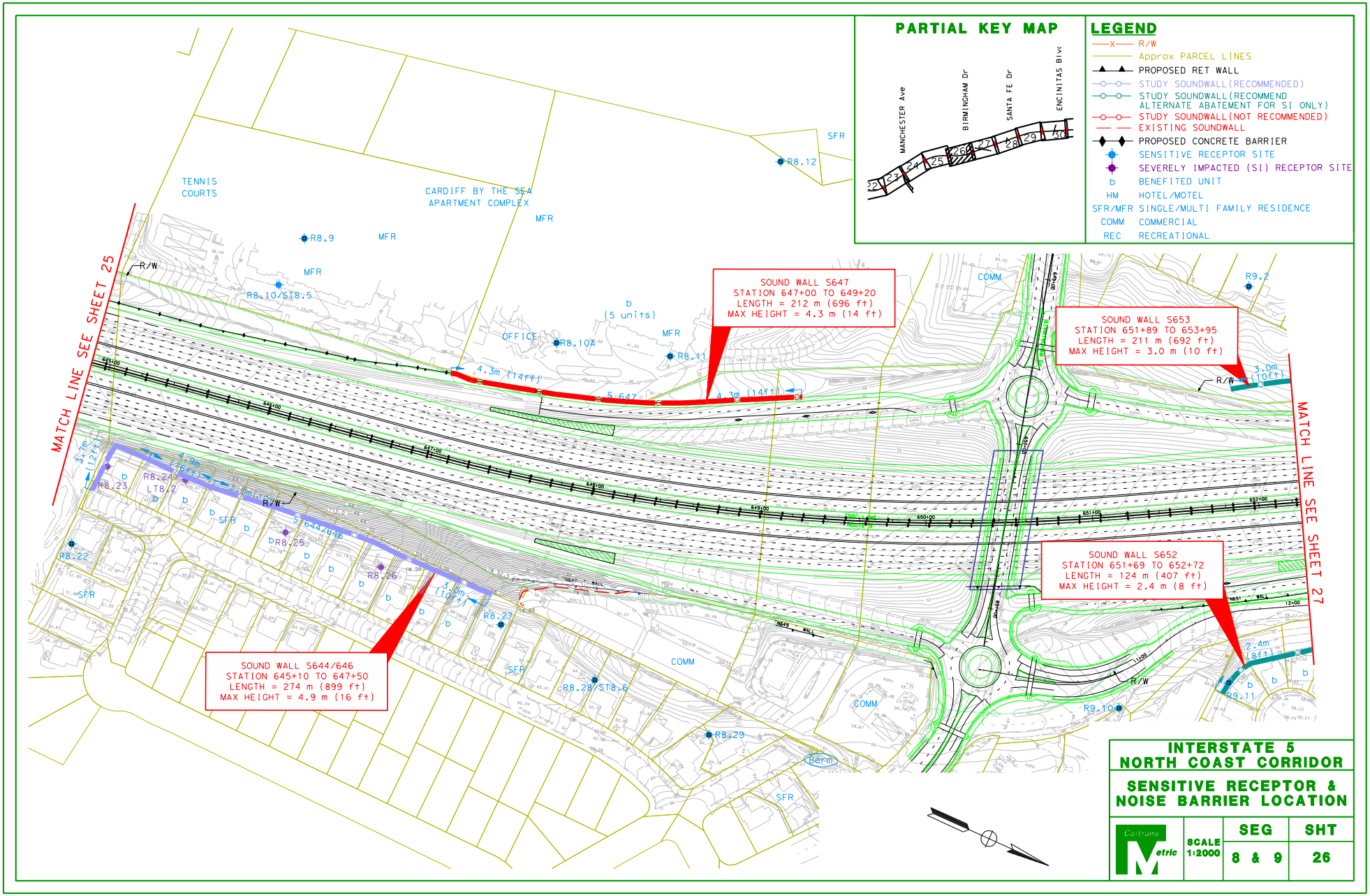


INTERSTATE 5
NORTH COAST CORRIDOR

SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

Caltrans Metric

SCALE	SEG	SHT
1:2000	8	25


PARTIAL KEY MAP
MANCHESTER Ave
BIRMINGHAM Dr
SANTA FE Dr
ENCINITAS Blvd
22
23
24
25
26
27
28
29
30
LEGEND
R/W
Approx PARCEL LINES
PROPOSED RET WALL
STUDY SOUNDWALL(RECOMMENDED)
STUDY SOUNDWALL(RECOMMEND ALTERNATE ABATEMENT FOR SI ONLY)
STUDY SOUNDWALL(NOT RECOMMENDED)
EXISTING SOUNDWALL
PROPOSED CONCRETE BARRIER
SENSITIVE RECEPTOR SITE
SEVERELY IMPACTED (SI) RECEPTOR SITE
b BENEFITED UNIT
HM HOTEL/MOTEL
SFR/MFR SINGLE/MULTI FAMILY RESIDENCE
COMM COMMERCIAL
REC RECREATIONAL
MATCH LINE SEE SHEET 25
MATCH LINE SEE SHEET 27
TENNIS COURTS
CARDIFF BY THE SEA APARTMENT COMPLEX
OFFICE
(5 units)
SFR
MFR
COMM
Berm
R8.9
R8.10/ST8.5
R8.10A
R8.11
R8.12
R8.22
R8.23
R8.24
LT8.2
DR8.25
R8.26
R8.27
R8.28/ST8.6
R8.29
R9.2
R9.10
R9.11
SOUND WALL S647
STATION 647+00 TO 649+20
LENGTH = 212 m (696 ft)
MAX HEIGHT = 4.3 m (14 ft)
SOUND WALL S653
STATION 651+89 TO 653+95
LENGTH = 211 m (692 ft)
MAX HEIGHT = 3.0 m (10 ft)
SOUND WALL S652
STATION 651+69 TO 652+72
LENGTH = 124 m (407 ft)
MAX HEIGHT = 2.4 m (8 ft)
SOUND WALL S644/646
STATION 645+10 TO 647+50
LENGTH = 274 m (899 ft)
MAX HEIGHT = 4.9 m (16 ft)
4.3m (14ft)
3.0m (10ft)
2.4m (8ft)
3.7m (12ft)
S647
S644/646
S652
S653
INTERSTATE 5
NORTH COAST CORRIDOR
SENSITIVE RECEPTOR & NOISE BARRIER LOCATION
Caltrans
Metric
SCALE 1:2000
SEG
8 & 9
SHT
26

Segment 9

Noise Barrier S653

General

Type: Sound wall

I-5 Station limits: 651+89 to 653+95

Receptor sites: R9.3 and R9.4

Severely Impacted Receptors: R9.4

Height: 3.0 meters (10 feet)

Location: Environmental Segment 9; see exhibit

Benefited Units: Four single-family residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 74 to 77 dBA

Compared to existing (year 2005): Seven dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	No
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$216,000
Estimated Total Cost without Easements:	$443,525
Estimated Total Cost with Construction Easements only:	$538,475
Estimated Total Cost with all Easements:	$638,653

Reasonable Cost Allowance/Benefited Unit:	$54,000
Estimated Cost/Benefited Unit without Easements:	$110,881
Estimated Cost/Benefited Unit with Construction Easements only:	$134,619
Estimated Cost/Benefited Unit with all Easements:	$159,663

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

Discussion

As shown in Segment 9, Sheets 26 and 27, of this NADR, noise barrier S653 would be located on private property and Caltrans right-of-way along the southbound side of I-5, north of Birmingham Drive. This area is represented by receiver sites R9.3 and R9.4. The noise barrier would extend for approximately 211 meters (692 feet). The height of the barrier required to achieve an insertion loss of 5 dBA or more at the critical design receiver would be 3.0 meters (10 feet). The wall would benefit four single-family residences and is considered feasible. The estimated cost of S653, when all easements are assumed eliminated, would be 105% above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 149%. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 196% above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier S653 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier S653. However, there exists a severely impacted receptor that must be abated for. It is recommended that S653 not be constructed as proposed, with the stipulation that the severely impacted receptor, R9.4, receive individual abatement.

Noise Barrier S652

General

Type: Sound wall

I-5 Station limits: 651+69 to 652+72

Receptor sites: R9.11 and R9.12

Severely Impacted Receptors: R9.12

Height: 2.4 meters (8 feet)

Location: Environmental Segment 9; see exhibit

Benefited Units: Six single family residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 74 to 75 dBA

Compared to existing (year 2005): Four dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	No
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$252,000
Estimated Total Cost without Easements:	$224,149
Estimated Total Cost with Construction Easements only:	$280,124
Estimated Total Cost with all Easements:	$339,956

Reasonable Cost Allowance/Benefited Unit:	$42,000
Estimated Cost/Benefited Unit without Easements:	$37,358
Estimated Cost/Benefited Unit with Construction Easements only:	$46,687
Estimated Cost/Benefited Unit with all Easements:	$56,659

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

Discussion

As shown in Segment 9, Sheets 27 and 28, of this NADR, noise barrier S652 would be located on private property along the southbound side of I-5, north of Birmingham Drive. This area is represented by receiver sites R9.11 and R9.12. The noise barrier would extend for approximately 124 meters (407 feet). The heights of the barrier required to achieve an insertion loss of a 5 dBA or more at the critical design receiver would be 2.4 meters (8 feet). The wall would benefit six single family residences and is considered feasible. The estimated construction cost of S652 without easements would be less than the cost allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 11%. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 35% above the reasonable allowance.

Noise Abatement Decision

Construction of S652 may be recommended if 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 construction and footing 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 of S652 is not recommended, and alternate abatement will need to be provided for the severely impacted receptor, R9.12.

Noise Barrier S654 (Option 1)

General

Type: Sound wall

I-5 Station limits: 652+60 to 655+85

Receptor sites: R9.13 through R9.15

Severely Impacted Receptors: R9.13

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

Location: Environmental Segment 9; see exhibit

Benefited Units: Nine single-family residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 67 to 75 dBA

Compared to existing (year 2005): Five to ten dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	No
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$360,000
Estimated Total Cost without Easements:	$849,352
Estimated Total Cost with Construction Easements only:	$849,352
Estimated Total Cost with all Easements:	$849,352

Reasonable Cost Allowance/Benefited Unit:	$40,000
Estimated Cost/Benefited Unit without Easements:	$94,372
Estimated Cost/Benefited Unit with Construction Easements only:	$94,372
Estimated Cost/Benefited Unit with all Easements:	$94,372

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

Discussion

As shown in Segment 9, Sheet 27, of this NADR, noise barrier S654 (Option 1) would be located on Caltrans right-of-way along the northbound side of I-5, north of Birmingham Drive. This area is represented by receiver sites R9.13 through R9.15. The noise barrier would extend for approximately 327 meters (1,073 feet) and would be partially founded on a proposed retaining wall. The heights of the barrier required to achieve an insertion loss of a 5 dBA or more at the critical design receiver would be 3.7 meters (12 feet) to 4.9 meters (16 feet). The wall would benefit nine single-family residences and is considered feasible. There are no apparent easements that need to be acquired in order to construct S654 (Option 1). The estimated cost of S654 (Option 1) would be 136% above the reasonable allowance and so is not considered reasonable.

Noise Abatement Decision

Construction of noise barrier S654 (Option 1) is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier S654. The construction of S654 (Option 1) is not recommended. Because of the severely impacted receptor for the area, a second iteration of S654 has been proposed as S654 (Option 2) and is described on the following pages.

Noise Barrier S654 (Option 2)

General

Type: Sound wall

I-5 Station limits: 652+98 to 653+34

Receptor sites: R9.13

Severely Impacted Receptors: R9.13

Height: 3.0 meters (10 feet)

Location: Environmental Segment 9; see exhibit

Benefited Units: One single-family residence

Predicted Noise Levels if Project Built without Abatement

Year 2030: 75 dBA

Compared to existing (year 2005): Five dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	No
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$42,000
Estimated Total Cost without Easements:	$119,815
Estimated Total Cost with Construction Easements only:	$145,465
Estimated Total Cost with all Easements:	$177,100

Reasonable Cost Allowance/Benefited Unit:	$42,000
Estimated Cost/Benefited Unit without Easements:	$119,815
Estimated Cost/Benefited Unit with Construction Easements only:	$145,465
Estimated Cost/Benefited Unit with all Easements:	$177,100

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

Discussion

As shown in Segment 9, Sheet 27, of this NADR, noise barrier S654 (Option 2) would be located on private property along the northbound side of I-5, north of Birmingham Drive. This area is represented by receiver site R9.13. The noise barrier would extend for approximately 57 meters (187 feet). The height of the barrier required to achieve an insertion loss of a 5 dBA or more at the critical design receiver would be 3.0 meters (10 feet). The wall would benefit one single-family residence and is considered feasible. The estimated cost of S654 (Option 2), when all easements are assumed eliminated, would be 185% above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 246%. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 322% above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier S654 (Option 2) is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier S654 (Option 2). However, there exists a severely impacted receptor that must be abated for. S654 (Option 2) is preliminarily recommended in order to abate for the severely impacted receptor, R9.13.

Noise Barrier S658

General

Type: Sound wall

I-5 Station limits: 656+30 to 662+15

Receptor sites: R9.17 through R9.22

Severely Impacted Receptors: R9.17, R9.18, R9.21

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

Location: Environmental Segment 9; see exhibit

Benefited Units: 20 single-family residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 71 to 79 dBA

Compared to existing (year 2005): Three to six dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	No
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$1,040,000
Estimated Total Cost without Easements:	$1,048,853
Estimated Total Cost with Construction Easements only:	$1,222,103
Estimated Total Cost with all Easements:	$1,382,331

Reasonable Cost Allowance/Benefited Unit:	$52,000
Estimated Cost/Benefited Unit without Easements:	$52,443
Estimated Cost/Benefited Unit with Construction Easements only:	$61,105
Estimated Cost/Benefited Unit with all Easements:	$69,117

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

Discussion

As shown in Segment 9, Sheets 27 and 28, of this NADR, noise barrier S658 would be located on Caltrans right-of-way and the shoulder of the northbound side of I-5, south of Santa Fe Drive. This area is represented by receiver sites R9.17 through R9.22. The noise barrier would extend for approximately 651 meters (2,136 feet) and would be partially founded on a proposed retaining wall. The heights of the barrier required to achieve an insertion loss of a 5 dBA or more at the critical design receiver would be 2.4 meters (8 feet) to 3.7 meters (12 feet). The wall would benefit 20 single-family residences and is considered feasible. The estimated cost of S658 when all easements are assumed eliminated, would be one percent above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 18%. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 33% above the reasonable allowance.

Noise Abatement Decision

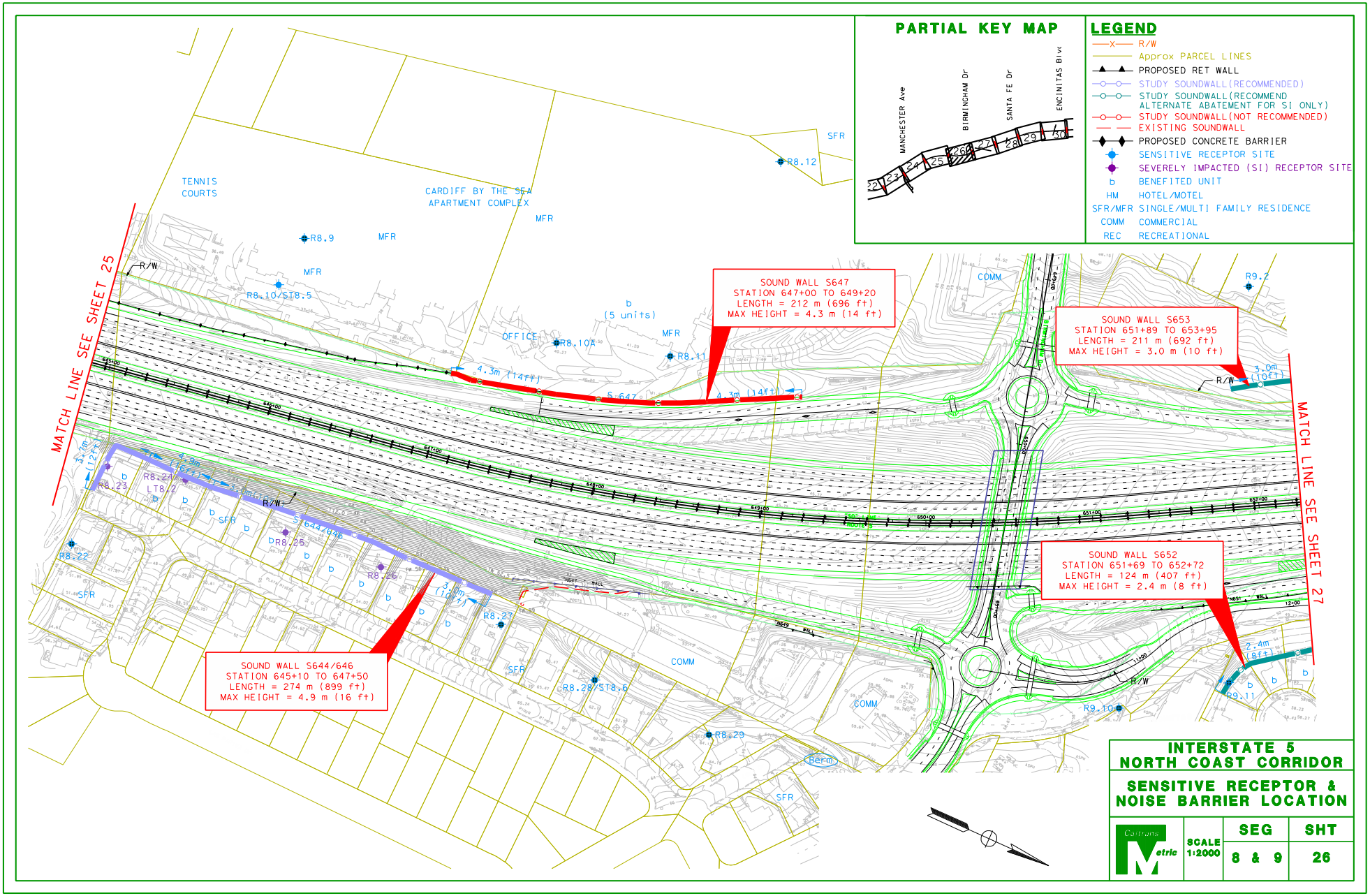
Construction of noise barrier S658 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier S658. However, there exist severely impacted receptors that must be abated for. S658 is preliminarily recommended with a planting pocket in order to abate for the severely impacted receptors, R9.17, R9.18, and R9.21.

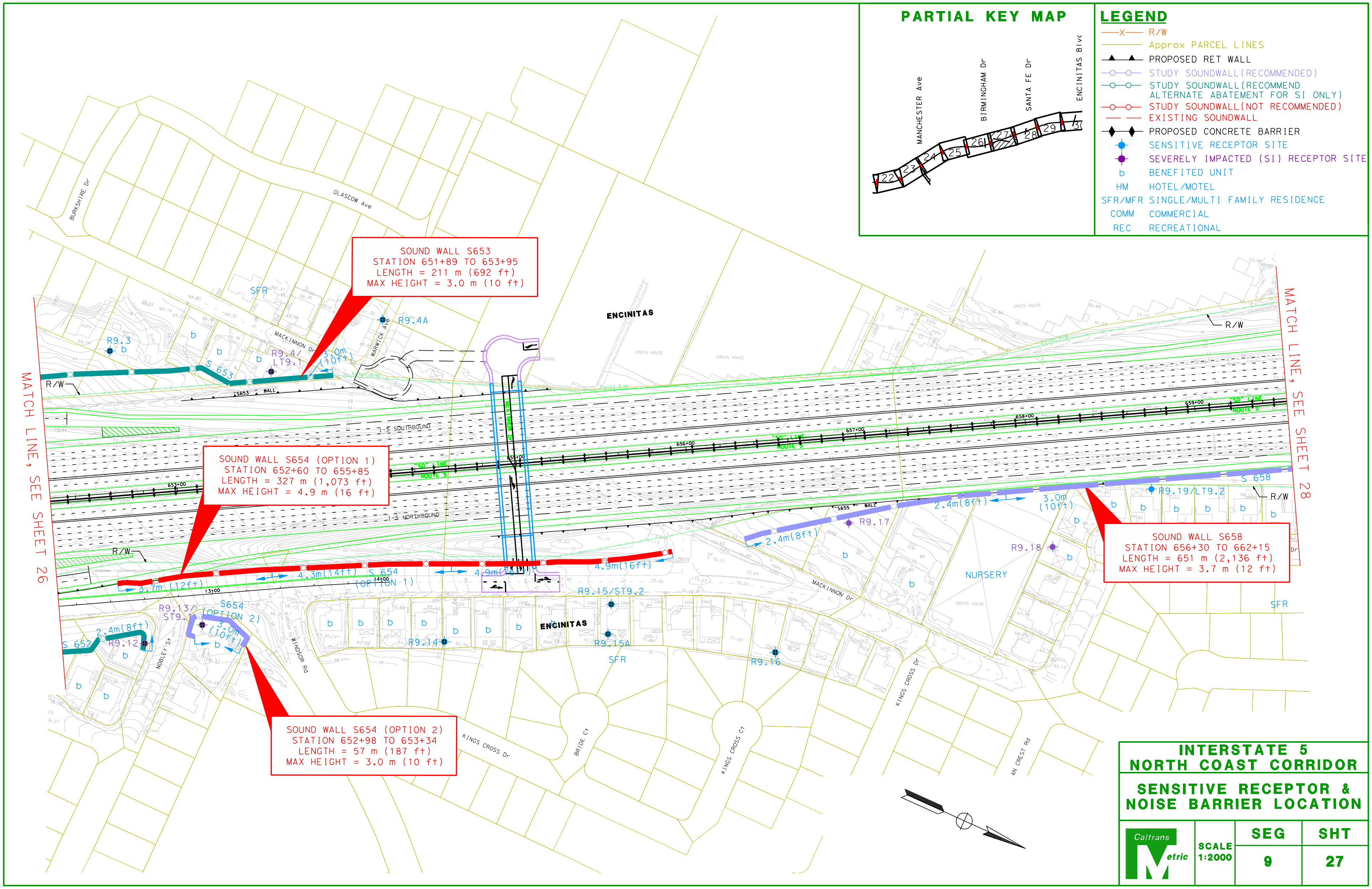
SEGMENT 9 - COST ANALYSIS

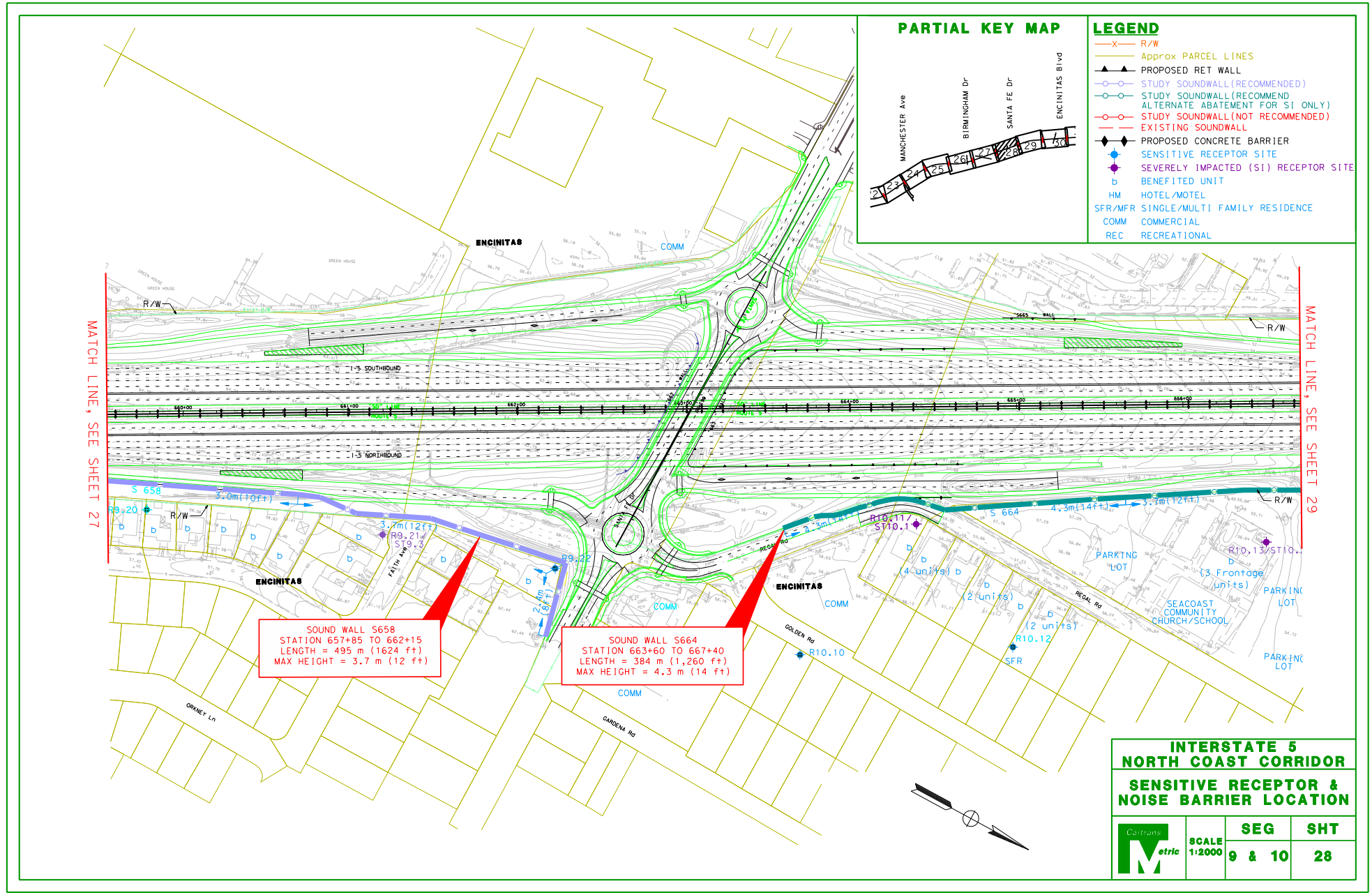
Sound Wall	# of Benefited Residences	WALL CHARACTERISTICS				QUANTITIES						EASEMENTS		
		Height	Length of Sound Wall	Length of Sound Wall on Retaining Wall	Length of Sound Wall Not on Retaining Wall	Excavation Depth	Excavation Width	Excavation and Backfill	Demolition of wood fence	Demolition of existing sound walls/property walls	Minor Concrete Sound Wall	Temporary Construction Easements	Footing Easements	Total Easements
		(m)	(m)	(m)	(m)	(m)	(m)	(cu m)	(m)	(cu m)	(cu m)	(sq m)	(sq m)	(sq m)
9.S653	4	3.0	211	0	211	1.22	2.1	541	0	0	190	633	271	904
9.S652	6	2.4	124	0	124	1.22	1.9	288	0	0	97	373	162	535
9.S654 (Option 1)		3.7	92	44	48	1.22	2.4	141	0	0	52	0	0	0
		4.3	105	0	105	1.22	2.6	333	0	0	126	0	0	0
		4.9	130	0	130	1.22	2.9	460	0	0	179	0	0	0
	9													
9.S654 (Option 2)	1	3.0	57	0	57	1.22	2.1	146	0	0	51	171	86	257
9.S658		2.4	156	0	156	1.22	1.9	362	0	0	122	468	203	671
		3.0	284	210	74	1.22	2.1	190	0	0	67	177	89	266
		3.7	166	0	166	1.22	2.4	486	0	0	179	375	113	488
		2.4	45	0	45	1.22	1.9	104	0	0	35	135	29	164
	20													

Sound Wall	# 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
		($210/sq m)	($700/cu m)	($100/cu m)	($20/m)	($40/cu m)	(8% of Wall Cost)	(10% of Wall Cost)	(5% of Wall Cost)	(5% of Wall Cost)	($150/sq m)	($370/sq m)	
9.S653	4	$159,516	$132,930	$54,058	$0	$0	$27,720	$34,650	$17,325	$17,325	$94,950	$100,178	$195,128
9.S652	6	$78,366	$67,917	$28,834	$0	$0	$14,009	$17,512	$8,756	$8,756	$55,976	$59,832	$115,807
9.S654 (Option 1)		$75,058	$36,288	$14,054	$0	$0	$5,234	$6,543	$3,271	$3,271	$0	$0	$0
		$108,045	$88,200	$33,306	$0	$0	$18,364	$22,955	$11,478	$11,478	$0	$0	$0
		$150,150	$125,580	$45,994	$0	$0	$25,738	$32,172	$16,086	$16,086	$0	$0	$0
	9												
9.S654 (Option 2)	1	$43,092	$35,910	$14,603	$0	$0	$7,488	$9,361	$4,680	$4,680	$25,650	$31,635	$57,285
9.S658		$98,280	$85,176	$36,161	$0	$0	$17,569	$21,962	$10,981	$10,981	$70,200	$75,036	$145,236
		$187,866	$46,620	$18,959	$0	$0	$5,283	$6,604	$3,302	$3,302	$26,550	$32,745	$59,295
		$149,898	$125,496	$48,605	$0	$0	$25,920	$32,400	$16,200	$16,200	$56,250	$41,625	$97,875
		$28,350	$24,570	$10,431	$0	$0	$5,068	$6,335	$3,168	$3,168	$20,250	$10,823	$31,073
	20												

Sound Wall	# 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
9.S653	4	**$443,525**	**$538,475**	**$638,653**	**$110,881**	**$134,619**	**$159,663**	**$54,000**	**$216,000**	**NO**	**NO**	**NO**
9.S652	6	**$224,149**	**$280,124**	**$339,956**	**$37,358**	**$46,687**	**$56,659**	**$42,000**	**$252,000**	**YES**	**NO**	**NO**
9.S654 (Option 1)		$143,720	$143,720	$143,720								
		$293,825	$293,825	$293,825								
		$411,807	$411,807	$411,807								
	9	**$849,352**	**$849,352**	**$849,352**	**$94,372**	**$94,372**	**$94,372**	**$40,000**	**$360,000**	**NO**	**NO**	**NO**
9.S654 (Option 2)	1	**$119,815**	**$145,465**	**$177,100**	**$119,815**	**$145,465**	**$177,100**	**$42,000**	**$42,000**	**NO**	**NO**	**NO**
9.S658		$281,110	$351,310	$426,346								
		$271,936	$298,486	$331,231								
		$414,718	$470,968	$512,593								
		$81,089	$101,339	$112,162								
	20	**$1,048,853**	**$1,222,103**	**$1,382,331**	**$52,443**	**$61,105**	**$69,117**	**$52,000**	**$1,040,000**	**NO**	**NO**	**NO**


PARTIAL KEY MAP
MANCHESTER Ave
BIRMINGHAM Dr
SANTA FE Dr
ENCINITAS Blvd
22
23
24
25
26
27
28
29
30
LEGEND
R/W
Approx PARCEL LINES
PROPOSED RET WALL
STUDY SOUNDWALL(RECOMMENDED)
STUDY SOUNDWALL(RECOMMEND ALTERNATE ABATEMENT FOR SI ONLY)
STUDY SOUNDWALL(NOT RECOMMENDED)
EXISTING SOUNDWALL
PROPOSED CONCRETE BARRIER
SENSITIVE RECEPTOR SITE
SEVERELY IMPACTED (SI) RECEPTOR SITE
b BENEFITED UNIT
HM HOTEL/MOTEL
SFR/MFR SINGLE/MULTI FAMILY RESIDENCE
COMM COMMERCIAL
REC RECREATIONAL
MATCH LINE SEE SHEET 25
MATCH LINE SEE SHEET 27
TENNIS COURTS
CARDIFF BY THE SEA APARTMENT COMPLEX
OFFICE
(5 units)
SFR
MFR
COMM
Berm
R8.9
R8.10/ST8.5
R8.10A
R8.11
R8.12
R8.22
R8.23
R8.24
LT8.2
DR8.25
R8.26
R8.27
R8.28/ST8.6
R8.29
R9.2
R9.10
R9.11
SOUND WALL S647
STATION 647+00 TO 649+20
LENGTH = 212 m (696 ft)
MAX HEIGHT = 4.3 m (14 ft)
SOUND WALL S653
STATION 651+89 TO 653+95
LENGTH = 211 m (692 ft)
MAX HEIGHT = 3.0 m (10 ft)
SOUND WALL S652
STATION 651+69 TO 652+72
LENGTH = 124 m (407 ft)
MAX HEIGHT = 2.4 m (8 ft)
SOUND WALL S644/646
STATION 645+10 TO 647+50
LENGTH = 274 m (899 ft)
MAX HEIGHT = 4.9 m (16 ft)
4.3m (14ft)
3.0m (10ft)
2.4m (8ft)
3.7m (12ft)
S647
S644/646
S652
S653
INTERSTATE 5
NORTH COAST CORRIDOR
SENSITIVE RECEPTOR & NOISE BARRIER LOCATION
Caltrans
Metric
SCALE 1:2000
SEG
8 & 9
SHT
26


MATCH LINE, SEE SHEET 26
MATCH LINE, SEE SHEET 28
SOUND WALL S653
STATION 651+89 TO 653+95
LENGTH = 211 m (692 ft)
MAX HEIGHT = 3.0 m (10 ft)
SOUND WALL S654 (OPTION 1)
STATION 652+60 TO 655+85
LENGTH = 327 m (1,073 ft)
MAX HEIGHT = 4.9 m (16 ft)
SOUND WALL S654 (OPTION 2)
STATION 652+98 TO 653+34
LENGTH = 57 m (187 ft)
MAX HEIGHT = 3.0 m (10 ft)
SOUND WALL S658
STATION 656+30 TO 662+15
LENGTH = 651 m (2,136 ft)
MAX HEIGHT = 3.7 m (12 ft)
ENCINITAS
NURSERY
SFR
R9.3
R9.4A
R9.4/LT9.1
R9.12
R9.13/ST9.1
R9.14
R9.15/ST9.2
R9.15A
R9.16
R9.17
R9.18
R9.19/LT9.2
I-5 SOUTHBOUND
I-5 NORTHBOUND
BURKSHIRE Dr
GLASCOW Ave
MACKINNON Dr
WARWICK Ave
NOBLEY St
WINDSOR Rd
KINGS CROSS Dr
BRIDE Ct
KINGS CROSS Ct
AN CREST Rd
PARTIAL KEY MAP
MANCHESTER Ave
BIRMINGHAM Dr
SANTA FE Dr
ENCINITAS Blvd
LEGEND
R/W
Approx PARCEL LINES
PROPOSED RET WALL
STUDY SOUNDWALL(RECOMMENDED)
STUDY SOUNDWALL(RECOMMEND ALTERNATE ABATEMENT FOR SI ONLY)
STUDY SOUNDWALL(NOT RECOMMENDED)
EXISTING SOUNDWALL
PROPOSED CONCRETE BARRIER
SENSITIVE RECEPTOR SITE
SEVERELY IMPACTED (SI) RECEPTOR SITE
b BENEFITED UNIT
HM HOTEL/MOTEL
SFR/MFR SINGLE/MULTI FAMILY RESIDENCE
COMM COMMERCIAL
REC RECREATIONAL
INTERSTATE 5
NORTH COAST CORRIDOR
SENSITIVE RECEPTOR & NOISE BARRIER LOCATION
Caltrans Metric
SCALE 1:2000
SEG 9
SHT 27


PARTIAL KEY MAP
MANCHESTER Ave
BIRMINGHAM Dr
SANTA FE Dr
ENCINITAS Blvd
21
23
24
25
26
27
28
29
30
LEGEND
R/W
Approx PARCEL LINES
PROPOSED RET WALL
STUDY SOUNDWALL(RECOMMENDED)
STUDY SOUNDWALL(RECOMMEND ALTERNATE ABATEMENT FOR SI ONLY)
STUDY SOUNDWALL(NOT RECOMMENDED)
EXISTING SOUNDWALL
PROPOSED CONCRETE BARRIER
SENSITIVE RECEPTOR SITE
SEVERELY IMPACTED (SI) RECEPTOR SITE
b BENEFITED UNIT
HM HOTEL/MOTEL
SFR/MFR SINGLE/MULTI FAMILY RESIDENCE
COMM COMMERCIAL
REC RECREATIONAL
MATCH LINE, SEE SHEET 27
MATCH LINE, SEE SHEET 29
ENCINITAS
I-5 SOUTHBOUND
I-5 NORTHBOUND
R/W
S 658
3.0m(10ft)
R9.20
3.7m(12ft)
R9.21
ST9.3
FAITH Ave
R9.22
2.4m (8ft)
SOUND WALL S658
STATION 657+85 TO 662+15
LENGTH = 495 m (1624 ft)
MAX HEIGHT = 3.7 m (12 ft)
S 664
2.4m(8ft)
4.3m(14ft)
3.7m(12ft)
R10.11
ST10.1
REGAL RD
GOLDEN Rd
R10.10
SOUND WALL S664
STATION 663+60 TO 667+40
LENGTH = 384 m (1,260 ft)
MAX HEIGHT = 4.3 m (14 ft)
COMM
(4 units)
(2 units)
(2 units)
R10.12
SFR
PARKING LOT
(3 Frontage units)
SEACOAST COMMUNITY CHURCH/SCHOOL
PARKING LOT
ORKNEY Ln
GARDENA Rd
INTERSTATE 5
NORTH COAST CORRIDOR
SENSITIVE RECEPTOR &
NOISE BARRIER LOCATION
Caltrans Metric
SCALE 1:2000
SEG
9 & 10
SHT
28

Segment 10

Noise Barrier S671

General

Type: Sound wall

I-5 Station limits: 669+84 to 672+15

Receptor sites: R10.3A, R10.3B, R10.4 and R10.4A

Severely Impacted Receptors: R10.3A and R10.4

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

Location: Environmental Segment 10; see exhibit

Benefited Units: 11 single-family residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 68 to 79 dBA

Compared to existing (year 2005): One to two dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	No
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$462,000
Estimated Total Cost without Easements:	$555,708
Estimated Total Cost with Construction Easements only:	$555,708
Estimated Total Cost with all Easements:	$555,708

Reasonable Cost Allowance/Benefited Unit:	$42,000
Estimated Cost/Benefited Unit without Easements:	$50,519
Estimated Cost/Benefited Unit with Construction Easements only:	$50,519
Estimated Cost/Benefited Unit with all Easements:	$50,519

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

Discussion

As shown in Segment 10, Sheet 29, of this NADR, noise barrier S671 would be located on Devonshire Drive (along the southbound side of I-5), just south of Requeza Street. This area is represented by receiver sites R10.3A, R10.3B, R10.4 and R10.4A. The noise barrier would extend for approximately 262 meters (860 feet) and would be partially founded on a proposed retaining wall. The heights of the barrier required to achieve an insertion loss of a 5 dBA or more at the critical design receiver would be 3.7 meters (12 feet) to 4.3 meters (14 feet). The wall would benefit 11 single-family residences and is considered feasible. There are no apparent easements that need to be acquired in order to construct S671. The estimated cost of S671 would be 20% above the cost allowance and so is not considered reasonable.

Noise Abatement Decision

Construction of noise barrier S671 would be feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier S671. However, there exist severely impacted receptors that must be abated for. S671 is preliminarily recommended in order to abate for the severely impacted receptors, R10.3A and R10.4.

Noise Barrier S675

General

Type: Sound wall

I-5 Station limits: 672+30 to 676+55

Receptor sites: R10.5 through R10.8

Severely Impacted Receptors: R10.6

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

Location: Environmental Segment 10; see exhibit

Benefited Units: 18 single-family residences

Predicted Noise Levels if Project Built without Abatement

Year 2030: 73 to 76 dBA

Compared to existing (year 2005): Two to eight dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	No
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$972,000
Estimated Total Cost without Easements:	$798,270
Estimated Total Cost with Construction Easements only:	$945,870
Estimated Total Cost with all Easements:	$1,025,864

Reasonable Cost Allowance/Benefited Unit:	$54,000
Estimated Cost/Benefited Unit without Easements:	$44,348
Estimated Cost/Benefited Unit with Construction Easements only:	$52,548
Estimated Cost/Benefited Unit with all Easements:	$56,992

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

Discussion

As shown in Segment 10, Sheets 29 and 30, of this NADR, noise barrier S675 would be located on Caltrans right-of-way and along the shoulder of the southbound side of I-5, just south of Encinitas Boulevard. This area is represented by receiver sites R10.5 through R10.8. The noise barrier would extend for approximately 438 meters (1,437 feet). The heights of the barrier required to achieve an insertion loss of a 5 dBA or more at the critical design receiver would be 2.4 meters (8 feet) to 3.0 meters (10 feet). The wall would benefit 18 single-family residences and is considered feasible. The estimated cost of S675, with construction easements only, would be less than the reasonable allowance. When all easements are included, the estimated cost exceeds the reasonable allowance by six percent.

Noise Abatement Decision

Construction of S675 may be recommended if 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 footing easements by signing a waiver of just compensation. If the total cost cannot be reduced to less than or equal to the reasonable allowance, abatement should be provided for the severely impacted receptor, R10.6.

Noise Barrier S664

General

Type: Sound wall

I-5 Station limits: 663+60 to 667+40

Receptor sites: R10.11 through R10.13

Severely Impacted Receptors: R10.11, R10.13

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

Location: Environmental Segment 10; see exhibit

Benefited Units: Three single-family residences, eight multi-family residences, and one school (three frontage units)

Predicted Noise Levels if Project Built without Abatement

Year 2030: 68 to 77 dBA

Compared to existing (year 2005): One to two dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	No
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$700,000
Estimated Total Cost without Easements:	$945,647
Estimated Total Cost with Construction Easements only:	$1,072,997
Estimated Total Cost with all Easements:	$1,171,232

Reasonable Cost Allowance/Benefited Unit:	$50,000
Estimated Cost/Benefited Unit without Easements:	$67,546
Estimated Cost/Benefited Unit with Construction Easements only:	$76,643
Estimated Cost/Benefited Unit with all Easements:	$83,659

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

Discussion

As shown in Segment 10, Sheets 28 and 29, of this NADR, noise barrier S664 would be located on Caltrans right-of-way along the northbound side of I-5, just north of Santa Fe Drive. This area is represented by receiver sites R10.11 through R10.13. The noise barrier would extend for approximately 384 meters (1,260 feet) and would be partially founded on a proposed retaining wall. The heights of the barrier required to achieve an insertion loss of 5 dBA or more at the critical design receiver would be 3.7 meters (12 feet) to 4.3 meters (14 feet). The wall would benefit three single-family residences, eight multi-family residences, and one school and is considered feasible. The estimated cost of S664, when all easements are assumed eliminated, would be 35% above the reasonable allowance. When only temporary construction easements are included, the estimated cost exceeds the reasonable allowance by 53%. The estimated cost of the wall including costs for both temporary construction easements and footing easements would be 67% above the reasonable allowance.

Noise Abatement Decision

Construction of noise barrier S664 would be feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier S664. However, there exist severely impacted receptors that must be abated for. It is recommended that S664 not be constructed as proposed, with the stipulation that the severely impacted receptors, R10.11 and R10.13, receive individual abatement.

Noise Barrier S670

General

Type: Sound wall

I-5 Station limits: 667+30 to 671+10

Receptor sites: R10.14 and R10.15

Severely Impacted Receptors: None

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

Location: Environmental Segment 10; see exhibit

Benefited Units: Two recreational areas (two frontage units)

Predicted Noise Levels if Project Built without Abatement

Year 2030: 73 to 74 dBA

Compared to existing (year 2005): Four dBA increase

Feasibility

5-dBA reduction:	Yes
Noise reduction below NAC:	No
Feasible:	Yes

Reasonableness

Reasonable Total Cost Allowance:	$96,000
Estimated Total Cost without Easements:	$365,633
Estimated Total Cost with Construction Easements only:	$365,633
Estimated Total Cost with all Easements:	$365,633

Reasonable Cost Allowance/Benefited Unit:	$48,000
Estimated Cost/Benefited Unit without Easements:	$182,817
Estimated Cost/Benefited Unit with Construction Easements only:	$182,817
Estimated Cost/Benefited Unit with all Easements:	$182,817

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

Discussion

As shown in Segment 10, Sheet 29, of this NADR, noise barrier S670 would be located on Caltrans right-of-way along the northbound side of I-5, just south of Requeza Street. This area is represented by receiver sites R10.14 and R10.15. The noise barrier would extend for approximately 370 meters (1,214 feet) and would be founded on a proposed retaining wall. The height of the barrier required to achieve an insertion loss of 5 dBA or more at the critical design receiver would be 4.3 meters (14 feet) to 4.9 meters (16 feet). The wall would benefit two recreational areas and is considered feasible. There are no apparent easements that need to be acquired in order to construct S670. The estimated cost of S670 would be 281% above the cost allowance and so is not considered reasonable.

Noise Abatement Decision

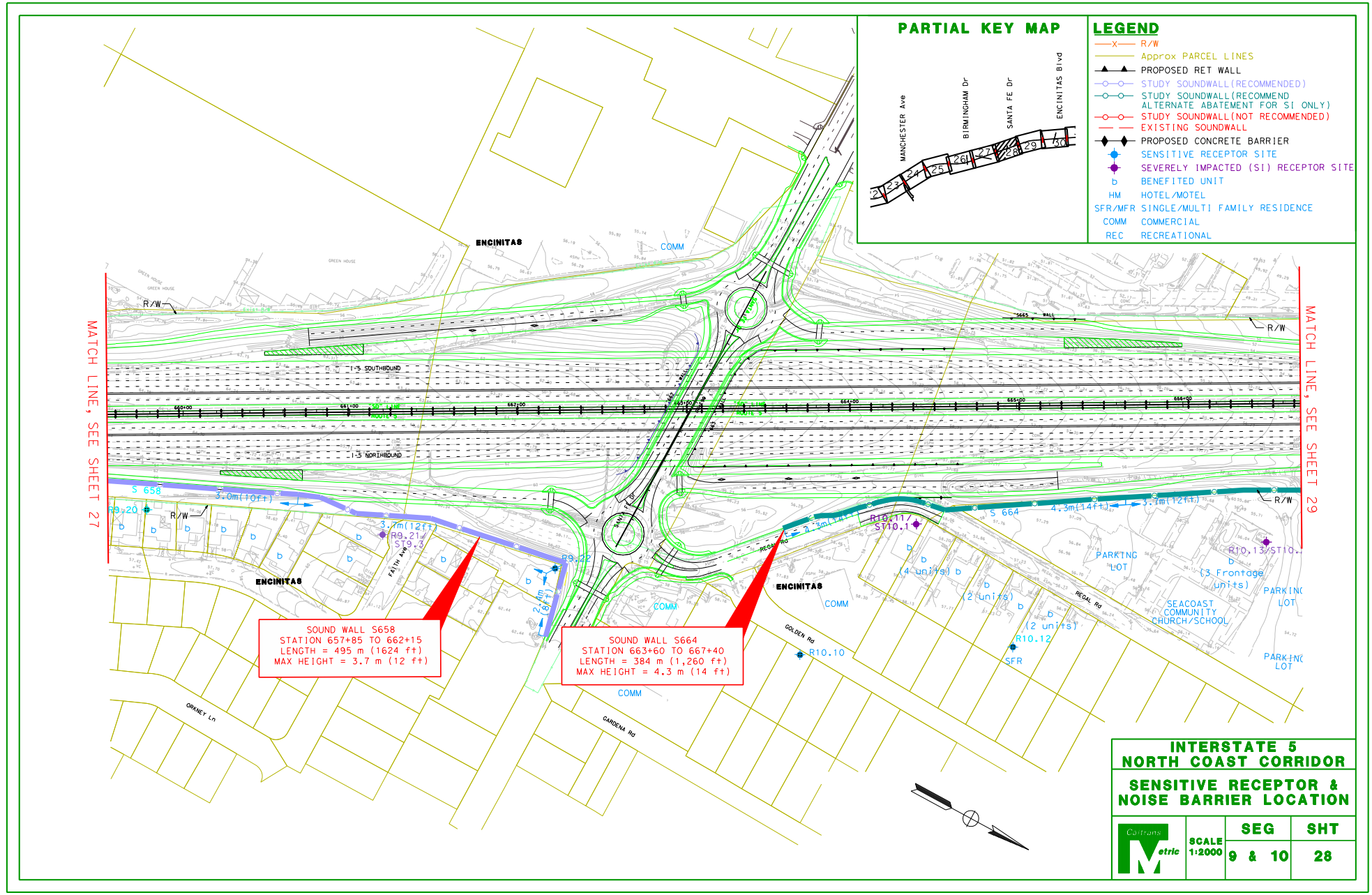
Construction of noise barrier S670 is feasible but not reasonable due to the estimated construction cost being higher than the total cost allowance for noise barrier S670. No severely impacted receptors exist for this wall that need to be abated for. Construction of noise barrier S670 is not recommended.

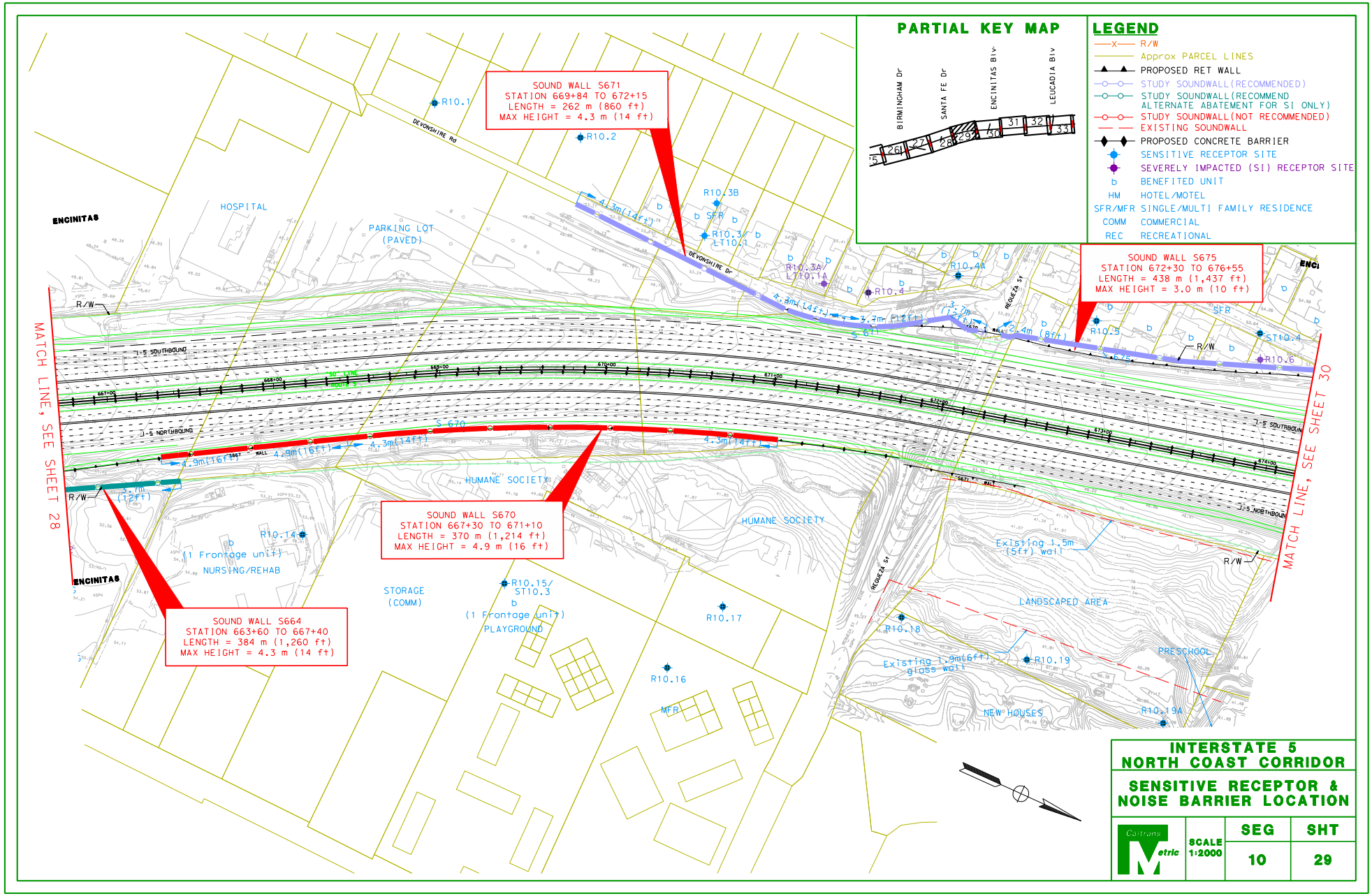
SEGMENT 10 - COST ANALYSIS

Sound Wall	# 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	Temporary Construction Easements	Footing Easements	Total Easements
		(m)	(m)	(m)	(m)	(m)	(m)	(cu m)	(m)	(cu m)	(cu m)	(sq m)	(sq m)	(sq m)
10.S671		4.3	175	31	144	1.22	2.6	456.768	0	0	172.8	0	0	0
		3.7	87	35	52	1.22	2.4	152.256	0	0	56.16	0	0	0
	11													
10.S675		2.4	408	0	408	1.22	1.9	946	0	0	318	894	194	1,088
		3.0	30	0	30	1.22	2.1	77	0	0	27	90	23	113
	18													
10.S664		4.3	209	27	182	1.22	2.6	577	0	0	218	324	108	432
		3.7	175	0	175	1.22	2.4	512	0	0	189	525	158	683
	14													
10.S670		4.9	112	112	0	1.22	2.9	0	0	0	0	0	0	0
		4.3	258	258	0	1.22	2.6	0	0	0	0	0	0	0
	2													

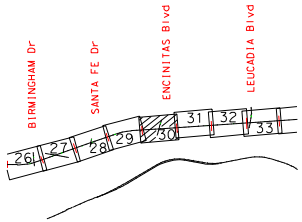
Sound Wall	# of Benefited Residences	CONSTRUCTION COSTS					ADDITIONAL COSTS				EASEMENT COSTS		
		Sound Wall Masonry Cost	Minor Concrete Sound Wall Cost	Excavation and Backfill Cost	Demolition Cost - wood fence	Demolition Cost - sound wall/property wall	Clearing & Grubbing	Landscaping Cost	Traffic Control Cost	SWPPP Cost	Construction Easements	Footing Easements	Total Easements
		($210/sq m)	($700/cu m)	($100/cu m)	($20/m)	($40/cu m)	(8% of Wall Cost)	(10% of Wall Cost)	(5% of Wall Cost)	(5% of Wall Cost)	($150/sq m)	($370/sq m)	
10.S671		$165,926	$120,960	$45,677	$0	$0	$21,892	$27,365	$13,683	$13,683	$0	$0	$0
		$70,979	$39,312	$15,226	$0	$0	$6,002	$7,502	$3,751	$3,751	$0	$0	$0
	11												
10.S675		$257,040	$222,768	$94,574	$0	$0	$45,951	$57,438	$28,719	$28,719	$134,100	$71,669	$205,769
		$22,680	$18,900	$7,686	$0	$0	$3,941	$4,927	$2,463	$2,463	$13,500	$8,325	$21,825
	18												
10.S664		$198,163	$152,880	$57,730	$0	$0	$28,477	$35,597	$17,798	$17,798	$48,600	$39,960	$88,560
		$158,025	$132,300	$51,240	$0	$0	$27,325	$34,157	$17,078	$17,078	$78,750	$58,275	$137,025
	14												
10.S670		$121,010	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
		$244,623	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	2												

Sound Wall	# 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
10.S671		$409,186	$409,186	$409,186								
		$146,523	$146,523	$146,523								
	11	**$555,708**	**$555,708**	**$555,708**	**$50,519**	**$50,519**	**$50,519**	**$42,000**	**$462,000**	**NO**	**NO**	**NO**
10.S675		$735,209	$869,309	$940,978								
		$63,060	$76,560	$84,885								
	18	**$798,270**	**$945,870**	**$1,025,864**	**$44,348**	**$52,548**	**$56,992**	**$54,000**	**$972,000**	**YES**	**YES**	**NO**
10.S664		$508,444	$557,044	$597,004								
		$437,203	$515,953	$574,228								
	14	**$945,647**	**$1,072,997**	**$1,171,232**	**$67,546**	**$76,643**	**$83,659**	**$50,000**	**$700,000**	**NO**	**NO**	**NO**
10.S670		$121,010	$121,010	$121,010								
		$244,623	$244,623	$244,623								
	2	**$365,633**	**$365,633**	**$365,633**	**$182,817**	**$182,817**	**$182,817**	**$48,000**	**$96,000**	**NO**	**NO**	**NO**


PARTIAL KEY MAP
MANCHESTER Ave
BIRMINGHAM Dr
SANTA FE Dr
ENCINITAS Blvd
21
23
24
25
26
27
28
29
30
LEGEND
R/W
Approx PARCEL LINES
PROPOSED RET WALL
STUDY SOUNDWALL(RECOMMENDED)
STUDY SOUNDWALL(RECOMMEND ALTERNATE ABATEMENT FOR SI ONLY)
STUDY SOUNDWALL(NOT RECOMMENDED)
EXISTING SOUNDWALL
PROPOSED CONCRETE BARRIER
SENSITIVE RECEPTOR SITE
SEVERELY IMPACTED (SI) RECEPTOR SITE
b BENEFITED UNIT
HM HOTEL/MOTEL
SFR/MFR SINGLE/MULTI FAMILY RESIDENCE
COMM COMMERCIAL
REC RECREATIONAL
MATCH LINE, SEE SHEET 27
MATCH LINE, SEE SHEET 29
ENCINITAS
I-5 SOUTHBOUND
I-5 NORTHBOUND
R/W
S 658
3.0m(10ft)
R9.20
3.7m(12ft)
R9.21
ST9.3
FAITH Ave
R9.22
2.4m (8ft)
SOUND WALL S658
STATION 657+85 TO 662+15
LENGTH = 495 m (1624 ft)
MAX HEIGHT = 3.7 m (12 ft)
S 664
2.4m(8ft)
4.3m(14ft)
3.7m(12ft)
R10.11
ST10.1
REGAL RD
GOLDEN Rd
R10.10
SOUND WALL S664
STATION 663+60 TO 667+40
LENGTH = 384 m (1,260 ft)
MAX HEIGHT = 4.3 m (14 ft)
COMM
(4 units)
(2 units)
(2 units)
R10.12
SFR
PARKING LOT
(3 Frontage units)
SEACOAST COMMUNITY CHURCH/SCHOOL
PARKING LOT
ORKNEY Ln
GARDENA Rd
INTERSTATE 5
NORTH COAST CORRIDOR
SENSITIVE RECEPTOR &
NOISE BARRIER LOCATION
Caltrans Metric
SCALE 1:2000
SEG
9 & 10
SHT
28


PARTIAL KEY MAP
BIRMINGHAM Dr
SANTA FE Dr
ENCINITAS Blv
LEUCADIA Blv
25
26
27
28
29
30
31
32
33
LEGEND
R/W
Approx PARCEL LINES
PROPOSED RET WALL
STUDY SOUNDWALL(RECOMMENDED)
STUDY SOUNDWALL(RECOMMEND ALTERNATE ABATEMENT FOR SI ONLY)
STUDY SOUNDWALL(NOT RECOMMENDED)
EXISTING SOUNDWALL
PROPOSED CONCRETE BARRIER
SENSITIVE RECEPTOR SITE
SEVERELY IMPACTED (SI) RECEPTOR SITE
b BENEFITED UNIT
HM HOTEL/MOTEL
SFR/MFR SINGLE/MULTI FAMILY RESIDENCE
COMM COMMERCIAL
REC RECREATIONAL
SOUND WALL S671
STATION 669+84 TO 672+15
LENGTH = 262 m (860 ft)
MAX HEIGHT = 4.3 m (14 ft)
SOUND WALL S675
STATION 672+30 TO 676+55
LENGTH = 438 m (1,437 ft)
MAX HEIGHT = 3.0 m (10 ft)
SOUND WALL S670
STATION 667+30 TO 671+10
LENGTH = 370 m (1,214 ft)
MAX HEIGHT = 4.9 m (16 ft)
SOUND WALL S664
STATION 663+60 TO 667+40
LENGTH = 384 m (1,260 ft)
MAX HEIGHT = 4.3 m (14 ft)
MATCH LINE, SEE SHEET 28
MATCH LINE, SEE SHEET 30
I-5 SOUTHBOUND
I-5 NORTHBOUND
DEVONSHIRE Rd
DEVONSHIRE Dr
REQUEZA St
ENCINITAS
HOSPITAL
PARKING LOT (PAVED)
HUMANE SOCIETY
NURSING/REHAB
(1 Frontage unit)
STORAGE (COMM)
PLAYGROUND
MFR
NEW HOUSES
LANDSCAPED AREA
PRESCHOOL
Existing 1.5m (5ft) wall
Existing 1.9m(6ft) glass wall
R10.1
R10.2
R10.3B
R10.3/ LT10.1
R10.3A/ LT10.1A
R10.4
R10.4A
R10.5
R10.6
ST10.4
R10.14
R10.15/ ST10.3
R10.16
R10.17
R10.18
R10.19
R10.19A
4.3m(14ft)
3.7m (12ft)
2.4m (8ft)
4.9m(16ft)
3.7m (12ft)
R/W
INTERSTATE 5
NORTH COAST CORRIDOR
SENSITIVE RECEPTOR & NOISE BARRIER LOCATION
Caltrans
Metric
SCALE 1:2000
SEG 10
SHT 29

PARTIAL KEY MAP



LEGEND

—X—	R/W
	Approx PARCEL LINES
	PROPOSED RET WALL
	STUDY SOUNDWALL(RECOMMENDED)
	STUDY SOUNDWALL(RECOMMEND ALTERNATE ABATEMENT FOR SI ONLY)
	STUDY SOUNDWALL(NOT RECOMMENDED)
	EXISTING SOUNDWALL
	PROPOSED CONCRETE BARRIER
	SENSITIVE RECEPTOR SITE
	SEVERELY IMPACTED (SI) RECEPTOR SITE
b	BENEFITED UNIT
HM	HOTEL/MOTEL
SFR/MFR	SINGLE/MULTI FAMILY RESIDENCE
COMM	COMMERCIAL
REC	RECREATIONAL

MATCH LINE, SEE SHEET 29

MATCH LINE, SEE SHEET 31

SOUND WALL S675
STATION 672+30 TO 676+55
LENGTH = 438 m (1,437 ft)
MAX HEIGHT = 3.0 m (10 ft)

SOUND WALL S680
STATION 677+90 TO 684+15
LENGTH = 664 m (2,178 ft)
MAX HEIGHT = 4.9 m (16 ft)

INTERSTATE 5
NORTH COAST CORRIDOR

SENSITIVE RECEPTOR & NOISE BARRIER LOCATION

	SCALE	SEG	SHT
Caltrans Metric	1:2000	10& 11	30