SR-133 SB AUXILIARY LANE PROJECT

NADR



Noise Abatement Decision Report

Compiled information from 0N8900 NSR approved 09-23-2019

In the City of Irvine

Orange County, California

12-ORA-133 PM 8.3/M9.3

EA 0N8900

Project ID No. 1214000130

September 2019



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In the City of Irvine

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12-Ora-133 PM 8.3/M9.3

EA 0N8900

Project ID No. 1214000130

September 24, 2019

Prepared By:

Date: 929 2019

Ricardo Caraig, P.E., Transportation Engineer Environmental Engineering District 12/0range County

Approved By: Jft fp./

______Date: _____9/2- /20/9

Rez Aurasteh, Ph.D., P.E., Senior Transportation Engineer Environmental Engineering District 12/0range County

SB SR-133 Auxiliary Lane Project - Noise Abatement Decision Report

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List of Abbreviated Terms

Benefited receptor	A dwelling unit or other equivalent land use expected to receive a noise reduction of at least 5 dBA from the proposed abatement measure
Date of public knowledge	The date of approval of the project CE, FONSI, or ROD.
dBA	A-weighted sound pressure level
ED	Environmental Document
FHWA	Federal Highway Administration
L _{eq}	Equivalent sound level (energy averaged sound level)
$L_{eq}[h]$	A-weighted, energy average sound level during a 1-hour period
NSR	Noise Study Report
NADR	Noise Abatement Decision Report
NAC	Noise Abatement Criteria
Noise reduction design goal	7 dB of noise reduction at one or more benefited receptors.
Reasonable allowance	A single dollar value—a reasonable allowance per benefited receptor

1. Introduction

The Noise Abatement Decision Report (NADR) presents the preliminary noise abatement decision as defined in the Caltrans Traffic Noise Analysis Protocol (Protocol). This report has been approved by a California licensed professional civil engineer. The project level noise study report (NSR) for the State Route 133 (SR-133) Southbound (SB) Auxiliary Lane Project from PM 8.3 to M9.3 prepared and approved on September 23, 2019 for this project is hereby incorporated by reference.

1.1. Noise Abatement Assessment Requirements

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

The Protocol establishes a process for assessing the reasonableness and feasibility of noise abatement. Before publication of the draft ED, a *preliminary noise abatement decision* is made. The preliminary noise abatement decision is based on the *feasibility* of evaluated abatement and the *preliminary reasonableness determination*. Noise abatement is considered to be acoustically feasible if it is predicted to provide noise reduction of at least 5 dBA at an impacted receptor. Other nonacoustical factors relating to geometric standards (e.g., sight distances), safety, maintenance, and security can also affect feasibility.

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

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

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

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

The NADR presents the preliminary noise abatement decision based on acoustical and nonacoustical feasibility factors, the design goal, 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 ED is published. The final overall reasonableness decision will take this information into account, along with the results of the survey of benefited receptors conducted during the environmental review process.

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

1.2. Purpose of the Noise Abatement Decision Report

The purpose of the NADR is to:

- summarize the conclusions of the NSR relating to acoustical feasibility, the design goal, 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.).

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

1.3. Project Description

This operational improvement project is on SR-133 from the SB Interstate 5 (I-5)/SB SR-133 connector (SB I-5 connector) to the SB SR-133/northbound (NB) Interstate 405 (I-405) connector (NB I-405 connector). The proposed project is in located in the City of Irvine in south Orange County. This project proposes to construct a new auxiliary lane on SB SR-133 from the SB I-5 connector (PM M9.3) to the NB I-405 connector (PM 8.3). This auxiliary lane will become the second lane on the NB I-405 connector. This project also proposes to extend the number three lane on SB SR 133 approximately 300 feet south of the San Diego Creek to match the existing roadway pavement.

This project is a non-capacity increasing project. There are 2 alternatives, No Build and Build:

- <u>No Build (Alternative 1)</u> would be where no construction or improvements are made to the existing SB SR-133 between the SB I-5 connector and NB I-405 connector.
- <u>Build (Alternative 2)</u> proposes to improve operations and safety of this facility by constructing a new auxiliary lane on SB SR-133 from the SB I-5 connector to the NB I-405 connector. This proposed lane will become the second lane on the NB I-405 connector. This alternative also proposes to extend the number three lane on SB SR-

133 approximately 300 feet south of San Diego Creek to match the existing roadway pavement.

1.4. Affected Land Uses

A field investigation was conducted to identify land uses that could be subject to traffic and construction noise impacts from the proposed project. The following land uses were identified in the project area:

- Multi-family residences (apartments): Activity Category B
- Offices and hotel: Activity Category E
- Undeveloped Lands: Activity Category G

Although all developed land uses are evaluated in this analysis, noise abatement is only considered for areas of frequent human use that would benefit from a lowered noise level. Accordingly, this impact analysis focuses on locations with defined outdoor activity areas, such as balconies and common use areas at multi-family residences and offices.

2. Results of the Noise Study Report

The NSR for this project was prepared by Ricardo Caraig on September 19, 2019 and approved by Reza Aurasteh, Branch Chief of Environmental Engineering on September 23, 2019.

FHWA Traffic Noise Model 2.5 (TNM 2.5) was utilized for modeling predicted future noise levels. As stated in the Protocol, noise abatement measures are considered when predicted noise levels in the design year approach or exceed the NAC or when a predicted noise level substantially exceeds the existing noise levels (i.e. 12dBA or more). A total of 38 representative receivers were used to model existing and future land uses in the study area for the future build project and its alternative. These modeled locations represent Activity Categories B, E, and G exterior land uses along the project alignment. These noise-sensitive land uses are located throughout the project area and are identified in the NSR and also shown in Figures 7-1(Sheets 1 to 3) in Appendix A.

• Area A, SR-133 Southbound: Area A is located on the west side of southbound SR-133 between Irvine Center Drive and I-405. The land uses in this area is composed of offices. The terrain in this area varies approximately in elevation ranging from 5 feet above to 25 feet below the freeway. Office buildings in the Activity Category E land use areas have frequent human use receptors such as benches and sitting areas that are adjacent or near the freeway. No existing soundwalls are present to shield the receptors from traffic noise. Modeled receivers R1 through R9 are in this area. The impacted receivers among them are:

Receptors R6, R7, and R8

• Area B, SR-133 Northbound: Area B is located on the east side of northbound between I-405 and Irvine Center Drive. The land uses in this area is composed of apartments, a hotel, and offices. The terrain in this area varies approximately in elevation ranging from 2 feet above to 4 below the freeway. Receivers at certain locations of the apartments (Westview in Irvine Spectrum) were placed and modeled because of balconies that show human frequent use. In addition, the apartment had a couple of common outdoor exercise activity areas that also required evaluation. No existing soundwalls are present to shield the receptors from traffic noise. Modeled receivers R10 through R22 are in this area. The impacted receivers among them are:

Receivers R11.1 through R11.5, R12.1 through R12.5, R13, R14, R15.1 through R15.5, and R16.3 through R16.5

When traffic noise impacts occur due to the project are identified (as noted above), noise abatement measures must be considered. As reiterated in Section 1.1 in this report, traffic noise impacts occur when predicted noise levels under future build conditions come within 1.0 dB of or exceed the NAC.

The predicted traffic noise levels under future build project conditions were found to approach or exceed the NAC of 67 dBA for Activity Categories B and approach or exceed the NAC of 72 dBA for Activity Category E land uses at 23 of the 38 representative modeled receiver locations for Build Alternative 2. From the 23 representative impacted modeled receivers, the number of dwelling units equates to 42 for Build Alternative 2, where some receivers represent more than one dwelling unit. Modeled receptors are shown for Alternative 2 in Figure 7-1(Sheets 1 to 3) and is in Appendix A of this report.

The modeling results in the NSR indicate that predicted traffic noise levels under design-year or future build conditions would approach or exceed the NAC of 72 dBA hourly equivalent sound level ($L_{eq}[h]$) for Activity Category E land uses within Areas A and B and would approach or exceed the NAC of 67 dBA ($L_{eq}[h]$) Activity Category B land uses within Area B. Therefore, noise abatement measures must be considered and evaluated for the project.

Three noise barriers, in the form of soundwalls, were analyzed for the project in the NSR: Noise Barriers (NB Nos.) S9066, S9067, and S9075. No existing soundwalls exist in Areas A or B. All three walls were evaluated at wall heights ranging from 6 feet to 22 feet and were found to be feasible by meeting a noise reduction of at least 5 dB at an impacted receptor(s), and preliminarily reasonable by meeting the 7-dB noise reduction design goal at one or more benefited receptor. This design goal applies to any receptor and is not limited to impacted receptors.

Therefore, the feasible noise barriers to be evaluated as noise abatement measures for the project are: S9066, S9067, and S9075. The evaluated noise barriers are also shown in Figure 7-1(Sheets 1 to 3) in Appendix A. The following table, Tables 1, provides a summary of barrier evaluations, including locations, heights, and the calculated reasonable allowances of the modeled barriers based on the Build - Alternative 2 documented in the NSR.

Table '	Table 1 Summary of Barrier Evaluation from Noise Study Report (Build - Alternative 2)											
Barrier No.	Approximate Location	Approximate SR- 133 Mainline	Approximate Length (feet)	Height (feet)	Acoustically Feasible?	Number of Benefited	Design Goal	Reasonable Allowance Per	Total Reasonable			
		Station			(Yes or No)	Receptors	(Yes or No)	Receptor	Allowances			
S9066	ROW ¹	9061+81~9068+59	700	6	No	0	No	\$107,000	\$0			
				8	Yes	3	Yes	\$107,000	\$321,000			
				10	Yes	5	Yes	\$107,000	\$535,000			
				12	Yes	5	Yes	\$107,000	\$535,000			
				14	Yes	5	Yes	\$107,000	\$535,000			
				16	Yes	7	Yes	\$107,000	\$749,000			
				18	Yes	7	Yes	\$107,000	\$749,000			
				20	Yes	7	Yes	\$107,000	\$749,000			
				22	Yes	9	Yes	\$107,000	\$963,000			
S9067	ROW	9063+54~9067+83	432	6	No	0	No	\$107,000	\$0			
				8	No	0	No	\$107,000	\$0			
				10	No	0	No	\$107,000	\$0			
				12	Yes	1	Yes	\$107,000	\$107,000			
				14	Yes	1	Yes	\$107,000	\$107,000			
				16	Yes	1	Yes	\$107,000	\$107,000			
				18	Yes	1	Yes	\$107,000	\$107,000			
				20	Yes	1	Yes	\$107,000	\$107,000			
				22	Yes	1	Yes	\$107,000	\$107,000			
S9075	ROW	9070+15~9077+30	735	6	No	0	No	\$107,000	\$0			
				8	No	0	No	\$107,000	\$0			
				10	No	0	No	\$107,000	\$0			
				12	Yes	1	Yes	\$107,000	\$214,000			
				14	Yes	2	Yes	\$107,000	\$214,000			
				16	Yes	2	Yes	\$107,000	\$214,000			
				18	Yes	2	Yes	\$107,000	\$214,000			
				20	Yes	2	Yes	\$107,000	\$214,000			
				22	Yes	2	Yes	\$107,000	\$214,000			
¹ ROV	/ represents Cal	trans' or State's Right c	f Way.									

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3.1. Summary of Key Information

The preliminary noise abatement decision is based on the NSR for the SR-133 SB Auxiliary Lane Project. In the NSR, three noise barriers were found to be feasible at wall heights ranging from 8 to 22 feet, providing a minimum noise reduction of 5 dB at an impacted receptor. The design goal of 7 dB would be achieved at wall heights ranging from 8 to 22 feet. The total number of benefited receptors range from 1 to 9. The cost estimates were based on barrier design, materials, labor, traffic control, mobilization, and a 10% contigency factor. The noise barriers are assumed to be constructed of masonry block, in accordance with Caltrans Standard Specifications and Plans, and supported on cast-in-drilled hole (CIDH) piles with pile cap or concrete barrier.

Tables 3 summarize the acoustical feasibility of the noise barriers, the estimated total cost of construction compared to the reasonable allowance cost for each noise barrier height, and the number of benefited receptors. Appendix B includes a cost estimate for each wall height. The estimated costs of construction were prepared by Ricardo Caraig, District 12 Caltrans – Environmental Engineering. The Caltrans Contract Cost Data website and Standard Plans were used to calculate the estimated cost of construction for each proposed noise barrier. Certain soundwall items for proposed wall heights greater than 16 feet, i.e. 18, 20, and 22 feet high, included an increase factor of 15%, 20%, and 25% respectively to the item cost to consider special design, material, and labor to construct the noise abatement.

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

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

The reasonableness of a noise barrier was determined by comparing the estimated construction cost of the noise barrier against the total reasonable allowance. The total reasonable allowance is based on the number of benefited receptors or, in this case,

residential equivalents multiplied by the reasonable allowance per benefited receptor (\$107,000) for the year 2019. If the estimated noise barrier total construction cost exceeds the total reasonable allowance, the noise barrier is determined to be not reasonable.

Barrier	Approximate	Approximate	Height	Acoustically	Number of	Design	Total	Estimated	Cost Less Thar
No.	Location	Length (feet)	(feet)	Feasible?	Benefited	Goal	Reasonable	Construction	Allowance?
				(Yes or No)	Receptors	Achieved	Allowances	Cost	(Yes or No)
						(Yes or No)			
S9066	ROW ¹	700	6	No	0				
			8	Yes	3	Yes	\$321,000	\$603,710	No
			10	Yes	5	Yes	\$535,000	\$642,320	No
			12	Yes	5	Yes	\$535,000	\$683,460	No
			14	Yes	5	Yes	\$535,000	\$721,960	No
			16	Yes	7	Yes	\$749,000	\$760,130	No
			18	Yes	7	Yes	\$749,000	\$892,560	No
			20	Yes	7	Yes	\$749,000	\$963,390	No
			22	Yes	9	Yes	\$963,000	\$1,037,300	No
S9067	ROW	432	6	No	0				
			8	No	0				
			10	No	0				
			12	Yes	1	Yes	\$107,000	\$181,430	No
			14	Yes	1	Yes	\$107,000	\$206,820	No
			16	Yes	1	Yes	\$107,000	\$230,330	No
			18	Yes	1	Yes	\$107,000	\$282,330	No
			20	Yes	1	Yes	\$107,000	\$316,130	No
			22	Yes	1	Yes	\$107,000	\$351,840	No
S9075	ROW	735	6	Yes	1	No			
			8	Yes	1	No			
			10	Yes	1	No			
			12	Yes	1	Yes	\$107,000	\$307,340	No
			14	Yes	2	Yes	\$214,000	\$349,800	No
			16	Yes	2	Yes	\$214,000	\$391,930	No
			18	Yes	2	Yes	\$214,000	\$480,410	No
			20	Yes	2	Yes	\$214,000	\$537,930	No
			22	Yes	2	Yes	\$214,000	\$598,680	No

3.2. Non-Acoustical Factors Relating to Feasibility

The non-acoustical factors considered are geometric standards (e.g., sight distances), safety, maintenance, security, geotechnical issues, utility relocations, and aesthetics. Some of these non-acoustical factors, will have to be investigated during design phase. Based on preliminary project and abatement designs, no non-acoustical factors related to feasibility have been identified that would be considered out of the ordinary for noise barrier construction.

3.3. Preliminary Recommendation and Decision

3.3.1 Noise Barrier No. S9066

Noise Barrier S9066 was found to be acoustically feasible and would meet Caltrans noise reduction design goal at wall heights ranging from 8 to 22 feet for Build Alternatives 2. The barrier is proposed along NB SR-133 between the San Diego Creek and Alton Parkway at the State's or Caltrans' right-of-way. The total length would be approximately 700 feet and is referenced at an offset from SR-133 Sta 9061+81 to 9068+59. The soundwall is expected to be supported by CIDH piles on concrete barrier foundation. The location of NB No. S9066 is shown in Appendix A, Figures 7-1(Sheet 2).

For each wall height that was found to be feasible and meet the noise reduction design goal, an estimated construction cost of the noise abatement measure was calculated and compared to the total reasonableness allowance. Based on the costs provided in Appendix B and shown in Table 3, the cost to construct NB No. S9066 would exceed the reasonableness allowances at all feasible barrier heights ranging from 8 to 22 feet for the project. Because the construction costs exceed the reasonableness allowances for all feasible wall heights, NB No. S9066 becomes unreasonable for construction as part of the project and is not recommended.

3.3.2 Noise Barrier No. S9067

Noise Barrier S9067 was found to be acoustically feasible and would meet Caltrans noise reduction design goal at wall heights ranging from 12 to 22 feet for Build Alternatives 2. The barrier is proposed along SB SR-133 between the San Diego Creek and Alton Parkway at the State's or Caltran's right-of-way. The total length would be approximately 432 feet and is referenced at an offset from SR-133 Sta 9063+54 to 9067+83. The soundwall is expected to be supported by CIDH piles on pile cap foundation. The location of NB No. S9067 is shown in Appendix A, Figures 7-1(Sheet 2).

For each wall height that was found to be feasible and meet the noise reduction design goal, an estimated construction cost of the noise abatement measure was calculated and compared to the total reasonableness allowance. Based on the costs provided in Appendix B and shown in Table 3, the cost to construct NB No. S9067 would exceed the reasonableness allowances at all feasible barrier heights ranging from 12 to 22 feet for the project. Because the construction costs exceed the reasonableness allowances for all feasible wall heights, NB No. S9067 becomes unreasonable for construction as part of the project and is not recommended.

3.3.3 Noise Barrier No. S9075

Noise Barrier S9075 was found to be acoustically feasible and would meet Caltrans noise reduction design goal at wall heights ranging from 12 to 22 feet for the Build Alternatives 2. The barrier is proposed along SB SR-133 between Alton Parkway and Barranca Parkway at the State's or Caltrans' right-of-way. The total length would be approximately 735 feet and is referenced at an offset from SR-133 Sta 9070+15 to 9077+30. The soundwall is expected to be supported by CIDH piles on pile cap foundation. The location of NB No. S9075 is shown in Appendix A, Figures 7-1(Sheet 2).

For each wall height that was found to be feasible and meet the noise reduction design goal, an estimated construction cost of the noise abatement measure was calculated and compared to the total reasonableness allowance. Based on the costs provided in Appendix B and shown in Table 3, the cost to construct NB No. S9067 would exceed the reasonableness allowances at all feasible barrier heights ranging from 12 to 22 feet for the project. Because the construction costs exceed the reasonableness allowances for all feasible wall heights, NB No. S9067 becomes unreasonable for construction as part of the project and is not recommended.

In conclusion, all three feasible noise barriers identified in Table 3 and discussed in this section were determined to be not reasonable. Therefore no noise barriers are recommended as part of the project.

The preliminary noise abatement decision presented in this report is based on preliminary project alignments and profiles, which may be subject to change. As such, the physical characteristics of noise abatement described herein also may be subject to change. If pertinent parameters change substantially during the final project design, the preliminary noise abatement decision may be changed or eliminated from the final project design. A final decision to construct noise abatement will be made upon completion of the project design. The preliminary noise abatement decision presented here will be included in the draft environmental document (ED), which will be circulated for public review.

4. Secondary Effects of Abatement

Because all feasible noise barriers identified in Table 3 were determined to be not reasonable, noise abatement measures would not have any secondary effects (e.g. cultural, scenic views, hazardous materials, and biology) on other resources.

5. References

California Department of Transportation (Caltrans). 2019, *Noise Study Report, SR-133 SB Auxiliarly Lane Project.*

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LEGEND

- Short-Term Noise Measurement Locations (ST#)
- O Modeled Receptor Locations (R# or R#.#)
- SHARE Modeled Noise Barrier Number
- .#/# Receptor Floor Levels (i.e., R203.2/3/4/5 are Receptors at 2nd, 3rd, 4th, and 5th Floor area)
- Proposed Roadway Improvement
- Proposed Structure Improvement

Modeled Noise Barrier Locations

FIGURE 7-1 SHEET 1 OF 3 1" =180'

MODELED NOISE BARRIER AND RECEPTOR LOCATIONS SR-133 SB AUXILIARY LANE PROJECT



LEGEND

- Short-Term Noise Measurement Locations (ST#)
- O Modeled Receptor Locations (R# or R#.#)
- SHARE Modeled Noise Barrier Number
- .#/# Receptor Floor Levels (i.e., R203.2/3/4/5 are Receptors at 2nd, 3rd, 4th, and 5th Floor area)
- Proposed Roadway Improvement
- Proposed Structure Improvement

Modeled Noise Barrier Locations

FIGURE 7-1 SHEET 2 OF 3 1" =180'

MODELED NOISE BARRIER AND RECEPTOR LOCATIONS SR-133 SB AUXILIARY LANE PROJECT



LEGEND

- Short-Term Noise Measurement Locations (ST#)
- Modeled Receptor Locations (R# or R#.#)
- SHARE Modeled Noise Barrier Number
- .#/# Receptor Floor Levels (i.e., R203.2/3/4/5 are Receptors at 2nd, 3rd, 4th, and 5th Floor area)
- Proposed Roadway Improvement
- Proposed Structure Improvement

--- Modeled Noise Barrier Locations

FIGURE 7-1 SHEET 3 OF 3 1" =180'

MODELED NOISE BARRIER AND RECEPTOR LOCATIONS SR-133 SB AUXILIARY LANE PROJECT

Appendix B Engineer's Cost Estimate

Image <th< th=""><th></th><th></th><th></th><th></th><th>Engineer's Cost</th><th>Estimate for No</th><th>oise Barrier No</th><th>. \$9066</th><th></th><th></th><th></th><th></th><th></th><th></th></th<>					Engineer's Cost	Estimate for No	oise Barrier No	. \$9066						
Ident CodeDescription of Construction ItemUnitPrice Part UnitSecond Second S					Heights	6	8	10	12	14	16	18	20	22
1 66:10 Image Modifications IS 90000 0 0 0 0 </td <td>Item Code</td> <td>Item Code</td> <td>Description of Construction Item</td> <td>Unit</td> <td>Price Per Unit</td> <td></td> <td></td> <td></td> <td></td> <td>Quantity</td> <td></td> <td></td> <td></td> <td></td>	Item Code	Item Code	Description of Construction Item	Unit	Price Per Unit					Quantity				
Image Image <th< td=""><td>1</td><td>66210</td><td>Minor Landscape Modifications</td><td>LS</td><td>50000</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></th<>	1	66210	Minor Landscape Modifications	LS	50000	0	0	0	0	0	0	0	0	0
1 1						\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Image: Construct Schedule Image: Construct Schedule	2	120100	Traffic Control System	LS	60000	1	1	1	1	1	1	1	1	1
3 121101 Tenporary Crack Cathon FA 33300 <						\$60,000	\$60,000	\$60,000	\$60,000	\$60,000	\$60,000	\$60,000	\$60,000	\$60,000
Image: state in the	3	129110	Temporary Crash Cushion	EA	3500	0	0	0	0	0	0	0	0	0
4 150/58 Remove Asphalt Concrete Revenent (Y 215 0						\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Image: Source Retaining Wall Li Source Retaining Wall Li Source Retaining Wall	4	150768	Remove Asphalt Concrete Pavement	CY	275	0	0	0	0	0	0	0	0	0
15083 Lennove Retaining Wall LF 80 0 0 0 0<						\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Image Image <th< td=""><td>5</td><td>150833</td><td>Remove Retaining Wall</td><td>LF</td><td>80</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></th<>	5	150833	Remove Retaining Wall	LF	80	0	0	0	0	0	0	0	0	0
6 15203 Modify brainage System L 600 0 0 0 0 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td>\$0</td> <td>\$0</td> <td>\$0</td> <td>\$0</td> <td>\$0</td> <td>\$0</td> <td>\$0</td> <td>\$0</td> <td>\$0</td>						\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Image: Concrete Barrier IF 50	6	152603	Modify Drainage System	LS	600000	0	0	0	0	0	0	0	0	0
7 153221 Remove Concrete Barrier LF 50 0 <						\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
A Corr Sol	7	153221	Remove Concrete Barrier	LF	50	0	0	0	0	0	0	0	0	0
8 15.25.51 (Renove Soundwall) CP C C O O O O </td <td></td> <td></td> <td></td> <td></td> <td></td> <td>\$0</td> <td>\$0</td> <td>\$0</td> <td>Ş0</td> <td>\$0</td> <td>\$0</td> <td>Ş0</td> <td>Ş0</td> <td>\$0</td>						\$0	\$0	\$0	Ş0	\$0	\$0	Ş0	Ş0	\$0
Image: Constraint of the second wall C Sol <	8	153253	Remove Soundwall	SQFT	5	0	0	0	0	0	0	0	0	0
9 19/308 Functure Excavation (Sound Wall) CV 112 208 <th< td=""><td></td><td></td><td></td><td>01</td><td>105</td><td>\$0 2000</td><td>\$0 \$0</td><td>\$0</td><td>\$0 222</td><td>\$0 222</td><td>\$0</td><td>\$0 \$0</td><td>\$0 222</td><td>\$0</td></th<>				01	105	\$0 2000	\$0 \$0	\$0	\$0 222	\$0 222	\$0	\$0 \$0	\$0 222	\$0
Image: Constructure Excavation , Retaining Wall (Sound Wall) CY Sole, 000 Sole, 00	9	192038	Structure Excavation (Sound Wall)	CY	125	208	208	208	208	208	208	208	208	208
1192048 Structure Excavation, Metaning Wall (Sound Wall) CY 50 0 <td></td> <td></td> <td></td> <td>01</td> <td></td> <td>\$26,000</td> <td>\$26,000</td> <td>\$26,000</td> <td>\$26,000</td> <td>\$26,000</td> <td>\$26,000</td> <td>\$26,000</td> <td>\$26,000</td> <td>\$26,000</td>				01		\$26,000	\$26,000	\$26,000	\$26,000	\$26,000	\$26,000	\$26,000	\$26,000	\$26,000
Image: Constraint of the standing of th	10	192048	Structure Excavation , Retaining Wall (Sound Wall)	CY	50	0	0	0	0	0	0	0	0	0
11 139/04 growthere each mill (sound Wail) (Y 113 113/<		102011			4.25	\$0 427	\$0 4 2 7	\$0 127	\$0	\$0 127	\$0 127	\$0 127	\$0 127	\$0
12 193202 Str/Lts Str/	11	193014	Structure Backfill (Sound Wall)	CY	125	137	137	137	137	137	137	137	137	137
11 19300 Structure Scalard , ketalning wall (sound wall) C/V 1800 0<	12	402020				\$17,125	\$17,125	\$17,125	\$17,125	\$17,125	\$17,125	\$17,125	\$17,125	\$17,125
13 390132 Hot Mix Asphalt (Type A) TON 285 0	12	193020	Structure Backfill , Retaining Wall (Sound Wall)	CY	60	0	0	0	0	0	0	0	0	0
13 39112 Hot With Aspinal (Type A) 10N 283 0	12	200122	List Min Asphalt (Truce A)		205	Ş0	Ş0	Ş0	Ş0	ŞU	Ş0	0	0	0
Image: Note of the contract Pilling and the cont	13	390132	Hot MIX Asphalt (Type A)	TON	285	0	0 ¢0	0	0	0 ¢0	0 ¢0	0	0 ¢0	0 ¢0
14 4300 15 635 712 713	1.4	400001	16" Cost In Duillad Llala Consusta Dilina*		100	ŞU 424	ŞU 507	Ş0 C08	\$U 702	0ڊ حج	ŞU 830	ŞU 820	\$U 820	Ş0 820
15 15<	14	490601			100	434 ¢42,400	ر 53 درج 200	600 ¢c0.800	207 670 200	772 مرد ججئ	602 000	606 48F	639 6100 680	6104 875
1 1000 3 structural concrete, Retaining wail (30th Wain) Cr 100 0	15	510050	Structure Concrete Retaining Wall (Sound Wall)	CV	1700	Ş45,400 0	355,700 0	300,800	\$70,200	\$77,200	303,900 0	390,465 0	\$100,080	\$104,875
Image: Construct on the structural Concrete, Retaining Wall CY B30 C30	15	510055			1700	0 \$0	0 \$0	0 \$0	50 50	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0
Index Status Status </td <td>16</td> <td>510060</td> <td>Structural Concrete, Retaining Wall</td> <td>CV</td> <td>890</td> <td>0Ç 0</td> <td>ر 0</td> <td>ې ب 0</td> <td>ې 0</td> <td>0, 0</td> <td>ېږ 0</td> <td></td> <td>0, 0</td> <td>ېږ 0</td>	16	510060	Structural Concrete, Retaining Wall	CV	890	0Ç 0	ر 0	ې ب 0	ې 0	0 , 0	ېږ 0		0 , 0	ېږ 0
1 5 Soundwall (Masony Block)* SQFT 200 4200 5600 7000 8400 9800 11200 120000 12000	10	510000			850	0 \$0	0 \$0	0 \$0	50 50	0 \$0	0 \$0	0 \$0	0 \$0	0 \$0
1 1	17	582001	Soundwall (Masonry Block)*	SOFT	20	4200	5600	7000	8400	9800	11200	12600	14000	15400
18 800103 Temporary Fence (Type CL-6) LF 25 0		562661				\$84,000	\$112,000	\$140,000	\$168,000	\$196,000	\$224,000	\$289,800	\$336,000	\$385,000
1000000 1000000 1000000 1000000 10000000 100000000 100000000 1000000000000000000000000000000000000	18	800103	Temporary Fence (Type CI-6)	I F	25	¢01,000	0000	0	0	0	0	0	0	0
19 839729 Concrete Barrier (Type 736 S or 736 S Mod)* LF 400 700		000100				\$0	\$0	\$0	\$0	<u>\$0</u>	\$0	\$0	\$0	\$0
Normal Sector	19	839729	Concrete Barrier (Type 736 S or 736 S Mod)*	LF	400	700	700	700	700	700	700	700	700	700
20 839734 Concrete Barrier (Type 736 SV) LF 0						\$280.000	\$280.000	\$280.000	\$280.000	\$280.000	\$280.000	\$322.000	\$336.000	\$350.000
Image: Solution of the problem of t	20	839734	Concrete Barrier (Type 736 SV)	LF	0	0	0	0	0	0	0	0	0	0
Image: Contract of the contract						\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
SubtotalSubtota					1			, -		, -	,			
Image: Non-State of the state of the st			Subtotal		1	\$510.525	\$548.825	\$583.925	\$621.325	\$656.325	\$691.025	\$811.410	\$875.805	\$943.000
Total \$561,578 \$603,708 \$642,318 \$683,458 \$721,958 \$760,128 \$963,386 \$1,037,300 *Item cost at wall heights 18', 20', and 22' were Heights 6 8 10 12 14 16 18 20 22			10% Contingencies			\$51.053	\$54.883	\$58.393	\$62.133	\$65.633	\$69.103	\$81.141	\$87.581	\$94.300
*Item cost at wall heights 18', 20', and 22' were Image: Construction of the con			Total			\$561.578	\$603.708	\$642,318	\$683,458	\$721,958	\$760.128	\$892.551	\$963,386	\$1,037,300
increased due to special design considerations. Heights 6 8 10 12 14 16 18 20 22			*Item cost at wall heights 18', 20', and 22' were		1 1	. , -	. , -			. , -			. , -	
			increased due to special design considerations.		Heights	6	8	10	12	14	16	18	20	22

	Engineer's Cost Estimate for Noise Barrier No. S9067												
				Heights	6	8	10	12	14	16	18	20	22
Item Code	Item Code	Description of Construction Item	Unit	Price Per Unit					Quantity				
1	66210	Minor Landscape Modifications	LS	50000	0	0	0	0	0	0	0	0	0
					\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2	120100	Traffic Control System	LS	60000	0	0	0	0	0	0	0	0	0
					\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
3	129110	Temporary Crash Cushion	EA	3500	0	0	0	0	0	0	0	0	0
					\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4	150768	Remove Asphalt Concrete Pavement	СҮ	275	0	0	0	0	0	0	0	0	0
					\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
5	150833	Remove Retaining Wall	LF	80	0	0	0	0	0	0	0	0	0
					\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6	152603	Modify Drainage System	LS	600000	0	0	0	0	0	0	0	0	0
					\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
7	153221	Remove Concrete Barrier	LF	50	0	0	0	0	0	0	0	0	0
					\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8	153253	Remove Soundwall	SQFT	5	0	0	0	0	0	0	0	0	0
					\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
9	192038	Structure Excavation (Sound Wall)	CY	125	128	128	128	128	128	128	128	128	128
					\$16,000	\$16,000	\$16,000	\$16,000	\$16,000	\$16,000	\$16,000	\$16,000	\$16,000
10	192048	Structure Excavation , Retaining Wall (Sound Wall)	CY	50	0	0	0	0	0	0	0	0	0
					\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
11	193014	Structure Backfill (Sound Wall)	CY	125	86	86	86	86	86	86	86	86	86
					\$10,750	\$10,750	\$10,750	\$10,750	\$10,750	\$10,750	\$10,750	\$10,750	\$10,750
12	193020	Structure Backfill , Retaining Wall (Sound Wall)	СҮ	60	0	0	0	0	0	0	0	0	0
					\$0	\$0	\$0	\$0	\$0	\$0			
13	390132	Hot Mix Asphalt (Type A)	TON	285	0	0	0	0	0	0	0	0	0
					\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
14	490601	16" Cast-In-Drilled-Hole Concrete Piling*	LF	100	196	238	280	345	403	444	444	444	444
					\$19,600	\$23,800	\$28,000	\$34,500	\$40,300	\$44,400	\$51,060	\$53,280	\$55,500
15	510059	Structure Concrete, Retaining Wall (Sound Wall)	CY	1700	0	0	0	0	0	0	0	0	0
					\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
16	510060	Structural Concrete, Retaining Wall	CY	890	0	0	0	0	0	0	0	0	0
					\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
17	582001	Soundwall (Masonry Block)*	SQFT	20	2592	3456	4320	5184	6048	6912	7776	8640	9504
					\$51,840	\$69,120	\$86,400	\$103,680	\$120,960	\$138,240	\$178,848	\$207,360	\$237,600
18	800103	Temporary Fence (Type CL-6)	LF	25	0	0	0	0	0	0	0	0	0
					\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
19	839729	Concrete Barrier (Type 736 S or 736 S Mod)	LF	400	0	0	0	0	0	0	0	0	0
					\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
20	839734	Concrete Barrier (Type 736 SV)	LF	0	0	0	0	0	0	0	0	0	0
					\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		Subtotal			\$98,190	\$119,670	\$141,150	\$164,930	\$188,010	\$209,390	\$256,658	\$287,390	\$319,850
		10% Contingencies			\$9,819	\$11,967	\$14,115	\$16,493	\$18,801	\$20,939	\$25,666	\$28,739	\$31,985
		Total			\$108,009	\$131,637	\$155,265	\$181,423	\$206,811	\$230,329	\$282,324	\$316,129	\$351,835
		*Item cost at wall heights 18', 20', and 22' were											
		increased due to special design considerations.		Heights	6	8	10	12	14	16	18	20	22

	Engineer's Cost Estimate for Noise Barrier No. S9075												
				Heights	6	8	10	12	14	16	18	20	22
Item Code	Item Code	Description of Construction Item	Unit	Price Per Unit					Quantity				
1	66210	Minor Landscape Modifications	LS	50000	0	0	0	0	0	0	0	0	0
					\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2	120100	Traffic Control System	LS	60000	0	0	0	0	0	0	0	0	0
					\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
3	129110	Temporary Crash Cushion	EA	3500	0	0	0	0	0	0	0	0	0
					\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4	150768	Remove Asphalt Concrete Pavement	СҮ	275	0	0	0	0	0	0	0	0	0
					\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
5	150833	Remove Retaining Wall	LF	80	0	0	0	0	0	0	0	0	0
					\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6	152603	Modify Drainage System	LS	600000	0	0	0	0	0	0	0	0	0
					\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
7	153221	Remove Concrete Barrier	LF	50	0	0	0	0	0	0	0	0	0
					\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8	153253	Remove Soundwall	SQFT	5	0	0	0	0	0	0	0	0	0
					\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
9	192038	Structure Excavation (Sound Wall)	CY	125	218	218	218	218	218	218	218	218	218
					\$27,250	\$27,250	\$27,250	\$27,250	\$27,250	\$27,250	\$27,250	\$27,250	\$27,250
10	192048	Structure Excavation , Retaining Wall (Sound Wall)	СҮ	50	0	0	0	0	0	0	0	0	0
					\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
11	193014	Structure Backfill (Sound Wall)	СҮ	125	146	146	146	146	146	146	146	146	146
					\$18,250	\$18,250	\$18,250	\$18,250	\$18,250	\$18,250	\$18,250	\$18,250	\$18,250
12	193020	Structure Backfill , Retaining Wall (Sound Wall)	СҮ	60	0	0	0	0	0	0	0	0	0
					\$0	\$0	\$0	\$0	\$0	\$0			
13	390132	Hot Mix Asphalt (Type A)	TON	285	0	0	0	0	0	0	0	0	0
					\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
14	490601	16" Cast-In-Drilled-Hole Concrete Piling*	LF	100	329	400	470	575	667	756	756	756	756
					\$32,900	\$40,000	\$47,000	\$57,500	\$66,700	\$75,600	\$86,940	\$90,720	\$94,500
15	510059	Structure Concrete, Retaining Wall (Sound Wall)	CY	1700	0	0	0	0	0	0	0	0	0
					\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
16	510060	Structural Concrete, Retaining Wall	CY	890	0	0	0	0	0	0	0	0	0
					\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
17	582001	Soundwall (Masonry Block)*	SQFT	20	4410	5880	7350	8820	10290	11760	13230	14700	16170
					\$88,200	\$117,600	\$147,000	\$176,400	\$205,800	\$235,200	\$304,290	\$352,800	\$404,250
18	800103	Temporary Fence (Type CL-6)	LF	25	0	0	0	0	0	0	0	0	0
					\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
19	839729	Concrete Barrier (Type 736 S or 736 S Mod)	LF	400	0	0	0	0	0	0	0	0	0
					\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
20	839734	Concrete Barrier (Type 736 SV)	LF	0	0	0	0	0	0	0	0	0	0
					\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
		Subtotal			\$166,600	\$203,100	\$239,500	\$279,400	\$318,000	\$356,300	\$436,730	\$489,020	\$544,250
		10% Contingencies			\$16,660	\$20,310	\$23,950	\$27,940	\$31,800	\$35,630	\$43,673	\$48,902	\$54,425
		Total			\$183,260	\$223,410	\$263,450	\$307,340	\$349,800	\$391,930	\$480,403	\$537,922	\$598,675
		*Item cost at wall heights 18', 20', and 22' were											
		increased due to special design considerations.		Heights	6	8	10	12	14	16	18	20	22

Appendix C Noise Barrier Elevations

	Modeled Noise Barrier's Top and Bottom Elevations											
		Bottom of				Top of Wall	Elevations at W	all Heights:				
Barrier No.	SR-133 Station*	Wall Elevations	6 feet	8 feet	10 feet	12 feet	14 feet	16 feet	18 feet	20 feet	22 feet	
	9061+81	184.00	190.00	192.00	194.00	196.00	198.00	200.00	202.00	204.00	206.00	
	9062+72	184.00	190.00	192.00	194.00	196.00	198.00	200.00	202.00	204.00	206.00	
	9063+09	182.00	188.00	190.00	192.00	194.00	196.00	198.00	200.00	202.00	204.00	
	9064+00	184.30	190.30	192.30	194.30	196.30	198.30	200.30	202.30	204.30	206.30	
S9066	9065+00	185.90	191.90	193.90	195.90	197.90	199.90	201.90	203.90	205.90	207.90	
33000	9066+00	186.00	192.00	194.00	196.00	198.00	200.00	202.00	204.00	206.00	208.00	
l	9066+29	186.00	192.00	194.00	196.00	198.00	200.00	202.00	204.00	206.00	208.00	
l	9067+00	186.00	192.00	194.00	196.00	198.00	200.00	202.00	204.00	206.00	208.00	
l	9068+00	186.00	192.00	194.00	196.00	198.00	200.00	202.00	204.00	206.00	208.00	
	9068+59	188.00	194.00	196.00	198.00	200.00	202.00	204.00	206.00	208.00	210.00	
	9063+54	184.00	190.00	192.00	194.00	196.00	198.00	200.00	202.00	204.00	206.00	
	9064+00	184.00	190.00	192.00	194.00	196.00	198.00	200.00	202.00	204.00	206.00	
l	9065+00	184.00	190.00	192.00	194.00	196.00	198.00	200.00	202.00	204.00	206.00	
\$9067	9066+25	184.00	190.00	192.00	194.00	196.00	198.00	200.00	202.00	204.00	206.00	
33007	9066+74	184.00	190.00	192.00	194.00	196.00	198.00	200.00	202.00	204.00	206.00	
	9067+26	184.00	190.00	192.00	194.00	196.00	198.00	200.00	202.00	204.00	206.00	
	9067+52	184.00	190.00	192.00	194.00	196.00	198.00	200.00	202.00	204.00	206.00	
	9067+83	184.00	190.00	192.00	194.00	196.00	198.00	200.00	202.00	204.00	206.00	
	9070+15	185.50	191.50	193.50	195.50	197.50	199.50	201.50	203.50	205.50	207.50	
l	9071+00	185.50	191.50	193.50	195.50	197.50	199.50	201.50	203.50	205.50	207.50	
	9072+00	185.50	191.50	193.50	195.50	197.50	199.50	201.50	203.50	205.50	207.50	
	9073+00	185.50	191.50	193.50	195.50	197.50	199.50	201.50	203.50	205.50	207.50	
S9075	9074+00	185.50	191.50	193.50	195.50	197.50	199.50	201.50	203.50	205.50	207.50	
	9075+00	185.50	191.50	193.50	195.50	197.50	199.50	201.50	203.50	205.50	207.50	
	9076+00	185.50	191.50	193.50	195.50	197.50	199.50	201.50	203.50	205.50	207.50	
	9077+00	185.50	191.50	193.50	195.50	197.50	199.50	201.50	203.50	205.50	207.50	
	9077+30	185.50	191.50	193.50	195.50	197.50	199.50	201.50	203.50	205.50	207.50	
* SR-133 stations are ap	proximate values.	Elevations are t	based on surfact	e information ar	nd preliminary d	esign plans and	profiles. Locati	on of noise barr	iers are at Caltra	ans or State's rig	tt-of-way.	