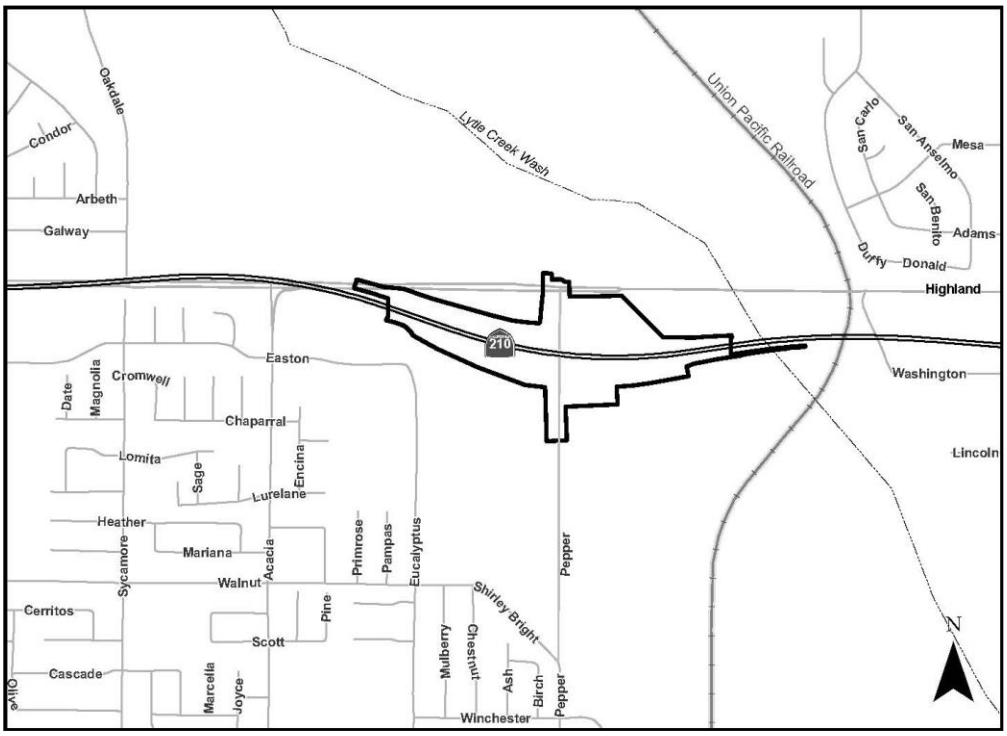
State Route 210/Pepper Avenue New Interchange Project ***NADR***



Noise Abatement Decision Report

Reference: Noise Study Report, State Route 210/Pepper Avenue New Interchange Project Noise Study Report, January 2014

City of Rialto, San Bernardino County, California

08-SBD-210 (PM 19.3/20.1)

Project Identification Number: 0800020180

EA 08-443940

March 2014

Caltrans

Noise Abatement Decision Report

Reference: Noise Study Report, State Route 210/Pepper Avenue New Interchange Project Noise Study Report, January 2013

City of Rialto, San Bernardino County, California

08-SBD-210 (PM 19.3/20.1)

Project Identification Number: 08-0002-0180
EA 08-443940

March 2014

Prepared By: _____ Date: 3-20-14

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List of Abbreviated Terms

Benefited residence	A dwelling unit or other equivalent land use expected to receive a noise reduction of at least 5 dBA from the proposed abatement measure
Caltrans	California Department of Transportation
CE	Categorical Exclusion
Critical design receiver	The design receiver that is impacted and for which the absolute noise levels, build vs. existing noise levels, or achievable noise reduction will be at a maximum where noise abatement is considered
Date of public knowledge	The date that a project is approved—approval of the final environmental documentation (e.g., Record of Decision) is complete
dB	A measure of sound pressure level on a logarithmic scale
dBA	A-weighted sound pressure level
ED	Environmental Document
FHWA	Finding of No Significant Impact
FONSI	Federal Highway Administration
Leq	Equivalent sound level (energy averaged sound level)
Leq[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.
Planned, designed, and programmed	A noise-sensitive land use is considered planned, designed, and programmed when it has received final development approval (generally the issuance of a building permit) from the local agency with jurisdiction
Reasonable allowance	A single dollar value—a reasonable allowance per benefited residence that embodies five reasonableness factors
ROD	Record of Decision

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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 NADR has been appoved by a California licensed professional civil engineer. The project level noise study report (NSR) (Noise Study Report, State Route 210/Pepper Avenue New Interchange Project Noise Study Report, January 2014) prepared for this project is hereby incorporated by reference.

1.1. Noise Abatement Assessment Requirements

Title 23, Code of Federal Regulations (CFR), Part 772 of the Federal Highway Administration (FHWA) standards (23 CFR 772) and the Caltrans Traffic Noise Analysis Protocol (Protocol) require that noise abatement be considered for projects that are predicted to result in traffic noise impacts. A traffic noise impact is considered to occur when future predicted design-year noise levels with the project "approach or exceed" Noise Abatement Criteria (NAC) defined in 23 CFR 772 or when the predicted design-year noise levels with the project substantially exceed existing noise levels. A predicted design-year noise level is considered to "approach" the NAC when it is within 1 dB of the NAC. A substantial increase is defined as being a 12-dB increase above existing conditions.

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

The preliminary reasonableness determination reported in this document is based on the noise reduction design goal and the cost of abatement. The viewpoints of benefited receptors are 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 deterined by calculating a cost allowance that is considered to be a reasonable amount of money to spend on abatement. This *reasonble 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 envioronmental review process for any barriers where the preliminary determination is that abatement is reasonable.

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

1.2. Purpose of the Noise Abatement Decision Report

The purpose of the 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 nonacoustical 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

The San Bernardino Associated Governments (SANBAG), in cooperation with the California Department of Transportation (Caltrans) and the City of Rialto, is proposing to construct the new interchange along State Route (SR) 210 at Pepper Avenue. This proposed project is included in the 2013 Federal Transportation Improvement Program (FTIP) as project number 20110110. It is also included in the Southern California Association of Governments' (SCAG) 2012-2035 Regional Transportation Plan (RTP) as project number 4M1007 (project identification number 0800020180).

The SR-210/Pepper Avenue New Interchange project is located along SR-210 within the jurisdictional limits of the Cities of Rialto and San Bernardino (see Figures 1-1 and 1-2). The interchange immediately to the west is Riverside Avenue and to the east is State Street/University Parkway. Preliminary engineering was previously completed, and final design was initiated, for the proposed interchange under the SR-210 freeway extension project. In mid-2003, this interchange was removed from the SR-210 freeway extension project since the construction of Pepper Avenue to Highland Avenue, which is a separate local project by the City of Rialto, was not completed. As part of the SR-210 freeway extension project, some grading occurred and partial right-of-way was preserved for a future diamond configuration interchange at SR-210/Pepper Avenue. Pepper Avenue currently extends approximately 2,000 feet north of Baseline Road to Shirley Bright Road. The City of Rialto is now currently constructing the Pepper Avenue Extension as a four-lane roadway

from this point up to approximately 1,300 feet south of Highland Avenue. The Caltrans right of way extends south along Pepper Avenue approximately 500 feet south of the proposed eastbound ramps intersection. The 1,300-foot portion of Pepper Avenue within the Caltrans right of way from the City's terminus to Highland Avenue is planned to be constructed by the City as a two-lane roadway (one lane in each direction) until the interchange project is constructed. The City initiated construction of the four-lane extension of Pepper Avenue in July 2012 and expects to complete construction by May 2014. The City is also scheduled to initiate and complete construction of the two-lane gap closure portion of Pepper Avenue by May 2014. Both projects are scheduled to be completed well in advance of the proposed SR-210/Pepper Avenue Interchange project.

The proposed Build Alternative would construct a new tight diamond interchange along SR-210 at Pepper Avenue. The project would provide freeway access ramps at each of the four quadrants of the diamond configuration interchange. The eastbound and westbound off-ramps would widen from one lane where the ramps diverge from SR-210 to two lanes at the intersection with Pepper Avenue where a dedicated left turn lane and a dedicated right turn lane would be provided. The eastbound and westbound on-ramps would each include two lanes at the intersection with Pepper Avenue and would taper to one lane prior to merging onto SR-210. At the ramp intersections with Pepper Avenue, traffic signals would be installed. A traffic signal would also be installed at the Pepper Avenue/Highland Avenue intersection.

Pepper Avenue would be widened from two (constructed as the City's gap closure project) to four through lanes from Highland Avenue to south of the intersection of Pepper Avenue and the eastbound ramps; a distance of approximately 1,300 feet. This portion of Pepper Avenue would ultimately consist of two 12-foot through lanes in each direction with an 8-foot shoulder, curb and gutter, a 6.5-foot parkway, and a 5-foot sidewalk on both sides of the roadway (i.e., next to the 6.5-foot parkway northbound and southbound from the freeway), except within the undercrossing where the sidewalk would be 6.5 feet wide. A dedicated 12-foot left turn lane from northbound Pepper Avenue to the westbound on-ramp and from southbound Pepper Avenue to the eastbound on-ramp would also be constructed. The south end of the interchange project would match the four-lane Pepper Avenue Extension project that is currently under construction by the City of Rialto.

Two retaining walls would be constructed along Pepper Avenue beneath the undercrossing structures at the abutment slopes of the structure. They are anticipated to each be approximately 400 feet long with a 10-foot design height. The retaining walls would include aesthetic design treatments and features consistent with the policies, principles, and standards

contained in Caltrans' *Highway Design Manual*, and input from the City of Rialto regarding aesthetic wall treatments for facilities located within the City. Utilities would be adjusted or relocated, as needed, to accommodate the new interchange. Best Management Practice (BMP) features, including modifications to the existing, or the installation of new, water quality control features, would also be part of the project. This is anticipated to include two additional water quality basins, which would be adjacent to the southeast corner of the proposed interchange adjacent to the eastbound on-ramp and the northeast corner of the interchange adjacent to the proposed westbound off-ramp. The water quality basins would be designed and planted so they would blend into the existing sage scrub landscape. Limited additional landscaping appropriate to the setting, and any necessary irrigation, will be installed to preserve and enhance existing landscape character. Also, to the fullest extent practicable, BMPs would be designed to convey both stormwater quantity flows and peak flows.

Some permanent right-of-way acquisition is anticipated for the proposed Build Alternative.

1.4. Affected Land Uses

The land uses surrounding the project area consist of a park (Frisbie Park), existing residential development, and a tributary of Lytle Creek, to the west; and, Lytle Creek Wash to the east vegetated with non-native grassland (NNG) and ruderal species, and one abandoned/uninhabitable residence (SR-210/Pepper Avenue southeast quadrant). Towards the eastern edge of the Wash is the Union Pacific Railroad (UPRR) alignment, which traverses the Wash in a generally south-to-north direction atop an elevated concrete causeway. A sand and gravel quarry (Vulcan Materials Company) is located north of SR-210, on the north side of East Highland Avenue. The terrain of the project area is generally uniform, with SR-210 on fill relative to the surrounding project area.

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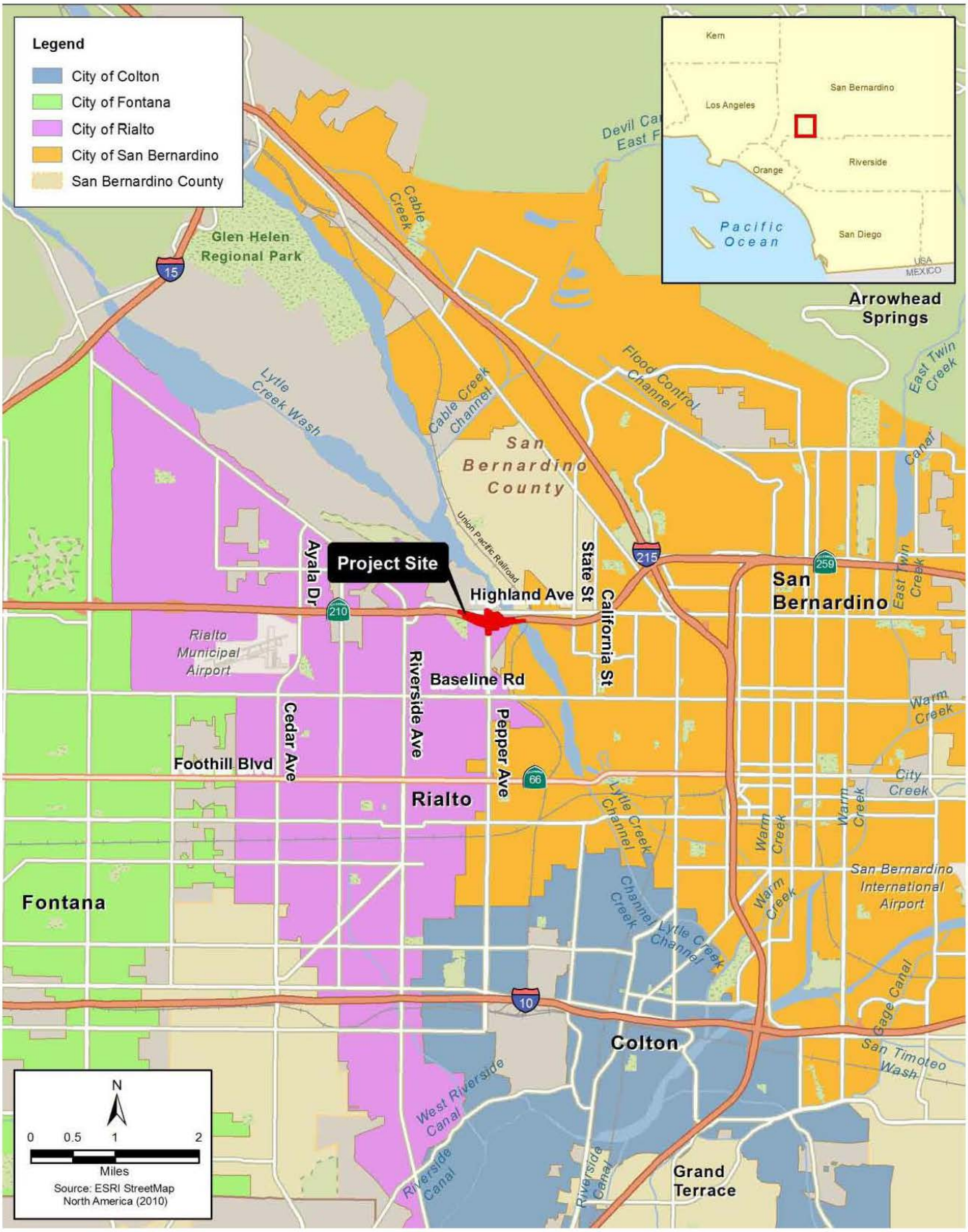

Figure 1-1
Project Vicinity Map

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Figure 1-2
Project Location Map

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2. Results of the Noise Study Report

The NSR for this project was prepared by Peter Hardie on January 28, 2014 and approved by Olufemi Odufalu, P.E. on February 5, 2014.

Table 2-1 summarizes NAC corresponding to various land use activity categories. Activity categories and related traffic noise impacts are determined based on the actual land use in a given area.

Table 2-1. Activity Categories and Noise Abatement Criteria

Activity Category	NAC, Hourly A-Weighted Noise Level (dBA L_{eq}[h])[1] (Evaluation Location)	Description of Activities
A	57 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B[2]	67 (Exterior)	Residential.
C[2]	67 (Exterior)	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52 (Interior)	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72 (Exterior)	Exterior Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A–D or F.
F	n/a	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	n/a	Undeveloped lands that are not permitted.

[1] The L_{eq}(h) activity criteria values are for impact determination only and are not design standards for noise abatement measures. All values are A-weighted decibels (dBA).

[2] Includes undeveloped lands permitted for this activity category.

n/a – Not applicable. There is no NAC for this activity category.

A total of 11 representative receivers were used to model existing and future land uses in the study area for the design year (year 2036). A majority of the receivers are representative of recreational uses (Activity Category C) at Frisbie Park, located southwest of the proposed interchange. The other modeled receivers are representative of open space (Activity Category

G) or industrial (Actitivy Category F) land uses, which are not noise-sensitive but were included in the analysis for completeness, pursuant to the Caltrans Noise Protocol.

When traffic noise impacts are identified, noise abatement measures must be considered. Noise impacts are defined to occur when there will be a substantial noise increase predicted ("substantial increase" is defined in the protocol as when noise levels with the project exceed existing noise levels by 12 dB), or when predicted noise levels under future build conditions approach within 1 dB, or exceed the NAC.

The predicted traffic noise levels for the design-year with-project conditions were found to approach or exceed the NAC of 67 dBA for Activity Category C land uses at seven receivers for the Build Alternative under design year (2036) conditions; these receivers represent Frisbie Park. The taffic noise levels at recreation areas within Frisbie Park are predicted to be in the range of 64 to 69 dBA Leq(h) in the design year (2036) build conditions. Table B-1 from the approved NSR, which summarizes the traffic noise modeling results for existing and design year-conditions with and without the project and provides a comparison of the predicted noise reductions by barrier height for each barrier analyzed, is included in Appendix A.

One noise barrier (NB-1), ranging from 6 to 16 feet in height and approximately 2,189 feet in length, was analyzed for the outdoor frequent use areas that would be exposed to traffic noise levels approaching or exceeding the NAC. The noise barrier was analyzed for feasibility, providing a minimum of 5 dB noise reduction for impacted receivers. Noise Barrier NB-1 was found to be acoustically feasible if constructed at heights ranging from 12 feet to 16 feet. NB-1 would be constructed at or near the edge of shoulder, and would be approximately 2,165 feet in length. Table 2-2 on the following page summarizes the relevant information for NB-1. The location of noise barrier NB-1 is included in Appendix B.

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

Barrier	Location	Station	Height (feet)	Acoustically Feasible?	Number of Benefited Residences or Residential Equivalents	Design Goal Achieved?	Reasonable Allowance per Residence	Total Reasonable Allowance
NB-1	EOS	486+03 to 507+92	6	No	0	No	$0	$0
			8	No	0	No	$0	$0
			10	No	0	No	$0	$0
			12	Yes	6	Yes	$55,000	$330,000
			14	Yes	6	Yes	$55,000	$330,000
			16	Yes	7	Yes	$55,000	$385,000

EOS = edge of shoulder

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3. Preliminary Noise Abatement Decision

3.1. Summary of Key Information

The preliminary noise abatement decision is based on the State Route 210/Pepper Avenue New Interchange Project NSR (ICF International, January 2014). In the NSR, one noise barrier was found to be feasible at wall heights ranging from 12 feet to 16 feet, providing a minimum 5-dB reduction. The design goal of 7 dB would be achieved at wall heights of 12, 14, and 16 feet.

Table 3-1 summarizes the preliminary noise abatement decision by investigating a) acoustical feasibility, b) number of benefited residences, c) the total reasonableness allowance, d) engineer's cost estimate for the abatement, and e) comparison of cost versus allowance.

Costs associated with the mitigation of secondary effects of the abatement were not included in the abatement construction cost estimate. These types of mitigation include:

- Mitigation of visual effects, such as planting of vines or use of see-through wall materials;
- Mitigation of effects related to hazardous materials (i.e., removal of materials);
- Mitigation of effects on cultural resources (i.e., removal of buried artifacts).

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

Wall construction costs are based on Caltrans' 2012 Contract Cost Data and masonry construction, in accordance with Caltrans' 2010 Standard Specifications and Standard Plans. Details regarding the development of cost data are included in Appendix C of this report.

As shown in Table 3-1, the estimated construction cost would exceed the reasonable allowance for each of the barrier heights found to be acoustically feasible.

Table 3-1. Summary of Abatement Key Information

Barrier	Height (feet)	Acoustically Feasible?	Number of Benefited Residences	Total Reasonable Allowance	Estimated Construction Cost	Cost Less than Allowance?
NB-1	6	No	0	NA	NA	NA
	8	No	0	NA	NA	NA
	10	No	0	NA	NA	NA
	12	Yes	6	$330,000	$1,800,800	No
	14	Yes	6	$330,000	$1,941,000	No
	16	Yes	7	$385,000	$2,046,400	No

3.2. Non-acoustical Factors Relating to Feasibility

The following non-acoustical factors have been identified.

Geometric standards, such as minimum sight distances: Because there is an approximately three-foot high existing barrier controlling the horizontal sight distance, the sight distance with the sound barrier would be unchanged.

Safety: A three-foot high safety shape barrier would be provided for the entire length of the sound barrier.

Retaining walls: An existing retaining wall is located along the originally planned existing mainline shoulder. Since the auxiliary lane in advance of the Pepper Avenue off-ramp was not constructed as part of the SR-210, the retaining wall location was not constructed entirely on the existing mainline edge of shoulder. Rather the horizontal location varies between approximately 10-22 feet to the right of the edge of mainline traveled way. This retaining wall would need to be reconstructed if the soundwall was constructed. The soundwall would be built atop of the reconstructed retaining wall. To avoid a reduction in horizontal sight distance, the combined retaining/sound wall would need to be constructed in the same location it currently exists which would result in the same varying distance from right of the edge of traveled way.

Storm drains: A storm drain opening in the wall footing would be necessary to accommodate the existing 60-inch storm drain which parallels the mainline shoulder and would therefore, be adjacent to the proposed sound wall. The existing 96-inch storm drain which diagonally

crosses the mainline just east of the proposed eastbound off-ramp gore point, would cross the wall alignment and is assumed to be deep enough to be protected in place.

Other facilties: The existing underground Caltrans fiber optic line in the area of the proposed soundwall may need to be relocated.

3.3. Preliminary Recommendation and Decision

Noise Barrier NB-1 was found to be acoustically feasible if constructed at heights ranging from 12 feet to 16 feet. NB-1 would be constructed at or near the edge of shoulder, and would be approximately 2,165 feet long. Table 2-2 summarizes the relevant information for NB-1.

As shown in Table 3-1, the estimated construction cost would exceed the reasonable allowance for each of the barrier heights found to be acoustically feasible. Thus the barrier NB-1 is determined not reasonable to construct.

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.

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4. Secondary Effects of Abatement

As identified in Section 3.3, noise barrier NB-1 is identified as being not reasonable to construct. Therefore, there is no potential for adverse secondary effects to occur as no abatement is proposed for construction.

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5. References

ICF International. 2014. Noise Study Report, State Route 210/Pepper Avenue New Interchange Project, City of Rialto, San Bernardino County, California. Irvine, CA

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Appendix A Table B-1 from the Approved Noise Study Report (NSR)

Table B-1 from the approved NSR summarizes the traffic noise modeling results for existing and design-year conditions with and without the project. Table B-1 from the approved NSR also compares the predicted noise reductions by barrier height for each noise barrier analyzed.

Table B-1. Traffic Noise Levels for Existing, Future No Build, Future Build

Receiver I.D.	Area	Barrier I.D.	Land Use / Activity Category	Number of Dwelling Units or Equivalent	Address	Existing Noise Level $L_{eq}(h)$, dBA	SR 210 / Pepper Avenue New Interchange Project Future Worst Hour Noise Levels - $L_{eq}(h)$, dBA																						
							Design Year Noise Level without Project, Leq(h), dBA	Design Year Noise Level with Project, Leq(h), dBA	Design Year Noise Level without Project minus Existing Conditions Leq(h), dBA	Design Year Noise Level with Project minus No Project Conditions Leq(h), dBA	Activity Category (NAC)	Impact Type (None, or A/E)	Noise Prediction with Barrier, Barrier Insertion Loss (I.L.), and Number of Benefited Receivers (NBR)																
													6 feet			8 feet			10 feet			12 feet			14 feet			16 feet		
													$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR
M1	**A**	**NB-1**	**Recreational / C**	**1**	**Frisbie Park 1920 Acacia Avenue**	**67**	**68**	**69**	**1**	**1**	**C(67)**	**A/E**	**66**	**3**	**0**	**65**	**4**	**0**	**64**	**5**	**1**	**62** [a]	**7**	**1**	**62**	**7**	**1**	**61**	**8**	**1**
ST1	**A**	**NB-1**	**Recreational / C**	**1**	**Frisbie Park 1920 Acacia Avenue**	**68**	**69**	**69**	**1**	**0**	**C(67)**	**A/E**	**67**	**2**	**0**	**66**	**3**	**0**	**64**	**5**	**1**	**63** [a]	**6**	**1**	**62**	**7**	**1**	**61**	**8**	**1**
M2	**A**	**NB-1**	**Recreational / C**	**1**	**Frisbie Park 1920 Acacia Avenue**	**67**	**69**	**69**	**2**	**0**	**C(67)**	**A/E**	**67**	**2**	**0**	**65**	**4**	**0**	**65**	**4**	**0**	**64**	**5**	**1**	**62** [a]	**7**	**1**	**61**	**8**	**1**
M3	**A**	**NB-1**	**Recreational / C**	**1**	**Frisbie Park 1920 Acacia Avenue**	**66**	**67**	**67**	**1**	**0**	**C(67)**	**A/E**	**65**	**2**	**0**	**64**	**3**	**0**	**63**	**4**	**0**	**62** [a]	**5**	**1**	**61**	**6**	**1**	**60**	**7**	**1**
M4	**A**	**NB-1**	**Recreational / C**	**1**	**Frisbie Park 1920 Acacia Avenue**	**65**	**66**	**67**	**1**	**1**	**C(67)**	**A/E**	**65**	**2**	**0**	**64**	**3**	**0**	**63**	**4**	**0**	**61** [a]	**6**	**1**	**61**	**6**	**1**	**60**	**7**	**1**
ST2	**A**	**NB-1**	**Recreational / C**	**0**	**Frisbie Park 1920 Acacia Avenue**	**66**	**67**	**68**	**1**	**1**	**C(67)**	**A/E**	**67**	**1**	**0**	**65**	**3**	**0**	**63** [a]	**5**	**0**	**63**	**5**	**0**	**62**	**6**	**0**	**61**	**7**	**0**
M5	**A**	**NB-1**	**Recreational / C**	**1**	**Frisbie Park 1920 Acacia Avenue**	**65**	**66**	**68**	**1**	**2**	**C(67)**	**A/E**	**66**	**2**	**0**	**64**	**4**	**0**	**63** [a]	**5**	**1**	**62**	**6**	**1**	**61**	**7**	**1**	**61**	**7**	**1**
M6	A	NB-1	Recreational / C	1	Frisbie Park 1920 Acacia Avenue	62	64	64	2	0	C(67)	None	**63**	1	0	**62**	2	0	**61**	3	0	**60**	4	0	**60** [a]	4	0	**59**	5	1
M7	A	n/a	Open Space / G	0	Southwest quadrant of proposed SR 210 / Pepper Avenue Interchange	62	64	65	2	1	n/a	None	**0**	--	--	**0**	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ST3	B	n/a	Open Space / G	0	Southeast quadrant of proposed SR 210 / Pepper Avenue Interchange	58	60	66	2	6	n/a	None	**0**	--	--	**0**	--	--	--	--	--	--	--	--	--	--	--	--	--	--
M8	C	n/a	Industrial / F	0	North of Highland Avenue at Pepper Avenue (20554 East Highland Avenue)	64	66	67	2	1	n/a	None	**0**	--	--	**0**	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Note: A/E= Future noise conditions approach or exceed the Noise Abatement Criteria.

[a] Minimum height needed to break the line of sight between 11.5 foot truck stack and first row receivers.

Appendix B Analysis Areas, Noise Monitoring and Modeling Locations, and Locations of Evaluated Noise Barriers

The included figure shows the evaluated location for noise barrier NB-1.

Analysis Areas, Noise Monitoring and Modeling Locations and Locations of Evaluated Noise Barriers
State Route 210/Pepper Avenue New Interchange Project

Appendix C Engineers Cost Estimate

The following cost estimate for noise barrier NB-1 was provided by Civil Works Engineers.

Soundwall

SANBAG, Caltrans District 8
Prepared by: Civil Works Engineers

March 2014
Opinion of Probable Construction Cost

					H = 12		H = 14		H = 16	
Item Number	**Payment Ref. Special Provision**	**Description**	**Unit**	**Unit Price**	**Estimate Quantity**	**Total Cost**	**Estimate Quantity**	**Total Cost**	**Estimate Quantity**	**Total Cost**
		Traffic Control	LS	$25,000	1	$25,000	1	$25,000	1	$25,000
		Storm Water Pollution Prevention	%Cost + SWPPP		1	$26,100	1	$27,400	1	$28,600
		REMOVALS								
		Clear & Grub	AC	$2,000	0.5	$1,000	0.5	$1,000	0.5	$1,000
		Remove Retaining Wall & Barrier	CY	$150	1,280.0	$192,000	1280.0	$192,000	1280.0	$192,000
		Roadway Excavation	CY	$20	3,690	$73,800	3,720	$74,400	3,750	$75,000
		SOUNDWALL								
		Soundwall / Retaining Wall	SQFT	$16	19,500	$312,000	23,800	$380,800	28,200	$451,200
		Misc Concrete (Barrier, Foundation, Wall)	CY	$350	1,860	$651,000	1,890	$661,500	1,920	$672,000
		Reinforcing Steel	LBS	$1	204,700	$204,700	240,400	$240,400	245,600	$245,600
		MISCELLANEOUS								
		Drainage Facilities	LS	$10,000	1	$10,000	1	$10,000	1	$10,000
		Misc Conduits (signal, lighting, landscape)	LS	$5,000	1	$5,000	1	$5,000	1	$5,000
		OTHER								
						$0	0	$0	0	$0
						$0	0	$0	0	$0
		Subtotal				$1,500,600		$1,617,500		$1,705,400
		Mobilization		10%		$150,100		$161,800		$170,500
		Contingency		10%		$150,100		$161,800		$170,500
		Total Project Cost				**$1,800,800**		**$1,941,100**		**$2,046,400**

Assumptions:
The replacement retaining wall based on Bridge Standard Detail Sheet 1SWB however, design changes would need to be made to account for the site PGA being greater than 0.6g
Where retaining wall is not needed, the soundwall foundation is per Standard Plan B15-1 Case 2
Excludes reconstruction of the non-standard existing slope varying between 1.5:1 and 2:1
Excludes project development costs & construction administration costs