



## Noise Abatement Decision Report

Reference: Traffic Noise Study Report by Aye Htoon, T.E., P.E.

IN LOS ANGELES COUNTY AND SAN BARNERNADINO COUNTY

IN CITY OF PALMDALE, VICTORVILLE, APPLE VALLEY, AND ADELANTO

NEAR

AVE P-8 FROM RTE 14 TO BEAR VALLEY RD./SR18

07-LA-138 PM 42.4 to 08-SBd-18 PM 84.4

07-LA-14 PM 57.8/64.1

08-SBd-I15 PM 43.0/49.0

EA 2000U0  
October, 2015



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Traffic Noise Report by Aye Htoon, on June 1<sup>th</sup>, 2015

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October 15, 2015

Approved By:



Date:



Sam Alameddine, Chief  
Office of Design B



## List of Abbreviated Terms

Caltrans	California Department of Transportation
dB	A measure of sound pressure level on a logarithmic scale
dBA	A-weighted sound pressure level
FHWA	Federal Highway Administration
Leq	Equivalent sound level (energy averaged sound level)
Leq[h]	A-weighted, energy average sound level during a 1-hour period
Benefited residence	A dwelling unit expected to receive a noise reduction of at least 5 dBA from the proposed abatement measure
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
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
Date of public knowledge	The date that a project is approved-approval of the final environment documentation (e.g. Record of Decision) is completed
NSR	Noise Study Report
NADR	Noise Abatement Decision Report
NAC	Noise Abatement Criteria
ED	Environmental Document
Reasonable allowance	A single dollar value-a reasonable allowance per benefited residence that embodies five reasonableness factors



# 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 prepared by a California licensed professional civil engineer. The Traffic Noise Study Report (TNSR) for the High Desert Corridor Project, prepared by Caltrans Noise and Vibration Branch in June 2015, 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) requires 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.

The Protocol establishes a process for assessing the reasonableness and feasibility of noise abatement. Before publication of the draft environmental document, a preliminary noise abatement decision is made. The preliminary noise abatement decision is based on the feasibility of evaluated abatement and the preliminary reasonableness determination. Noise abatement is considered to be acoustically feasible if it provides noise reduction of at least 5 dBA at receivers subject to noise impacts. Other non-acoustical factors relating to the geometric standards (e.g., sight distances), safety, maintenances, and security can also affect feasibility.

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

The 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 (ED) is published. The final overall reasonableness decision will take this information into account, along with other reasonableness factors identified during the environmental review process. These factors may include:

- Impacts of abatement construction,
- Public and local agency input,
- Life cycle of abatement measures,
- Views/opinions of impacted residents, and
- Social, economic environmental, legal and technological factors.

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

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

The purpose of the NADR is to:

- Summarize the conclusions of the NSR relating to acoustical feasibility and the reasonable allowances for abatement evaluated,
- Present the engineer's cost estimate for evaluated abatement,
- Present the engineer's evaluation of 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 barrier 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 project proposes to construct a new freeway High Desert Corridor linking State Route SR-14 in Los Angeles County to State Route 18 in San Bernardino County, California to accommodate the growing demand in the Antelope Valley. The new freeway will link some of the fastest residential, commercial, and industrial growth areas in southern California including cities of Palmdale, Lancaster, Adelanto, Victorville, and the Town of Apple Valley.

Five alternatives have been considered for the environmental analysis in the EIR/EIS as part of this project:

**No Build Alternative** – This alternative represents the future travel condition without the HDC project.

**Freeway/Expressway Alternative (HDC Highway Only, Avenue P-8, I-15 and SR-18)** – This alternative consists of a combination of a controlled-access freeway and an expressway. Four alignment variations A, B, D, and E will be considered

**Freeway/Tollway Alternative (HDC Highway with Tollway, Avenue P-8, I-15 and SR-18)** – This alternative follows the same route as Freeway/Expressway Alternative with alteration made in coordination with a Public Private Partnership analysis.

**Freeway/Expressway Alternative with High Speed Rail (HSR) Feeder Service (HDC Highway with HSR)** – This alternative follows the same route as Freeway/Expressway Alternative. In addition, it includes consideration of additional right-of-way to accommodate a High Speed Rail Feeder Service (HSR-FS) facility.

**Freeway/Tollway Alternative with High Speed Rail Feeder Service (HDC Highway with Tollway and HSR)** – This alternative is similar to Freeway/Expressway Alternative with High Speed Rail Feeder Service with alteration made in coordination with a Public Private Partnership analysis.

#### **1.4. Affected Land Uses**

The traffic noise analysis indicates that residential areas, a school, a park and a Church within the project limits will be impacted after project completion under Freeway/Expressway alternative [i.e. the noise level will approach or exceed FHWA Noise Abatement Criteria (NAC)]. A traffic noise impact also occurs when there is a substantial noise increase (12 dBA or more from existing baseline conditions).

Unity Church (a place of worship), located west of 8<sup>th</sup> Street along the new eastbound HDC will benefit from soundwalls along the edge of shoulder.

Palmdale Learning Plaza School is located between Avenue S and Palmdale Boulevard, along northbound SR-14. Noise impacts have been identified, noise abatement has been considered in the form of noise barrier for Palmdale Learning Plaza School.

## 2. Results of the Noise Study Report

The NSR for this project was prepared by Aye Htoon on June 1, 2015 and supervised by Jin S. Lee dated June 1, 2015. It addresses the highway related noise for the freeway/Expressway Alternative with and without Tollway. The High Speed Rail Feeder Rail related noise has been analyzed in the “ Noise Study Report and High Speed Rail Vibration Impact Assessment, August 15, 2014” by Parsons Company.

An analysis with barrier heights ranging from 8 to 20 feet was conducted for impacted noise sensitive areas. All recommended barrier heights and locations are designed to provide a minimum of 5-dB noise reduction. Tables below provide summaries of the feasible barriers, including the number of benefited residences, reasonableness allowance per residence, and reasonableness allowance cost per barrier.

Table 1-Summary of Reasonableness Determination Data For Soundwalls On SR-14:								
Barrier	Direction	Location		Height(ft)	Acoustical Feasibility	Number of Benefited Residences	Reasonable Allowance per Residence	Total Reasonable Allowance
SW-100, SW-101	NB	ES	Between Ave.S and Palmdale Blvd.	8	Y	1	\$71,000	\$71,000
				10	Y	8	\$71,000	\$568,000
				12	Y	10	\$71,000	\$710,000
				14	Y	14	\$71,000	\$994,000
				16	Y	14	\$71,000	\$994,000
SW-102, SW-103	SB	ES	Between Ave.S and Palmdale Blvd.	8	N	0	\$71,000	\$0
				10	Y	36	\$71,000	\$2,556,000
				12	Y	62	\$71,000	\$4,402,000
				14	Y	62	\$71,000	\$4,402,000
				16	Y	62	\$71,000	\$4,402,000

Table 1 (Continued)

Barrier	Direction	Location		Height(ft)	Acoustical Feasibility	Number of Benefited Residences	Reasonable Allowance per Residence	Total Reasonable Allowance
SW-104	SB	ES	Between SR14/HDC Connector and 10th St. W.	8	N	0	\$71,000	\$0
				10	N	0	\$71,000	\$0
				12	Y	11	\$71,000	\$781,000
				14	Y	11	\$71,000	\$781,000
				16	Y	11	\$71,000	\$781,000
SW-105	SB	ES	Between Ave. O-8 W. and Ave.O	8	N	0	\$71,000	\$0
				10	Y	2	\$71,000	\$142,000
				12	Y	2	\$71,000	\$142,000
				14	Y	2	\$71,000	\$142,000
				16	Y	2	\$71,000	\$142,000

PP=Private Property

ES=Edge of Shoulder

Table 2 Summary of Reasonableness Determination Data For Soundwalls On HDC:

Main Alignment, Segment 1

Barrier	Direction	Location		Height(ft)	Acoustical Feasibility	Number of Benefited Residences	Reasonable Allowance per Residence	Total Reasonable Allowance
SW-106	WB	PP	Between Division St. and 3rd St. E.	8	N	0	\$71,000	\$0
				10	Y	14	\$71,000	\$994,000
				12	Y	14	\$71,000	\$994,000
				14	Y	14	\$71,000	\$994,000
				16	Y	14	\$71,000	\$994,000
SW-107	EB	ES	Between Sierra Hwy. and 15th St. E.	8	N	0	\$71,000	\$0
				10	Y	1	\$71,000	\$71,000
				12	Y	1	\$71,000	\$71,000
				14	Y	1	\$71,000	\$71,000
				16	Y	1	\$71,000	\$71,000
SW-109	WB	ES	Between 10th St. E. and 15th St. E.	8	Y	11	\$71,000	\$781,000
				10	Y	11	\$71,000	\$781,000
				12	Y	22	\$71,000	\$1,562,000
				14	Y	22	\$71,000	\$1,562,000
				16	Y	22	\$71,000	\$1,562,000

PP=Private Property

ES=Edge of Shoulder

Table 3 Summary of Reasonableness Determination Data For Soundwalls On HDC:  
Main Alignment, Segment 1 (Variation A)

Barrier	Direction	Location		Height(ft)	Acoustical Feasibility	Number of Benefited Residences	Reasonable Allowance per Residence	Total Reasonable Allowance
SW-106	WB	PP	Between Division St. and 3rd St. E.	8	N	0	\$71,000	\$0
				10	Y	14	\$71,000	\$994,000
				12	Y	14	\$71,000	\$994,000
				14	Y	14	\$71,000	\$994,000
				16	Y	14	\$71,000	\$994,000
SW-107	EB	ES	Between Sierra Hwy. and 15th St. E.	8	Y	1	\$71,000	\$71,000
				10	Y	1	\$71,000	\$71,000
				12	Y	1	\$71,000	\$71,000
				14	Y	1	\$71,000	\$71,000
				16	Y	1	\$71,000	\$71,000
SW-109	WB	ES	Between 10th St. E. and 15th St. E.	8	Y	11	\$71,000	\$781,000
				10	Y	11	\$71,000	\$781,000
				12	Y	22	\$71,000	\$1,562,000
				14	Y	22	\$71,000	\$1,562,000
				16	Y	22	\$71,000	\$1,562,000

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ES=Edge of Shoulder

Table 4 Summary of Reasonableness Determination Data For Soundwalls On HDC:  
Main Alignment, Segment 2 (Between 100<sup>th</sup> St. and LA/SB County Line) / Variation D

Barrier	Direction	Location		Height(ft)	Acoustical Feasibility	Number of Benefited Residences	Reasonable Allowance per Residence	Total Reasonable Allowance
SW-111	WB	ES	Between 140th st. E. and 170th St. E.	8	Y	2	\$71,000	\$142,000
				10	Y	2	\$71,000	\$142,000
				12	Y	2	\$71,000	\$142,000
				14	Y	2	\$71,000	\$142,000
				16	Y	2	\$71,000	\$142,000
SW-112	EB	ES	Between 140th st. E. and 170th St. E.	8	N	0	\$71,000	\$0
				10	N	0	\$71,000	\$0
				12	Y	1	\$71,000	\$71,000
				14	Y	1	\$71,000	\$71,000
				16	Y	1	\$71,000	\$71,000
SW-113	WB	ES	Between 140th st. E. and 170th St. E.	8	N	1	\$71,000	\$71,000
				10	Y	2	\$71,000	\$142,000
				12	Y	2	\$71,000	\$142,000
				14	Y	2	\$71,000	\$142,000
				16	Y	2	\$71,000	\$142,000

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ES=Edge of Shoulder

Table 5 Summary of Reasonableness Determination Data For Soundwalls On HDC:								
Expressway Segment								
Barrier	Direction	Location		Height(ft)	Acoustical Feasibility	Number of Benefited Residences	Reasonable Allowance per Residence	Total Reasonable Allowance
SW-114	EB	ES	Between Joshua Rd. and Standing Rock Rd.	8	N	0	\$71,000	\$0
				10	N	0	\$71,000	\$0
				12	Y	1	\$71,000	\$71,000
				14	Y	1	\$71,000	\$71,000
				16	Y	1	\$71,000	\$71,000

PP=Private Property

ES=Edge of Shoulder

## 2.1 Description of Acoustically Feasible Sound Barriers

### Freeway/Expressway Alternative

#### Northbound SR-14

Soundwalls SW-100 & SW-101 are located at the edge-of-shoulder and will benefit the single-family homes and the Palmdale Learning Plaza School. The height of this soundwall will range from 10 to 16 ft.

Soundwall SW-104 is located at the edge-of-shoulder, along southbound SR-14. This soundwall would attenuate the noise impact at the residential area. The height of this soundwall will range from 12 to 16 ft.

### **Southbound SR-14**

Soundwalls SW-102 & SW-103 are located at the edge-of-shoulder and would benefit the residential area consisting of single-family homes between Avenue S and Palmdale Boulevard. The height of this soundwall will range from 10 to 16 ft.

Soundwall SW-105 is located at the southbound edge of shoulder between Avenue O-8 W and Avenue O. This soundwall would benefit two residential properties. The height of this soundwall will range from 10 to 16 ft.

### **Westbound HDC Main Alignment, Segment 1**

Soundwall SW-106 would benefit the residential area consisting of single-family homes located between Division Street and 3<sup>rd</sup> Street East. The height of this soundwall will range from 10 to 16 ft.

Soundwall SW-109 would benefit the residential area consisting of single-family homes located between 10<sup>th</sup> Street East and 15<sup>th</sup> Street East. The height of this soundwall will range from 8 to 16 ft.

### **Eastbound HDC Main Alignment, Segment 1**

Soundwall SW-107 would benefit the residential area consisting of single-family homes located between Division Street and 3<sup>rd</sup> Street East. The height of this soundwall will range from 10 to 16 ft.

### **Eastbound HDC Main Alignment, Segment 2**

Soundwall SW-112 would benefit residential area consisting of a single-family home located between 140<sup>th</sup> Street and 150<sup>th</sup> Street. The height of this soundwall will range from 12 to 16 ft.

### **Eastbound HDC Main Alignment, Expressway Segment**

Soundwall SW-114 would benefit residential area consisting of a single-family home located between Joshua Road and Standing Rock Road. The height of this soundwall will range from 12 to 16 ft.

### **Other Alternatives include:**

- Freeway/Tollway Alternative (HDC Highway with Tollway, Avenue P-8, I-15 and SR-18)
- Freeway/Expressway Alternative with High Speed Rail (HSR) Feeder Service (HDC Highway with HSR)
- Freeway/Tollway Alternative with High Speed Rail Feeder Service (HDC Highway with Tollway and HSR)

Based on Noise Study Report and High Speed Rail Vibration Impact Assessment dated August 15, 2014, the combined project noise impacts of Other Alternatives as above indicated would be the same as the traffic noise impacts of Freeway/Expressway Alternative. Negligible noise impacts from “Tollway” and “HSR” would be expected.

## 3. Preliminary Noise Abatement Decision

### 3.1 Summary of Key Information

Utilizing the information in Chapter 2, all barriers considered to be feasible are analyzed to determine their reasonableness. As stated in Section 5.4 of the TNSR, the overall reasonableness of noise abatement is determined by these factors: acoustical design goal, the cost of abatement, and viewpoints of benefited receptors (including property owners and residents of the benefited receptors). 23CFR722 requires that an acoustical design goal be applied to all noise abatement. Caltrans acoustical design goal is that a barrier must be predicted to provide at least 7 dB of noise reduction at one or more benefited receptors. In order for a sound barrier to be considered reasonable, the 7 dB design goal must be achieved at one or more benefited receptors. This design goal applies to any receptor and is not limited to impacted receptors. The preliminary noise abatement decision is based on the Traffic Noise Study Report (TNSR) dated June 1, 2015. In the TNSR; 13 soundwalls were found to be feasible under Freeway/Expressway Alternative Main Alignment including Segment 1 and 2; 3 soundwalls were found to be feasible under Variation A and Variation D, providing minimum 5-dB reduction (See Section 2 for detail). The following tables ( Table 6 thru table 10) summarize the preliminary noise abatement decision by investigating a) Acoustical feasibility, b) Number of benefited residences, c) the total reasonableness allowance and engineer's cost estimate for each barrier and barrier height evaluated, and d) comparison of cost versus allowance.

### Construction Cost Estimates

A preliminary engineer's cost estimate was prepared for each noise barrier based on the heights and lengths determined from the noise analysis. The estimate considered all costs required to construct the abatement, including the cost of the wall and wall footing, and allowances for traffic control, temporary construction easements, and modification to

retaining walls to accommodate the barrier. Ten percent mobilization and ten percent contingencies were also included in the cost total.

Wall construction costs were based on masonry construction, in accordance with Caltrans May 2010 standard plans and specifications which assumed cast-in drilled-hole pile foundations, pile cap and concrete barriers.

Table 6-Summary of Preliminary Noise Abatement Decision for Soundwalls on SR14: Freeway/Expressway Alternative							
Barrier	Height(ft)	Acoustically Feasible (5dBA min.)	Number of Benefited Residences	Total Reasonable Allowance	Estimated Construction Cost	Cost less than Allowance	Noise Reduction (dBA)
<b>SW-100, SW-101</b>	8	Y	1	\$71,000	\$1,420,000	N	5
	10	Y	8	\$568,000	\$1,655,000	N	6
	12	Y	10	\$710,000	\$1,891,000	N	7
	14	Y	14	\$994,000	\$2,126,000	N	7
	<b>16</b>	<b>Y</b>	<b>14</b>	<b>\$994,000</b>	<b>\$2,344,000</b>	<b>N</b>	<b>8</b>
<b>SW-102, SW-103</b>	8	N	0	\$0	\$1,080,000	N	5
	10	Y	36	\$2,556,000	\$1,259,000	Y	8
	12	Y	62	\$4,402,000	\$1,437,000	Y	10
	14	Y	62	\$4,402,000	\$1,616,000	Y	11
	<b>16</b>	<b>Y</b>	<b>62</b>	<b>\$4,402,000</b>	<b>\$1,782,000</b>	<b>Y</b>	<b>12</b>
<b>SW-104</b>	8	N	0	\$0	\$491,000	N	4
	10	N	0	\$0	\$573,000	N	5
	12	Y	11	\$781,000	\$654,000	Y	5
	14	Y	11	\$781,000	\$736,000	Y	6
	<b>16</b>	<b>Y</b>	<b>11</b>	<b>\$781,000</b>	<b>\$751,000</b>	<b>Y</b>	<b>7</b>
<b>SW-105</b>	8	N	0	\$0	\$110,000	N	4
	10	Y	2	\$142,000	\$129,000	Y	6
	<b>12</b>	<b>Y</b>	<b>2</b>	<b>\$142,000</b>	<b>\$137,000</b>	<b>Y</b>	<b>7</b>
	14	Y	2	\$142,000	\$165,000	N	7
	16	Y	2	\$142,000	\$182,000	N	8

Table 7-Summary of Preliminary Noise Abatement Decision for Soundwalls on HDC:  
 Freeway/Expressway Alternative - HDC Main Alignment - Segment - 1 ( Between SR 14 and 100th St.)

Barrier	Height(ft)	Acoustically Feasible (5dBA min.)	Number of Benefited Residences	Total Reasonable Allowance	Estimated Construction Cost	Cost less than Allowance	Noise Reduction (dBA)
<b>SW-106</b>	8	N	0	\$0	\$351,000	N	3
	10	Y	14	\$994,000	\$424,000	Y	8
	12	Y	14	\$994,000	\$497,000	Y	9
	14	Y	14	\$994,000	\$570,000	Y	10
	<b>16</b>	<b>Y</b>	<b>14</b>	<b>\$994,000</b>	<b>\$637,000</b>	<b>Y</b>	<b>11</b>
SW-107	8	Y	0	\$0	\$939,000	N	3
	10	Y	1	\$71,000	\$1,094,000	N	4
	12	Y	1	\$71,000	\$1,250,000	N	4
	14	Y	1	\$71,000	\$1,406,000	N	4
	16	Y	1	\$71,000	\$1,550,000	N	5
<b>SW-109</b>	8	Y	11	\$781,000	\$690,000	Y	4
	10	Y	11	\$781,000	\$745,000	Y	6
	12	Y	22	\$1,562,000	\$1,076,000	Y	7
	14	Y	22	\$1,562,000	\$1,034,000	Y	8
	<b>16</b>	<b>Y</b>	<b>22</b>	<b>\$1,562,000</b>	<b>\$1,139,000</b>	<b>Y</b>	<b>9</b>

Table 8-Summary of Preliminary Noise Abatement Decision for Soundwalls on HDC:  
Main Alignment, Segment 1 (Between SR14 and 100th St.) Variation A

Barrier	Height(ft)	Acoustically Feasible (5dBA min.)	Number of Benefited Residences	Total Reasonable Allowance	Estimated Construction Cost	Cost less than Allowance	Noise Reduction (dBA)
<b>SW-106</b>	8	N	0	\$0	\$351,000	N	3
	10	Y	14	\$994,000	\$424,000	Y	8
	12	Y	14	\$994,000	\$497,000	Y	9
	14	Y	14	\$994,000	\$570,000	Y	10
	<b>16</b>	<b>Y</b>	<b>14</b>	<b>\$994,000</b>	<b>\$637,000</b>	<b>Y</b>	<b>11</b>
SW-107	8	Y	1	\$71,000	\$828,000	N	2
	10	Y	1	\$71,000	\$966,000	N	2
	12	Y	1	\$71,000	\$1,103,000	N	4
	14	Y	1	\$71,000	\$1,240,000	N	5
	16	Y	1	\$71,000	\$1,367,000	N	5
<b>SW-109</b>	8	Y	11	\$781,000	\$773,000	Y	4
	10	Y	11	\$781,000	\$841,000	N	6
	12	Y	22	\$1,562,000	\$1,205,000	Y	7
	<b>14</b>	<b>Y</b>	<b>22</b>	<b>\$1,562,000</b>	<b>\$1,158,000</b>	<b>Y</b>	<b>8</b>
	16	Y	22	\$1,562,000	\$1,276,000	Y	8

Table 9-Summary of Preliminary Noise Abatement Decision for Soundwalls on HDC:  
 Freeway/Expressway Alternative - HDC Main Alignment - Segment - 2  
 (Between 100th St. and LA/SB County Line) / Variation D

Barrier	Height(ft)	Acoustically Feasible (5dBA min.)	Number of Benefited Residences	Total Reasonable Allowance	Estimated Construction Cost	Cost less than Allowance	Noise Reduction (dBA)
SW-111	8	Y	2	\$142,000	\$1,185,000	N	2
	10	Y	2	\$142,000	\$1,381,000	N	2
	12	Y	2	\$142,000	\$1,577,000	N	4
	14	Y	2	\$142,000	\$1,773,000	N	5
	16	Y	2	\$142,000	\$1,955,000	N	5
SW-112	8	N	0	\$0	\$552,000	N	5
	10	N	0	\$0	\$644,000	N	5
	12	Y	1	\$71,000	\$735,000	N	7
	14	Y	1	\$71,000	\$827,000	N	7
	16	Y	1	\$71,000	\$912,000	N	8
SW-113	8	N	1	\$71,000	\$1,243,000	N	3
	10	Y	2	\$142,000	\$1,448,000	N	4
	12	Y	2	\$142,000	\$1,654,000	N	6
	14	Y	2	\$142,000	\$1,860,000	N	7
	16	Y	2	\$142,000	\$2,051,000	N	7

Table 10-Summary of Preliminary Noise Abatement Decision for Soundwalls on HDC:  
 Freeway/Expressway Alternative - Main Alignment ( Expressway )

Barrier	Height(ft)	Acoustically Feasible (5dBA min.)	Number of Benefited Residences	Total Reasonable Allowance	Estimated Construction Cost	Cost less than Allowance	Noise Reduction (dBA)
SW-114	8	N	0	\$0	\$552,000	N	4
	10	N	0	\$0	\$644,000	N	4
	12	Y	1	\$71,000	\$735,000	N	7
	14	Y	1	\$71,000	\$827,000	N	8
	16	Y	1	\$71,000	\$912,000	N	9

**Comparison of Construction Cost versus Allowance**

Tables 6 to 10 summarize construction cost and calculated reasonable allowance to determine economic feasibility for each noise barrier.

Based on the calculations, eight noise barriers from Main Alignment and Variation A including SW-102, SW-103, SW-104, SW-105, SW-106, and SW-109 of Freeway/Expressway Alternative with SW-106 and SW-109 of Variation A can be considered reasonable with construction costs less than the allowance; the construction cost of the remaining noise barriers exceed the allowance, and is therefore considered not reasonable.

**3.2 Nonacoustical Factors Relating to Feasibility**

The Noise abatement barriers were analyzed for feasibility based on nonacoustical factors such as geometric standards, sight distance, safety; maintenance, security, geotechnical considerations, and utility relocations. SW-106 of Variation A and SW-106 of Main

Alignment are proposed to be constructed on the private property. Based on the study, the impacted residents will receive maximum noise attenuation at the proposed wall location, although the property owners must support noise barrier in order for it to be constructed.

### **3.3 Preliminary Recommendation and Decision**

Refer to tables 6 to 10, most noise barriers are considered not reasonable due to the high construction cost exceeding their reasonable allowance. This is mainly the low number of benefited residents in the proposing area for these noise barriers. Most of the proposed locations of these noise barriers are still not densely populated.

The 16-ft Soundwalls SW-100 and SW-101 are recommended: although the total reasonable allowance of SW-100 is less than the construction cost, the widening of SR-14 would demolish an existing 12-ft soundwall at this location. SW-100 is recommended to replace the existing 12-ft soundwall. Additionally, SW-100 and SW-101 are both located near Palmdale Learning Plaza School within Noise Abatement Category D which requires the Activity  $L_{eq}$  to be under 52dB. SW-101 is recommended with a noise level measured at 54.2dB exceeding the maximum allowable Activity  $L_{eq}$  of 52dB.

Evidently, Soundwalls SW-102/SW-103 of Freeway/Expressway Alternative Main Alignment are recommended with high number of benefited residents. The benefits of the 62 residents at this location greatly outweigh the allowable construction cost to warrant a noise barrier. At the height of 16 feet, this Soundwall will obtain a noise attenuation of 12 dBA, which will be a welcoming noise reduction as the location was projected to have a severe traffic noise impact at 77 dBA. There is 10% projected construction cost to increase the noise barrier from 14 feet to 16 feet to lower the noise by 1dBA at this particular location.

Soundwalls 16-ft SW-104 and 12-ft SW-105 of Freeway/Expressway Alternative Main Alignment have 7dBA noise reduction which meet the reasonableness requirement with

reasonable allowances greater than construction cost at these locations. Therefore, these Soundwalls are recommended.

Different types of foundations would also impact the cost of the soundwall. The different types of foundation are dependent of the location of the proposed soundwall. SW-106 of Variation A and SW-106 of Freeway/Expressway Alternative Main Alignment are considered reasonable mainly due to its construction with pile cap foundation without concrete barriers which greatly reduce the construction cost by approximately 30%. The proposed location of the noise barrier allowed this possibility. The proposed location was based on the study that it would reach maximum noise attenuation. The height of the noise barrier at this proposed location is recommended to be 12 feet for Freeway/Expressway Alternative Main Alignment and Variation A.

Soundwalls 16-ft SW-109 of Freeway/Expressway Alternative Main Alignment and Variation A are also recommended with number of 22 benefited residents. The total reasonable allowance is greater than construction cost at these locations.

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 parameter changes substantially during the final project design, the preliminary noise abatement decision may be changed or eliminated from the final project design. A final decision to construct noise abatement will be made upon completion of the project design.

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

In Conclusions, the following proposed noise barriers are recommended in accordance with comparison of noise reduction and reasonable allowance:

Barrier	SW Height (ft)	Noise Reduction (dBA)	
SW-100	16	8	
SW-101	16	8	
SW-102	16	12	
SW-103	16	12	
SW-104	16	7	
SW-105	12	7	
SW-106 /SW-106 (Var A)	16 /16	11	11
SW-109 / SW109 (Var A)	16 /14	9	8

### 3.4 Recommended Process for Negotiation with Property Owners

The proposed noise barrier that would be constructed along property lines of multi-family and single residential units, namely SW-106, would have a poll taken by the impacted residents in the public hearing during the design phase. A decision will be made by these impacted residents as whether to construct the noise barrier.

The Protocol requires that noise abatement features be considered when more than 50% of the affected property owners approved such features located within State right-of-way. For noise abatement features located within the private properties, 100% of the affected property owners must approve to construct the noise abatement feature. The public will be informed of the NADR process during the public hearing. All affected property owners will be provided with information on noise abatement features such as location, aesthetic and technical details, etc. All comments and suggestions in regard to the noise abatement features by the residents will be documented by Caltrans project development team to provide any other possible improvements for the impacted residents.

Issuance of Right-of-Way Contracts will be required to all impacted residents including those that provide the State with temporary or permanent construction easements. Negotiations with the impacted residents on easement costs, landscape restoration, and any other costs need to be done before the Plans, Specifications, & Estimate (PS&E) completion. If the negotiated costs cause a noise abatement feature to exceed the reasonableness allowance, then the noise abatement feature would no longer be considered reasonable.

## 4. Secondary Effects of Abatement

The noise abatement recommended in the preliminary noise abatement decision may have the potential to result in secondary effects on scenic views which have been discussed in the Visual Impact Assessment (VIA) of High Desert Corridor dated April 2014.

## 5. References

Caltrans, Traffic Noise Study Report of High Desert Corridor, June 1, 2015.

Parsons, Noise Study Report and High Speed Rail Vibration Impact Assessment, August 15, 2014.

Caltrans, 6<sup>th</sup> Edition Highway Design Manual – Chapter 1100 Highway Traffic Noise Abatement. June.

Caltrans, 2009. Project Development Procedure Manual – Chapter 30 Highway Traffic Noise Abatement. June.

Caltrans, 2011. Traffic Noise Analysis Protocol. May.

