State of California
DEPARTMENT OF TRANSPORTATION

California State Transportation Agency

Memorandum

Making Conservation a California Way of Life!

To: **DAVID GOULD**
Environmental Planner
Southern San Joaquin Valley Management Branch 3

Date: October 11, 2019

File: 06-0V110
0616000208
KIN-41 PM 30.6/33.0

From: **KEN ROMERO**
Branch Chief
Central Region Environmental Engineering Branch

Subject: **RE-EVALUATION OF NOISE IMPACTS DUE TO DETOURING TRAFFIC**

Objective

The objective of this memorandum is to evaluate potential noise impacts due to detouring traffic heading north and south from the City of Fresno on State Route 41 to take Avenal-Cutoff Road, Interstate 5 and back onto State Route 41 towards the Central Coast.

Project Description

The project would be replacing the Kings River Bridge (No. 45-0007) on State Route 41 with an incremental precast slab bridge. The alignment and centerline of the new bridge will match the existing bridge. The number and size of the supporting columns for the replacement bridge will be determined during the detailed design phase.

A 50-foot long temporary wood trestle bridge would be built on the east side of the existing bridge for dismantling and installing the new bridge. The trestle bridge would be erected from the northeast bank of the Kings River and stop just before the southeast bank.

During construction, State Route 41 will be temporarily closed, and traffic would be redirected onto an estimated 32-mile long detour. Traffic heading south from Fresno would turn onto State Route 198 heading west, then south onto Avenal-Cutoff Road. From Avenal-Cutoff Road traffic would head west onto State Route 269, then south on Interstate 5, then back onto State Route 41 at Kettleman City. Traffic heading north from Paso Robles would take the reverse order to get back onto State Route 41.

Temporary traffic signals will be required at the intersection of Avenal-cutoff Road, State Route 269, and Interstate-5.
Temporary traffic signals will be required on Avenal-Cutoff Road at two intersections; State Route 198 and State Route 269. The two traffic signals will be portable and not require any ground disturbance.

. All work on the detour will be within Caltrans right-of-way.

Construction including the detour, is estimated to take 200 working days to complete the project.

Purpose

The purpose of this project is to address superstructure, substructure, and seismic deficiencies of this bridge to ensure the safety and reliability of State Route 41.

Need

The existing Kings River Bridge (No. 45-0007) was built in 1942 and widened in 1987. The bridge is exhibiting continued deterioration and corrosion of the columns supporting the bridge. The underside of the widened portions of the bridge also show's signs of cracks about five feet long and spaced as close as three feet on center. Further studies found that a bridge replacement was required to address the structural and seismic deficiencies. The columns will continue to corrode and deteriorate to the point where it will no longer be able to support the bridge if the bridge is not replaced.

Noise Evaluation Due to Detouring

Avenal Cutoff Road is a two-lane road with existing traffic volumes of approximately 600 vehicles per hour running in both directions, see traffic data in Appendix A attached. The land use adjacent to Avenal Cuttoff Road, is primarily agriculture land with few homes scattered and separated by farm land. Four residences were identified along Avenal Cuttoff Road, shown as receptors R1 through R4, see figures below. The FHWA-approved TNM 2.5 noise model was used to generate existing as well as detour traffic noise levels at the identified receptors adjacent to Avenal Cutoff Road for the years 2018 and 2022, respectively, see Appendix B.

Figure 1: R1-28067 Gale Ave.

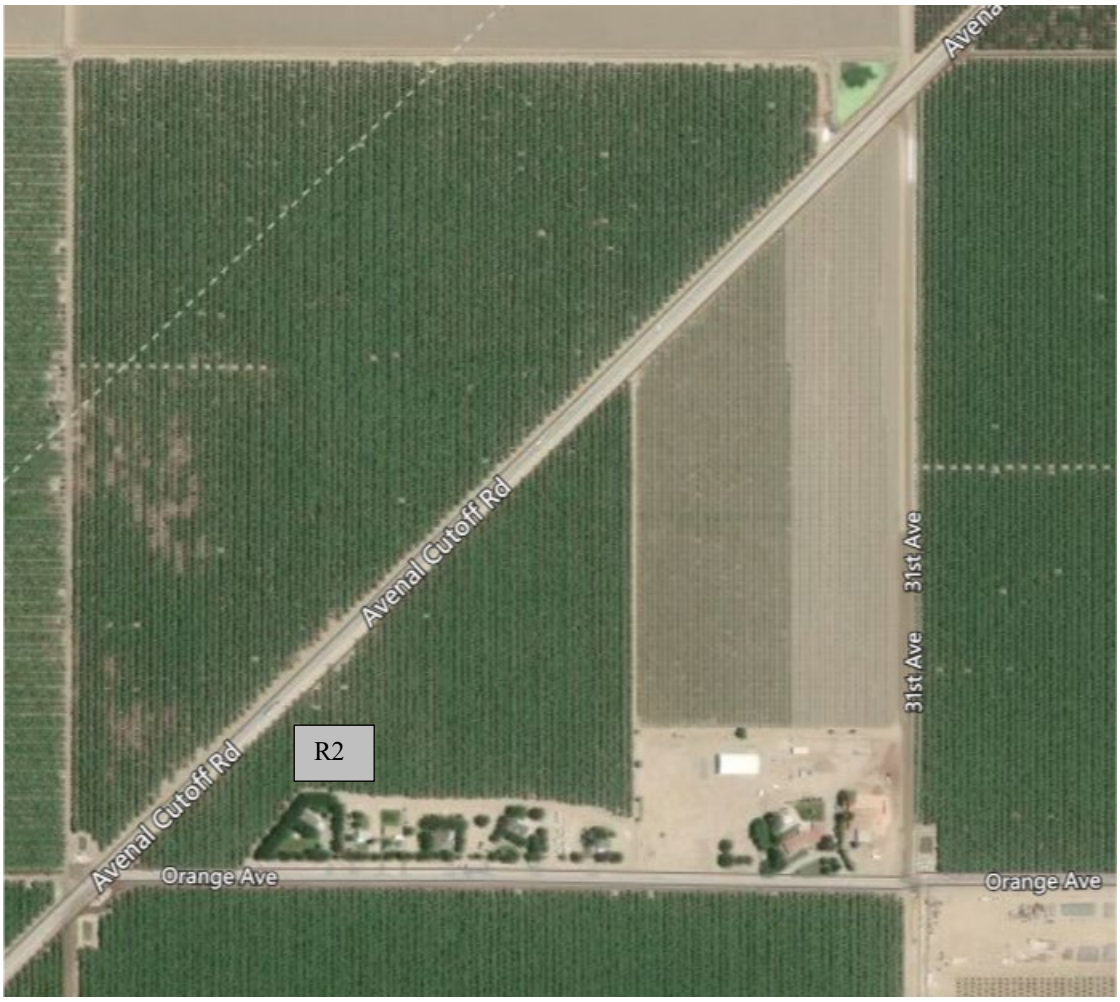

Figure 2: R2-32340 Orange Ave

Figure 3: R3-3911 Avenal Cutoff Rd

Figure 4: R4-11454 Harvey St (owner address)

Traffic Data

Traffic volumes and speeds were obtained from District 06 Division of Planning, see attached Traffic volumes (Appendix A). Appendix A shows Traffic volumes for the existing year 2018 and the Detour years 2022 as well as traffic speeds of 56 miles per hour.

Results of Noise modeling

The results from noise modeling are listed in the table below and Appendix B.

Table:1: Existing and Detour Noise Levels

Receptor number	Address	Activity Category land use	Noise Abatement Criteria	Existing Noise Levels (dBA)	Predicted Noise Level with detour 2022 (dBA)	Predicted Noise Levels minus Existing Noise Levels with detour (dBA)
R1	28067 Gale Ave.	B*	67	72	78	6
R2	32340 Orange Ave	B	67	64	70	6
R3	3911 Avenal Cutoff Rd***.	B	67	71	77	6
R4	11454 Harvey St.	B	67	71	76	5

* Indicates Activity Category for residences
** Indicate Activity Category for Vacant Land use
*** Owners address

As stated in the TeNS, modeling results are rounded to the nearest decibel before comparisons are made. In some cases, rounding itself creates apparent differences that don't, in fact, exist. Rounding two readings that are quite close together, for example, 64.4 dBa and 64.5 dBa, will result in a reported difference of 1 dBA.

Results of Table 1 show existing and predicted future noise levels at the residences adjacent to Avenal Cutoff Road for the year 2022. The table also shows the following:

- The identified receptors/residences would experience noise levels above the noise abatement criteria designated for that land use category.
- The noise level increase is not substantial at these receptors/residences. A substantial noise level increase at a receptor/residence occurs when the predicted noise levels exceeds the existing noise level by 12 dBA.

Conclusion

The re-evaluation of the State Route 41, as a result of detouring traffic through Avenal Cutoff Road, will result noise levels higher than 67 dBA Noise Abatement Criteria (NAC) for the residences located on either side of the Avenal Cutoff Road .

23CFR772 noise impacts does not specify specific methods or abatement criteria for evaluating construction noise. Since the temporary detour is related to the construction of the Stratford Kings River Bridge Replacement project and the detour will be proposed for a maximum of 10 months as per the information provided through design and traffic

planning therefore, no long-term abatement measures will be proposed.

Based on the above no long-term noise abatement will be provided for the proposed detour. However, since this detour causes substantial noise to increase for extended period of time, 10 months, the Project Development Team should consider construction noise measures such as the following in order to minimize the noise levels as a result of the detour:

- Arrange discussions with the public regarding the proposed project and the traffic noise level increases as a result of the proposed temporary detour.
- Traffic impacts and information for the temporary detour need to be posted on a website for public review.

If you have any questions, please contact Allam Alhabaly, Transportation Engineer at (559) 445-6218

APPENDIX A

Detour traffic (2022)				
Trucks	DHV	vehicles	MT*	HT**
Avenal cutoff Road				
529	2860	1166	111	153
I5				
998	4100	1551	100	399
SR-198				
270	2700	1215	59	76

Existing traffic (2018)				
Trucks	DHV	vehicles	MT*	HT**
Avenal cutoff Road				
113	610	249	24	33
I5				
657	2700	1021	66	263
SR-198				
145	1450	653	32	41

Traffic speeds 45 mph
*medium trucks
**heavy trucks

APPENDIX B

RESULTS: SOUND LEVELS

06-0V110

Caltrans
Allam Alhabaly

17 October 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: 06-0V110
RUN: Avenal existing noise levels-(2018)
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	No Barrier LAeq1h Crit'n	Increase over existing Calculated	Increase over existing Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
R1	1	1	0.0	71.9	66	71.9	10	Snd Lvl	71.9	0.0	8	-8.0
R4	13	1	4.9	70.5	8	65.6	66	Snd Lvl	70.5	0.0	0	0.0
R2	14	1	0.0	64.2	66	64.2	10	---	64.2	0.0	8	-8.0
R3	16	1	0.0	71.2	66	71.2	10	Snd Lvl	71.2	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	4	0.0	0.0	0.0
All Impacted	3	0.0	0.0	0.0
All that meet NR Goal	1	0.0	0.0	0.0

Caltrans
Allam Alhabaly

17 October 2019
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: 06-0V110
RUN: Detour noise levels-(2022)
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	No Barrier LAeq1h Crit'n	Increase over existing Calculated	Increase over existing Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
R1	1	1	0.0	77.5	66	77.5	10	Snd Lvl	77.5	0.0	8	-8.0
R4	13	1	4.9	76.0	8	71.1	66	Both	76.0	0.0	0	0.0
R2	14	1	0.0	69.8	66	69.8	10	Snd Lvl	69.8	0.0	8	-8.0
R3	16	1	0.0	76.7	66	76.7	10	Snd Lvl	76.7	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Noise Reduction Avg	Noise Reduction Max
		dB	dB	dB
All Selected	4	0.0	0.0	0.0
All Impacted	4	0.0	0.0	0.0
All that meet NR Goal	1	0.0	0.0	0.0

Memorandum

Making Conservation a California Way of Life!

To: **KENDRA REIF**
Environmental Planner
Sierra Pacific Environmental Analysis Branch

Date: 9/14/2018

File: EA 06-0V110
KIN-41
PM 31.6/33.1
0616000208

From: **KEN J. ROMERO, P.E.**
Senior Transportation Engineer
Central Region Environmental Engineering Branch

Subject: NOISE STUDY

OBJECTIVE

This Noise Study was conducted by reviewing Photolog, maps, and other Caltrans computer accessed data bases to assess potential environmental impacts.

PROJECT LOCATION AND DESCRIPTION

The project is located on State Route (SR) 41 between PM 31.6 and 33.1, in Kings County.

The project would replace the bridge (Br. No.45-007) crossing over Kings River at PM 32.3.

The chosen alternative (#2) proposes to demolish and construct a new replacement bridge at the existing bridge location. Traffic, during bridge reconstruction, would be detoured on local roads 22nd Avenue and Laurel Road. The project work would include shallow excavations to replace the bridge abutments and drill borings for new bridge columns. Temporary water diversion would be necessary for work in the river channel.

PURPOSE AND NEED

The purpose of this project is to replace an outdated bridge.

The impact of this project on Noise has been considered and described below.

NOISE

A Type 1 project is defined by 23 CFR 772 as follows: a proposed Federal or Federal-aid highway project for the construction of a highway on a new location, or the physical alteration of an existing highway which significantly changes either horizontal or vertical alignment, or increases the number of through-traffic lanes.

This project is not considered Type 1 under NEPA, and no further noise analysis is necessary in that regard.

Construction Noise

Noise due to project construction will be intermittent and the intensity of it will vary. The degree of construction noise may vary for different areas of the project site and depending on the construction activities. Long-term noise exposure descriptors are difficult to quantify due to the intermittent nature of construction noise. The estimated overall noise levels generated by construction equipment (50 feet away from the equipment) are found in the table below:

Equipment	Maximum Noise Level at 50 feet (dBA)
Front End Loader	79
Dump Truck	76
Boring Jack Power Unit	83
Backhoe	78
Concrete Mixer Truck	79
Concrete Saw	90

Source: Construction Noise Handbook FHWA, 2006

Construction noise can be assessed by comparing the existing noise levels with the expected noise levels produced by various construction activities.

The following measures should be implemented to minimize noise and vibration disturbances during periods of construction:

Standard Specifications

Construction activities should conform to Chapter 14-8," Noise and Vibration" from the Caltrans Standard Specifications, 2015:

14-8.02 Noise Control
Control and monitor noise resulting from work activities.

Do not exceed 86 dBA Lmax at 50 feet from job site from 9:00 p.m. to 6:00 am.

Equipment Noise Control

- Use newer equipment with improved noise muffling and ensure that all equipment items have the manufacturers' recommended noise abatement measures, such as mufflers, engine enclosures, and engine vibration isolators intact and operational. Newer equipment will generally be quieter in operation than older equipment. All construction equipment should be inspected at periodic intervals to ensure proper maintenance and presence of noise control devices (e.g., mufflers and shrouding, etc.).
- Use construction methods or equipment that will provide the lowest level of noise and ground vibration, such as alternative low-noise pile installation methods.
- Turn off idling equipment.
- Use and relocate temporary noise barriers, as needed, to protect sensitive receptors against excessive noise from construction activities. Noise barriers can be made of heavy plywood or moveable insulated sound blankets.

Administrative Measures

- Implement a construction noise and/or vibration monitoring program.
- Limit construction activities to daytime hours, if possible. If nighttime construction is absolutely necessary, obtain the proper permits.
- Keep noise levels relatively uniform, and avoid impulsive noises.
- Maintain good public relations with the community to minimize objections.

A combination of the above techniques with equipment noise control and administrative measures can be selected to provide the most effective means to minimize effects of the construction activities. Application of these measures will reduce construction-related noise; however, a temporary increase in noise and vibration may still occur.

In the event that the scope of work changes, please request additional investigation for this project.

If you have any questions, please contact Cris Timofei at (559) 445-4618.