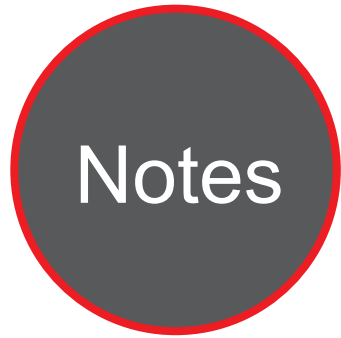


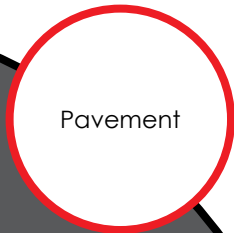


Caltrans Division of Research,  
Innovation and System Information

# Research



# Notes



Pavement

SEPTEMBER 2019

Project Title:  
Quieter Pavement Long-term  
Monitoring

Task Number: 3193

Start Date: July 1, 2017

Completion Date: July 1, 2020

Task Manager:  
Yue Wang  
Transportation Engineer  
yue.wang@dot.ca.gov

## Quieter Pavement Long-term Monitoring

Data collection and analysis on sections of tire/pavement noise performance of different concrete mixes.

### WHAT IS THE NEED?

The objective of this research is to continue noise, smoothness (International Roughness Index, IRI) and friction monitoring on selected continuously reinforced concrete (CRC) pavement and grind and groove (GnG) pilot sections.

Minimizing traffic noise impacts on the public is a key goal for all pavement design, construction, and maintenance strategies throughout the state. As tire-pavement noise is the single largest contributor to traffic noise on many highways, increased utilization of low-noise pavement surfaces may reduce overall traffic noise or reduce the need for expensive traditional noise mitigation measures.

Both state highway agencies and Federal Highway Administration are highly interested in developing low-noise pavement surfaces that are both durable and safe.

### WHAT ARE WE DOING?

California Department of Transportation (Caltrans) and the University of California Pavement Research Center have been conducting the long-term monitoring of quieter pavement research.

The research team has been monitoring 52 test sections for 3-4 years. There are 6 continuously reinforced concrete sections, 2 of which have diamond grind surfaces, and 26 sections of grind and groove surfacing, along with 20 sections of diamond grinding for direct comparison.



DRISI provides solutions and knowledge that improves California's transportation system

As these pavement types exit the initial phase of their service life, it is unknown whether the surface properties of interest have maintained their initial tire/pavement noise and friction characteristics. There may be other pavement surfaces that can provide a quiet and smooth road surface that Caltrans may also want to monitor in addition to those already identified, which can be added to this study as needed and budget and time permit.

To fulfill the stated objectives, the research includes both CRC and GnG sections evaluation and investigate noise reducing surfaces in the field. The research team will compile a research report to document the research results.

## WHAT IS OUR GOAL?

The goal of this study is to continue the acoustical and ride quality performance testing and modeling for the factorial of asphalt pavements that has been tested in previous years.

## WHAT IS THE BENEFIT?

Caltrans will benefit from this research since the data collected from the previous projects were used to develop statistical models, which were used to forecast the functional life of the four surface mix types.

These forecasts can be used to update policies, and the information can also be used in the pavement management system. This research will result in quieter roadways and sustainable communities, while saving money on traditional noise mitigation measures such as sound walls.

## WHAT IS THE PROGRESS TO DATE?

The study categorized and summarized the previous testing data in different test sections, using data plots, summary statistics, and discussions of the trends for each of the variables including six years of data collected: macrotexture, ride quality, and tire/pavement noise. The researchers plotted the data collected on the environmental sections and reviewed trends observed.