

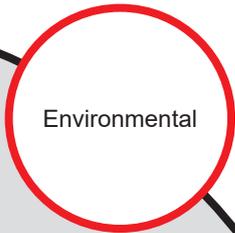


Caltrans Division of Research,
Innovation and System Information

Research



Results



Environmental

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Project Title:
FHWA Traffic Noise Model Version 3.0

Task Number: 1578

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FHWA Traffic Noise Model Version 3.0

The software for Version 3.0 of the FHWA Traffic Noise Model is being updated so that it does not become obsolete.

WHAT IS THE NEED?

The FHWA Traffic Noise Model is the required model for use on federal-aid highway projects. The original version of the model was released in 1998. The model has been periodically updated as knowledge about highway noise has expanded and computer systems have evolved. This revision is necessary to ensure that new information on highway noise generation and reduction are included in the model, and that the model can run on currently used operating systems. The updated version of the model will also allow for more efficient future upgrades and maintenance.

WHAT WAS OUR GOAL?

The goal of this project is to produce an improved FHWA traffic noise model that can be used by federal, state, and local entities to determine the noise impacts of transportation projects and help to develop mitigation measures for those projects. The end product is the model that can be implemented by transportation agencies.

WHAT DID WE DO?

Caltrans is a partner in this Transportation Pooled Fund project which has FHWA as the lead agency [TPF-5(158)]. The work will include but not be limited to the following: making the graphical user interface more user friendly; including the reflection of sound off of barriers in the model; improving how highways with multiple lanes are modeled; improving the contour functionality of the model; and correcting the known software bugs.



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WHAT WAS THE OUTCOME?

Several of the modules for the update of the model have been completed and FHWA has released Version 3 of Traffic Noise Model (TNM 3) on March, 2017 which is the final product of this pooled fund project. In order to make the graphical user interface more user friendly, TNM 3 features an updated user interface that keeps more information about the project in front of the user and is based on ESRI products such as ArcMAP. TNM 3 is also updated to include a function that allows the user to pair barriers and roadways where single barrier reflections may be cause for concern. The user can then calculate the noise levels at a receiver with and without single barrier reflections and compare the results to determine where single barrier reflections could be a concern. To improve how highways with multiple lanes are modeled, TNM 3 now includes a multi-lane input tool that allows the user to input parameters for a direction of travel such as number of lanes, land width, shoulders and shoulder width and draw all associated objects at one time. After setting up the parameters, the user draws the roadway along the centerline of the roadway to input the objects. In order to improve the contour functionality of the model, TNM 3 is also changed from using sound level contours to using color gradation to represent noise levels within contour zones. This approach should reduce confusion that resulted from the previous approach. The project has also corrected known software bugs in the acoustic code. The updates to the TNM acoustics library addressed the known bugs and others identified during development.

WHAT IS THE BENEFIT?

The benefits of having an improved an FHWA Traffic Noise Model include being able to better forecast the noise impacts of highway projects and developing the proper cost- effective mitigation

measures to meet our obligations under state and federal law and build a sustainable efficient transportation system to support California's economy and livability.