ATTACHMENT

3.1.G.4  FHWA Traffic Noise Model (FHWA TNM), FHWA Memorandum, James M. Shrouds, December 16, 1999
Memorandum

U.S. Department of Transportation

Federal Highway Administration

SENT BY ELECTRONIC MAIL

Subject: INFORMATION: FHWA Traffic Noise Model (FHWA TNM)  

Date: December 16, 1999

(Original signed by)

From: James M. Shrouds  
Director of Natural Environment

To: Division Administrators  
Federal Lands Highway Division Engineers

On March 30, 1998, FHWA released a new state-of-the-art highway traffic noise prediction model, the **FHWA Traffic Noise Model, Version 1.0 (FHWA TNM)**. The new model was to be phased-in over the following 24 months, after which it would replace the existing **FHWA Highway Traffic Noise Prediction Model (FHWA-RD-77-108)** and the existing model prediction software, STAMINA 2.0/ OPTIMA. Based on verification described in the **FHWA Traffic Noise Model Technical Manual**, the FHWA determined the model was valid and fully acceptable for use. However, the verification was limited, i.e., it included three comparisons with point-source geometry and two comparisons of in-situ measurements of barrier performance along actual highways.

Users, including State Departments of Transportation (DOTs), have been encouraged to do additional validation studies subsequent to the **FHWA TNM**'s release, but little such work has been reported. Additional validation is necessary to provide increased confidence in the model's results. Consequently, in support of the FHWA, the Volpe National Transportation Systems Center (Volpe) in Cambridge, MA, has begun a full validation of all aspects of the model. The initial phase of this validation will include the elements of the model most often used in highway traffic noise analyses; validation of all other elements of the model will follow. Field measurements made to support the model validation will be used to begin study of atmospheric effects on the propagation of highway traffic noise, effects which may possibly be included in the **FHWA TNM** in the future. We hope a continued State pooled-fund study will provide additional support for this.

In addition to the model validation activities, work is also underway to address problems and
inconveniences which users have identified subsequent to the release of the *FHWA TNM Version 1.0*, as well as to incorporate some improvements in the model's graphical user interface (GUI). This software work is the result of a user-wide *FHWA TNM* survey (which identified over 200 software bugs and desired GUI enhancements) and a 1-day workshop held during the Transportation Research Board Committee A1F04 1999 Summer Conference. A 32-bit version of the *FHWA TNM* is currently under final development and testing and should be released in approximately 6-9 months. This interim release (*FHWA TNM Version 1.1*) will provide an approximate 30 percent run-time improvement under Windows NT and over a 100 percent run-time improvement under Windows 95/98. Version 1.1 will also correct some problems and inconveniences and include limited GUI enhancements. The *FHWA TNM Version 2.0* will correct additional problems and inconveniences and include substantial GUI enhancements; it will be released prior to the final phase-in of the *FHWA TNM*.

The model's initial phase validation work and software improvements described above must be completed prior to the final phase-in of the *FHWA TNM*. Consequently, the final phase-in date is being extended to **December 31, 2002**. Until then, each FHWA division office, in consultation with its respective State DOT, should continue to determine which studies and projects will be analyzed using the existing *FHWA Highway Traffic Noise Prediction Model (FHWA-RD-77-108)* and which ones will be analyzed using the *FHWA TNM*. [NOTE: The final phase-in of TNM will "grandfather" analyses which use FHWA's previous prediction model. The "grandfathering" will be as flexible as possible, e.g., each State DOT and respective FHWA division office will decide on appropriate model use on a project-by-project basis. We encourage the use of the same model throughout the life of a project, i.e., planning, environmental analysis and preliminary design, and final design.]

Questions and comments on the *FHWA TNM* should be directed to Bob Armstrong or Steve Ronning at (202) 366-2073 or (202) 366-2078, respectively.

cc: Resource Center Directors