

Texas Department of Transportation

Environmental Affairs Division

Standards of Uniformity for Traffic Noise Analysis

Documentation of Traffic Noise Analysis

Traffic Noise Analysis

The following outlines the data and items necessary for performing a traffic noise analysis. This information shall be documented to the fullest extent possible and archived in the project file as the basis for the results shown in associated environmental documentation.

Terms

K-factor:

The number applied to the Average Daily Traffic (ADT) to determine the Design Hourly Volume (DHV), the K-factor, is normally 0.10 (plus or minus one percent).

Average Daily Traffic (ADT):

The average 24-hour traffic count, vehicles per day, is typically the total amount of traffic during a stated period (normally one year) divided by the number of days in that period. The ADT is only used as the basis for determining the DHV.

Design Hourly Volume (DHV):

The average hourly traffic count is determined by applying the K-factor to the ADT. The DHV is used to model a “worst case” scenario in design year noise levels. DHV is equal to the 30th highest hourly volume for the design year.

Equation

$$ADT * (K - factor) = DHV$$

Deliverables to be Included in the Project File

Field Data Sheets

Field data sheets, or field notes, record and describe any unusual noise sources or topography that needs consideration for the noise analysis. Conditions and results of monitored noise levels utilizing noise meters (if taken) shall be documented in the field data sheets and thereby in the project file.

Traffic Data

Traffic Data for the Existing Year (preferably the build or opening year) and Existing Year plus 20 Years is required to perform the TNM 2.5 analysis. Typically, traffic data is provided by TxDOT's Transportation Planning and Programming (TPP) Division. If this information is obtained from a source other than TxDOT/TPP, such as a Metropolitan Planning Organization or city planning staff, it shall be provided to TxDOT/TPP for review and approval.

Traffic Data must include the following:

- K-factor
- DHV (ADT x K-factor)
- the three values for the percent of DHV for Lt, Med, and Heavy Vehicles
- Speeds – Normally, the posted speed limit shall be modeled, however, the average operating speed may be used if it is determined to be consistently higher than the posted speed limit.

CAD Files

CAD files used for creating the TNM noise model shall be saved in .dxf or .dgn (windows format).

The CAD files should include:

- striping,
- existing right-of-way lines,
- proposed right-of-way lines,
- elevations,
- typical sections, and
- any additional engineering information that is relevant towards building the TNM 2.5 noise model.

FHWA TNM Data Files

A completed noise model (existing and proposed models with results) of all roadways, receivers, and barriers used for noise analysis determination shall be included in the project file. The files shall be saved as .dat and .idx files in windows format.

Feasible/Reasonable Worksheets

Refer to the Reasonable and Feasible Criteria in [TxDOT's Guidelines for Analysis and Abatement of Roadway Traffic Noise](#) for more information or definitions of the terms Feasible and Reasonable. Worksheets or data similar to the example below to document considered noise abatement options.

Example Highway Traffic Noise Abatement Worksheet

Highway Traffic Noise Abatement Measure:		
Feasibility Factors *	Yes	No
Is the proposed noise abatement measure acoustically feasible?		
Reasonableness Factors*	Yes	No
Viewpoints of property owners and residents		
Cost effectiveness		
Measure achieves noise reduction design goal		
Reasons for Decision: (Provide reasons for the decision here.)		

* 23 CFR 772.13(d)(2)(iv) requires that the abatement measure must achieve each of these criteria to be reasonable.