

<b>TD↑T</b> <b>DEPARTMENTAL POLICY</b> <b>State of Tennessee</b> <b>Department of Transportation</b>	<b>Policy Number:</b> 520-01
	<b>Effective Date:</b> July 13, 2011
<b>Approved By:</b> 	<b>Supersedes:</b> Policy on Highway Traffic Noise Abatement (Effective September 16, 2005)
<b>SUBJECT:</b> Policy on Highway Traffic Noise Abatement	

**RESPONSIBLE OFFICE:** Environmental Division – Tennessee Department of Transportation

**AUTHORITY:** This policy is authorized under the powers granted the Commissioner of the Department of Transportation in T.C.A. 4-3-2303 Et. Seq.

This policy also complies with the requirements of the Federal Highway Administration (FHWA) regulations for the identification of highway traffic noise impacts contained in 23 CFR 772, “Procedures for Abatement of Highway Traffic Noise and Construction Noise.”

If any portion of this policy conflicts with applicable state or federal laws or regulations, that portion shall be considered void. The remainder of this policy shall not be affected thereby and shall remain in full force and effect.

This policy has been reviewed and approved by FHWA.

**PURPOSE:** This policy describes the Tennessee Department of Transportation’s (TDOT) program to implement 23 CFR Part 772, “Procedures for Abatement of Highway Traffic Noise and Construction Noise.” FHWA has given state highway agencies flexibility in implementing the procedures. This policy describes TDOT’s approach to implementation.

**APPLICATION:** The Tennessee Department of Transportation (TDOT) recognizes that highway traffic noise is an important environmental impact consideration in the improvement and development of the state’s highway system. Noise impacts are taken into consideration in the planning, location, design and construction phases of highway project development. Decisions made during each of these phases attempt to minimize impacts from highway traffic noise on noise-sensitive areas.

This policy outlines the process that TDOT will use to make decisions on highway traffic noise abatement and to justify the expenditure of public funds in the most cost-effective manner when addressing the total needs on the state’s highway system.

This policy applies to all Type I Federal highway projects in the State of Tennessee; that is, any projects that receive Federal-aid funds or are otherwise subject to FHWA approval. They include Federal projects that are administered by Local Public Agencies (LPAs) as well as the highway agency. This policy also applies to state-funded projects that meet the definition of a

Type I project contained herein for which a Tennessee Environmental Evaluation Report (TEER) is prepared.

If there are any questions about whether a project is subject to this policy or the FHWA noise standards, contact the Director of TDOT's Environmental Division at (615) 741-2612.

Type II projects are optional noise abatement activities along existing Federal-aid highways. As stated in 23 CFR Part 772.15(b)(2) and (3), Federal funds are available for Type II noise barriers along lands that were developed or were under substantial construction before approval of the acquisition of the rights-of-ways for, or construction of, the existing highway. FHWA will not approve noise abatement measures for locations where such measures were previously determined not to be feasible and reasonable for a Type I project.

TDOT has a statewide Type II Program that was developed in accordance with 23 CFR 772 and TDOT's Noise Policy. A description of TDOT's Type II program is provided in Appendix A.

## INTRODUCTION

During the rapid expansion of the Interstate Highway System and other roadways in the 20th century, communities began to recognize that highway traffic noise and construction noise had become important environmental impacts. In the 1970 Federal-aid Highway Act, Congress required FHWA to develop a noise standard for new Federal-aid highway projects. While providing national criteria and requirements for all highway agencies, the FHWA noise standards contained in 23 CFR 772 gives highway agencies flexibility that reflects state-specific attitudes and objectives in approaching the problem of highway traffic and construction noise.

In addition to defining traffic noise impacts, the FHWA noise standards requires that noise abatement measures be considered when traffic noise impacts are identified for Type I Federal projects. Noise abatement measures that are found to be feasible and reasonable must be constructed for such projects. Feasible and reasonable noise abatement measures are eligible for Federal-aid participation at the same ratio or percentage as other eligible project costs.

## DEFINITIONS

The following definitions shall be used in this policy.

**Abatement** - measures used to reduce traffic noise levels. The use of quieter pavements and the planting of vegetation are not acceptable Federal-aid noise abatement measures for Federal projects.

**Approach** - as used in 23 CFR 772.11(e), one-hour equivalent sound levels [ $L_{Aeq}(h)$ ] that are one decibel or less below the levels shown in Table 2 of this policy.

**Benefited Receptor** - the recipient of an abatement measure that receives a noise reduction at or above the minimum threshold of 5 dBA regardless of whether or not the receptor is "impacted."

**Common Noise Environment** - a group of receptors within the same Activity Category in Table 2 that are exposed to similar noise sources and levels; traffic volumes, traffic mix and speed; and topographic features. Generally, common noise environments occur between two secondary noise sources such as interchanges, intersections or cross-roads.

**Date of Public Knowledge** - the date of approval of the Categorical Exclusion (CE), the Finding of No Significant Impact (FONSI), or the Record of Decision (ROD), as defined in 23 CFR 771.

**Decibel (dB)** - a measure used to express the relative level of a sound in comparison with a standard reference level. For traffic noise purposes, the A-weighted scale, which closely approximates the frequency response of the human ear to typical environmental sound levels, is used. The A-weighted sound level in decibels has the unit dBA.

**Design Year** - the future year used to estimate the probable traffic volume for which a highway is designed, typically 20 years into the future.

**Existing Noise Level** - the existing worst one-hour equivalent sound level in dBA resulting from the natural and mechanical sources and human activity present in a particular area.

**Feasibility** - one of two criteria (also see “reasonableness”) used to evaluate a noise abatement measure. Feasibility deals with engineering considerations and the ability to achieve a 5 dB noise reduction.

**Frequent Human Use** - any activity that results in prolonged human exposure to traffic noise on a regular basis over the course of a year in a given location.

**Future Noise Level** - the predicted worst one-hour equivalent sound level in dBA in the design year.

**Impacted Receptor** - a receptor that has a traffic noise impact.

**L<sub>Aeq</sub>** - the A-weighted equivalent steady-state sound level that in a stated period of time contains the same acoustic energy as the time-varying sound level during the same time period.

**L<sub>Aeq</sub>(h)** - the hourly value of L<sub>Aeq</sub>.

**Multifamily Dwelling** - a residential structure containing more than one residence. Each residence in a multifamily dwelling shall be counted as one receptor when determining impacted and benefited receptors.

**Noise Abatement Criteria (NAC)** - the Noise Abatement Criteria shown in Table 2 of this Policy.

**Noise Barrier** - a physical obstruction that is constructed between the highway noise source and the noise sensitive receptor(s) that lowers the noise level, including stand alone noise walls, noise berms (earth or other material) and combination berm/wall systems.

**Noise Reduction Design Goal** – the predicted minimum noise level reduction provided by the noise abatement measure. TDOT’s noise reduction design goal is 7 dB and must be achieved at 60% or more of the first-row benefited receptors. If a reduction of 7 dB at 60% or more of first-row benefited receptors cannot be met, the abatement measure would not be considered reasonable.

**Permitted** - a definite commitment to develop land with an approved specific design of land use activities as evidenced by the issuance of a building permit.

**Property Owner** - an individual or group of individuals that holds a title, deed or other legal documentation of ownership of a property or a residence.

**Reasonableness** - one of two criteria (also see "feasibility") used to evaluate a noise abatement measure. Reasonableness weighs the amount of required noise barrier area against the benefits that would be provided by the barrier.

**Receptor** - a discrete or representative location of a noise sensitive area(s) for any of the land uses listed in Table 2.

**Residence** - either a single family residence or each dwelling unit in a multifamily dwelling.

**Statement of Likelihood** - a statement provided in the environmental clearance document based on the feasibility and reasonableness analysis completed at the time the environmental document is being approved.

**Substantial Construction** - the granting of a building permit, prior to right-of-way acquisition or construction approval for the highway. This definition applies to Type II projects only.

**Substantial Noise Reduction** - a minimum reduction in traffic noise levels of at least 7 dB at the majority of impacted first-row receptors.

**Traffic Noise Impacts** - impacts that occur when the predicted design year traffic noise levels for the Build Alternative(s) approach or exceed the NAC or when the predicted design year traffic noise levels for the Build Alternative(s) substantially exceed the existing noise levels.

**Type I Project** - a project shall be considered Type I if it meets one of the following conditions:

- (1) The construction of a highway on new location; or,
- (2) The physical alteration of an existing highway where there is either:
  - (i) Substantial Horizontal Alteration. A project that halves the distance between the traffic noise source and the closest receptor between the existing condition to the future build condition; or,
  - (ii) Substantial Vertical Alteration. A project that removes shielding, therefore, exposing the line-of-sight between the receptor and the traffic noise source. This is done by either altering the vertical alignment of the highway or by altering the topography between the highway traffic noise source and the receptor; or,
- (3) The addition of a through-traffic lane(s). This includes the addition of a through-traffic lane that functions as a High-Occupancy Vehicle (HOV) lane, High-Occupancy Toll (HOT) lane, bus lane or truck climbing lane; or,
- (4) The addition of an auxiliary lane, except for when the auxiliary lane is a turn lane; or,
- (5) The addition or relocation of interchange lanes or ramps added to a quadrant to complete an existing partial interchange; or,

- (6) Restriping existing pavement for the purpose of adding a through-traffic lane or an auxiliary lane; or,
- (7) The addition of a new or substantial alteration of a weigh station, rest stop, ride-share lot or toll plaza.
- (8) If a project is determined to be a Type I project under this definition, then the entire project area as defined in the environmental document is a Type I project.

**Type II Project** - a Federal or Federal-aid highway project for noise abatement on an existing highway.

**Type III Project** - a Federal or Federal-aid highway project that does not meet the classification of a Type I or Type II project. Type III projects do not require a noise analysis.

## **QUALIFICATIONS NECESSARY TO CONDUCT NOISE STUDIES**

Only individuals (TDOT or consultant staff) qualified in the field of highway traffic noise analysis shall conduct highway traffic noise studies for TDOT projects or local projects that will utilize federal or state funding. The minimum qualifications are outlined in the Noise Section of the *"TDOT Environmental Procedures Manual"* (TEPM).

### **1.0 ANALYSIS**

The primary goal of conducting noise studies is to ensure that the information derived and related conclusions are accurate and pertinent to the decision-making process.

In order to facilitate this goal, noise studies should: (1) accurately identify all noise-sensitive land uses that are predicted to be impacted under each Build Alternative in the design year, and (2) properly assess the potential for noise abatement measures to mitigate the predicted impacts.

The analysis procedure described below provides the basic framework for conducting a highway traffic noise study in Tennessee. More detailed technical guidance is provided in the TEPM. Analysts should use both this policy and the detailed procedures included in the TEPM when conducting highway traffic noise studies.

For Tier 1 Environmental Impact Statements or other studies that will examine broad corridors, the appropriate scope and methodology of the noise analysis should be discussed with FHWA and other participating agencies early in the project planning process.

#### **1.1 Analysis Locations**

Traffic noise analysis will be performed within the project limits for developed lands containing noise-sensitive land uses in Categories A through E in Table 2 and for undeveloped land where development is permitted.

The receivers chosen for modeling will be outdoor areas where frequent human use occurs, not property lines. These outdoor areas could be patios, porches, decks, balconies, common grounds areas or other appropriate locations.

## **1.2 Determination of Existing Noise Levels**

The determination of existing noise levels will generally be made utilizing field measurement of actual sound levels and/or the prediction of existing sound levels.

The procedure used in determining existing noise levels should be consistent with the methods outlined in the TEPM that consider the type of project (i.e., widening or new alignment) and facility; the extent, level of detail and accuracy of the data available to complete noise modeling for existing conditions; the number of expected impacts; the potential need for evaluation of noise abatement measures; and the effect on the decision-making process.

### *1.2.1 Noise Measurements*

Noise measurements will be conducted at a representative number of noise-sensitive land uses that are likely to be affected by the project. Unless specifically approved by TDOT, field measurements will be taken at locations that are representative of outdoor areas of frequent human use.

Noise measurements should be conducted in accordance with FHWA-PD-96-046, *“Measurement of Highway-Related Noise.”*

Detailed procedures for conducting noise measurements are contained in the TEPM.

## **1.3 Determination of Future Noise Levels**

Future noise levels will be determined for the design year for the No-Build and all Build Alternatives under detailed study in the National Environmental Policy Act (NEPA) process. All analyses must use the latest version of the FHWA Traffic Noise Model (TNM), which is described in *“FHWA Traffic Noise Model,”* Report No. FHWA-PD-96-010, including all applicable revisions.

TNM noise modeling should be conducted in accordance with: (1) the procedures outlined in the TEPM and (2) *“TDOT Guidelines for Noise Modeling Using FHWA’s Traffic Noise Model (TNM).”*

Design year sound levels should be predicted for the worst-noise hour, which would normally occur when the highest traffic volume can travel at the highest possible speed.

Traffic projections developed for the project typically include traffic volumes for the design hour, which is often representative of Level of Service (LOS) C operating conditions. These design hour volumes (DHVs) should be used for the noise analysis since they represent the highest number of vehicles expected to travel on the roadway network in a given hour.

Average pavement type must be used for prediction of design year noise levels.

## **1.4 Determination of Traffic Noise Impacts**

Traffic noise impacts may occur when either the predicted noise level at a receptor approaches or exceeds the NAC or when there is a substantial increase in noise as a result of the project. Both criteria are defined below.

### 1.4.1 Substantial Increase

Highway traffic noise impacts will occur if there is a substantial increase in design year noise levels above existing noise levels as shown in Table 1.

**Table 1: Substantial Noise Level Increase**

<b>Existing Noise Level (dBA) <sup>(1)</sup></b>	<b>Predicted Design Year Noise Level Increase (dB) <sup>(2)</sup></b>
42 or less	15 or more
43	14 or more
44	13 or more
45	12 or more
46	11 or more
47 or more	10 or more

(1) Worst hour noise level from the combination of natural and mechanical sources and human activity.

(2) Predicted design year noise level minus existing noise level.

### 1.4.2 Noise Abatement Criteria

Highway traffic noise impacts will occur when the future noise levels approach, equal or exceed the FHWA's noise abatement criteria shown in Table 2.

If, in TDOT's opinion, a land use within the project limits is worthy of consideration as Category A Land Use, TDOT will submit a "Proposal for Justification for Designating Land Use as Category A" to the FHWA Division Office.

If a Category C land use has both exterior and interior areas of frequent human use, the exterior area should be analyzed for impact as Category C. If there are no exterior areas of frequent human use or the exterior area is far from or physically shielded from the roadway in a manner that prevents an impact on the exterior areas, then the interior area should be analyzed for impact as Category D.

## 2.0 EVALUATION OF NOISE ABATEMENT MEASURES

Noise abatement shall be evaluated when noise impacts are predicted in the design year for the Build Alternative(s). At a minimum, TDOT will consider noise abatement in the form of a noise barrier.

TDOT may also consider the following noise abatement measures for Type I projects on a case-by-case basis: (1) traffic management measures (e.g., traffic control devices and signing for prohibition of certain vehicles types, time-use restrictions for certain vehicle types, and exclusive lane designations); (2) alteration of horizontal and vertical alignments; (3) acquisition of property rights (either in fee or lesser interest) for construction of noise barriers; and (4) noise insulation of Category D land uses. Post-installation maintenance and operational costs for noise insulation are not eligible for Federal-aid funding.

**Table 2: Noise Abatement Criteria**  
[Hourly A-weighted Sound Level, decibels (dBA)]

<b>Activity Category</b>	<b><math>L_{Aeq}(h)</math></b>	<b>Evaluation Location</b>	<b>Activity Description</b>
<b>A</b>	57	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
<b>B<sup>(1)</sup></b>	67	Exterior	Residential.
<b>C<sup>(1)</sup></b>	67	Exterior	Active sport areas, amphitheatres, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structure, radio stations, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
<b>D</b>	52	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structure, radio studios, recording studios, schools, and television studios.
<b>E<sup>(1)</sup></b>	72	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D, or F.
<b>F</b>	---	---	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
<b>G</b>	---	---	Undeveloped lands that are not permitted.

(1) Includes undeveloped lands permitted for this activity category.

## 2.1 Multistory Buildings

For multiple-story, single-family houses and multi-family dwellings, noise abatement will be designed to protect the exterior ground-floor receptors when the exterior areas are at-grade or elevated above the roadway. In cases where the exterior first-floor areas (i.e., decks or porches) are elevated above the ground but are still below the grade of the roadway (i.e., first-floor decks or porches), noise abatement will generally be designed to protect those elevated first-floor areas.

If any of the upper floor exterior balconies in multi-family dwellings are benefited as a result of a noise abatement design, then these upper floor units will be included in the reasonableness analysis.

## **2.2 Date of Public Knowledge**

Federal participation in noise abatement measures will not be considered for lands that are not permitted by the date of public knowledge of the project and TDOT will not analyze or provide noise abatement for these lands. After the date of public knowledge, provision of noise abatement becomes the responsibility of local communities or private developers.

## **2.3 Noise Abatement Feasibility and Reasonableness**

Noise abatement measures must be feasible and reasonable, as defined below. Feasibility deals with engineering considerations and the ability to achieve a 5 dB noise reduction. Reasonableness weighs the amount of required noise barrier area against the benefits that would be provided by the barrier. The viewpoints of the benefited property owners and residents will be considered by TDOT in its final decision regarding reasonableness.

### *2.3.1 Feasibility*

In order for the noise abatement measure to be feasible, the measure should provide a minimum of 5 dB reduction in design year highway traffic noise levels for the majority of the impacted first-row receptors. For impacted Category D land uses, the measure should provide a minimum of 5 dB reduction in interior noise levels for the impacted areas.

Feasibility may also be affected by: (1) topography; (2) access and utility requirements; (3) drainage; (4) safety and maintenance considerations; (5) the presence of local cross streets; (6) noise from other sources in the area such as local roads, trains, aircraft, factories; and (7) excessive height of barrier needed to reach reduction goal, etc.

### *2.3.2 Reasonableness*

Noise abatement will only be evaluated where noise impacts are predicted and where frequent human use occurs. Primary consideration will be given to exterior areas.

#### 2.3.2.1 Noise Reduction Design Goal

The noise abatement measure shall provide at least 7 dB noise reduction at 60% or more of the first-row benefited receptors. For impacted Category D land uses, the noise abatement measure should provide a minimum 7 dB reduction in interior noise levels for the impacted areas.

#### 2.3.2.2 Category B (Residential) Land Uses

In order for a noise abatement measure to be reasonable the required barrier area (in square feet) per benefited residence must be less than or equal to the allowable barrier area per benefited residence for that noise abatement location.

The allowable barrier area per benefited residence for each noise abatement location is calculated using the following equation:

Allowable Area per Benefited Residence =

Base Allowance	
+ Previous Type I Widening Allowance	
+ Design Year Noise Levels Allowance	
+ Noise Level Increase Allowance	
+ Noise Compatible Planning Allowance	
 = Total Allowable Area per Benefited Residence	

The value for each allowance type should be selected based on the criteria outlined in the following table:

Allowance Type	Criteria	Allowance in square feet
Base Allowance	Residences pre-date the highway <sup>(1)</sup> or the project is on a new alignment.	1,500
	Residences post-date the highway <sup>(2)</sup> but were constructed before September 16, 2005. <sup>(3)</sup>	750
	Residences were constructed after September 16, 2005. <sup>(3)</sup>	250
Previous Type I Widening Allowance <sup>(4)</sup>	Residences pre-date a Type I widening project on the adjacent highway.	200
Design Year Noise Levels Allowance <sup>(5)</sup>	69 or less dBA	0
	70 – 74 dBA	100
	75 or more dBA	200
Noise Level Increase Allowance <sup>(6) (7)</sup>	0 – 4 dB	0
	5 – 9 dB	200
	10 or more dB	400
Noise Compatible Planning Allowance	The local government of the jurisdiction in which the project will be constructed has no policies to require that noise be considered in the land development process.	0
	The local government of the jurisdiction in which the project will be constructed has adopted official and enforceable policies to require that noise be considered as an integral component of the land development process.	100

(1) The majority (more than 50%) of residences existed before the original highway construction.

(2) The majority (more than 50%) of residences were constructed after the original highway construction.

(3) TDOT's previous noise policy became effective on September 16, 2005. FHWA's approval of this policy was contingent upon TDOT's completion of a public outreach program to 1) notify local jurisdictions of the changes in TDOT's new noise policy and 2) encourage them to consider noise compatible land use planning when noise-sensitive land uses are proposed adjacent to TDOT's highways. As a result, development that occurs after this date receives less consideration in the reasonableness analysis.

(4) The majority (more than 50%) of residences existed before the most recent Type I project that added through traffic lanes.

(5) Based on an average of the impacted first-row receivers' levels (design year noise levels for Type I projects and existing noise levels for Type II projects).

(6) An average of the increases from existing noise levels to design year noise levels for the Build Alternative at the impacted first-row receivers.

(7) Not applicable for Type II projects.

For Type I projects, TDOT will consider combining areas that are determined not to be reasonable with areas that are determined to be reasonable as long as: (1) the areas to be combined are located within a common noise environment; (2) the majority (more than 50%) of the impacted residences in each area existed before the original highway construction; (3) the calculated barrier area per benefited residence for the unreasonable area(s) does not exceed two times its allowable barrier area per benefited residence; and (4) the calculated barrier area per benefited residence for the combined areas does not exceed the allowable barrier area per benefited residence.

The reasonableness determination for Category B residential land uses that do not have dedicated exterior areas such as patios or balconies but do have common areas such as picnic areas, swimming pools, etc., will be evaluated in accordance with the procedures for Category C land uses described below.

#### 2.3.2.3 Category C, Category D and Category E Land Uses

The reasonableness determination for Category C, D and E land uses requires the calculation of an equivalent number of residences based on the size, type and duration of the activity. The procedures for calculating the equivalent number of residences are contained in the TEPM.

The allowable barrier area per equivalent benefited residence for each noise abatement location is calculated using the reasonableness calculation provided in the previous section.

The abatement measure will be reasonable if the required barrier area (in square feet) per equivalent benefited residence is less than or equal to the allowable barrier area per equivalent benefited residence for that noise abatement location.

#### 2.3.2.4 Viewpoints of Benefited Property Owners and Residents

The input of the benefited property owners and residents will generally be received at planning, NEPA or design public hearings or public meetings. Input received at these hearings or meetings may be supplemented, as necessary, with formal survey methods on a case-by-case basis as discussed in the TEPM. TDOT will conclude that a community desires the construction of a noise barrier unless a majority (at least 51%) of the benefited property owners and residents indicate that they do not want the proposed noise barrier.

#### *2.3.3 Third-Party Funding*

Third party funding is not allowed on a Federal or Federal-aid Type I or Type II project if the noise abatement measure would require the additional funding from the third party to be considered feasible and/or reasonable. Third party funding is acceptable on a Federal or Federal-aid highway Type I or Type II project to make functional enhancements such as absorptive treatment and access doors or aesthetic enhancements to a noise abatement measure already determined feasible and reasonable.

#### *2.3.4 Absorptive Treatments*

TDOT will assess the need for absorptive noise barriers for all projects that involve the construction of parallel barriers on both sides of the highway in accordance with the procedures outlined in the TEPM. If noise reflections are predicted to degrade the design year noise reductions, TDOT will specify that the barrier sections that are causing the degradations be

absorptive. Final determinations regarding the need for absorptive barriers will be made during the final design process.

### **3.0 INFORMATION FOR LOCAL OFFICIALS**

TDOT and the FHWA believe that highway traffic noise should be reduced through a program of shared responsibility. Local governments should use their power to regulate land development in such a way that noise-sensitive land uses are either prohibited from being located adjacent to a highway or that the developments are planned, designed and constructed in such a way that noise impacts are minimized.

To minimize future traffic noise impacts on currently undeveloped lands adjacent to Type I projects, TDOT will provide local officials within whose jurisdiction the highway project is located with the following:

1. Information on noise compatible planning concepts;
2. The best estimation of the design year noise levels on the undeveloped lands along the project at various distances from the edge of the nearest travel lane of the highway improvement; and,
3. Information on TDOT's Type II Noise Barrier Program.

This information will be provided in the environmental document and/or noise study reports for the project.

### **4.0 CONSTRUCTION NOISE**

Construction of a highway project may cause localized, short-duration noise impacts. Analysis and mitigation of construction noise impacts will be addressed on a project-by-project basis for all Type I and Type II projects in accordance with the procedures outlined in the TEPM.

Construction noise impacts can be minimized by using TDOT's *Standard Specifications for Road and Bridge Construction* as amended by the most recent applicable supplements. The contractor will be bound by Section 107.01 of the *Standard Specifications* to observe any noise ordinance in effect within the project limits. Detoured traffic shall be routed during construction so as to cause the least practicable noise impact upon noise-sensitive areas.

### **5.0 DOCUMENTATION OF HIGHWAY TRAFFIC NOISE ABATEMENT**

TDOT will identify the following before adoption of a CE, FONSI, ROD or TEER for a project:

1. Locations where noise impacts are predicted to occur but where noise abatement is not feasible and/or reasonable.
2. A statement of likelihood for noise abatement measures that are feasible and reasonable, and which are likely to be incorporated in the project. The statement of likelihood shall include the preliminary location and physical description of noise abatement measures determined feasible and reasonable in the preliminary analysis. The statement of likelihood will indicate that final recommendations on the construction of an abatement measure(s) is determined during the completion of the project's final design and the public involvement processes.

For design-build projects, the preliminary technical noise study shall document all considered and proposed noise abatement measures for inclusion in the NEPA document. Final design of design-build noise abatement measures shall be based on the preliminary noise abatement design developed in the technical noise analysis.

## **6.0 ABATEMENT MEASURE REPORTING**

Per 23 CFR 772, TDOT will maintain an inventory of all constructed noise abatement measures. The inventory shall include the following parameters: type of abatement; cost; average height; length; area; location; year of construction; average insertion loss/noise reduction as reported by the model in the noise analysis; NAC category(s) protected; material(s) used; features; foundation; and project type. FHWA will collect this information in accordance with the Office of Management and Budget's (OMB) Information Collection requirements.

## Appendix A

### TDOT's *Type II Noise Barrier Program*

TDOT is required by federal law to evaluate noise abatement for new highway construction and widening projects. However, there is no federal requirement for State DOTs to construct noise barriers along existing highways adjacent to impacted communities that were in place before the highways were built. Such stand-alone "retrofit" noise barrier projects are referred to as Type II projects. Following the completion of detailed *Type II Noise Barrier Needs and Cost Assessment and Noise Barrier Prioritization Studies*, TDOT initiated a Type II Noise Barrier Program in 2005.

To be eligible for a Type II noise barrier, an area must meet the following criteria:

- The neighborhood must be located along a limited-access roadway;
- The neighborhood must be primarily residential;
- The majority (more than 50%) of residences in the neighborhood near the highway pre-dated the initial highway construction;
- A noise barrier for the neighborhood must not have been previously determined to be not reasonable or not feasible as part of a new highway construction or through-lane widening study (Type I project);
- Existing noise levels measured in the neighborhood must be above the Noise Abatement Criteria (NAC) of 66 dBA;
- A barrier must be feasible to construct and will provide substantial noise reduction;
- A barrier must be reasonable in accordance with TDOT's Noise Policy. A residence is considered "benefited" if the noise barrier will reduce the traffic noise by at least 5 dB; and,
- A majority of the impacted residents (>50%) must support the construction of the noise barrier.

TDOT's Type II studies resulted in a list of eligible Type II projects. This list is available at URL <http://www.tdot.state.tn.us/environment/airnoise/default.htm>. This list includes all of the areas that have been identified for inclusion in TDOT's Type II Program and represents TDOT's prioritized list of Type II projects.

The order in which these projects are programmed will depend on many factors including funding limitations; requirements for lane closures (particularly on urban interstates); other nearby interstate construction projects; a strong likelihood that an area will get a barrier as part of a Type I project; geographic considerations; right-of-way and utility requirements; and the need to retrofit existing bridges with noise barriers.

TDOT will review the Type II project list on an annual basis and will select projects from the list for programming based upon a comprehensive consideration of the above factors.