

**SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION TRAFFIC
NOISE ABATEMENT POLICY**

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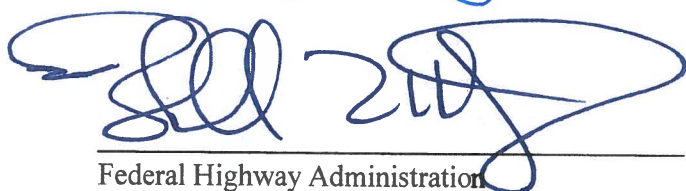
To replace previous policy entitled *South Carolina Department of Transportation Traffic Noise Abatement Policy, September 1, 2014.*

Responsible Official: SCDOT Director of Environmental Services



South Carolina Department of Transportation

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CONTENTS

SECTION 1: INTRODUCTION	Page 4
1.1 What is noise?	Page 4
1.2 How is noise measured?	Page 4
1.3 How have noise regulations evolved over time?	Page 4
1.4 What is the purpose and applicability of this policy?	Page 5
1.5 When is a noise analysis needed?	Page 5
SECTION 2: DEFINITIONS	Page 6
SECTION 3: TYPES OF SCDOT NOISE ANALYSIS	Page 10
3.1 Scoping the Level of Noise Analysis	Page 10
3.2 What are the required elements of a SCDOT detailed noise analysis?	Page 12
3.3 What are the required elements and/or considerations of a SCDOT final design noise analysis?	Page 13
SECTION 4: ELEMENTS OF A SCDOT NOISE ANALYSIS	Page 13
4.1 Average Pavement	Page 13
4.2 Noise Contours	Page 14
4.3 Traffic Characteristics	Page 14
4.4 Posted vs. Design Speeds	Page 14
4.5 TNM Input Parameters for a SCDOT Noise Analysis	Page 14
<i>Receivers</i>	Page 14
<i>Roadways</i>	Page 16
4.6 Required Additional TNM Input Parameters	Page 16
<i>Receivers</i>	Page 17
<i>Roadways</i>	Page 17
<i>Building Rows/Terrain Lines/Ground Zones/Tree Zones</i>	Page 17
4.7 Quality Assurance/Quality Control	Page 17
SECTION 5: ANALYSIS OF TRAFFIC NOISE IMPACTS	Page 17
5.1 Field Noise Measurements	Page 17
5.2 Model Validation	Page 19
5.3 Model Calibration	Page 19
5.4 Prediction of Future Highway Traffic Noise Levels for Study Alternatives	Page 20
5.5 Identification of Highway Traffic Noise Impacts for Study Alternations	Page 20
<i>Activity Category A</i>	Page 21
<i>Activity Category B</i>	Page 22
<i>Activity Category C</i>	Page 22
<i>Activity Category D</i>	Page 22
<i>Activity Category E</i>	Page 23
<i>Activity Category F</i>	Page 23
<i>Activity Category G</i>	Page 23

SECTION 6: ANALYSIS OF NOISE ABATEMENT MEASURES	Page 23
6.1 Feasibility	Page 24
<i>Acoustic Feasibility</i>	Page 24
<i>Engineering Feasibility</i>	Page 24
<i>Constructability Review</i>	Page 25
6.2 Reasonableness	Page 25
6.3 Noise Barriers on Bridges/Structures	Page 26
6.4 Assessment of Benefited Receptors	Page 26
6.5 Abatement Measure Reporting	Page 27
6.6 Information Required for NEPA Decision	Page 27
6.7 Third Party Funding	Page 28
SECTION 7: DESIGN-BUILD PROJECTS & FEDERAL PARTICIPATION	Page 28
7.1 Design-Build Projects	Page 28
7.2 Federal Participation	Page 28
SECTION 8: INFORMATION FOR LOCAL OFFICIALS	Page 29
8.1 Noise Compatible Planning Concepts	Page 29
8.2 Estimation of Future Noise Levels	Page 30
SECTION 9: CONSTRUCTION NOISE	Page 30
SECTION 10: NOISE ANALYSIS DOCUMENTATION	Page 31
APPENDIX A: 23 CFR Part 772	
	Procedures for Abatement of Highway Traffic Noise and Construction Noise
APPENDIX B: SCDOT Feasibility and Reasonableness Worksheet	

SECTION 1: INTRODUCTION

This document describes South Carolina Department of Transportation's (SCDOT) policy on highway traffic and construction noise and SCDOT's implementation of the requirements of the Federal Highway Administration (FHWA) Noise Standard at 23 Code of Federal Regulations (CFR) Part 772 (refer to Appendix A). This policy was developed by SCDOT and reviewed and concurred with by FHWA. This policy provides procedures and guidance regarding highway traffic noise impact assessment and analysis for Type I highway traffic noise projects requiring FHWA approval or using Federal Aid Highway Program funding during the Environmental Clearance and Final Design Phases in accordance with the National Environmental Policy Act (NEPA) of 1969. This policy does not provide procedural information or guidance relative to Type II highway traffic noise projects as SCDOT does not participate in a Type II program at this time. See Section 2 of this policy document for information on/definitions of Type I and Type II projects. SCDOT considers the policies and procedures that follow to be consistent with 23 CFR Part 772 as well as supporting FHWA noise guidance and policy documents.

SCDOT recognizes the adverse effects that highway traffic noise may have on the citizens of South Carolina and will do what is practical to make highway projects and noise sensitive land use more compatible by lessening these effects, when reasonable and feasible to do so. During the project development process various noise abatement options are considered to minimize noise impacts including alternate alignments and not building the project. Throughout the public involvement process, affected residents and business owners will be given the opportunity to comment on highway traffic noise and any proposed abatement measures. During construction, SCDOT requires its contractors to minimize disruption from construction noise. Even after all of the above efforts, some locations may still experience noise impacts.

1.1 What is noise?

Sound is created when an object moves, causing vibrations or waves in air molecules. When vibrations reach our ears, we hear sounds. Noise is defined as unwanted or excessive sounds. It is an undesirable by-product of our modern way of life. Highway traffic noise sources include tire-pavement interaction, as well as the engines and exhaust systems of vehicles. The impacts from noise are defined by the amount of interference the sound levels have with everyday human activity.

1.2 How is noise measured?

Sound levels are measured in units called decibels (dB). Adjustment for the high and low pitched sounds an average person can hear is called "A-weighted levels" or dB(A). Highway traffic noise is assessed using dB(A) measurements. Noise is further described by its average level over time. In noise abatement studies an "hourly equivalent sound level," or Leq(h), is the constant, average sound level that contains the same amount of sound energy over the time period as does the varying levels of actual traffic noise.

1.3 How have noise regulations evolved over time?

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 a more prominent environmental impact. In the 1972 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 Standard gives highway agencies flexibility that reflects state-specific attitudes and objectives in approaching the problem of highway traffic and construction noise. This document contains SCDOT's policy on how highway traffic noise impacts are defined, how noise abatement is evaluated, and how noise abatement decisions are made.

In addition to defining traffic noise impacts, the FHWA Noise Standard requires that noise abatement measures be considered when traffic noise impacts are identified for Type I Federal projects (refer to Section 2 of this policy for more information regarding a Type I project). 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.

1.4 What is the purpose and applicability of this policy?

This policy outlines SCDOT's program to implement the FHWA Noise Standards found at 23 CFR Part 772. Where FHWA has given SCDOT the flexibility in implementing the standard, this policy describes the highway agency approach to implementation that includes traffic noise prediction requirements, noise analyses, noise abatement criteria, and requirements for informing local officials.

This policy applies to all Type I Federal highway projects in the State of South Carolina; 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. If there are any questions about whether a project is subject to this policy or the FHWA Noise Standard, contact the SCDOT Environmental Services Office. The requirements of this policy apply uniformly and consistently to all Type I Federal projects throughout the state. This policy will be applied per Title VI of the Civil Rights Act of 1964 (42 U.S.C 2000d et seq.), which prohibits discrimination on the basis of race, color, or national origin in any program or activity that receives Federal funds or other Federal financial assistance.

1.5 When is a noise analysis needed?

A noise analysis is required for all Type I projects, including:

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 HOV lane, High-Occupancy Toll (HOT) lane, bus lane, or truck climbing lane; or,
4. The addition of an auxiliary lane of at least 2,500 feet, 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 of at least 2,500 feet; or,
7. The addition of a new or substantial alteration of a weigh station, rest stop, ride-share lot or toll plaza.

NOTE: 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.

SECTION 2: DEFINITIONS

Acoustic Feasibility. The minimum level of effectiveness of a noise abatement measure. Acoustic feasibility indicates that the noise abatement measure can at a minimum achieve a discernible reduction in noise levels.

Active Sports Area. An area where serenity and quiet are not necessary for the use of the facility. Active sports areas can include areas such as baseball, softball or soccer fields.

Approach. A noise level that is within 1 dB(A) of the minimum FHWA abatement criteria.

Auxiliary Lane. The portion of the roadway adjoining the traveled way for parking, speed change, turning, storage for turning, weaving, truck climbing, and other purposes supplementary to through-traffic movement. The width of an auxiliary lane typically is equal to that of a through-traffic lane. An auxiliary lane that is at least 2,500 feet in length, that is not a turn lane, will be considered a Type I project.

A-Weighted Decibels. A-weighted decibels abbreviated “dB(A)”, are an expression of the relative loudness of sounds in air as perceived by the human ear. In the A-weighted system, the decibel values of sounds at low frequencies are reduced, compared with unweighted decibels, in which no correction is made for audio frequency.

Benefited Receptor. The recipient of an abatement measure that receives a noise reduction at or above the minimum threshold defined by SCDOT as 5 dB(A).

Common Noise Environment. A group of receptors within the same Activity Category 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, cross-roads.

Constructive Use. Constructive use occurs when the transportation improvement project does not

incorporate land from a Section 4(f) resource, but the project's proximity impacts are so severe that the protected activities, features, or attributes that qualify a resource for protection under Section 4(f) are substantially impaired. Substantial impairment occurs only when the protected activities, features, or attributes of the resource are substantially diminished. FHWA is not required to determine that there is no constructive use. However, such a determination could be made by the FHWA.

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 Part 771. It is important to note that building permits issued after the Date of Public Knowledge, for new developments, will not be subject to detailed noise analysis and will not be considered for noise abatement.

Decibel. A unit used to measure the intensity of a sound. Decibel is abbreviated as "dB".

Design Year. The future year used to estimate the probable traffic volume for which a highway is designed.

Existing Noise Levels. The worst noise hour resulting from the combination of natural and mechanical sources and human activity usually present in a particular area.

Feasibility. The combination of acoustical and engineering factors considered in the evaluation of a noise abatement measure.

Impacted Receptor. The receptor that has a traffic noise impact. A receptor is determined impacted, when predicted sound levels approach or exceed the NAC for its given land use Activity Category.

Insertion Loss (IL). The actual acoustical benefit derived from the presence of a noise barrier.

L10. The sound level that is exceeded 10 percent of the time (the 90th percentile) for the period under consideration, with L10(h) being the hourly value of L10.

Leq. The equivalent steady-state sound level which in a stated period of time contains the same acoustic energy as the time-varying sound level during the same time period, with Leq(h) being the hourly value of Leq.

Level of Service (LOS). A qualitative assessment of a road's operating conditions. Level of service indicates the capacity per unit of demand for each public facility. It is a standard measurement that reflects the relative ease of traffic flow on a scale of A to F, with free-flow being rated LOS-A and congested conditions rated as LOS-F.

Line-of-Site – An unobscured straight line between the observer location and a specific noise source.

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.

National Environmental Policy Act (NEPA). Federal legislation that establishes environmental policy for the nation. It provides an interdisciplinary framework to ensure that decision-makers adequately take environmental factors into account. The level of documentation for federally-aided projects is influenced by the impact the project may have on the surrounding natural, cultural, and social environment.

Noise Abatement Criteria (NAC). Noise levels for various activities or land uses that represent the upper limit of acceptable highway traffic noise levels. These levels are used to identify highway traffic noise impacts and are from Table 1 from 23 CFR Part 772; see Page 20.

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 standalone noise walls, noise berms (earth or other material), and combination berm/wall systems.

Noise Reduction Design Goal. The optimum desired dB(A) noise reduction determined from calculating the difference between future build noise levels with abatement, to future build noise levels without abatement. **The SCDOT noise reduction design goal is 8 dB(A).** The design goal is a reasonableness factor indicating a specific reduction in noise levels that SCDOT uses to identify that a noise abatement measure effectively reduces noise. It is a comparison of the design year noise level with the abatement measure to the design year noise level without the abatement measure. The design goal is not the same as acoustic feasibility.

Park. A place or area set aside for recreation or preservation of a cultural or natural resource.

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.

Project Area. For noise study purposes, the area within 500 feet from the proposed edge of pavement of the roadway improvements is defined by the roadway construction limits. Highway traffic noise assessment is required for all receptors within these limits and there may be instances where the noise analysis evaluates noise impacts and potential mitigation beyond the project area for the purposes of community continuity and other potential reasons. Close coordination with SCDOT is required when identifying the “project area” and will be approved as part of the the Noise Analysis Work Plan (NAWP).

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. The combination of social, economic, and environmental factors considered in the evaluation of a noise abatement measure.

Receptor. A discrete or representative location of a noise sensitive area(s).

Residence. A dwelling unit. Either a single-family residence or each dwelling unit in a multifamily dwelling.

Non-residential Uses. Uses that include, but are not limited to, schools, preschools, daycares,

places of worship, hospitals, parks, and campgrounds.

Substantial Construction. The granting of a building permit, prior to right-of-way acquisition or construction approval for the highway.

Substantial noise increase. One of two types of highway traffic noise impacts. **For a Type I project, an increase in noise levels of 15 dB(A) or more in the design year over the existing noise level.**

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

Traffic Noise Impacts. Design year build condition noise levels that approach or exceed the NAC listed in Table 1 for the future build condition; or design year build condition noise levels that create a substantial noise increase over existing noise levels.

Type I Project.

- (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 HOV lane, High-Occupancy Toll (HOT) lane, bus lane, or truck climbing lane; or,
- (4) The addition of an auxiliary lane of at least 2,500 feet, 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 of at least 2,500 feet; 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 per § 772.5 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. For a Type II project to be eligible for Federal-aid funding, the highway agency must develop and implement a Type II program in accordance with section 772.7(e). SCDOT does not participate in a Type II program at this time.

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

SECTION 3: TYPES OF SCDOT NOISE ANALYSIS

The latest version of the FHWA TNM (or any other model determined by the FHWA to be consistent with the methodology of TNM), is required for use in all highway traffic noise analyses for Federal-aid highway projects that begin on or after May 2, 2005. Future noise levels must be predicted for all build alternatives under consideration in the NEPA document (all reasonable alternatives, but not alternatives rejected for detailed analysis because they are not reasonable).

3.1 Scoping the Level of Noise Analysis

SCDOT policy dictates one of three levels of noise analysis be completed, that is designed to match the scope of the project more effectively. Coordination with SCDOT during the early stages of project scoping is critical to ensure the proper level of noise analysis is conducted. If the project is not a Type I project, then it needs to be documented in the project file and the following language should be included in the NEPA document: *The proposed project does not meet any of the criteria to be a Type I noise project per 23 CFR §772.5. Thus, no noise analysis is required for the project.*

If the project is a Type I project, then an evaluation of land use needs to be completed to determine if there are any noise sensitive receptors (currently present or have issued building permits) within 500 feet of the edge of the proposed roadway. If there are no noise sensitive receptors within 500 feet of the edge of the future roadway, it should be documented as part of the project record and a noise analysis is not required.

The appropriate level of analysis, for Type I projects (with sensitive receptors present) can be scoped based on the probable occurrence of highway traffic noise impacts, the potential for noise mitigation measures, and/or noise-related public concerns. The level of analysis of highway traffic noise impacts may be one of two types:

- Detailed Analysis
- Final Design Analysis

3.2 What are the required elements of a SCDOT detailed noise analysis?

A detailed analysis shall be performed for all Type I projects. Detailed analyses shall also be performed when noise impacts are determined to be likely and mitigation appears feasible.

3.2.1 – Timing of detailed noise analysis:

The detailed noise analysis will need to be complete by the time SCDOT holds a public hearing for a project. If a project does not have a public hearing scheduled, the detailed study would need to be complete by the time a Categorical Exclusion (CE), Environmental Assessment (EA), or Draft Environmental Impact Statement (EIS) is approved.

3.2.2 - A Noise Analysis Work Plan (NAWP) is required to be developed and must be approved by SCDOT prior to initiating field monitoring activities. A NAWP shall outline the steps to be taken for the detailed noise analysis, including any methodologies and assumptions that may be appropriate. The NAWP shall be prepared in a memo-style format with color graphics depicting the limits of the proposed project improvements, noise study area and include the following elements:

- a) Identification of all noise sensitive receivers within 500 feet of the nearest edge-of-shoulder for the roadway being improved, depicted by Activity Land Use Category
- b) Noise study area to be modeled
- c) Proposed noise monitoring/modeling locations
- d) Discussion of traffic data to be used and how the worst-case hour was determined
- e) Proposed project schedule

3.2.3 - Required elements as part of a detailed SCDOT noise analysis:

- a) Measurement of existing noise levels
- b) Noise Model validation
- c) Coordination with local municipalities to locate all planned, designed and permitted developments prior to the Date of Public Knowledge.¹
- d) Noise model analysis of existing, no-build, and future build noise levels for each proposed alternative. **NOTE:** For TNM noise modeling purposes, include roadway shoulders, building rows, terrain lines, or ground zones for existing and recommended preferred alternative. Tree Zones shall only be used when they are needed for Noise Model Validation and aren't being altered as part of the proposed project.
- e) Identification of traffic noise impacts
- f) Consideration and evaluation of noise abatement
- g) Constructability Review
 - a. Barrier(s) shall be evaluated for conflicts with utilities, drainage and other elements that may affect the constructability of the barrier, prior to public solicitation.
- h) 66-dB(A) contour on project mapping
- i) Modeling of noise barrier(s) with barrier segments not greater than 50-feet.

¹ A noise analysis must include the step of contacting local governments/planning officials to determine if any new building permits have been issued within the noise study area since the initial completion of the detailed noise analysis and the project's FONSI or ROD, also known as the Date of Public Knowledge. This step should be performed immediately (within two weeks) of the imminent issuance of the project's FONSI or ROD. If new building permits have been issued, or if the environmental manager or noise analysis personnel note signs of pending development not captured in the NEPA noise analysis, then the report must be revised to include analysis of any new qualifying category of development (see Activity Category table in Section 2).

- j) Tabular discussion of results of feasibility and reasonableness of the evaluated barriers.
- k) Insertion losses for the barrier and all reasonableness calculations shall be performed with the final “smoothed top height” barrier that is also used for development of the acoustic profile.
- l) Acoustic Profile in tabular format for all barriers meeting SCDOT criteria.
- m) Quality Assurance/Quality Control
- n) DRAFT Noise Analysis Technical Report Submission to SCDOT for approval
- o) Solicitation of benefited receptor’s viewpoints for feasible and reasonable noise barriers
- p) FINAL Noise Analysis Technical Report Submission

3.3 What are the required elements and/or considerations of a SCDOT final design noise analysis?

- a) NAWP
- b) All elements required as part of a detailed analysis
- c) Acoustic profiles of all recommended noise abatement
- d) Noise abatement designed during final design shall protect the same number of receptors (at a minimum), as were identified in the NEPA noise analysis
- e) During Final Design, if a noise barrier (previously recommended in the NEPA analysis) changes base elevation by one foot or greater, or if the location of the noise barrier is modified by five or more linear feet from its originally studied position, it must be reevaluated during Final Design
- f) Quality Assurance/Quality Control
- g) Noise Abatement Technical Report Submission

SECTION 4: ELEMENTS OF A SCDOT NOISE ANALYSIS

4.1 Average Pavement

Average pavement type must be utilized when analyzing future conditions unless there is an agreement with FHWA to use a different pavement type. States may propose use of a different pavement type for approval by coordinating with the FHWA Headquarters Office and the South Carolina’s FHWA Division Office. SCDOT would be required to demonstrate that a current TNM pavement is an acoustic match for a pavement used or provide sufficient data to FHWA to incorporate a specific pavement within the TNM.

4.2 Noise Contours

Noise contour lines are useful for screening and to provide information to local officials (772.17); however, some caution is necessary when using noise contour lines. SCDOT prefers that noise contours be generated through the use of the Noise Contour function in TNM. When using the Noise Contour function, users must ensure the grid spacing provides a sufficient resolution to provide good results and when using discrete receivers, the user must ensure the receivers are close enough together to enable relatively accurate extrapolation between receiver points. **Noise Contours can only be used for project alternative screening or for land use planning**

purposes, NOT for determining highway traffic noise impacts.

4.3 Traffic Characteristics

The "worst hourly traffic noise impact" occurs at a time when truck volumes and vehicle speeds are the greatest, typically when traffic is free flowing and at or near level of service (LOS) C conditions. Vehicle composition in a project corridor are very important, especially during periods that contain higher medium and heavy truck volumes. In heavily congested urban areas, the peak traffic period (often LOS E or F) may NOT represent the worst noise condition because speeds may be low and heavy truck volumes may drop as drivers try to avoid severe congestion. An evaluation of hourly traffic volumes may be warranted in areas where there is heavy congestion to ensure that the worst hourly traffic noise impact is being measured as well as being modeled. This should be discussed as part of the NAWP.

4.4 Posted vs. Design Speeds

The highest overall speed at which a driver can travel on a given highway under favorable weather conditions and under prevailing traffic conditions, should be included in TNM. This may be either the posted speed limit or the design speed(s) depending on the roadway. Actual speeds documented during the monitoring effort shall be used for the validation noise modeling only. The design speed shall be used for all other noise modeling scenarios (existing, no-build and build) if it is determined to be consistently higher than the posted speed limit.

4.5 TNM Input Parameters for a SCDOT Noise Analysis

Receivers:

1. Unless the area of exterior frequent human use is identified elsewhere, residential receptor sites should be placed at the edge of the dwelling unit closest to the major traffic noise source or as dictated by professional judgment.
2. Where more than one unit is clustered together, a single site can be analyzed as representative of the group as long as the representative site is within a common noise environment for the entire area it is representing. For example, the apartments on one side of a building can be modeled with a single site but represent the multiple apartments on that side of the building. However, additional sites may need to be analyzed for the apartments that have balconies or other outside uses on the other side of the building.
 - Balconies and decks shall be modeled for each floor of the building for the purposes of quantifying all impacts for a project. Careful consideration must be given to the relationship of the balcony/deck versus the ground floor to the roadway. Based on the elevation of the receptors, the area with the most direct line-of-sight to the roadway must be modeled.
 - SCDOT has a maximum allowable barrier height of 25 feet for ground mounted applications. Therefore, when evaluating multi-story residences in the barrier analysis, it is permissible to only include the

receptors in the first two floors, in the feasibility and reasonableness calculations.

3. Receptor heights for first floor receivers are always assumed to be 1.5 m (5 ft) above ground and second story receivers at 4.6 m (15 ft) above ground level, or five feet above the height of the balcony or deck elevation. Higher story receivers will have to be determined on a case-by-case basis.
4. Other non-residential uses are noise sensitive receptors where quiet is important for normal activities. Including schools, preschools, daycares, places of worship, hospitals, parks, campgrounds, and apartment complex pools. Retirement homes are also included in this category as quiet is important for normal activities. The location of the receptor in these cases will be dictated by the location of the noise source and the exterior activity that will be impacted, if any. Active Sports Areas do not fall within the classification of non-residential uses, as a quiet environment is not important for normal activities. As such, these areas are equivalent to one impacted residence. For non-residential uses and retirement homes, the following equation should be used to determine the equivalent number of impacted residents:

Equivalent # Residents = # Occupants/(# People/Residence) * Usage

of Occupants = # of students in a school or the # of people in a congregation. For parks, an attempt should be made to contact the owner/operator of the park to estimate the average number of people that utilize the park per day.

NOTE: These areas shall be evaluated on a case by case basis and the methodology shall be detailed in the NAWP. In some cases, these land uses may be permitted, but not constructed at the time of the noise analysis. In these instances, SCDOT may find it acceptable to utilize usage statistics from adjacent and similar land uses. This should be detailed in the NAWP.

of People/Residence = Average number of people per residence as defined by the 2010 U.S. Census for the particular project area. For example, the average number of people per occupied household for West Columbia, South Carolina is 2.13 according to the 2010 U.S Census. This should be rounded to 3 people per residence.

Usage = # of hours used per day/24 hours per day
If school is in session with children for 8 hours per day
Usage = .33 (8 hours divided by 24 hours)

Example 1:

- 500 students in a West Columbia, SC school for 4 hours per day
- Equivalent # Residents = $500/3 * (4/24)$
- Equivalent # Residents = $166.66*0.166$
- Equivalent # Residents = 27.66

**Note: Always round the equivalent # of residents upward when dealing with decimals in this situation.

- Equivalent # Residents = 28
- Equivalent # Residents / Number of Modeling Receptors = Per modeling receptor equivalent residential value.

Example 2:

- 100 visitors to a park per day to a park in West Columbia, SC that is open from sunrise to sunset = an average of 10 hours per day
- Equivalent # Residents = $100/3*(10/24)$
- Equivalent # Residents = $33.33*0.416$
- Equivalent # Residents = 13.88

**Note: Always round the equivalent # of residents upward when dealing with decimals in this situation.

- Equivalent # Residents = 14
- Equivalent # Residents / Number of Modeling Receptors = Per modeling receptor equivalent residential value.

Roadways:

1. When a roadway consists of multiple lanes, each lane must be modeled as a separate roadway in TNM. A single TNM roadway that has an expanded width to account for the multiple lanes is not acceptable.
2. Include the shoulders of a roadway in TNM. The shoulders should be modeled in TNM as a separate TNM roadway with no traffic.

4.6 Required Additional TNM Input Parameters

A SCDOT noise analysis, whether detailed or final design level, must include the following input parameters:

Receivers:

1. Include elevation of the receivers.

Roadways:

1. Include elevation and width of the roadways and shoulders.

Building Rows/Terrain Lines/Ground Zones/Tree Zones:

1. Buildings should be modeled as individual (three-sided) barriers for the first two rows of homes. It is permissible to model building rows for the third row and beyond.
2. Use terrain lines only for changes in elevation greater than 5 feet.
3. Ground zones should be included where the non-default ground type is between the roadway and the receiver, i.e. a water feature, large parking lot, etc.
4. Only use tree zones if the area consists of heavy, non-deciduous woods and undergrowth, and is required for noise validation purposes. The growth must be sufficiently dense to completely block the view between the receptor and the roadway and must be at least one hundred (100) feet in depth parallel to the roadway.

4.7 Quality Assurance/Quality Control

Technical accuracy of the predicted results and any feasible and reasonable noise abatement is paramount to SCDOT. Professionals completing noise analyses under this policy, shall adopt internal QA/QC measures and implement them prior to submissions to SCDOT. If a noise analysis is being performed for a project requiring an Environmental Assessment or an Environmental Impact Statement, SCDOT requires that an independent, third-party Quality Assurance/Quality Control (QA/QC) review will be conducted for the analysis unless an exception has been granted in writing by SCDOT. SCDOT will provide the third-party review as part of its on-call services.

SECTION 5: ANALYSIS OF TRAFFIC NOISE IMPACTS

5.1 Field Noise Measurements

All measurements must comply with the methodology cited in the FHWA “Noise Measurement Handbook” and the corresponding “Noise Measurement Field Guide” (June 1, 2018). Field measurements are to be conducted at representative receptors along all existing roadway segments that may be affected by the proposed action. When field measurements are required along a new alignment where traffic noise does not exist or is only a minor element in the overall acoustic environment, noise monitoring is to be conducted in accordance with the FHWA procedures. Measurements should be taken 1.5 m (5 ft) above ground level and within 30 m (100 ft) of the centerline of the proposed roadway alignment if possible. If possible, a location along the alignment should be chosen that represents a potential noise sensitive site and that has a noise environment similar to most areas along this section of the alignment. SCDOT will approve field measurement periods as presented in the NAWP prior to initiating noise monitoring activities.

Statistical accuracy requires minimum measurements of approximately 10 minutes. **SCDOT prefers 15-minute time periods to represent the Leq(h).** SCDOT requires at least ten-minutes of remaining data once unusual events are “removed” from the monitoring session, therefore it is recommended that that measurement intervals be between 10-30 seconds for the duration of the monitoring session. Measurements along low-volume highways may require longer measurement

periods (e.g., 30-60 minutes) to attain desirable statistical accuracy. If information is not available to identify the noisiest hour of the day or if there is public controversy at a specific location, 24-hour measurements may be necessary. As stated above, this will all be captured upon review of the field measurement locations and sessions, as presented in the NAWP.

Use noise meters with sufficient accuracy to yield valid data for the particular project (ANSI TYPE 1 or 2 are required). Factory calibration of noise monitoring equipment is required on a biannual basis. Current calibration certifications for all noise meters used to collect field data shall be included in the appendices of the Noise Analysis Technical Report.

During field noise measurements note the following:

1. Site sketch with digital photos and GPS coordinates of location (if possible);
2. Vehicle counts and class identification (automobiles, motorcycles, buses, medium trucks, heavy trucks, directional factors). In instances where visual (or other) obstructions inhibit the ability to effectively document vehicle counts and class identification for both directions/all traffic relative to a measurement location (divided roadway with tree median, for instance), the NAWP must include information on how simultaneous count/identification for all traffic (both directions) will be achieved at the location;
3. Unusual, non-traffic related noises (aircraft flyovers, trains, barking dogs, etc.);
4. Meteorological conditions;
5. Barrier/buffer information including trees, berms, structures or variations in terrain between the receptor and the source

If the field data was gathered without unusual noise disturbances, such as barking dogs or aircraft flyovers, the study will be considered complete. If not, and a logical explanation for any unusual readings cannot be made, the field measurements at that location(s) should be repeated in accordance with the FHWA’s current measurement procedures.

Below is an example table that should be completed when taking field noise measurements and included in the noise analysis report. In addition to the information below a graphic must also be included that depicts where each noise measurement was taken.

Site	Time Period	Hourly Traffic Based on Concurrent Traffic Counts										Measured Leq
		Southbound Lanes					Northbound Lanes					
		Autos	MT	HT	Bus	MC	Autos	MT	HT	Bus	MC	
A	4:30PM-4:45PM	391	11	22	17	2	352	5	23	0	1	66.1
B	4:55PM-5:10PM	391	11	22	17	2	352	5	23	0	1	64.3
MT = Medium Trucks			HT = Heavy Trucks			MC = Motorcycles						

NOTES:

Site A – Dogs barking intermittently, occasional local traffic.

Site B traffic shielded from view: used counts taken during Site A measurement.

5.2 Model Validation

23 CFR 772.11(d)(2) requires validation to verify the accuracy of noise models used to predict existing or future noise levels. The model is validated if existing highway traffic noise levels and predicted highway traffic noise levels for the existing condition are within +/-3 dB(A). If the measured and predicted highway traffic noise levels are within +/-3 dB(A) for all the measurements at all the sites, then the model is considered valid and can be used to predict future highway traffic noise levels along the entire project. If the model is not within +/-3 dB(A) for all the measurements at all the sites, a careful examination of the field-measured and predicted data should be undertaken to determine the reason(s) for this margin of error. In the event that a logical explanation for the difference cannot be made, the field measurements at that location(s) should be repeated. SCDOT has the discretion to accept margin of error or require additional field measurements.

Below is an example table that should be completed and included in the noise analysis report.

Site	Time Period	FHWA TNM Model Validation		
		Measured Leq	Modeled Leq	Difference
A	4:30PM-4:45PM	66.1	66.9	-0.8
B	4:55PM-5:10PM	63.3	60.8	2.5
NOTES: Difference = Measured Leq minus Modeled Leq				

5.3 Model Calibration

Calibration of a noise model, where the user adjusts the predicted noise level at a specific receiver to account for differences between measured and modeled noise levels, **is not routinely advisable**. Problems with validating most models usually are due to input errors rather than problems with the model and users are encouraged to exhaust input options prior to making receiver adjustments. Typically, calibration involves the situations where the model is consistently over-predicting or under-predicting by an amount greater than 3 dB(A). Adjusting the model by the difference between the measured and predicted values is a possible solution. The analyst must determine and document the reasons or causes for the difference between measured and predicted highway traffic noise levels and the actual level of the adjustment. Generally, differences in measured and predicted noise levels greater than +/- 3 dB(A) occur due to a site condition not accounted for in the model such as ground type, meteorological effects or contributions from non-transportation related noise sources. For example, one or more representative sites within each link or segment are to be sampled if traffic volumes, mix, or horizontal/vertical geometry change substantially enough to impact traffic noise levels.

Coordination with SCDOT must be completed prior to any model calibration.

5.4 Prediction of Future Highway Traffic Noise Levels for Study Alternatives

The next step involved in the highway traffic noise study is analysis of the noise levels expected to occur with the proposed highway. Using TNM, traffic noise levels are predicted for the existing and design year conditions using the appropriate traffic data and roadway configurations. Future noise levels must be predicted for all build alternatives under consideration in the NEPA document (all reasonable alternatives, but not alternatives rejected for detailed analysis because they are not reasonable). A no-build scenario is required to satisfy NEPA requirements. Document the method used to predict highway traffic noise levels and traffic data for the various alternatives.

5.5 Identification of Highway Traffic Noise Impacts for Study Alternatives

The next step in the highway traffic noise analysis involves a comparison of the predicted noise levels for each project alternative with the highway traffic noise abatement criteria and existing noise levels. This comparison identifies any highway traffic noise impacts associated with each alternative in terms of a substantial increase in noise levels or approach or exceeding of the NAC.

A highway traffic noise impact occurs when:

1. The projected highway traffic noise levels approach or exceed the noise abatement criteria in 23 CFR 772. **“Approach” is defined as within 1 dB(A) of the FHWA noise abatement criteria for the applicable land use category.**

Or

2. The projected highway traffic noise levels substantially exceed existing highway traffic noise levels in an area. **“Substantially exceed” is defined as an increase in noise levels of 15 dB(A) or more in the design year over the existing noise level.** A substantial increase is independent of the absolute noise level. A substantial noise increase is a noise impact, even if the future noise level does not approach or exceed the NAC.

The noise analysis must include analysis for each Activity Category present in the study area. Below is a brief explanation of the activity categories listed in Table 1 of 23 CFR, Part 772, Noise Abatement Criteria (NAC), see below.

<i>23 CFR, Part 772, Table 1 Noise Abatement Criteria (NAC)</i>				
Activity Criteria\2\			Evaluation Location	Activity Description
Activity Category	Leq(h)	L10(h)		
A	57	60	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 ³	67	70	Exterior	Residential.
C ³	67	70	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52	55	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E ³	72	75	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F.
F	--	--	--	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.
G	--	--	--	Undeveloped lands that are not permitted

¹ Either Leq(h) or L10(h) (but not both) may be used on a project.

² The Leq(h) and L10(h) Activity Criteria values are for impact determination only and are not design standards for noise abatement measures.

³ Includes undeveloped lands permitted for this activity category.

Activity Category A. This activity category includes the exterior impact criteria for 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 for the area to continue to serve its intended purpose. Highway agencies shall submit justifications to the FHWA on a case-by-case

basis for approval of an Activity Category A designation.

Activity Category B. This activity category includes the exterior impact criteria for single-family and multifamily residences.

Activity Category C. This activity category includes the exterior impact criteria for a variety of land use facilities. Facilities that fall into this land use activity category should be evaluated based on the non-residential use classification explained in detail previously.

NOTE: Golf Courses - when evaluating golf courses within 500 feet of the proposed improvements, SCDOT defines the frequent human use area as the tee boxes and greens only. A single modeling receptor should be placed at each location and included in the noise analysis. To determine reasonableness, please refer to Section 6 for more information.

NOTE: Other Activity Category C recreation areas - when evaluating all other Activity Category C recreation areas, the modeled receptors should be placed in the area of frequent human use. (e.g., trail, basketball court, baseball field, dog park, etc). Utilizing a grid system, the identified outdoor use area should be modeled with single receptors placed in a 100-foot by 100-foot pattern, perpendicular to the roadway and ensure coverage of the entire outdoor use area. For trails, modeling sites shall be placed at 100-foot spacing in a linear manner. If the outdoor use area is smaller than the 100-foot by 100-foot grid (e.g., playground), a single modeling receptor should be placed at the center of the outdoor use area. To determine reasonableness, please refer to Section 6 for more information.

Activity Category D. This activity category includes the interior impact criteria for certain land use facilities listed in Activity Category C that may have interior uses. A highway agency shall conduct an indoor analysis only after a determination is made that exterior abatement measures will not be feasible and reasonable. An indoor analysis shall only be done after exhausting all outdoor analysis options. In situations where no exterior activities are to be affected by the traffic noise, or where the exterior activities are far from or physically shielded from the roadway in a manner that prevents an impact on exterior activities, the highway agency shall use Activity Category D as the basis of determining noise impacts.

Noise analysts may collect field measurements or use the TNM to estimate the noise reduction factors rather than obtaining the factors from detailed acoustical analysis. In the absence of calculations or field measurements, compute interior noise level predictions by subtracting noise reduction factors from the predicted exterior levels for the building in question, using the information below. Noise analysts should take interior noise measurements for the final noise analysis and abatement design for locations where highway agencies consider noise insulation as an abatement measure.

Building Type	Window Condition	Noise Reduction Due to Exterior of the Structure
All	Open	10 dB
Light Frame	Ordinary Sash (closed)	20 dB
	Storm Windows	25 dB
Masonry	Single Glazed	25 dB
	Double Glazed	35 dB
*The windows shall be considered open unless there is firm knowledge that the windows are in fact kept closed almost every day of the year.		

Activity Category E. This activity category includes the exterior impact criteria for developed lands that are less sensitive to highway noise. Facilities that fall into this land use activity category should be evaluated as explained in detail previously.

Activity Category F. This activity category includes developed lands that are not sensitive to highway traffic noise. There is no impact criteria for the land use facilities in this activity category and no analysis of noise impacts is required.

Activity Category G. This activity includes undeveloped lands.

1. Determine whether undeveloped land is permitted for development. The milestone and its associated date for acknowledging when undeveloped land is considered permitted shall be the date of issuance of a building permit by the local jurisdiction or by the appropriate governing entity.
2. If undeveloped land is determined to be permitted, then the highway agency shall assign the land to the appropriate Activity Category and analyze it in the same manner as developed lands in that Activity Category.
3. If undeveloped land is not permitted for development by the date of public knowledge, the highway agency shall determine noise levels in accordance with 772.17(a) and document the results in the project's environmental clearance documents and noise analysis documents. Federal participation in noise abatement measures will not be considered for lands that are not permitted by the date of public knowledge

SECTION 6: ANALYSIS OF NOISE ABATEMENT MEASURES

When traffic noise impacts are identified, noise abatement shall be considered and evaluated for feasibility and reasonableness. In abating traffic noise impacts, a highway agency shall give primary consideration to exterior areas where frequent human use occurs. South Carolina is not part of the FHWA-approved Quiet Pavement Pilot Program, so use of quieter pavements is not an acceptable Federal-aid noise abatement measure for Federal projects. Planting of vegetation or landscaping is not an acceptable Federal-aid noise abatement measure because only dense stands of evergreen vegetation at least 100 feet deep will reduce noise levels.

In accordance with 23 CFR 772.13(c), the following noise abatement measures will be considered

as a means to reduce or eliminate the traffic noise impacts.

1. Traffic management measures
 - i. Traffic control devices (refer to current NCHRP guidance)
 - ii. Signing for prohibition of certain vehicle types
 - iii. Time-use restrictions for certain vehicle types
 - iv. Modified speed limits
 - v. 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.
4. Construction of noise barriers (including landscaping for esthetic purposes) whether within or outside the highway right-of-way. Interstate construction funds may not participate in landscaping.
5. Acquisition of real property or interests therein (predominantly unimproved property) to serve as a buffer zone to preempt development which would be adversely impacted by traffic noise.
6. Noise insulation of public use or nonprofit institutional structures.

When considering noise abatement measures, the following feasibility and reasonableness factors must be evaluated relative to each alternative abatement measure.

6.1 Feasibility

Acoustic Feasibility. It is SCDOT's policy that a noise reduction of at least 5 dB(A) must be achieved for 75% of those receivers determined to be impacted for the noise abatement measure to be acoustically feasible. At a minimum, at least three (3) impacted receptors must achieve a 5-dB(A) reduction or the proposed barrier will not be considered acoustically feasible.

Engineering Feasibility. Feasibility deals with engineering considerations. The ability to achieve noise reduction may be limited by:

1. Topography – Determine if the abatement measure could be constructed given the topography of the location.
2. Safety - Maintaining a clear recovery zone, sight distance and accommodation of disabled vehicles.
3. Drainage – Issues created by directing water along, under, or away from an abatement measures.
4. Utilities - Large overhead power lines, underground water, sewer, gas, oil, etc., can have a significant impact on costs and design options.
5. Maintenance – Potential issues from location of abatement measure and construction materials.

6. Access - Refers to the ingress and egress to properties that would be affected by the noise abatement measure.
7. The exposed height of the noise abatement measure cannot exceed 25 feet based on constructability constraints.

Constructability Review - A constructability review should be conducted prior to any proposed noise abatement measure/barrier being shown to the public during the NEPA analysis. This review will determine whether any project-specific engineering or construction considerations may affect the abatement/barrier cost in such a way that make abatement unreasonable, which would thereby preclude any exhibition of the abatement measure to the public. Factors to consider but are not limited to: site distance, barrier height, topography, drainage, utilities, and maintenance of the abatement measure, maintenance access to adjacent properties, and access to adjacent properties. This would be factored into the cost-effectiveness reasonableness criterion discussed below.

6.2 Reasonableness

There are Three Mandatory Reasonable Factors that must be met for a noise abatement measure to be considered reasonable. The Three Mandatory Reasonable Factors must collectively be achieved in order for a noise abatement measure to be deemed reasonable. Failure to achieve any one of the reasonable factors will result in the noise abatement measure being deemed not reasonable. Completion of a “Feasibility and Reasonableness Worksheet” (refer to example in Appendix B) is required for inclusion in the noise analysis technical report.

1. **Noise reduction design goal.** It is SCDOT’s policy that a noise reduction of at least 8 dB(A) must be achieved for 80% of those receivers determined to be in the first two building rows and considered benefited. Please note that the first two building rows will only be applicable if they are within 500 feet from the edge of pavement noise source.
2. **Cost effectiveness.** The allowable cost of the abatement will be based on \$35.00 per square foot. This allowable cost is based on actual construction costs on recent SCDOT projects. This construction cost will be divided by the number of benefited receptors. If the cost per benefited receptor is less than **\$30,000** then the barrier is determined to be cost effective. This allowable cost will be reanalyzed at most every 5 years.

During the noise abatement evaluation, a more project-specific construction cost should be applied at a cost per square foot basis. The estimation will take into consideration the cost of the actual noise barrier, required hydrology, additional right-of-way, and other aspects associated with the noise barrier construction. The following is a general list of “allowable and prohibited” costs associated with the overall cost of a noise barrier.

“Allowable Costs”- if only required for the construction of the noise barrier

- Utility relocations and supporting infrastructure, including but not limited

- to, water, sewer, gas, electrical and fiber optic lines
- Additional ROW necessary for the barrier
- Significant drainage modifications
- Mitigation costs for drainage (or other) modifications due to the barrier
- Specialized foundation requirements due to unstable ground or other geologic constraints
- Modifications to structures, including bridges, culverts and retaining walls

“Unallowable Costs”

- Clearing, grubbing and reseeded
- Maintenance of traffic during construction
- Guardrail/Safety or jersey barrier design
- Asphalt/paving
- General maintenance of the installed barrier

3. ***Viewpoints of the property owners and residents of the benefited receptors.*** SCDOT shall solicit the viewpoints of all of the benefited receptors and document a decision on either desiring or not desiring the noise abatement measure. The viewpoints will be solicited as part of the public involvement process through a voting procedure during NEPA. The method of obtaining the votes shall be determined on a project-by-project basis, but may include flyers, door-to-door surveys, a public meeting, or a mailing. The voting ballot will explain that the noise abatement shall be constructed unless a majority (greater than 50% of the benefited receptors) of votes not desiring noise abatement is received.

NOTE: For non-owner occupied benefited receptors, both the property owner and the renter may vote on whether the noise abatement is desired. One owner ballot and one resident ballot shall be solicited for each benefited receptor.

NOTE: Home owner associations or local governments cannot be given authority over the desirability for abatement. The viewpoints of the abatement must be solicited from the property owners and tenants.

6.3 Noise Barriers on Bridges/Structures

As part of the constructability review (Section 5.3), noise walls should be limited to 10 feet in height on bridges/structures. Due to typical wind loading calculations and other pertinent constraints, noise barriers on bridges/structures should not exceed 10 feet in height, from the top of the bridge parapet. In addition, if a noise barrier is proposed on a structure, coordination with the appropriate SCDOT design engineer is required and should be completed as soon as possible to ensure the structure/bridge can support the evaluated noise barrier. All coordination related to this issue should be documented and included in the project record.

6.4 Assessment of Benefited Receptors

A noise reduction of 5 dB(A) or greater determines a receptor to be benefited and shall be solicited

for noise barrier desirability.

6.5 Abatement Measure Reporting

SCDOT will maintain an inventory of all constructed noise abatement measures. The inventory data is needed for each individual barrier or a combination of barriers for a single noise sensitive area and shall include the following parameters:

1. type of abatement;
2. cost (overall cost, unit cost per/sq. ft.);
3. average height;
4. length;
5. area;
6. location (State, county, city, route);
7. year of construction;
8. average insertion loss/noise reduction as reported by the model in the noise analysis;
9. NAC category(s) protected;
10. material(s) used (precast concrete, berm, block, cast in place concrete, brick, metal, wood, fiberglass, combination, plastic (transparent, opaque, other);
11. features (absorptive, reflective, surface texture);
12. foundation (ground mounted, on structure);
13. project type (Type I, Type II, and optional project types such as State funded, county funded, tollway/turnpike funded, other, unknown).

6.6 Information Required for NEPA Decision:

The NEPA document must include the results of the noise analysis in order for FHWA to approve the document. SCDOT will identify:

- a. the locations where noise impacts will occur,
- b. where noise abatement is feasible and reasonable, and
- c. the locations that have no feasible and reasonable abatement.

The analysis shall be completed to the extent that design information on the alternative(s) under study in the environmental document is available at the time the environmental clearance document is completed. A statement of likelihood shall be included in the environmental document since feasibility and reasonableness determinations may change due to changes in project design after approval of the environmental document. 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 shall also 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.

The viewpoints of the benefited residents and property owners should be a major consideration in determining the reasonableness of highway traffic noise abatement measures for proposed highway construction projects. These viewpoints should be determined and addressed during the environmental phase of project development. The will and desires of the public should be an important factor in dealing with the overall problems of highway traffic noise. SCDOT will

make every effort to incorporate highway traffic noise consideration into on-going activities for public involvement in the highway program.

***Example Statement of Likelihood.** Based on the studies thus far accomplished, SCDOT intends to install highway traffic noise abatement measures in the form of a barrier at _____.* These preliminary indications of likely abatement measures are based upon preliminary design for a barrier cost of \$35.00 per square foot that will reduce the noise level by dB(A) for residences. If it subsequently develops during final design that these conditions have substantially changed, the abatement measures might not be provided. A final decision of the installation of the abatement measure(s) will be made upon completion of the project's design and the public involvement processes.

The noise analysis must be completed in order for FHWA to approve the Categorical Exclusion or to provide a Finding of No Significant Impact or a Record of Decision.

6.7 Third Party Funding

For Federal projects, third party funding cannot be used to make up the difference in cost between the reasonable cost allowance and the actual cost. Third party funding can only be used to pay for additional features such as landscaping, aesthetic treatments, etc. for noise barriers that meet cost-effectiveness criteria.

SECTION 7: DESIGN-BUILD PROJECTS & FEDERAL PARTICIPATION

7.1 Design-Build Projects

The 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 analysis. Noise abatement designed during final design shall protect the same number of receptors (at a minimum), as were identified in the NEPA noise analysis, unless a justifiable reason is presented, and permission is given through coordination with SCDOT. Design-Build and Design Bid-Build projects are considered final design level analyses. Noise abatement measures shall be considered, developed, and constructed in accordance with this standard and in conformance with the provisions of 40 CFR 1506.5(c) and 23 CFR 636.109.

7.2 Federal Participation

Section 772.15(a) identifies the rules that guide the funding of highway traffic noise abatement on highway projects.

Highway agencies may not use Federal-aid highway funds as payment or compensation for a highway traffic noise impact through the purchase of a noise easement from a property owner. The FHWA highway traffic noise regulations limit use of Federal funds to reducing traffic noise impacts and providing highway traffic noise abatement benefits. Monetary compensation accomplishes neither of these requirements.

For Type II projects only, Section 772.15(b) limits funding participation of highway traffic noise

abatement measures for projects approved before November 28, 1995 (the date of passage 1995 National Highway System Designation Act) or proposed where development or substantial construction predated the existence of the highway. If the existing highway is a six-lane freeway, this means development must have been in place prior to the construction of the first paved two-lane roadway. In addition, FHWA will not approve highway traffic noise abatement measures at locations where such measures were previously determined not feasible and reasonable for a Type I project. SCDOT does not have a Type II program at this time.

The participating share for the highway traffic noise mitigation measure is the same as that for the system on which the project is located. Although most highway traffic noise abatement occurs along Interstate highways, agency's may use Federal funds for abatement measures along other types of highways, if highway traffic noise impacts exist and the project meets the criteria in 772.15(a).

Property owners cannot receive Federal funds as monetary compensation in lieu of noise abatement. It is the highway agency's responsibility to ensure that Federal funds are properly used.

SECTION 8: INFORMATION FOR LOCAL OFFICIALS

To minimize future traffic noise impacts on currently undeveloped lands of Type I projects, SCDOT shall inform local officials by providing a copy of the noise analysis within whose jurisdiction the highway project is located in, per 23 CFR 772.17.

8.1 Noise Compatible Planning Concepts

Highway traffic noise is a program of shared responsibility. The FHWA encourages State and local governments to practice noise compatible land planning and control near highways. Local governments may use their power to regulate land development to prohibit noise-sensitive land uses adjacent to a highway, or require developers to plan, design, and construct projects that minimize highway traffic noise impacts on adjacent developments.

The prevention of future impacts is one of the most important parts of highway traffic noise control. New development and highways can be compatible. But, local government officials need to know what highway traffic noise levels to expect from a highway and what techniques they can use to prevent future impacts. Highway agencies can inform local officials by including a table of future noise levels at specific locations or a figure of distances to typical noise levels along the roadway. Encourage local officials to make this such information available for disclosure in real estate transactions. Make local officials aware of the eligibility requirements for Federal-aid participation in Type II projects.

To facilitate noise compatible planning concepts, FHWA developed a brochure titled "*Entering the Quiet Zone: Noise Compatible Land Use Planning.*" This brochure was developed to assist developers, elected officials, planners and members of the general public about the problem associated with traffic noise and effective response to noise.

In addition, a comprehensive guide titled "*The Audible Landscape: A Manual for Highway and Land Use*" was developed to provide a variety of administrative strategies to minimize or eliminate

potential roadway noise impacts, with the goal of preventing the need or desires for expensive noise abatement strategies. Both documents can be referenced through FHWA's website at the following location:

https://www.fhwa.dot.gov/environment/noise/noise_compatible_planning/federal_approach/

8.2 Estimation of Future Noise Levels

The best estimation of the future design year noise levels at various distances from the edge of the nearest travel lane of the highway improvement where the future noise levels meet the highway agency's definition of "approach" for undeveloped lands or properties within the project limits. To determine these zones, noise levels are computed at various distances from the edge of the project roadways in each of the undeveloped areas of the project study area. The distances from the edge of the roadway to the Category B, C, and E NAC noise levels are then determined through interpolation. Any noise sensitive sites within these zones should be considered impacted.

Noise level contours are lines of equal noise exposure that typically parallel roadway alignments. Highway traffic noise is considered a linear noise source and noise levels can drop considerably over distance. The degree that noise levels decrease can vary based on many different factors including objects that shield the roadway noise, terrain features and ground cover type (e.g., pavement, grass or snow). Through conscious planning efforts and noise contour generation, municipal officials can restrict future development inside the noise impact zone. Therefore, to implement this planning strategy, the 66-dB(A) noise level contour representing Design Year Build Conditions, should be developed and included on all project mapping.

SECTION 9: CONSTRUCTION NOISE

SCDOT shall:

1. Identify land uses or activities that may be affected by noise from construction of the project. The identification is to be performed during the project development studies.
2. Determine the measures that are needed in the plans and specifications to minimize or eliminate adverse construction noise impacts to the community. This determination shall include a weighing of the benefits achieved and the overall adverse social, economic, and environmental effects and costs of the abatement measures.
3. Incorporate the needed abatement measures in the plans and specifications.

The impact of construction noise does not appear to be serious in most instances. Consider the following items to ensure adequate consideration of potential construction noise impacts during highway project development:

For the majority of highway projects, highway agencies may address potential impacts of highway construction noise in a general manner in the noise analysis; noting the temporary nature of the impacts. The analysis should indicate the anticipated types of construction and noise levels associated with these activities from information available in existing literature and present this information in the noise analysis.

Highway traffic noise analyses should identify measures to mitigate potential highway construction noise impacts using a common-sense approach. Highway agencies may incorporate low-cost, easy-to-implement measures into project plans and specifications (e.g., work-hour limits, equipment muffler requirements, location of haul roads, eliminate of "tail gate banging", ambient sensitive back-up alarms, community rapport, and complaint mechanisms).

Calculation of construction noise levels is usually not necessary for highway traffic noise analyses. The decision to develop a detail construction noise analysis usually results from combination of factors including the scale and scope of the project along with public concern about construction noise. In some cases, the decision to complete a construction noise analysis may occur after construction begins resulting from public complaints. It is best to anticipate public concerns so the project plans, specification and estimates include consideration for construction noise abatement where necessary. If it is anticipated that construction noise impact are at a particular sensitive receiver, SCDOT has the option to use the FHWA Roadway Construction Noise Model (FHWA RCNM). Find additional information regarding the FHWA RCNM at <http://www.trafficnoisemodel.org/main.html>.

Note – Construction Noise Activities – Local Coordination

When construction noise is an issue on a particular project, the appropriate SCDOT staff should coordinate with the local communities and municipalities to establish periods of time when construction activities that cause high noise levels should not occur. These limitations may preclude nighttime activities near sensitive receptors or potentially controlling the noise at the source by utilizing quieter equipment or the development of construction staging areas adjacent to less sensitive areas. If at any time, construction noise specifications are to be included in PS&E packages, detailed coordination is required with the local municipality and SCDOT staff.

SECTION 10: NOISE ANALYSIS DOCUMENTATION

A complete noise analysis documentation should clearly describe each alternative under study and detail the adjacent land uses.

Executive Summary – Not necessary for reports less than 10 pages in length.

Table of Contents - Not necessary for reports less than 10 pages in length.

Introduction and Project Information

- Project description
- Purpose and need
- Existing facility
- Land uses
- Traffic conditions
- Roadway information

Methodology and Assumptions

- Model used
- Years considered

- Vehicle volumes
- Speeds
- Vehicle mix
- Receptor locations
- Receptor land use categories.
- Field measurement procedures
- Field measurement locations
- Field measurement durations and results (use example table provided)
- Aerial mapping with receptors labeled
- Validation of model (use example table provided)

Traffic Noise Impacts

- Modeled existing, no build, and build noise levels
- Comparison with FHWA NAC with identification of impacted and non-impacted receptors
- Increase of build noise level over existing noise level
- Aerial graphics with the locations where noise impacts will occur

Consideration of Abatement

- Abatement options considered
- Feasible and reasonable determination
- Shown graphically and supported with tables
- Public meeting dates and times
- Summary of public meeting comments or survey/voting results
- Findings and recommendations
- Statement of likelihood
- Graphic with the locations where noise impacts will occur, where noise abatement is feasible and reasonable, and the locations that have no feasible and reasonable abatement

Construction Noise

- Identify land uses or activities that may be affected by noise from construction of the project
- Describe construction phases, if applicable
- Levels of construction
- Potential impacts
- Abatement considerations

Coordination with Local Officials

- Contact information for local official(s) that will be provided copy of report
- Table providing distances from edge of nearest travel lane for NAC Activity Categories B, C, and E

Appendices

- Field data sheets
- Traffic Data

- TNM data files (can be on a CD)
- Feasible/Reasonable Worksheets
- Inventory items for proposed noise abatement
 - type of abatement;
 - cost (overall cost, unit cost per/sq. ft.);
 - average height;
 - length;
 - area;
 - location (State, county, city, route);
 - year of construction;
 - average insertion loss/noise reduction as reported by the model in the noise analysis;
 - NAC category(s) protected;
 - material(s) used (precast concrete, berm, block, cast in place concrete, brick, metal, wood, fiberglass, combination, plastic (transparent, opaque, other));
 - features (absorptive, reflective, surface texture);
 - foundation (ground mounted, on structure);
 - project type (Type I, Type II, and optional project types such as State funded, county funded, tollway/turnpike funded, other, unknown).

Appendix A: FHWA Noise Regulations; 23 CFR Part 772

by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.

Issued in Renton, Washington, on June 25, 2010.

Ali Bahrami,

Manager, Transport Airplane Directorate,
Aircraft Certification Service.

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DEPARTMENT OF TRANSPORTATION

Federal Highway Administration

23 CFR Part 772

[FHWA Docket No. FHWA-2008-0114]

RIN 2125-AF26

Procedures for Abatement of Highway Traffic Noise and Construction Noise

AGENCY: Federal Highway Administration (FHWA), DOT.

ACTION: Final rule.

SUMMARY: This final rule amends the Federal regulations on the Procedures for Abatement of Highway Traffic Noise and Construction Noise. The final rule clarifies and adds definitions, the applicability of this regulation, certain analysis requirements, and the use of Federal funds for noise abatement measures.

DATES: *Effective date:* July 13, 2011.

Incorporation by reference: The incorporation by reference of certain publications listed in the regulations is approved by the Director of the Federal Register as of July 13, 2011.

FOR FURTHER INFORMATION CONTACT: Mr. Mark Ferroni, Office of Natural and Human Environment, (202) 366-3233, or Mr. Robert Black, Office of the Chief Counsel, (202) 366-1359, Federal Highway Administration, 1200 New Jersey Avenue, SE., Washington, DC 20590.

SUPPLEMENTARY INFORMATION:

Electronic Access

This document and all comments received by the DOT Docket Facility, Room PL-401, may be viewed through www.regulations.gov. Regulations.gov is available 24 hours each day, 365 days each year. Electronic submission and retrieval help and guidelines are available under the help section of this Web site.

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Background

The FHWA developed the noise regulation as required by section 136 of the Federal-Aid Highway Act of 1970 (codified at 23 U.S.C. 109(i)). The regulation applies to highway construction projects where a State department of transportation has requested Federal funding for participation in the project. The FHWA noise regulation, found at 23 CFR 772, requires a highway agency to investigate traffic noise impacts in areas adjacent to federally funded highways for the proposed construction of a highway on a new location or the reconstruction of an existing highway that either significantly changes the horizontal or vertical alignment or increases the number of through-traffic lanes. If the highway agency identifies impacts, it must consider abatement. The highway agency must incorporate all feasible and reasonable noise abatement into the project design.

The FHWA published the "Highway Traffic Noise Analysis and Abatement Policy and Guidance" (Policy and Guidance), dated June 1995 (available at <http://www.fhwa.dot.gov/environment/noise/polguide/polguid.pdf>), which provides guidance and policy on highway traffic and construction noise abatement procedures for Federal-aid projects. While updating the 1995 Policy and Guidance, the FHWA determined that certain changes to the noise regulations were necessary.

As a result, the FHWA published a Notice of Proposed Rulemaking (NPRM) on September 17, 2009 (74 FR 47762). This final rule amends sections 772.1, 772.5 to 772.17, and Table 1—Noise Abatement Criteria. Sections 772.3 and 772.19 are not amended by this final rule, and Appendix A—National Reference Energy Mean Emission Levels as a Function of Speed, is removed by this final rule. This final rule also reorganizes various sections and parts of sections throughout the NPRM to institute a more logical order in the regulation. This reorganization does not change the meaning of the regulation and is not substantive in nature.

In the preamble of the NPRM, the FHWA specifically asked for comments

on the cost of abatement, third party funding for abatement, and maintaining a noise abatement inventory. The FHWA appreciates the comments received on this section. A summary of the comments received and the FHWA's response to these comments can be found in the discussion of comments section.

The preamble of the NPRM requested comments on a proposed timeline for highway agencies to revise and have the FHWA approve their noise policies. Changes to this timeline have been made based on the comments received. Therefore, highway agencies will need to submit their revised noise policy, meeting the requirements of this final rule, to FHWA for approval within 6 months from the publication date of this final rule. The FHWA will review the highway agency's revised noise policy for conformance to the final rule and uniform and consistent application nationwide. The highway agency will provide FHWA a review schedule for approval of their revised noise policy that does not exceed 3 months from the highway agency's first submission of the revised noise policy to the FHWA. Each review of the document by FHWA should have a duration of at least 14 days for the initial and subsequent reviews. The highway agency's main point of contact for this review will be the FHWA Division Office in their State. Each highway agency's revised noise document will be concurrently reviewed by three FHWA offices to ensure uniform and consistent application of this final rule nationwide (one from the respective Division Office, one from the Resource Center, and one from Headquarters). Failure to submit a revised noise policy in accordance with the final rule could result in a delay in FHWA's approval of Federal-aid highway projects that require a noise analysis. The highway agency would be required to implement the new standard no later than 12 months from the date this final rule was published in the **Federal Register**.

Grandfathering to the pre-final rule of 23 CFR 772 should be considered for Federal-aid highway projects for which the Categorical Exclusion, Finding of No Significant Impact, or Record of Decision has been signed by the effective date of this final rule. The State highway agency should coordinate with their FHWA Division Office to determine which projects, if any, should be completed under the previous 23 CFR 772 and highway agency's previously approved noise policy.

The FHWA has updated the Policy and Guidance document to reflect what is presented in this final rule. Highway

agencies should use this document for additional guidance when developing their revised noise policies in compliance with this final rule. To further assist highway agencies in revising their noise policies, the FHWA has developed a policy template for the highway agencies to use if they desire to do so. The updated guidance and optional policy template can be found at: <http://www.fhwa.dot.gov/Environment/noise/index.htm>.

Discussion of Comments

The agency received comments from 25 State highway agencies (California, Florida, Georgia, Illinois, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, North Carolina, New Jersey, New York, Ohio, Oregon, Pennsylvania, South Carolina, Tennessee, Texas, Virginia, Washington, and Wisconsin), 1 county highway agency (Anoka County Highway Department, Minnesota), 1 national organization (American Association of State Highway and Transportation Officials (AASHTO)), 7 noise consultants or consulting firms (Bergmann Associates, Inc., Bowlby & Associates, Environmental Acoustics, Inc., Environmental Science Associates, HNTB Corporation, Karel Cubic and Sharon Paul Carpenter), 1 university (East Carolina University), and 1 private citizen (Jennifer Leigh Hanson).

There were several comments received that were general in nature. Three State highway agencies and one private consultant expressed that they generally agreed with the NPRM. One private consultant commented that the numbering of the regulation should not skip the even numbers. The FHWA will retain the numbering sequence that the regulation currently has. One private consultant commented on the parentheses used on the "A" of dB(A). It is FHWA's position that since the metric used to assess highway traffic noise levels is the A-weighted decibel, that decibel be illustrated by "dB" and the parentheses are needed around the "A" to illustrate the A-weighting. The parentheses are commonly used by the highway noise industry and will be retained in the final rule. Two State highway agencies and a university commented that quiet pavements should be allowed as a federally funded noise abatement measure. While the FHWA recognizes the efforts of many State highway agencies and the pavement industries, there are still too many unknowns that currently prohibit the use of pavement as a noise abatement measure. One national organization commented that while they

recognize the importance of uniform and consistent application of this regulation nationwide, they encourage the FHWA to incorporate flexibility to accommodate regional and State-specific needs. The FHWA has incorporated flexibility while setting specific parameters throughout this final rule. There are numerous situations in the final rule where the State highway agency is permitted to completely define a definition or process, or define a definition or process within the parameters set by the FHWA.

Based on comments received, the FHWA has changed the order and titles of several of the sections. The current section 772.17 "Traffic Noise Predication" is now section 772.9, with the same title. The current section 772.9 "Analysis of traffic noise impacts and abatement measures" is now section 772.11, with the title "Analysis of traffic noise impacts." The "and abatement measures" of this title has been removed as it is redundant with the noise abatement section. The current section 772.11 "Noise abatement" is now section 772.13, with the new title of "Analysis of noise abatement," which keeps consistent with the previous section dealing with the analysis of traffic noise impacts. The current section 772.13 "Federal participation" is now section 772.15 with the same title. The current section 772.15 "Information for local officials" is now section 772.17 with the same title.

Section-by-Section Discussion of Comments

Section 772.1—Purpose

In section 772.1, the FHWA is adding the word "livability" to this section, not based on comments received, but to incorporate the DOT Secretary's livability initiative.

Section 772.3—Noise Standards

In section 772.3, no changes have been made to this section based on comments received; however, one State highway agency commented on the difference between the use of the words "accordance" and "conformance." The FHWA did not use these two terms to show a difference in meaning, but rather to illustrate agreement between both the regulation and the noise standard.

Section 772.5—Definitions

In section 772.5, three State highway agencies and one private consultant commented that the definitions should be placed in alphabetical order. The FHWA agrees and the definitions are now listed and discussed in this final rule in alphabetical order. Also, one

State highway agency suggested adding a definition for substantial noise reduction. The FHWA disagrees with the addition of "substantial noise reduction" since this principle is adequately addressed in the other sections of the final rule.

Benefited Receptor, 10 State highway agencies, 1 national organization, and 5 private consultants commented on the definition of benefited receptor. Eleven commenters generally support the definition with minor or no revisions, with two comments desiring additional flexibility in defining and applying benefited receptors. Three comments concerned the issues of benefited receptors that are impacted and benefited receptors that are not impacted, and two comments were concerned with a discernable 5 dB(A) change in noise versus a perceptible 3 dB(A) change in noise.

The FHWA has changed the definition to indicate that a benefited receptor is a "recipient of an abatement measure that receives a noise reduction at or above the minimum threshold of 5 dB(A), but not to exceed the highway agency's reasonableness design goal." The definition retains the 5 dB(A) minimum threshold, but provides flexibility to State highway agencies by allowing the agency to define a benefited receptor as one benefitting from a reduction in noise level that is between 5 dB(A) and the agency's design goal. These changes ensure construction of effective noise abatement measures. Generally, a 5 dB(A) change in noise levels is deemed discernible by a person with normal hearing. Noise abatement activities should result in a discernible 5 dB(A) change in noise level rather than a perceptible 3 dB(A) change in noise level. This approach provides a consistent approach throughout this final rule. State highway agencies will still be able to differentiate between benefiting impacted and non-impacted receivers within their own policies. States may continue weighting impacted receptors greater than non-impacted receptors when making decisions about reasonableness of noise abatement.

Common Noise Environment, seven State highway agencies, one national organization, and three private consultants commented on the definition of common noise environment. The definition was generally supported with minor changes or clarifications requested. Two commenters disagreed with the definition. Based on a comment from the New York DOT, the FHWA has added "within the same Activity Category in Table 1" to the definition,

with the other comments being addressed in sec. 772.13 Analysis of Noise Abatement. The FHWA is addressing the concept of common noise environment by defining the parameters for cost averaging to ensure cost averaging is applied uniformly and consistently nationwide. States can continue to consider each neighborhood as its own noise environment. The definition allows States flexibility to consider common noise environments within the project. A noise analysis should consider secondary sources, including non-highway noise sources, as part of the common noise environment. The final rule acknowledges that a common noise environment may span an entire project area and requires consideration of a common noise environment for land uses within the same activity category.

Date of Public Knowledge, one State highway agency, one national organization, and one private consultant agreed and supported the addition of this definition. No changes were made based on comments received, however, "CE" and "ROD" were spelled out and "as defined in 23 CFR 771" was added to provide additional clarification.

Noise Reduction Design Goal, based on comments received, the FHWA is defining "noise reduction design goal" to be "[t]he optimum desired dB(A) noise reduction determined from calculating the difference between future build noise levels with abatement, to future build noise levels without abatement. The noise reduction design goal shall be at least 7 dB(A), but not more than 10 dB(A)." The FHWA is defining "Noise Reduction Design Goal" to remove the disconnect that occurs with a 5 dB(A) substantial decrease criterion and substantial increase criteria's 5–15 dB(A) range.

Design Year, two State highway agencies, one national organization, and a private consultant commented in support of the definition of design year. The FHWA made no changes to this definition in the final rule.

Existing Noise Levels, two State highway agencies, one national organization, and one private consultant commented on the definition of existing noise levels. Most comments expressed support of the definition with minor clarifications. One State highway agency sought additional clarification on what are, and how to address, non-highway traffic noise sources. It is FHWA's position that an effective noise analysis should consider major noise sources in the environment including transportation, industry, and background noise.

Feasibility, two State highway agencies, one national organization, and two private consultants commented on the definition of feasibility. The definition was generally supported with minor revisions. Based on the comments, the FHWA added "considered in the evaluation of" to the definition to clarify that the combination of acoustical and engineering factors shall be examined when considering noise abatement measures. Other comments dealt with how to apply feasibility and therefore are better suited to in sec. 772.13 where feasible noise abatement is further addressed.

Impacted Receptor, four State highway agencies, one national organization, and two private consultants submitted comments generally supportive of the definition of impacted receptor, with minor revisions regarding redundancy, and allowing State highway agencies to define. The FHWA made several changes to this definition. The definition was simplified by removing the text that made it redundant with the definition of traffic noise impacts.

L10, four State highway agencies, one national organization, and two private consultants commented on this definition. Many of the comments recommended the definition be deleted because the metric is obsolete. Although currently the L10 metric is not the most applicable metric to use on highway projects, the L10 and Leq metrics were a part of this regulation from its genesis. As a result, the State of Minnesota has a law requiring the use of L10, and therefore this metric will remain in the final rule with no changes.

Multifamily Dwelling, six State highway agencies, a national organization, and two private consultants generally support the definition of multifamily dwellings with some minor revisions including, allowing the highway agency to define the term, and a request for additional flexibility and additional guidance from the FHWA. Massachusetts DOT disagreed with the definition, indicating that, as proposed, the definition of multifamily structures would skew the cost reasonableness calculations. It is FHWA's position that the purpose of any environmental analysis is to quantify impacts first, and explore methods to mitigate those impacts. The approach of only looking at first floor receptors ignores the possibility that impacts may occur at upper floor residences. The analysis to determine impacts shall be for all outdoor areas of frequent human use, both on the ground and on balconies (if present). This does

not automatically result in feasible and reasonable noise abatement measures being determined for upper level receptors. When a multifamily dwelling has a common exterior area of frequent human use, each unit of the multifamily dwelling that has access to that common exterior shall be included in the feasible and reasonable analysis. Multifamily development does not "skew" the determination of feasible and reasonable noise abatement measures. Providing noise abatement for multifamily development results in noise abatement for a higher number of people who may be using individual or common exterior areas. Frequency of use is not based on a comparison between how a single family dwelling would use their outdoor area versus how a multifamily dwelling would use their outdoor area. This process allows all receptors to be analyzed for noise impacts, and allows all impacted receptors to be considered for noise abatement. To add clarification, the FHWA added "when determining impacted and benefiting receptors" to the end of the second sentence.

Noise Barrier, based on comments received, the FHWA is defining "noise barrier" to be "[a] physical obstruction that is constructed between the highway noise source and the noise sensitive receptor(s) that lowers the noise environment, to include stand alone noise walls, noise berms (earth or other material), and combination berm/wall systems." Noise barriers have been a longstanding proven noise abatement measure and therefore it is necessary to clarify that a noise barrier can be a wall, berm or a combination berm/wall system.

Permitted, three State highway agencies, one national organization, one county highway department, and one private consultant commented that there should be more of a definite commitment to develop, and therefore suggested renaming this definition "permitted" instead of "planned, designed and programmed." There was also a comment to retain flexibility in interpreting a definite commitment. The FHWA agrees, and has changed this definition to "permitted" and removed all references to "planned, designed and programmed" from the final rule. The FHWA also added "as evidence by issuance of a building permit" to the definition.

Property Owner, three State highway agencies, one national organization, and a private consultant generally supported the definition of "property owner" with minor changes. The FHWA modifies this definition to include "holds a title,

deed or other legal documentation of ownership.”

Reasonableness, two State highway agencies, one national organization, and two private consultants commented on the definition of “reasonableness.” The definition was generally supported with minor revisions. Based on the comments of a private consultant, the FHWA added “considered in the evaluation of” to the definition to clarify that the combination of social, economic and environmental factors shall be considered when considering noise abatement measures. Other comments provided suggested adding that reasonableness is based on common sense and good judgment. It is FHWA’s position that this leaves reasonableness open to personal opinion rather than using an objective approach and has not made the suggested change in the final rule.

Receptor, based on changes made from comments received, the FHWA is defining “receptor,” to be “a discrete or representative location of a noise sensitive area(s), for any of the land uses list in Table 1.”

Residence, four State highway agencies, one national organization and two private consultants commented on their general approval of this definition for “residence.” Additional comments include surveying multifamily residents and the use of a basic unit of measure. A discussion on how to survey multifamily residents is not appropriate for the definition section, but is addressed later in the final rule.

The NPRM had proposed to define “severe noise impact” in sec. 772.5(s). Nine State highway agencies, one county highway agency, one national organization, and five private consultants commented on the definition of severe noise impact. Based on the comments received, the FHWA has removed this definition from the final rule due to the conflict from the commenters on size and scale of the range, and since the definition would likely be misinterpreted to mean that the noise levels or noise level increases must fall within those ranges.

The NPRM had proposed to define “special land use facilities” in sec. 772.5(e). Seven State highway agencies, one national organization, and three private consultants commented on the definition of “special land use facilities.” The FHWA removed this term from the final rule based on changes to the activity categories presented in Table 1. There are now seven activity categories in order to break out various land uses into more appropriate groupings.

Statement of Likelihood, based on changes made from comments received, the FHWA is defining “statement of likelihood,” to be “a statement provided in the environmental clearance document based on the feasibility and reasonableness analysis completed at the time of environmental document is being approval.”

Substantial Construction, six State highway agencies, one county highway agency, one national organization and two private consultants comment on the definition of “substantial construction.” The definition was generally supported with recommendations. Based on the comments received, the FHWA is removing from the definition “the filing of a plat plan or an occurrence of a similar action,” and the word “original” before “highway.” The final rule will retain this definition to help State highway agencies clarify when development must occur for Type II eligibility and for potential Type I reasonableness considerations.

Substantial Noise Increase, based on comments received from eight State highway agencies and two private consultants, the FHWA is defining “substantial noise increase,” to be “One of two types of highway traffic noise impacts. For a Type I project, an increase in noise levels of 5 to 15 dB(A) in the design year over the existing noise level.”

Traffic Noise Impacts, four State highway agencies, a national organization, and two private consultants commented on the definition of traffic noise impacts, with general support of the definition. Comments pertained to the inclusion of design year and reference to future condition as well as how to address other noise sources. The FHWA has added “design year” and “design year build condition” to the final rule. It is FHWA’s position that an effective noise analysis should consider major noise sources in the environment including transportation, industry, and background noise. Without a project noise levels may exist that exceed the noise abatement criteria (NAC), but there are no impacts without a project.

Type I Project, 14 State highway agencies, 1 national organization, and 6 private consultants commented on this section. The majority of the comments referenced the use of a 3 dB(A) increase in determining a significant change for a Type I project, followed by the redundancy of the first two sentences, and use of the word “significant.” The FHWA has revised this section to remove the first sentence and replace “significant” with “substantial.” The use of a 3 dB(A) increase in determining a

substantial change has been removed. The factor for determining a substantial horizontal change is a halving the distance between the noise source and the closest receiver between the existing condition to the future build condition. The factor for determining a substantial vertical change is “a project that removes shielding therefore exposing the line-of-sight between the receptor and the traffic noise source exposing the receptor to additional traffic noise. 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.”

Twelve State highway agencies, 1 national organization, and 4 private consultant firms commented on what constitutes a Type I project for the addition of a through traffic lane or an auxiliary lane. Additional comments were provided on bus lanes, turn lanes, restriping travel lanes, weight stations, toll plazas, ride-share lots, and rest stops. Based on the comments received, the FHWA changed the definition of Type I project to now include bus lanes as through traffic lanes. The definition further clarifies that left turn lanes are not considered an auxiliary lane, and additional qualifying activities were added including “restriping existing pavement for the purpose of adding a through-traffic lane or an auxiliary lane” and “the addition of a new or substantial alteration of a weigh station, rest stop, ride-share lots and toll plaza.” Finally, the FHWA adds clarifying language to make clear that “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.”

Five State highway agencies and one private consultant supported this section and suggested moving the addition of new interchanges or ramps to an existing facility to its own subsection. The FHWA agrees. The final rule will reflect that the “addition of new interchanges or ramps added to a quadrant to complete an existing partial interchange” will be its own section under the Type I definition.

Type II Project, one State highway agency and one private consultant commented that they were in support of this section on Type II projects. One State highway agency commented that it is not necessary for a State highway agency to develop a Type II program. The FHWA disagrees and did not change this section in the final rule. As supported in the 1995 guidance document, a Type II noise abatement program is appropriate to ensure statewide consistency.

Type III Project, nine State highway agencies and two private consultants commented on the creation of a Type III project. The majority of the comments were in support of the Type III project type, with some asking FHWA to provide examples of Type III projects and to develop a template for documenting Type III. One commenter requested clarifying that Type III projects do not need a noise analysis performed. The FHWA agrees and, as a result, added "Type III projects do not require a noise analysis" to the definition of a Type III project. Examples of Type III projects and a template for documenting Type III projects will be provided in FHWA guidance.

Section 772.7—Applicability

Two State highway agencies and a private consultant expressed support for the expansion of this section of the regulation. In sec. 772.7(a)(1), one State highway agency expressed support for the proposed change, but a private consultant requested additional clarification because item (1) requires applicability for any project requiring "FHWA approval regardless of funding sources." Therefore, a highway agency, other than the State DOT, such as a county or local highway agency is required to comply with 23 CFR 772 when one of its projects involves a new or modified access to an Interstate highway. This is a correct interpretation of what the FHWA intended, therefore no changes to this section were made.

In sec. 772.7(a)(2), one State highway agency expressed support for this provision in the regulation. This applies to all Federal and Federal-aid highway projects authorized under Title 23, United States Code. Therefore, this regulation applies to any highway project or multimodal project that is funded with Federal-aid highway funds. A county highway agency stated that the above statement appears to contradict the statement made under the Regulatory Flexibility Act that the proposed rule would not have a significant economic impact on a substantial number of small entities. The rulemaking addresses the obligation of Federal funds to States for Federal-aid highway projects. As such, it affects only States, and States are not included in the definition of small entity set forth in 5 U.S.C. 601. Therefore, the Regulatory Flexibility Act does not apply and the FHWA certifies that the final rule would not have a significant economic impact on a substantial number of small entities. Local public agencies have never had an exemption from complying with 23 CFR 772. The

proposed rule does not present a new economic impact. The proposed changes in the rule will not result in an increase in the likelihood of construction of noise abatement.

In sec. 772.7(b), no comments were received, but the FHWA has modified this section in the final rule to provide additional clarification and to tie into the proposed requirement in the NPRM that this final rule will require State highway agencies to revise their noise policies in conformance with this final rule. The section now states "For FHWA approval, the highway agency shall develop noise policies in conformance with this regulation and shall apply these policies uniformly and consistently statewide."

Section 772.7(d) was proposed in the NPRM as sec. 772.7(c)(1), and is now listed as sec. 772.7(d). Two State highway agencies commented on this section. While one expressed support, the other State highway agency requested clarification on the intent of the section regarding use of State-only funds to avoid noise abatement. It is FHWA's position that the rule applies to any Federal or Federal-aid project. This means that the regulation applies to any project that includes a Federal action. No changes were made to this section.

Section 772.7(e) was proposed in the NPRM as sec. 772.7(c)(2) and is now listed as sec. 772.7(e). A national organization, eight State highway agencies, and three private consultants commented on this section. Some comments offered support for this clarification of Type II program requirements, while others questioned the need for a priority system and the status of States that already have a system in place. A private consultant recommended insertion of language that the ranking system serves as a guide, but not a requirement for selection for funding. A State highway agency requested a template for a priority system. The FHWA disagrees with the need to incorporate the ranking of potential Type II project as language in the final rule. State highway agencies will submit their existing ranking system to FHWA for approval when they submit their updated noise policies. The concept of a priority system is not new. This is a longstanding practice on the part of States with active Type II programs. The priority system restricts construction of "political" noise barriers under the guise of a Type II program when a State does not actually have a Type II program in place and has no intent of developing a Type II program. The priority system ensures uniform and consistent application of this provision of the rule.

The following was added to this section "The highway agency shall re-analyze the priority system on a regular interval, not to exceed 5 years." A private consultant recommended adding a new section (3) to include "If a highway agency chooses to participate in a Type II program, the highway agency must have a statewide outreach program to inform local officials and the public of the items in § 772.15(a)(i)–(iv)." If States choose to participate in a Type II program, they should also act to encourage local communities to enact noise compatible land use planning to limit the expenditure of Federal highway dollars to construct Type II noise barriers in the future. The FHWA agrees with the concept, but not with the application of this idea. The circumstances that lead to a Type II project occurred in the past. State highway agencies should take the opportunity of a Type II project to inform local officials about noise compatible planning concepts to avoid future Type I projects. The development of this outreach effort should be a part of any Type II program.

Section 772.7(f), was proposed in the NPRM as sec. 772.7(c)(3) and is now listed as 772.7(f). A State highway agency and a private consultant requested a listing of the types of projects classified as Type III. The FHWA believes the rule clearly states that Type III projects are any project that falls outside the definition of a Type I or Type II project. The FHWA noise guidance provides additional information on this topic. A private consultant suggested adding language that NEPA may require noise analysis on Type III projects. A State highway agency recommended changing "not required" to "optional." The FHWA declines to make these changes in the final rule. The proposed and final language does not prohibit States from performing a noise analysis on Type III projects if they determine an analysis is necessary due to unusual characteristics of a particular project. Two State highway agencies commented on this section. One recommended elimination of Type III as a descriptor and the other expressed approval of the new designation. The FHWA retains the Type III project designation with no changes.

Section 772.9—Traffic Noise Prediction

Section 772.9, traffic noise prediction, is sec. 772.17 in the existing regulation. Moving the traffic noise prediction section from 772.17 to 772.9 was done to place the activities associated with traffic noise prediction in chronological order with the overall procedures for

abating highway traffic noise. Due to the new numbering of this section, the provisions presented below are numbered and identified as presented in this final rule and not how they were presented in the NPRM.

In sec. 772.9(a), one State highway agency and a private consultant commented that FHWA should continue to require use of the Traffic Noise Model (TNM) and remove reference to other models that may be compatible with TNM until alternate models are tested and approved for use through a change in the regulation. These entities further commented that FHWA should limit use of TNM to the most recent version. It is FHWA's position that the provision in the regulation to use other models determined compatible with TNM must appear in the regulation so that FHWA may work with other software developers in their efforts to implement the TNM acoustic code if their noise models for testing and approval. Therefore, "or any other model determined to be by the FHWA to be consistent with the methodology of the FHWA TNM" will remain in the final rule. Lastly, the FHWA will update this regulation as necessary to require use of updated versions of the TNM.

Ten State highway agencies, a national organization, and two private consultants expressed concerns about proposed restrictions on use of the TNM Lookup Tables; four State highway agencies recommended additional restrictions on the use of the TNM Lookup Tables, and one State highway agency along with three private consultants recommended eliminating use of the Lookup Tables, or developing a replacement. This final rule eliminates use of the TNM Lookup Tables in either form to predict noise levels on Federal or Federal-aid projects. The FHWA developed the Lookup tables to provide TNM users with a simple screening tool for highway analyses. The tables were to supplement TNM to obtain quick estimates. The intended use of the estimates is to inform planners about the potential scope of their project, or to educate the public. The Lookup Tables are not a substitute for the TNM or for routine use in performing a noise analysis. Many practitioners started using the Lookup Tables due to long calculation times inherent with the use of the FHWA TNM when compared with the previous model. However, the dramatically increased speed of computers currently available on the market reduces the model run times to a fraction of what could be accomplished a few years ago. Further, a narrow interpretation of the previous rule indicates the changes to the

regulation requiring use of the FHWA TNM eliminated the option to use the TNM Lookup Tables. However, use of the TNM Lookup Tables continued as a legacy. The FHWA has removed this provision proposed in the NPRM from this final rule. The FHWA clarifies through this final rule that the TNM Lookup Tables are not an acceptable model for use on Federal or Federal-aid highway projects. The FHWA will not update the TNM Lookup Tables for future versions of the FHWA TNM. The FHWA will retract the allowable use of the TNM Lookup as it has outlived its intended use.

In sec. 772.9(b), two State highway agencies and a university commented that quieter pavement should be allowed as a mitigation measure. As previously discussed, it is FHWA's position that there are still too many unknowns regarding the viability of quieter pavements as a mitigation measure. However, State highway agencies, the pavement industry, and the FHWA are researching various parts of this overall initiative. The FHWA is actively researching how to better incorporate more specific pavement types in the FHWA TNM. As a result the FHWA added this provision which states, "average pavement type shall be used in the FHWA TNM for future noise level prediction unless a highway agency substantiates the use of a different pavement type for approval by the FHWA." However, the FHWA is actively seeking highway agencies to assist in our research to better account for pavements in the FHWA TNM by engaging themselves in the experimental use of the specific pavement types currently in the FHWA TNM on projects.

In sec. 772.9(c), six State highway agencies, a national organization, and two private consultants questioned restrictions or wanted additional clarification on the use of noise contours. The final rule ties use of noise contours to information provided to local officials to satisfy sec. 772.17 Information for Local Officials and permits use of contours for some preliminary studies.

Section 772.11—Analysis of Traffic Noise Impacts

Section 772.11, titled "analysis of traffic noise impacts," was sec. 772.9 in the proposed regulation. The FHWA has removed "and abatement measures" from the title of this section since sec. 772.13 of the final rule now deals with abatement measures. Due to the new numbering of this section, the provisions presented below are identified as presented in this final rule

and not how they were numbered in the NPRM. This and other organizational changes were done in response to a comment from a private consultant, who indicated that this section should separate the analysis and abatement portions into their respective sections of the regulation, and pointed out that there is a long-standing disconnect between the intent of this portion of the regulation and the practice of most State highway agencies in applying the regulation. The first condition is "where no exterior activities are to be affected by the traffic noise." The typical application would be an apartment building with no outdoor balconies, patios, or common grounds activity areas. The second condition is "where the exterior activities are far from or physically shielded from the roadway in a manner that prevents an impact on exterior activities." The implication of the second condition is that if the apartment, pool, and playground are on the side of the building away from the highway then one would need to consider the interior of the apartments facing the highway as Activity Category E. Few State highway agencies currently consider apartments as Category E. Instead, they analyze the playground and pool as exterior Category B, find that they are not impacted, and then fail to consider abatement for the apartments.

In sec. 772.11, one State highway agency had a general comment requesting that FHWA provide an opinion on a highway agency changing its definition of "substantial increase." It is the opinion of the FHWA that highway agencies may decide at its discretion to change established criterion within the allowable requirement of this final rule. However, highway agencies should consider past practices and the possible consequences of any changes they make to their noise policy and procedures.

No comments were received on sec. 772.11(a), but to provide clarification on how to analyze projects, the FHWA added sec. 772.11(a)(1) "For projects on new alignments, determine traffic noise impacts by field measurements" and sec. 772.11(a)(2) "for projects on existing alignments, prediction of existing and design year traffic noise impacts."

In sections 772.11(a)(1) and (a)(2), three State highway agencies and two private consultants requested rewording of this section to clarify determination of existing and future noise levels. The final rule clarifies that existing levels are determined through measurement or prediction. This is because there are times when the "existing" condition and the current year are not the same year.

In this case, predicting existing noise levels is necessary. The final rule clarifies prediction of future noise levels. A State highway agency requested clarification on determining existing noise levels on new alignment projects; the final rule covers new alignment and modification of existing alignment scenarios.

Two private consultants commented on sec. 772.11(b). One requested a definition of frequent human use and the other recommended a connection between exterior areas and frequent human use. The FHWA did not provide a definition for frequent human use, but did make the connection between exterior areas and frequent human use, by stating "In determining traffic noise impacts, a highway agency shall give primary consideration to exterior areas where frequent human use occurs." The FHWA also moved this provision to sec. 772.11 Analysis of traffic noise impacts.

In sec. 772.11(c)(1), one State highway agency expressed support for this provision while a second State highway agency requested expansion of the language to allow analysis of a single worst-case alternative in place of similar multiple project alternatives. It is FHWA's position that the language in the final rule does not preclude analysis of a worst-case scenario during preliminary engineering and early environmental studies; however, the highway agency must analyze all alternatives under detailed study as part of a final noise analysis.

Under sec. 772.11(c)(2), one national organization, four State highway agencies, and one private consultant sought additional clarification on the level of analysis necessary for various land use categories and project alternatives. They also suggested deemphasizing land uses previously listed in Activity Category C, which are primarily commercial activities. It is the FHWA's position that this provision of the rule does not require a separate noise analysis for each Activity Category. The rule requires that the noise analysis include a complete noise analysis of all land uses inside the project study area. Past practice of many highway agencies was to ignore certain Activity Categories, particularly Category C, because the highway agency determined that it is not reasonable to provide noise abatement for that Activity Category. Reasonableness decisions cannot precede determination of impacts. The regulation first requires consideration of impacts, then consideration for abatement. The focus of a noise analysis has always been, and will continue to be, on exterior areas of frequent human use. Consideration of

Activity Category C land use is unlikely to result in a large increase in the number of receivers within a noise model because Category C receptors do not necessarily have areas of frequent human use.

In sec. 772.11(c)(2)(i), three State highway agencies and two private consultants commented on Activity Category A, offering general support or minor wording changes. One of the State highway agencies requested additional clarification on when to start the process to designate a land use as Category A and suggested that this may work better through inter-agency consultation rather than through FHWA approval. The FHWA has determined the recommended wording changes are unnecessary. It is appropriate for the determination of Activity Category A receptors to occur early in the process and through the inter-agency consultation process; however, the final determination for this designation remains a FHWA decision. To further clarify Activity Category A, "the exterior impact criteria for lands * * *" has been added to this provision.

In sec. 772.11(c)(2)(ii), in response to comments received, the designation of Activity Category B has been revised to include the exterior criteria for only residential land uses. The provision states, "[t]his activity category includes the exterior impact criteria for single-family and multifamily residences."

In sec. 772.11(c)(2)(iii), eight State highway agencies, one national organization, and one private consultant commented their general support of this provision and requested that FHWA provide a standardized method to evaluate reasonableness for special land use facilities. The term "special land use facilities" has been removed from the final rule. There are several logical and fair ways to evaluate certain types of land use, one approach is the Florida Department of Transportation's method. The FHWA will provide examples of other methods in the updated noise guidance document. The final rule changes references from special land uses to the actual activity category based on the reorganized Table 1. To provide additional clarification, the designation of Activity Category C has been revised to include a variety of land use facilities as listed in Table 1. This provision states "Activity Category C. This activity category includes the exterior impact criteria for a variety of land use facilities. Each highway agency shall adopt a standard practice for analyzing these land use facilities that is consistent and uniformly applied statewide."

In sections 772.11(c)(2)(iv), (v), and (vi), three State highway agencies and three private consultants offered comments on this section. Two highway agencies offered general support, however, the remaining highway agency and the private consultants offered suggestions on consideration of commercial land use in a noise analysis. The final rule modifies Table 1 to segregate certain commercial land use from noise generating commercial and industrial land uses.

One private consultant requested additional clarification on the timing of interior noise studies in sec. 772.11(c)(2)(iv). The consideration for the analysis may occur prior to noise monitoring. It is FHWA's position that the noise analyst should be able to identify interior locations that require monitoring during preliminary field work while developing a monitoring plan. One national organization and eight State highway agencies requested additional clarification on the analysis requirements for interior areas. It is FHWA's position that an interior analysis is only required when all exterior analysis alternatives are exhausted or in cases where there are no exterior activities. To provide extra clarification on which land use categories can be considered for an interior noise analysis, the FHWA has indicated "exterior" and/or "interior" within each Activity Category.

In sec. 772.11(c)(2)(v), in response to comments received, the designation of Activity Category E has been revised to address the exterior impact criteria for less noise sensitive developed lands.

In response to comments received, a new Activity Category F was created in sec. 772.11(c)(2)(vi) to include developed lands that are not sensitive to highway traffic noise.

In sec. 772.11(c)(2)(vii), the FHWA provided clarification on undeveloped lands. Undeveloped lands were listed as Activity Category D in the NPRM, but due to the changes to Table I, undeveloped lands are now listed under Activity Category G in this final rule. Three State highway agencies commented that this section is overly broad for considering whether a property is planned for development and suggested limiting this consideration to issuance of a building permit. This final rule has revised the existing regulation to limit consideration to the issuing of a building permit. Five State highway agencies requested further clarification on the purpose of predicting noise levels on undeveloped land. It is FHWA's position that providing local officials with the best estimate of future

noise levels on undeveloped land is a longstanding requirement of 23 CFR 772 and is necessary to help avoid future noise impacts due to incompatible development. The Pennsylvania DOT commented that predication of noise levels for undeveloped lands which contain threatened or endangered species could become problematic when coordinating with resource agencies. It is important to remember that 23 CFR 772 is concerned with noise impacts on the human environment. Extrapolation of impact thresholds within the regulation to other species requires an incorrect interpretation of the regulation and the NAC. Additionally, concern about the effects of highway noise and actual impacts to species resulting from highway noise may occur in the absence of a noise analysis. Also, the current zoning of a property is an indicator of future development, but the zoning may change. The purpose of the information provided to local officials is avoiding future noise impacts. Section 17 of the final rule details the analysis requirements for information for local officials. As a result the FHWA has replaced “planned, designed and programmed” with “permitted.” Section 772.11(c)(2)(vii)(A) indicates that the date of issuance of a building permit shall be by the local jurisdiction or by the appropriate governing entity. Section 772.11(c)(2)(vii)(B) indicates that if “undeveloped land is determined to be permitted, then the highway agency shall assign the land to the appropriate Activity Category and study it in the same manner as developed lands in that Activity Category.” This is to ensure that a noise analysis is done for the permitted land use. Section 772.11(c)(2)(vii)(C) indicates that noise levels shall be determined in accordance with sec. 772.17(a).

The FHWA received no comments on sec. 772.11(d) and (d)(1), but the FHWA wanted to clarify the intent of this section, sec. 772.11(d) now states “the analysis of traffic noise impacts shall include a(n):”. This was done to clarify that 772.11(d)(1) to (4) all must be a part of a noise analysis.

To provide additional clarification, the FHWA has added sections 772.11(d)(2) and 772.11(d)(3) on validation and the noise meter type to be used on projects. Section 772.11(d)(2) states “For projects on new or existing alignments, validate predicted noise level through comparison between measured and predicted levels” and sec. 772.11(d)(3) states “Measurement of noise levels. Use an ANSI Type I or Type II integrating sound level meter.” The inclusion on the type of noise meters to be used on a Federal-aid

highway project is a result of industry standard and the FHWA guidance on which type of meters should be used.

Thirteen State highway agencies, a national organization, two private consultants, and a private individual expressed concern about the 500’ study area as proposed in sec. 772.11(d)(4). The final rule eliminates this provision and instead requires State highway agencies to determine project limits to determine all traffic noise impacts for the design year. This section now states “Identification of project limits to determine all traffic noise impacts for the design year for the build alternative. For Type II projects, traffic noise impacts shall be determined from current year conditions.” Two State highway agencies and one private consultant commented on sec. 772.11(d)(4), indicating that this section is inconsistent in that it discusses evaluation of impacts prior to a determination of future noise levels. This approach in the regulation may lead to some confusion. The FHWA reorganized the final rule to include separate sections requiring determination of noise levels and evaluation of noise impacts. Three State highway agencies commented that a disconnect occurs with a 5 dB(A) substantial decrease criterion and a substantial increase criteria in the range of 10–15 dB(A). The FHWA is clarifying that a 5 dB(A) reduction meets the acoustic feasibility requirement. Essentially, this reduction means that the noise abatement measure decreases noise impacts, but may not be optimal. To address this, FHWA introduces a design goal reasonableness criterion in the final rule. The final rule also expands substantial increase to a range of 5–15 dB(A). This provides States with additional flexibility to define substantial increases. Three State highway agencies and two private consultants requested clarification or removal of the phrase “lower threshold limit,” in sec. 772.11(d)(3)(ii). The final rule clarifies this issue by stating in that, “[t]he substantial noise increase criterion is independent of the absolute noise level.” In the past, some highway agencies applied the substantial noise increase criterion by linking it to an absolute noise level, meaning that a substantial noise increase was only considered from that absolute noise level or higher noise level. Typically a highway agency’s noise policy would state “a substantial noise increase occurs when the design year noise level results in an increase of 15 dB(A) or more over existing noise levels as long as the predicted noise level is 55 dB(A) or

above,” or something similar. This language represented a misapplication of 23 CFR 772 and the noise guidance, and could result in situations where receptors may experience noise increases of more than 15 dB(A), but there would not be a substantial impact. Any noise increase that meets or exceeds that State highway agency criteria for a substantial increase is an impact, regardless of the absolute noise level.

Section 772.13—Analysis of Noise Abatement

Section 772.9(a) of NPRM has been moved to sec. 772.13(a) based on comments received. Three State highway agencies recommended wording changes to this section. The final rule uses “abate” rather than “mitigate” to clarify that the focus of the regulation when dealing with impacts is in on abatement of impacts rather than mitigation of impacts. The FHWA added for clarification “when traffic noise impacts are identified, noise abatement shall be considered and evaluated for feasibility and reasonableness.”

No comments were received on section 772.13(b), which in the NPRM was section 772.11(a) but the FHWA has revised it to stress that primary consideration is given to exterior areas where frequent human use occurs. Five State highway agencies expressed concerns with section 772.11(b) of the NPRM which states “In situations where no exterior activities are to be affected by the traffic noise, or where the exterior activities are far from or physically shielded from the roadway in a manner that prevents an impact on exterior activities, a highway agency shall use Activity Category E as the basis for determining noise impacts,” may result in additional interior analysis requirements. The FHWA agrees and has eliminated this section in the final rule.

Three States and one private consultant expressed support for including sec. 772.12(c)(1) in the rule. In sec. 772.13(c)(2), a private consultant commented on including a new provision on the proper use of absorptive treatment on noise barriers. As a result, the FHWA added sec. 772.13(c)(2), which states, “If a highway agency chooses to add absorptive treatments to a noise barrier as a functional enhancement, the highway agency shall adopt a standard practice for using absorptive treatment that is consistent and uniformly applied statewide.” It is FHWA position that if a highway agency wants to use absorptive treatments on noise barriers, that they develop a standard practice

listing what situations the highway agency will consider absorptive treatments.

In sec. 772.13(d)(1), seven State highway agencies, one national organization, six private consultants, and one private individual commented on this section. Comments were primarily about application of the "majority" requirement to the entire project rather than to each neighborhood or increasing the substantial reduction criterion to a higher threshold. It is FHWA's position that highway agencies should make noise abatement decisions on a neighborhood basis when determining achievement of a substantial reduction. Considering all noise abatement measures in a project could penalize some neighborhoods where noise abatement is clearly effective because it is not possible to provide an effective design for a different neighborhood. Similarly, considering all noise abatement measures in the project jointly may result in construction of noise abatement that is not feasible at some locations because of highly effective abatement at other locations within the project. The FHWA does not advocate, or support for funding, construction of ineffective noise abatement measures.

A private consultant commented that the 5 dB(A) threshold for acoustic feasibility is too small. As such, the final rule clarifies that 5 dB(A) is the minimum requirement for a feasible barrier. The final rule also incorporates a new reasonableness criterion that each highway agency must establish a design goal of 7–10 dB(A). Further explanation of reasonableness design goal can be found in the discussion of 772.13(d)(2)(iii). Changes to this section in the final rule provide greater flexibility to States to identify a targeted number of impacted receptors necessary for a noise abatement measure to meet feasibility requirements. The FHWA has added the following, "The highway agency shall define, and receive FHWA approval for, the number of receptors that must achieve this reduction for the noise abatement measure to be feasible and explain the basis for this determination."

A State highway agency proposed averaging feasibility over the entire project. It is FHWA's position that averaging feasibility across the project to obtain a majority is a flawed approach to evaluate acoustic feasibility as it may result in construction of barriers that are not acoustically feasible. To take the example to the extreme, it is possible that one neighborhood could have 100 percent acoustic feasibility while a

second has 0 percent acoustic feasibility and the State highway agency would build no barriers because there was no majority of receptors that achieved a 5 dB(A) reduction.

In sec. 772.13(d)(1)(ii), three State highway agencies and a private consultant requested additional clarification on what "safe" means. A private consultant recommended listing the non-acoustical feasibility factors to consider. Additional clarification will be provided in the guidance document. However, the final rule includes the factors to consider for feasibility. The following sentence was added "Factors to consider are safety, barrier height, topography, drainage, utilities, and maintenance of the abatement measure, maintenance access to adjacent properties, and access to adjacent properties (*i.e.* arterial widening projects)."

In sec. 772.13(d)(2), one State highway agency commented that FHWA should establish the reasonable cost of abatement for all States. The FHWA disagrees with this comment. The final rule requires States to develop cost reasonableness criteria based on historical construction cost as published in the NPRM. This is necessary to accommodate the spectrum of costs for various States and the various approaches States take to quantify construction costs. For example, some States only consider the cost of post, panels, and foundations when estimating the construction cost of a noise barrier, while others may include other factors such as design, maintenance of traffic, clearing and grubbing, etc. A State highway agency and a private consultant recommended placing cost as the primary cost reasonableness criterion. The final rule has three reasonableness criteria State highway agencies must consider: cost effectiveness, desires of the public, and design goal. A State may determine the abatement measure is not reasonable if it does not meet any of the three criteria. A county highway agency expressed concern that only the State would determine the reasonableness factors in the State noise policy and recommended a broader definition of reasonableness. The rule intentionally provides a narrow selection of reasonableness factors to ensure uniform and consistent application of the rule nationwide. Similarly, each State highway agency noise policy will list reasonableness factors considered by the State on all projects within the State regardless of jurisdiction to ensure statewide uniform and consistent application of the noise policy. State highway agencies may not tailor

reasonableness factors to suit a particular jurisdiction or project.

Nineteen State highway agencies, one national organization, seven private consultants, and one private individual were concerned about various provisions of sec. 772.13(d)(2)(i). The concerns centered on two issues: (1) the requirement to obtain responses from a majority of benefited receptors, and (2) the limitation of surveying property owners rather than residents. A State highway agency expressed concerns about Executive Order 12898 compliance. The FHWA recognizes that the requirement to obtain a majority is overly proscriptive. Highway agencies should devise public involvement programs that satisfy their State's needs. States may institute schemes to give additional weight to the views of impacted residents, but must consider the views of benefited residents. The final rule requires solicitation of the views of residents and property owners. One State highway agency and one private consultant indicated concern with the provision that, "The highway agency is not required to consider the viewpoints of other entities to determine reasonableness, unless explicitly authorized by the benefited property owner." It is FHWA's position that this provision prevents entities other than benefiting residents from vetoing noise abatement on public right-of-way. Another State highway agency expressed that its current practice is to count a lack of response from a residence to a survey as a no vote for the barrier. Two State highway agencies requested clarifying language for the meaning of "desires" or substituting the word "views." It is FHWA's position that the failure to respond to a survey may demonstrate lack interest in noise abatement, particularly when there is a low response rate from the community, but only explicit "no" votes should be considered as "no" votes. States may institute schemes to give additional weight to the views of impacted residents, but must consider the views of benefited residents. The final rule incorporates the phrase "point of view" in place of "desire." This is to eliminate confusion over the meaning of "views," which in the past version of the rule, may have been confused with what people could see rather than their opinion. To provide a more uniform and consistent application nationwide, the following was added to this provision "The highway agency shall solicit the viewpoints form all of the benefited receptors and obtain enough responses to document a decision on either desiring or not desiring the noise

abatement measure. The highway agency shall define, and receive FHWA approval for, the number of receptors that are needed to constitute a decision and explain the basis for this determination.”

In sec. 772.13(d)(2)(ii), a State highway agency and a private consultant expressed concern that the proposed rule appeared to change cost as a reasonableness factor from cost effectiveness, as historically applied, to cost of the measure. It is FHWA's position that this was an unintentional change in the language of the proposed rule. The final rule clarifies that State highway agencies must consider the cost effectiveness of the abatement measure rather than considering the overall cost of the abatement measure in terms of the project cost. “The maximum square footage of abatement/benefited receptor,” was added to this provision as a way to determine a baseline cost reasonableness value.

Seven State highway agencies and three private consultants commented on the proposed change in sec. 772.13(d)(2)(ii) on how States determine cost reasonableness. All generally agreed with the new provision, but expressed that the provision should provide flexibility to develop cost reasonableness criteria outside the traditional scheme of cost per benefited receptor. One State expressed concern about what factors to include in the cost estimate, and a consultant indicated that States with little or no experience in building noise barriers could have difficulty establishing cost reasonableness criteria due to limited experience. Another State expressed concern about how the reevaluation of construction costs could affect projects caught in the process. It is FHWA's position that the final rule provides flexibility for State highway agencies to use alternate cost reasonableness schemes based on construction cost. The State highway agency and the FHWA should coordinate consideration of factors to include in the construction cost estimate and apply the same values to all projects. The cost estimate is based on averages, which include projects that may cost more or less than the average. The FHWA recognizes that some States have less experience than others with noise abatement construction. The FHWA provides additional information in the noise guidance. The reevaluation should focus on the construction costs with resulting changes in the cost reasonableness threshold. For example, if construction costs increase by 10 percent between evaluations, the cost reasonableness threshold should increase by a like

amount. This way, a location determined cost reasonable at one time, would not fail to meet the cost reasonableness criteria later. This is similar to the approach recommended below regarding geographic differences.

In sec. 772.13(d)(2)(ii), two private consultants expressed concern about the provision to allow for geographical differences for cost reasonableness within a State. One suggested removing the provision entirely because it could be difficult to implement and monitor. The other wanted to ensure that wording of the final rule would ensure that identical neighborhoods in a State would have the same opportunity for noise abatement despite geographical differences in construction cost. It is the FHWA's position that the final rule retains this subsection as an option provision as proposed in the NPRM. The language in the final rule ensures that geographical cost differences will not affect a neighborhood's opportunity to receive noise abatement. State highway agencies implementing this provision will ensure that the cost reasonableness criteria/construction cost ratio is the same statewide. For example, the unit cost in City A is \$12.50/sq. ft. and the cost per benefiting residence is \$25,000. City B is much more expensive with a unit cost of \$25/sq. ft. Therefore, the cost per benefiting residence in City B is \$50,000.

Based on comments received from four State highway agencies, two private consultants, and a private citizen on obtaining a substantial noise reduction, the FHWA is incorporating noise reduction design goals as the new sec. 772.13(d)(2)(iii). The FHWA is defining “Noise Reduction Design Goal” to remove the disconnect that occurs with a 5 dBA substantial decrease criterion and substantial increase criteria's 5–15 dBA range. This provision states, “[n]oise Reduction design goals for highway traffic noise abatement measures. When noise abatement measure(s) are being considered, a highway agency shall achieve a noise reduction design goal. The highway agency shall define the design goal of at least 7 dB(A) but not more than 10 dB(A), and define the value of benefited receptors that must achieve this design goal. The highway agency shall define the design goal of at least 7 dB(A) but not more than 10 dB(A). The highway agency shall define, and receive FHWA approval for, the number of benefited receptors that must achieve this design goal and explain the basis for this determination.” Defining the number of benefited receptors that must achieve this design goal assures that a too

balanced approach is taken when defining a design goal.

In sections 772.13(d)(2)(vi) and (v), five State highway agencies and two private consultants commented on the optional reasonableness factors and the statement “No single reasonableness factor should be used as the sole basis for determining reasonableness.” One State recommended removal of the optional abatement measures and that States should define these criteria in their own policies. Another State also requested inclusion of factors related to local zoning compliance in the final rule. The final rule clarifies that the provision about single reasonableness factors only applies to the optional factors. Inclusion of the optional reasonableness factors is based on example reasonableness factors in the 1995 guidance. The rule provides flexibility for States to choose additional reasonableness factors that work best for them. States are not required to incorporate the optional reasonableness factors. The final rule does not explicitly address local zoning. The final rule provides flexibility to address this under the optional factor of date of development. The FHWA has no control over zoning practices of local governments. As a result of these comments the FHWA added sec. 772.13(d)(2)(iv) to state, “[t]he reasonableness factors listed in § 772.13(d)(5)(i), (ii) and (iii), must collectively be achieved in order for a noise abatement measure to be deemed reasonable. Failure to achieve § 772.13(d)(5)(i), (ii) or (iii), will result in the noise abatement measure being deemed not reasonable” and modified sec. 772.13(d)(2)(v) to indicated that in addition to the required factors listed in sec. 772.13(d)(2)(i), (ii) and (iii), a highway agency may use the factors within this provision. A sentence was added to clarify that no single optional reasonableness factor could be used to determine reasonableness. In sec. 772.13(e), a national organization, six State highway agencies, and a private consultant requested clarification on substantial increase and the benefited receiver thresholds. The final rule clarifies that benefited receptors must obtain a reduction at or above 5 dB(A), but not exceed the highway agency's reasonableness design goal. This approach provides flexibility to establish different reasonableness criteria for receptors that are impacted and benefiting, versus receptors that are not impacted and benefiting.

Thirteen State highway agencies and four private consultants commented on the inclusion of the noise barrier inventory in the regulation at sec.

772.13(f). The commenters questioned whether this fulfills the current FHWA practice of collecting this information triennially and requested that FHWA specify or clarify the items State highway agencies must report. Two of the States speculated that Federal funding should pay for this effort since it is in the Federal Participation Section. One State sought clarification on whether they would have to report historical data in the format required in the regulation. It is FHWA's position that this new provision in the regulation does codify FHWA's noise barrier inventory that State highway agencies have voluntarily completed every 3 years since the 1990's. The final rule will state all required parameters and clarifies that noise reduction is the average insertion loss/reduction from the installed abatement measure. There is no intention to require reporting of previously reported data. The next inventory collection will start with abatement measures constructed in 2008, 2009, and 2010. The information collected for this inventory will be the same as previous inventories since this time period occurred before the publication of this final rule and before the implementation of this final rule. The inventory beginning with abatement measures constructed in 2011 and thereafter will be collected in accordance with this final rule. The following is been added to this provision, "The inventory shall include the following parameters: Type of abatement; cost (overall cost, unit cost per/sq. ft.); average height; length; area; location (State, county, city, route); year of construction; average insertion loss/noise reduction as reported by the model in the noise analysis; NAC category(s) protected; material(s) used (precast concrete, berm, block, cast in place concrete, brick, metal, wood, fiberglass, combination, plastic (transparent, opaque, other); features (absorptive, reflective, surface texture); foundation (ground mounted, on structure); project type (Type I, Type II, and optional project types such as State funded, county funded, tollway/turnpike funded, other, unknown)."

There were no specific comments on actual text of sec. 772.13(g), but based on the comments received on various parts of this regulation regarding the disconnect between the environmental clearance and the final design noise analysis and documentation, the FHWA has included sec. 772.13(g)(3), which states, "[d]ocumentation of highway traffic noise impacts: The environmental document shall identify locations where noise impacts are predicted to occur,

where noise abatement is feasible and reasonable and locations with impacts that have no feasible or reasonable noise abatement alternative. For environmental clearance, this analysis shall be completed to the extent that design information on the alternative(s) under study in the environmental document is available at the time the environmental clearance document is completed. A statement of likelihood shall be included in the environmental document since feasibility and reasonableness determinations may change due to changes in project design after approval of the environmental document. 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 shall also 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."

In sec. 772.13(h), one State highway agency and one private consultant recommended a change from "planned, designed and programmed" to "permitted." The final rule incorporates this change. One State highway agency wanted "in accordance with the Highway Agency approved noise Policy" added to the regulation. Because the FHWA requires all States to have an approved noise policy, the FHWA feels this change would be unnecessary.

In sec. 772.13(i), eight State highway agencies and two private consultants expressed general support for this new provision on design build projects in the regulation, but expressed concern that changes to the project during construction may result in implementation of unneeded environmental commitments, and commented on the relationship between the final and preliminary noise abatement design. The FHWA understands the concerns expressed in the comments; however, the FHWA is concerned that absent a commitment to provide abatement determined reasonable and feasible in the environmental document, and based on the acoustic design developed in the noise analysis, there may be cases where value engineering efforts or other cost savings measures may result in changes to the abatement design that reduce the effectiveness of the noise abatement measures. States are also encouraged to consider developing performance based specifications within their noise policies that apply to design build project to accommodate the project

flexibility inherent in the design build process and ensure constructed noise abatement is effective.

Section 772.13(j) was proposed as sec. 772.9(d) in the NPRM. This provision was moved to the analysis of noise abatement since it deals with paying for noise abatement. Ten State highway agencies, two private consultants, and one private individual commented on this section largely supporting the provision and in some cases, seeking minor clarification. In one case, a State highway agency commented that this provision could force States to provide abatement that is not feasible or reasonable. Another commented that this provision could unfairly skew noise abatement to those with greater funds, and a private individual wanted clarification on the timing of the funding. One State also wanted clarification on the entities that count as third parties. Some of the comments make it clear that the wording in the NPRM was not clear. The intent is for all noise abatement measures to stand on their own without contributing additional funds. The final rule states, "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." The inclusion of functional enhancements in third party funding covers items that the third party may want in the noise barrier, but are not essential. Listing components such as absorptive treatment and functional enhancements differentiates between what a community may want in a noise barrier and what is necessary for an effective noise barrier. States should develop policies that include consideration for aesthetics, absorptive treatments, functional enhancements such as access doors, fire safety features, etc. Communities desiring functional enhancements or aesthetic treatment beyond that provided for in the State noise policy could contribute toward those enhancements. Third parties are any entity other than the State highway agency and DOT operating administrations.

Section 772.13(k) was proposed as provision 772.9(d) in the NPRM. This provision was moved to the analysis of noise abatement since it deals with cost averaging noise abatement. This

provision was moved to the analysis of noise abatement since it deals with paying for noise abatement. The final rule incorporates the concept of cost averaging across the project with some limitations as presented in a comment from a private consultant. This section now states, "on a Type I or a Type II project, a highway agency has the option to cost average noise abatement among benefited receptors within common noise environments, if no single common noise environment exceeds two times the highway agency's cost reasonableness criteria and collectively all common noise environments being averaged do not exceed the highway agency's cost reasonableness criteria."

Section 772.15—Federal Participation

In sec. 772.15(b), a State highway agency remarked that this section was always confusing and offered clarifying language. The FHWA agrees and revised this provision to largely include the language as presented in section 339(b) of the National Highway System Designation Act of 1995. As a result, sec. 772.15(b)(1) states, "No funds made available out of the Highway Trust Fund may be used to construct Type II noise barriers, as defined by this regulation, if such barriers were not part of a project approved by the FHWA before the November 28, 1995." November 28, 1995, is the date that the National Highway System Designation Act went into effect. A private consultant expressed that this section limits Type II projects to those that were "proposed where land development or substantial construction predated the existence of any highway." The definition for substantial construction is "the granting of a building permit prior to right-of-way acquisition or construction approval for the highway." The wording and meaning of definition and this provision differ and need to be reconciled. The FHWA agrees and the final rule addresses this by removing "any" and largely stating the language as presented in the National Highway System Designation Act of 1995. As a result, sec. 772.15(b)(2) states "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."

In sec. 772.15(b)(3), two State highway agencies questioned the restriction on Type II funding eliminating locations previously determined not feasible or reasonable for a Type I project. One of these agencies questioned whether this is still

the case after a re-evaluation of an environmental document. It is FHWA's position that if a Type I location is not cost-reasonable based on the construction of homes at the time of that project, then that location is not cost-reasonable later for a Type II project. Highway agencies typically divide the overall cost of a noise abatement measure by the number of benefiting residences to determine a cost per benefiting residence. An abatement measure is cost reasonable if the cost per residence does not exceed the State's criteria. The only way the neighborhood becomes cost reasonable is if the number of residences increases. The new residences would not predate the facility and cannot count in the cost-reasonableness calculation. The only way to consider the commenter's approach is if the highway agency increased the allowable cost per benefited residence relative to the construction cost. This potentially exposes the highway agency to going back to look at previous decisions on other Type I and Type II projects to see if the highway agency inappropriately excluded locations from receiving noise abatement. This situation would not necessarily include Type I projects that involve a re-evaluation of an existing environmental document, but those circumstances would be scarce. Typically, a location determined not reasonable in an environmental document that is later determined reasonable in a re-evaluation results from construction of additional residences that result in a lower average cost per benefited residence and result in abatement not cost reasonable under the earlier document achieving the cost-reasonableness threshold. In this case, the highway agency would offer noise abatement to the neighborhood as part of the Type I project, eliminating the need to consider the location for a Type II project. The FHWA made no changes to this provision.

In sec. 772.15(c), one State highway agency sought clarification on some of the available noise abatement measures, specifically regarding the need to meet the feasibility and reasonableness criteria and regarding the purchase of land. It is FHWA's position that any proposed noise abatement measure must achieve the feasibility and reasonableness requirements established in the highway agency's noise policy. The section on acquisition of real property provides highway agencies with the authority to acquire right-of-way for the purpose of noise barrier construction. The statement regarding unimproved property is there to

highlight that highway agencies cannot use this provision to purchase a residence just so the State can tear it down and construct a noise barrier for the second row of houses. Three highway agencies and a university recommended including quieter pavements as noise abatement, with one noting a large body of research completed by the State to support this approach. It is FHWA's position that there are still too many unknowns regarding pavement to consider its use as a noise abatement measure. These issues include acoustic longevity and construction variability. The FHWA has provisions for highway agencies to enter into a Quiet Pavement Pilot Program or to perform Quiet Pavement Research. The FHWA acknowledges the valuable research performed by various highway agencies; however, the regulation must be applicable nationwide and not just in one State. No changes were made to this provision.

In sec. 772.15(c)(1), six State highway agencies and three private consultants expressed support for FHWA's position clarifying that vegetation is not an appropriate noise abatement measure, but recommended removal of references to funding for aesthetic purposes. The FHWA has removed reference to funding for landscaping from the regulation. One State highway agency and one private consultant indicated concerns with the approach to make five of the noise abatement alternatives optional and only require consideration of noise barriers because this approach contradicts the long-standing practice to avoid, minimize, and then mitigate. It is the FHWA's position that the language in the final rule allows States to consider all noise abatement measures listed in the regulation while requiring only consideration of noise barriers. This approach provides highway agencies with the flexibility they need to accomplish the recommended approach if the highway agency chooses to do so.

A private consultant recommended adding a new section to 772.15(c) regarding absorptive cladding applied to an existing reflective surface as a noise abatement measure. Because the final rule does not preclude States from considering this approach as a noise abatement measure, no changes were made to this provision.

In sec. 772.15(c)(4), two State highway agencies and one private consultant commented on buffer zones. One highway agency requested further clarification in the updated FHWA noise guidance. Another highway agency requested limitation to planned, designed, and programmed land use and

a private consultant wanted the addition of “to move noise-sensitive receptors farther from the source” added to the subsection. The FHWA addresses buffer zones in the guidance document. Regarding the comment on planned, designed and programmed land use, the purpose of the buffer zone for noise abatement could also be to stop potential alignment shifts toward existing noise sensitive land uses outside the buffer zone. The intent of the buffer zone is to provide separation between potentially developable land and highways. Regarding the added language, this may imply that FHWA may actually move residences away from an existing highway to a new location to purchase the property as a buffer zone. Since this is not the intent of the regulation, no changes were made to this provision.

In sec. 772.15(c)(5), two State highway agencies and one private consultant expressed support for this provision regarding noise insulation and recommended incorporating any additional expenses accrued by the property owner after project completion. The FHWA agrees and the final rule incorporates this idea by referring to additional expenses as post-installation maintenance and operational costs. Also, to clarify what land uses are eligible for noise insulation, this provision now states, “noise insulation or Activity Category D land use facilities listed in table 1.”

Eight State highway agencies and three private consultants expressed concerns about the provision in the NPRM regarding severe noise impact criteria in the regulation. Based on these comments, the FHWA has removed this provision on severe noise impacts from the final rule. It is FHWA’s position that the regulation currently requires a highway agency to define “substantial increase,” which recognizes all potential impacts that could result from the proposed project. Adding another layer of impact with the title of “severe” is problematic to the noise analysis and will create even more confusion to the public. Severe noise impacts could cause inconsistencies in the application of the noise analysis process, since it would require establishing another feasibility and cost reasonableness factor. As stated throughout this final rule, application of this regulation needs to be applied consistently and uniformly statewide. Also, “severe” noise impacts could be confusing to the public, since they typically feel that they are all severely impacted regardless of the noise level or increase in noise levels.

Section 772.17—Information for Local Officials

In sec. 772.17, 13 State highway agencies and 4 private consultants commented about the requirements in section 772.1 (section 772.15 in the NPRM) regarding information for local officials. Some comments were about the numbering of the section, which has been corrected in the final rule, and others were about the apparent redundancy in two of the subsections. There were also concerns about the extent of a statewide outreach program and some confusion about whether outreach to local officials is a new requirement. There was also opposition to the requirement to implement a statewide outreach program prior to considering date of development as a reasonableness criterion. It is FHWA’s position that highway agencies may use information in the FHWA publication “The Audible Landscape.” The FHWA is considering updating this document to incorporate additional planning strategies. The final rule also clarifies the minimum information provided to local officials, which is the distance from the highway to the impact criteria for each exterior land use in Table 1 of this regulation. The requirement to inform local officials about future noise impacts on undeveloped lands has been part of this regulation since its inception. Unfortunately, few highway agencies properly fulfill this requirement. It is likely that many municipalities have never had a Federal project that provided the opportunity for the highway agency to inform them about noise compatible planning practices. The FHWA recognizes that State governments often have little control over local planning; however, FHWA has also promoted noise compatible planning strategies for more than 30 years with little active involvement by States on the issue. It is incumbent on State highway agencies, therefore, to demonstrate that they have educated local officials on noise issues if date of development may preclude some locations from receiving noise abatement. The FHWA noise guidance provides additional clarification on statewide outreach programs. For clarification, the FHWA modified sec. 772.17(a) to include reference to Type I projects and section 772.17(a)(2) to state, “[a]t a minimum, identify the distance to the exterior noise abatement criteria in Table 1. The best estimation of the future design year noise levels at various distances from the edge of the nearest travel lane * * *

In sec. 772.17(b), a private individual expressed that the rule should expand

the date of development to allow State highway agencies to give additional weight to older residences. It is FHWA’s position that highway agencies with statewide noise compatible planning outreach programs may consider date of development in their decisions to provide abatement. The regulation currently authorizes highway agencies to fund Type II programs on a voluntary basis to provide abatement for locations that predate adjacent highways in the absence of a Type I project. For clarification, the FHWA modified this provision to state, “If a highway agency chooses to participate in a Type II noise program or to use the date of development as one of the factors in determining the reasonableness of a Type I noise abatement measure, the highway agency shall have a statewide outreach program * * *

Section 772.19—Construction Noise

In sec. 772.19, five State highway agencies, one national organization, and one private consultant commented that FHWA should provide additional regulatory guidance to address construction noise including a regulatory reference to the Roadway Construction Noise Model. It is FHWA’s position that there is sufficient information regarding construction noise available in the construction noise handbook. The model will remain an option for use by States to predict construction noise impacts for projects. As such, no changes were made to this provision.

Table 1 to Part 772—Noise Abatement Criteria

Eight State highway agencies, a national organization and two private consultants provided comments on Table 1. Some of the same entities also provided comments in other sections of the regulation related to Table 1. The comments generally centered on the opposition to include trails, trail crossings, and cemeteries; recommended inclusion of additional land use categories; recommended elimination of some Category C land uses; or recommended reorganization of the table to better differentiate between land use categories. The FHWA disagrees with removal of trails and trail crossing and cemeteries from Table 1. These are recreational and noise sensitive areas eligible for consideration under previous FHWA guidance. The FHWA disagrees with the elimination of Category C land uses. Historical data based on highway agencies not including Category C locations in their noise analyses or their public involvement may paint an inaccurate

portrait of commercial property owner interest in noise abatement since many highway agencies failed to include commercial land uses in noise analyses or involve them in the public involvement process. The FHWA agrees Table 1 needs to better differentiate business land uses that require analysis. The final rule includes a reorganization of Table 1 to help clarify this issue and adds day care, television studios, radio studios, and recording studios as noise sensitive land uses. This reorganization includes the following Activity Categories:

Activity Category A, this activity category still provides the exterior activity criteria for "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." No changes were made to this activity category.

Activity Category B, this activity category now only includes the exterior activity criteria for residential properties. All other land uses that were associated with this activity category in the past have been reorganized into other activity categories.

Activity Category C, this activity category is now the exterior activity criteria for the following land uses: "active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or non-profit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings." The exterior activity criteria for Activity Category C are the same as the exterior activity criteria for Activity Category B. The reason why the land uses associated with these activity categories are in separate categories is that the land used in Activity Category C includes a variety of land use facilities that require each highway agency to adopt a standard uniform and consistent practice in assessing their impacts and abatement measures.

Activity Category D, this activity category is now the interior activity criteria for the following land uses: "auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or non-profit institutional structures, radio studios, recording studios, schools, and television studios." The activity description for Activity Category D is similar to the activity description for Activity Category C. The

difference between the Activity Category C and D is the exterior versus interior criteria.

Activity Category E, this activity category is now the exterior activity criteria for the following land uses: "hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A–D or F." These land use facilities are less sensitive to highway traffic noise, and therefore have a higher activity criteria.

Activity Category F, this activity category has no activity criteria associated for the following land uses: "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." These land use facilities are not sensitive to highway traffic noise and/or do not have exterior areas of frequent human use and therefore no activity criteria is appropriate to apply.

Activity Category G, this activity category has no activity criteria associated for undeveloped lands that are not permitted. Undeveloped land is not sensitive to highway traffic noise and does not have exterior areas of frequent human use.

Rulemaking Analyses and Notices

Executive Order 12866 (Regulatory Planning and Review) and DOT Regulatory Policies and Procedures

The FHWA has determined that this final rule is not a significant regulatory action within the meaning of Executive Order 12866 and is not significant within the meaning of the U.S. Department of Transportation regulatory policies and procedures.

The final rule revises requirements for traffic noise prediction on Federal-aid highway projects to be consistent with the current state-of-the-art technology for traffic noise prediction. It is anticipated that the economic impact of this rulemaking would be minimal; therefore, a full regulatory evaluation is not required.

Regulatory Flexibility Act

In compliance with the Regulatory Flexibility Act (RFA) (Pub. L. 96–354, 5 U.S.C. 601–612), the FHWA has evaluated the effects of this final rule on small entities and anticipates that this action would not have a significant economic impact on a substantial number of small entities. The amendments address traffic noise prediction on certain State highway projects. As such, it affects only States, and States are not included in the

definition of small entity set forth in 5 U.S.C. 601. Therefore, the RFA does not apply, and the FHWA certifies that the final rule would not have a significant economic impact on a substantial number of small entities.

Unfunded Mandates Reform Act of 1995

This final rule would not impose unfunded mandates as defined by the Unfunded Mandates Reform Act of 1995 (Pub. L. 104–4, March 22, 1995, 109 Stat. 48). The actions proposed in this final rule would not result in the expenditure by State, local, and tribal governments, in the aggregate, or by the private sector, of \$141.3 million or more in any one year (2 U.S.C. 1532). Additionally, the definition of "Federal Mandate" in the Unfunded Mandates Reform Act excludes financial assistance of the type in which State, local, or tribal governments have authority to adjust their participation in the program in accordance with changes made in the program by the Federal Government. The Federal-aid highway program permits this type of flexibility.

Executive Order 13132 (Federalism)

This final rule has been analyzed in accordance with the principles and criteria contained in Executive Order 13132, dated August 4, 1999, and it has been determined that this final rule does not have a substantial direct effect or sufficient federalism implications on States that would limit the policymaking discretion of the States. Nothing in this final rule directly preempts any State law or regulation or affects the States' ability to discharge traditional State governmental functions.

Executive Order 12372 (Intergovernmental Review)

Catalog of Federal Domestic Assistance Program Number 20.205, Highway Planning and Construction. The regulations implementing Executive Order 12372 regarding intergovernmental consultation on Federal programs and activities apply to this program.

National Environmental Policy Act

The FHWA has analyzed this final rule for the purpose of the National Environmental Policy Act (42 U.S.C. 4321 *et seq.*) and anticipates that this action would not have any effect on the quality of the human and natural environment, since it updates the specific reference to acceptable highway traffic noise prediction methodology and removes unneeded references to a

specific noise measurement report and vehicle noise emission levels.

Paperwork Reduction Act

Under the Paperwork Reduction Act of 1995 (PRA) (44 U.S.C. 3501, *et seq.*), Federal agencies must obtain approval from the Office of Management and Budget (OMB) for each collection of information they conduct, sponsor, or require through regulations. The FHWA determined that this final rule would affect a currently approved information collection for OMB Control Number 2125-0622, titled "Noise Barrier Inventory Request." The OMB approved this information collection on July 30, 2008, at a total of 416 burden hours, with an expiration date of July 31, 2011.

Executive Order 13175 (Tribal Consultation)

The FHWA has analyzed this final rule under Executive Order 13175, dated November 6, 2000, and believes that it would not have substantial direct effects on one or more Indian tribes; would not impose substantial direct compliance costs on Indian tribal governments; and would not preempt tribal law. This rulemaking primarily applies to noise prediction on State highway projects and would not impose any direct compliance requirements on Indian tribal governments; nor would it have any economic or other impacts on the viability of Indian tribes. Therefore, a tribal summary impact statement is not required.

Executive Order 13211 (Energy Effects)

The FHWA has analyzed this final rule under Executive Order 13211, Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution or Use. We have determined that this final rule would not be a significant energy action under that order because any action contemplated would not be likely to have a significant adverse effect on the supply, distribution, or use of energy. Therefore, the FHWA certifies that a Statement of Energy Effects under Executive Order 13211 is not required.

Executive Order 12630 (Taking of Private Property)

The FHWA has analyzed this final rule under Executive Order 12630, Governmental Actions and Interference with Constitutionally Protected Property Rights. The FHWA does not anticipate that this final rule would affect a taking of private property or otherwise have taking implications under Executive Order 12630.

Executive Order 12988 (Civil Justice Reform)

This action meets applicable standards in sections 3(a) and 3(b)(2) of Executive Order 12988, Civil Justice Reform, to minimize litigation, eliminate ambiguity and reduce burden.

Executive Order 13045 (Protection of Children)

The FHWA has analyzed this final rule under Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks. The FHWA certifies that this final rule would not cause an environmental risk to health or safety that may disproportionately affect children.

Regulation Identification Number

A regulation identification number (RIN) is assigned to each regulatory action listed in the Unified Agenda of Federal Regulations. The Regulatory Information Service Center publishes the Unified Agenda in April and October of each year. The RIN number contained in the heading of this document can be used to cross-reference this action with the Unified Agenda.

List of Subjects in 23 CFR Part 772

Highways and roads, Incorporation by reference, Noise control.

Issued on: June 21, 2010.

Victor M. Mendez,
Administrator.

■ In consideration of the foregoing, the FHWA revises part 772 of title 23, Code of Federal Regulations, to read as follows:

PART 772—PROCEDURES FOR ABATEMENT OF HIGHWAY TRAFFIC NOISE AND CONSTRUCTION NOISE

Sec.

- 772.1 Purpose.
 - 772.3 Noise standards.
 - 772.5 Definitions.
 - 772.7 Applicability.
 - 772.9 Traffic noise prediction.
 - 772.11 Analysis of traffic noise impacts.
 - 772.13 Analysis of noise abatement.
 - 772.15 Federal participation.
 - 772.17 Information for local officials.
 - 772.19 Construction noise.
- Table 1 to Part 772—Noise Abatement Criteria

Authority: 23 U.S.C. 109(h) and (i); 42 U.S.C. 4331, 4332; sec. 339(b), Pub. L. 104-59, 109 Stat. 568, 605; 49 CFR 1.48(b).

§ 772.1 Purpose.

To provide procedures for noise studies and noise abatement measures to help protect the public's health, welfare and livability, to supply noise abatement criteria, and to establish requirements for information to be given

to local officials for use in the planning and design of highways approved pursuant to title 23 U.S.C.

§ 772.3 Noise standards.

The highway traffic noise prediction requirements, noise analyses, noise abatement criteria, and requirements for informing local officials in this regulation constitute the noise standards mandated by 23 U.S.C. 109(1). All highway projects which are developed in conformance with this regulation shall be deemed to be in accordance with the FHWA noise standards.

§ 772.5 Definitions.

Benefited Receptor. The recipient of an abatement measure that receives a noise reduction at or above the minimum threshold of 5 dB(A), but not to exceed the highway agency's reasonableness design goal.

Common Noise Environment. A group of receptors within the same Activity Category in Table 1 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, 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 part 771.

Design Year. The future year used to estimate the probable traffic volume for which a highway is designed.

Existing Noise Levels. The worst noise hour resulting from the combination of natural and mechanical sources and human activity usually present in a particular area.

Feasibility. The combination of acoustical and engineering factors considered in the evaluation of a noise abatement measure.

Impacted Receptor. The recipient that has a traffic noise impact.

L10. The sound level that is exceeded 10 percent of the time (the 90th percentile) for the period under consideration, with L10(h) being the hourly value of L10.

Leq. The equivalent steady-state sound level which in a stated period of time contains the same acoustic energy as the time-varying sound level during the same time period, with Leq(h) being the hourly value of Leq.

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 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 optimum desired dB(A) noise reduction determined from calculating the difference between future build noise levels with abatement, to future build noise levels without abatement. The noise reduction design goal shall be at least 7 dB(A), but not more than 10 dB(A).

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. The combination of social, economic, and environmental factors considered in the evaluation of a noise abatement measure.

Receptor. A discrete or representative location of a noise sensitive area(s), for any of the land uses listed in Table 1.

Residence. A dwelling unit. 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.

Substantial noise increase. One of two types of highway traffic noise impacts. For a Type I project, an increase in noise levels of 5 to 15 dB(A) in the design year over the existing noise level.

Traffic Noise Impacts. Design year build condition noise levels that approach or exceed the NAC listed in Table 1 for the future build condition; or design year build condition noise levels that create a substantial noise increase over existing noise levels.

Type I Project. (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 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. For a Type II project to be eligible for Federal-aid funding, the highway agency must develop and implement a Type II program in accordance with section 772.7(e).

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

§ 772.7 Applicability.

(a) This regulation applies to all Federal or Federal-aid Highway Projects authorized under title 23, United States Code. Therefore, this regulation applies to any highway project or multimodal project that:

(1) Requires FHWA approval regardless of funding sources, or

(2) Is funded with Federal-aid highway funds.

(b) In order to obtain FHWA approval, the highway agency shall develop noise policies in conformance with this regulation and shall apply these policies uniformly and consistently statewide.

(c) This regulation applies to all Type I projects unless the regulation specifically indicates that a section only applies to Type II or Type III projects.

(d) The development and implementation of Type II projects are

not mandatory requirements of section 109(i) of title 23, United States Code.

(e) If a highway agency chooses to participate in a Type II program, the highway agency shall develop a priority system, based on a variety of factors, to rank the projects in the program. This priority system shall be submitted to and approved by FHWA before the highway agency is allowed to use Federal-aid funds for a project in the program. The highway agency shall re-analyze the priority system on a regular interval, not to exceed 5 years.

(f) For a Type III project, a highway agency is not required to complete a noise analysis or consider abatement measures.

§ 772.9 Traffic noise prediction.

(a) Any analysis required by this subpart must use the FHWA Traffic Noise Model (TNM), which is described in "FHWA Traffic Noise Model" Report No. FHWA-PD-96-010, including Revision No. 1, dated April 14, 2004, or any other model determined by the FHWA to be consistent with the methodology of the FHWA TNM. These publications are incorporated by reference in accordance with section 552(a) of title 5, U.S.C. and part 51 of title 1, CFR, and are on file at the National Archives and Record Administration (NARA). For information on the availability of this material at NARA, call (202) 741-6030 or go to http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html. These documents are available for copying and inspection at the Federal Highway Administration, 1200 New Jersey Avenue, SE., Washington, DC 20590, as provided in part 7 of title 49, CFR. These documents are also available on the FHWA's Traffic Noise Model Web site at the following URL: <http://www.fhwa.dot.gov/environment/noise/index.htm>.

(b) Average pavement type shall be used in the FHWA TNM for future noise level prediction unless a highway agency substantiates the use of a different pavement type for approval by the FHWA.

(c) Noise contour lines may be used for project alternative screening or for land use planning to comply with § 772.17 of this part, but shall not be used for determining highway traffic noise impacts.

(d) In predicting noise levels and assessing noise impacts, traffic characteristics that would yield the worst traffic noise impact for the design year shall be used.

§ 772.11 Analysis of traffic noise impacts.

(a) The highway agency shall determine and analyze expected traffic noise impacts.

(1) For projects on new alignments, determine traffic noise impacts by field measurements.

(2) For projects on existing alignments, predict existing and design year traffic noise impacts.

(b) In determining traffic noise impacts, a highway agency shall give primary consideration to exterior areas where frequent human use occurs.

(c) A traffic noise analysis shall be completed for:

(1) Each alternative under detailed study;

(2) Each Activity Category of the NAC listed in Table 1 that is present in the study area;

(i) *Activity Category A.* This activity category includes the exterior impact criteria for 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 for the area to continue to serve its intended purpose. Highway agencies shall submit justifications to the FHWA on a case-by-case basis for approval of an Activity Category A designation.

(ii) *Activity Category B.* This activity category includes the exterior impact criteria for single-family and multifamily residences.

(iii) *Activity Category C.* This activity category includes the exterior impact criteria for a variety of land use facilities. Each highway agency shall adopt a standard practice for analyzing these land use facilities that is consistent and uniformly applied statewide.

(iv) *Activity Category D.* This activity category includes the interior impact criteria for certain land use facilities listed in Activity Category C that may have interior uses. A highway agency shall conduct an indoor analysis after a determination is made that exterior abatement measures will not be feasible and reasonable. An indoor analysis shall only be done after exhausting all outdoor analysis options. In situations where no exterior activities are to be affected by the traffic noise, or where the exterior activities are far from or physically shielded from the roadway in a manner that prevents an impact on exterior activities, the highway agency shall use Activity Category D as the basis of determining noise impacts. Each highway agency shall adopt a standard practice for analyzing these land use facilities that is consistent and uniformly applied statewide.

(v) *Activity Category E.* This activity category includes the exterior impact criteria for developed lands that are less sensitive to highway noise. Each highway agency shall adopt a standard practice for analyzing these land use facilities that is consistent and uniformly applied statewide.

(vi) *Activity Category F.* This activity category includes developed lands that are not sensitive to highway traffic noise. There is no impact criteria for the land use facilities in this activity category and no analysis of noise impacts is required.

(vii) *Activity Category G.* This activity category includes undeveloped lands.

(A) A highway agency shall determine if undeveloped land is permitted for development. The milestone and its associated date for acknowledging when undeveloped land is considered permitted shall be the date of issuance of a building permit by the local jurisdiction or by the appropriate governing entity.

(B) If undeveloped land is determined to be permitted, then the highway agency shall assign the land to the appropriate Activity Category and analyze it in the same manner as developed lands in that Activity Category.

(C) If undeveloped land is not permitted for development by the date of public knowledge, the highway agency shall determine noise levels in accordance with 772.17(a) and document the results in the project's environmental clearance documents and noise analysis documents. Federal participation in noise abatement measures will not be considered for lands that are not permitted by the date of public knowledge.

(d) The analysis of traffic noise impacts shall include:

(1) Identification of existing activities, developed lands, and undeveloped lands, which may be affected by noise from the highway;

(2) For projects on new or existing alignments, validate predicted noise level through comparison between measured and predicted levels;

(3) Measurement of noise levels. Use an ANSI Type I or Type II integrating sound level meter;

(4) Identification of project limits to determine all traffic noise impacts for the design year for the build alternative. For Type II projects, traffic noise impacts shall be determined from current year conditions;

(e) Highway agencies shall establish an approach level to be used when determining a traffic noise impact. The approach level shall be at least 1 dB(A) less than the Noise Abatement Criteria

for Activity Categories A to E listed in Table 1 to part 772;

(f) Highway agencies shall define substantial noise increase between 5 dB(A) to 15 dB(A) over existing noise levels. The substantial noise increase criterion is independent of the absolute noise level.

(g) A highway agency proposing to use Federal-aid highway funds for a Type II project shall perform a noise analysis in accordance with § 772.11 of this part in order to provide information needed to make the determination required by § 772.13(a) of this part.

§ 772.13 Analysis of noise abatement.

(a) When traffic noise impacts are identified, noise abatement shall be considered and evaluated for feasibility and reasonableness. The highway agency shall determine and analyze alternative noise abatement measures to abate identified impacts by giving weight to the benefits and costs of abatement and the overall social, economic, and environmental effects by using feasible and reasonable noise abatement measures for decision-making.

(b) In abating traffic noise impacts, a highway agency shall give primary consideration to exterior areas where frequent human use occurs.

(c) If a noise impact is identified, a highway agency shall consider abatement measures. The abatement measures listed in § 772.15(c) of this part are eligible for Federal funding.

(1) At a minimum, the highway agency shall consider noise abatement in the form of a noise barrier.

(2) If a highway agency chooses to use absorptive treatments as a functional enhancement, the highway agency shall adopt a standard practice for using absorptive treatment that is consistent and uniformly applied statewide.

(d) Examination and evaluation of feasible and reasonable noise abatement measures for reducing the traffic noise impacts. Each highway agency, with FHWA approval, shall develop feasibility and reasonableness factors.

(1) Feasibility:

(i) Achievement of at least a 5 dB(A) highway traffic noise reduction at impacted receptors. The highway agency shall define, and receive FHWA approval for, the number of receptors that must achieve this reduction for the noise abatement measure to be acoustically feasible and explain the basis for this determination; and

(ii) Determination that it is possible to design and construct the noise abatement measure. Factors to consider are safety, barrier height, topography, drainage, utilities, and maintenance of

the abatement measure, maintenance access to adjacent properties, and access to adjacent properties (*i.e.* arterial widening projects).

(2) Reasonableness:

(i) Consideration of the viewpoints of the property owners and residents of the benefited receptors. The highway agency shall solicit the viewpoints of all of the benefited receptors and obtain enough responses to document a decision on either desiring or not desiring the noise abatement measure. The highway agency shall define, and receive FHWA approval for, the number of receptors that are needed to constitute a decision and explain the basis for this determination.

(ii) Cost effectiveness of the highway traffic noise abatement measures. Each highway agency shall determine, and receive FHWA approval for, the allowable cost of abatement by determining a baseline cost reasonableness value. This determination may include the actual construction cost of noise abatement, cost per square foot of abatement, the maximum square footage of abatement/benefited receptor and either the cost/benefited receptor or cost/benefited receptor/dB(A) reduction. The highway agency shall re-analyze the allowable cost for abatement on a regular interval, not to exceed 5 years. A highway agency has the option of justifying, for FHWA approval, different cost allowances for a particular geographic area(s) within the State, however, the highway agency must use the same cost reasonableness/construction cost ratio statewide.

(iii) Noise reduction design goals for highway traffic noise abatement measures. When noise abatement measure(s) are being considered, a highway agency shall achieve a noise reduction design goal. The highway agency shall define, and receive FHWA approval for, the design goal of at least 7 dB(A) but not more than 10 dB(A), and shall define the number of benefited receptors that must achieve this design goal and explain the basis for this determination.

(iv) The reasonableness factors listed in § 772.13(d)(5)(i), (ii) and (iii), must collectively be achieved in order for a noise abatement measure to be deemed reasonable. Failure to achieve § 772.13(d)(5)(i), (ii) or (iii), will result in the noise abatement measure being deemed not reasonable.

(v) In addition to the required reasonableness factors listed in § 772.13(d)(5)(i), (ii), and (iii), a highway agency has the option to also include the following reasonableness factors: Date of development, length of time receivers have been exposed to highway

traffic noise impacts, exposure to higher absolute highway traffic noise levels, changes between existing and future build conditions, percentage of mixed zoning development, and use of noise compatible planning concepts by the local government. No single optional reasonableness factor can be used to determine reasonableness.

(e) Assessment of Benefited Receptors. Each highway agency shall define the threshold for the noise reduction which determines a benefited receptor as at or above the 5 dB(A), but not to exceed the highway agency's reasonableness design goal.

(f) Abatement Measure Reporting: Each highway agency shall maintain an inventory of all constructed noise abatement measures. The inventory shall include the following parameters: type of abatement; cost (overall cost, unit cost per/sq. ft.); average height; length; area; location (State, county, city, route); year of construction; average insertion loss/noise reduction as reported by the model in the noise analysis; NAC category(s) protected; material(s) used (precast concrete, berm, block, cast in place concrete, brick, metal, wood, fiberglass, combination, plastic (transparent, opaque, other); features (absorptive, reflective, surface texture); foundation (ground mounted, on structure); project type (Type I, Type II, and optional project types such as State funded, county funded, tollway/turnpike funded, other, unknown). The FHWA will collect this information, in accordance with OMB's Information Collection requirements.

(g) Before adoption of a CE, FONSI, or ROD, the highway agency shall identify:

(1) Noise abatement measures which are feasible and reasonable, and which are likely to be incorporated in the project; and

(2) Noise impacts for which no noise abatement measures are feasible and reasonable.

(3) Documentation of highway traffic noise abatement: The environmental document shall identify locations where noise impacts are predicted to occur, where noise abatement is feasible and reasonable, and locations with impacts that have no feasible or reasonable noise abatement alternative. For environmental clearance, this analysis shall be completed to the extent that design information on the alternative(s) under study in the environmental document is available at the time the environmental clearance document is completed. A statement of likelihood shall be included in the environmental document since feasibility and reasonableness determinations may change due to changes in project design

after approval of the environmental document. 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 shall also 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.

(h) The FHWA will not approve project plans and specifications unless feasible and reasonable noise abatement measures are incorporated into the plans and specifications to reduce the noise impact on existing activities, developed lands, or undeveloped lands for which development is permitted.

(i) 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. Noise abatement measures shall be considered, developed, and constructed in accordance with this standard and in conformance with the provisions of 40 CFR 1506.5(c) and 23 CFR 636.109.

(j) 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.

(k) On a Type I or Type II projects, a highway agency has the option to cost average noise abatement among benefited receptors within common noise environments if no single common noise environment exceeds two times the highway agency's cost reasonableness criteria and collectively all common noise environments being averaged do not exceed the highway agency's cost reasonableness criteria.

§ 772.15 Federal participation.

(a) *Type I and Type II projects.*

Federal funds may be used for noise abatement measures when:

(1) Traffic noise impacts have been identified; and

(2) Abatement measures have been determined to be feasible and

reasonable pursuant to § 772.13(d) of this chapter.

(b) *For Type II projects.* (1) No funds made available out of the Highway Trust Fund may be used to construct Type II noise barriers, as defined by this regulation, if such noise barriers were not part of a project approved by the FHWA before the November 28, 1995.

(2) 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.

(3) 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.

(c) *Noise Abatement Measures.* The following noise abatement measures may be considered for incorporation into a Type I or Type II project to reduce traffic noise impacts. The costs of such measures may be included in Federal-aid participating project costs with the Federal share being the same as that for the system on which the project is located.

(1) Construction of noise barriers, including acquisition of property rights, either within or outside the highway right-of-way. Landscaping is not a viable noise abatement measure.

(2) Traffic management measures including, but not limited to, traffic

control devices and signing for prohibition of certain vehicle types, time-use restrictions for certain vehicle types, modified speed limits, and exclusive lane designations.

(3) Alteration of horizontal and vertical alignments.

(4) Acquisition of real property or interests therein (predominantly unimproved property) to serve as a buffer zone to preempt development which would be adversely impacted by traffic noise. This measure may be included in Type I projects only.

(5) Noise insulation of Activity Category D land use facilities listed in Table 1. Post-installation maintenance and operational costs for noise insulation are not eligible for Federal-aid funding.

§ 772.17 Information for local officials.

(a) To minimize future traffic noise impacts on currently undeveloped lands of Type I projects, a highway agency shall inform local officials within whose jurisdiction the highway project is located of:

(1) Noise compatible planning concepts;

(2) The best estimation of the future design year noise levels at various distances from the edge of the nearest travel lane of the highway improvement where the future noise levels meet the highway agency's definition of "approach" for undeveloped lands or properties within the project limits. At

a minimum, identify the distance to the exterior noise abatement criteria in Table 1;

(3) Non-eligibility for Federal-aid participation for a Type II project as described in § 772.15(b).

(b) If a highway agency chooses to participate in a Type II noise program or to use the date of development as one of the factors in determining the reasonableness of a Type I noise abatement measure, the highway agency shall have a statewide outreach program to inform local officials and the public of the items in § 772.17(a)(1) through (3).

§ 772.19 Construction noise.

For all Type I and II projects, a highway agency shall:

(a) Identify land uses or activities that may be affected by noise from construction of the project. The identification is to be performed during the project development studies.

(b) Determine the measures that are needed in the plans and specifications to minimize or eliminate adverse construction noise impacts to the community. This determination shall include a weighing of the benefits achieved and the overall adverse social, economic, and environmental effects and costs of the abatement measures.

(c) Incorporate the needed abatement measures in the plans and specifications.

TABLE 1 TO PART 772—NOISE ABATEMENT CRITERIA

[Hourly A-Weighted Sound Level, decibels (dB(A))¹]

Activity category	Activity Leq(h)	Criteria ² L10(h)	Evaluation location	Activity description
A	57	60	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 ³	67	70	Exterior	Residential.
C ³	67	70	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52	55	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E ³	72	75	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A–D or F.
F	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.
G	Undeveloped lands that are not permitted.

¹ Either Leq(h) or L10(h) (but not both) may be used on a project.

² The Leq(h) and L10(h) Activity Criteria values are for impact determination only, and are not design standards for noise abatement measures.

³ Includes undeveloped lands permitted for this activity category.

[FR Doc. 2010-15848 Filed 7-12-10; 8:45 am]

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DEPARTMENT OF HOMELAND SECURITY

Coast Guard

33 CFR Part 165

[Docket No. USCG-2009-1056]

RIN 1625-AA11

Regulated Navigation Area; Hudson River and Port of NY/NJ

AGENCY: Coast Guard, DHS.

ACTION: Temporary interim rule with request for comments.

SUMMARY: The Coast Guard is establishing a regulated navigation area (RNA) from Port Coeymans, New York on the Hudson River to Jersey City, New Jersey on Upper New York Bay, and from Jersey City to the Willis Avenue Bridge site on the Harlem River, New York, including all waters of the East River between these two locations. This action is necessary to provide for the safety of life on the navigable waters during the load out and transit of the Willis Avenue Bridge replacement span.

DATES: This rule is effective from July 13, 2010 through October 31, 2010. The RNA will be enforced from 3 a.m. on Monday, July 12, 2010, to 11:30 p.m. on Saturday, August 7, 2010. Comments and related material must reach the Coast Guard on or before August 12, 2010. Requests for public meetings must be received by the Coast Guard on or before August 12, 2010.

ADDRESSES: Documents indicated in this preamble as being available in the docket are part of docket USCG-2009-1056 and are available online by going to <http://www.regulations.gov>, inserting USCG-2009-1056 in the "Keyword" box, and then clicking "Search." They are also available for inspection or copying at the Docket Management Facility (M-30), U.S. Department of Transportation, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue, SE., Washington, DC 20590, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

You may submit comments identified by docket number USCG-2009-1056 using any one of the following methods:

(1) *Federal eRulemaking Portal:* <http://www.regulations.gov>.

(2) *Fax:* 202-493-2251.

(3) *Mail:* Docket Management Facility (M-30), U.S. Department of Transportation, West Building Ground Floor, Room W12-140, 1200 New Jersey

Avenue, SE., Washington, DC 20590-0001.

(4) *Hand delivery:* Same as mail address above, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The telephone number is 202-366-9329.

To avoid duplication, please use only one of these four methods. See the "Public Participation and Request for Comments" portion of the **SUPPLEMENTARY INFORMATION** section below for instructions on submitting comments.

FOR FURTHER INFORMATION CONTACT: If you have questions on this interim rule, call or e-mail Mr. Jeff Yunker, Waterways Management Division at Coast Guard Sector New York, telephone 718-354-4195, e-mail Jeff.M.Yunker@uscg.mil. If you have questions on viewing the docket, call Renee V. Wright, Program Manager, Docket Operations, telephone 202-366-9826.

SUPPLEMENTARY INFORMATION:

Public Participation and Request for Comments

We encourage you to participate in this rulemaking by submitting comments and related materials. All comments received will be posted, without change, to <http://www.regulations.gov> and will include any personal information you have provided.

As this temporary interim rule will be in effect before the end of the comment period, the Coast Guard will evaluate and revise this rule as necessary to address significant public comments.

Submitting Comments

If you submit a comment, please include the docket number for this rulemaking (USCG-2009-1056), indicate the specific section of this document to which each comment applies, and provide a reason for each suggestion or recommendation. You may submit your comments and material online (via <http://www.regulations.gov>) or by fax, mail or hand delivery, but please use only one of these means. If you submit a comment online via <http://www.regulations.gov>, it will be considered received by the Coast Guard when you successfully transmit the comment. If you fax, hand deliver, or mail your comment, it will be considered as having been received by the Coast Guard when it is received at the Docket Management Facility. We recommend that you include your name and a mailing address, an e-mail address, or a telephone number in the

body of your document so that we can contact you if we have questions regarding your submission.

To submit your comment online, go to <http://www.regulations.gov>, click on the "submit a comment" box, which will then become highlighted in blue. In the "Document Type" drop down menu select "Proposed Rule" and insert "USCG-2009-1056" in the "Keyword" box. Click "Search" then click on the balloon shape in the "Actions" column. If you submit comments by mail or hand delivery, submit them in an unbound format, no larger than 8½; by 11 inches, suitable for copying and electronic filing. If you submit comments by mail and would like to know that they reached the Facility, please enclose a stamped, self-addressed postcard or envelope. We will consider all comments and material received during the comment period and may change this rule based on your comments.

Viewing Comments and Documents

To view comments, as well as documents mentioned in this preamble as being available in the docket, go to <http://www.regulations.gov>, click on the "read comments" box, which will then become highlighted in blue. In the "Keyword" box insert "USCG-2010-0176" and click "Search." Click the "Open Docket Folder" in the "Actions" column. You may also visit the Docket Management Facility in Room W12-140 on the ground floor of the Department of Transportation West Building, 1200 New Jersey Avenue, SE., Washington, DC 20590, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. We have an agreement with the Department of Transportation to use the Docket Management Facility.

Privacy Act

Anyone can search the electronic form of comments received into any of our dockets by the name of the individual submitting the comment (or signing the comment, if submitted on behalf of an association, business, labor union, etc.). You may review a Privacy Act notice regarding our public dockets in the January 17, 2008, issue of the **Federal Register** (73 FR 3316).

Public Meeting

We do not now plan to hold a public meeting. You may submit a request for one using one of the four methods specified under **ADDRESSES**. Please explain why you believe a public meeting would be beneficial. If we determine that one would aid revising this rule, we will hold one at a time and place announced by a later notice in the **Federal Register**.

Appendix B: SCDOT Reasonable/Feasible Worksheet

SCDOT Feasibility and Reasonableness Worksheet

Date: _____

Project Name

Highway Traffic Noise Abatement Measure

Feasibility

Number of Impacted Receivers

Number of Benefited Receivers

Percentage of Impacted Receivers that would achieve a 5 dBA reduction from the proposed noise abatement measure

Is the proposed noise abatement measure acoustically feasible?

NOTE:SCDOT Policy indicates that 75% of the impacted receivers must achieve at least a 5 dBA reduction for it to be acoustically feasible.

Yes

No

Would any of the following issues limit the ability of the abatement measure to achieve the noise reduction goal?

- | | | |
|------------------------|------------------------------|-----------------------------|
| Topography | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Safety | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Drainage | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Utilities | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Maintenance | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Access | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Exposed Height of Wall | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

If "Yes" was marked for any of the questions above, please explain below.

Detailed Description

Reasonableness

According to 23 CFR 772.13(d)(2)(iv) the abatement measure must collectively achieve each of these criteria to be reasonable. Therefore if any of the three mandatory reasonable factors are not achieved, then the abatement measure is determined NOT to be reasonable. When completing the form it is not necessary to detail each of the criteria if one was determined not to be reasonable.

#1: Noise Reduction Design Goal

Number of Benefited Receivers

Number of Benefited Receivers that achieve at least an 8 dBA reduction

Percentage of Benefited Receivers in the first two building rows that would achieve at least a 8 dBA reduction from the proposed noise abatement measure. NOTE: SCDOT Policy indicates that 80% of the benefited receivers in the first two building rows must achieve at least a 8 dBA reduction for it to be reasonable.

Does the proposed noise abatement measure meet the noise reduction design goal? Yes No

If "Yes" is marked, continue to #2. If "No" is marked, then abatement is determined NOT to be reasonable.

#2: Cost Effectiveness

Estimated cost per square foot for noise abatement measure

Estimated construction cost for noise abatement measure

Estimated cost per Benefited Receiver

Based on the SCDOT policy of \$30,000 per Benefited Receiver, would the abatement measure be reasonable? NOTE: SCDOT Policy states that the preliminary noise analysis is based on \$35.00 per square foot and a more project-specific construction cost should be applied at a cost per square foot basis during the detailed noise abatement evaluation.

Yes No

If "Yes" is marked, continue to #3. If "No" is marked, then abatement is determined NOT to be reasonable.

#3: Viewpoints of the property owners and residents of the benefited receivers

Number of Benefited Receivers (same as above)

Number of Benefited Receivers in **support** of noise abatement measure

Percentage of Benefited Receivers in **support** of noise abatement measure

Number of Benefited Receivers **opposed** to noise abatement measure

Percentage of Benefited Receivers **opposed** to noise abatement measure

Number of Benefited Receivers **that did not respond** to solicitation on noise abatement measure

Percentage of Benefited Receivers **that did not respond** to solicitation on noise abatement measure

Based on the viewpoints of the property owners and residents of the Benefited Receivers, would the abatement measure be reasonable? NOTE: SCDOT Policy indicates that the noise abatement shall be constructed unless greater than 50% of the benefited receptors are opposed to noise abatement.

Yes No

Final Determination for Noise Abatement Measure