**Template 5**

### Noise wall modeling performed; Noise walls likely

***Items in red to be modified for specific project***

***Yellow highlighted items are instructive and should be deleted.***

# Highway Traffic Noise

## Introduction

In accordance with Title 23 Code of Federal Regulations Part 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise (Title 23 CFR 772) and the North Carolina Department of Transportation Traffic Noise Policy, each Type I highway project must be analyzed for predicted traffic noise impacts. In general, Type I projects are proposed State or Federal highway projects that construct a highway on new location, add new through lanes to an existing highway, substantially change the horizontal or vertical alignment of an existing highway, add or relocate interchange ramps or loops to complete an existing partial interchange, or involve new construction or substantial alteration of transportation facilities such as weigh stations, rest stops, ride-share lots or toll plazas.

Traffic noise impacts are determined through implementing the current Traffic Noise Model (TNM®) approved by the Federal Highway Administration (FHWA) and following procedures detailed in Title 23 CFR 772, the NCDOT Traffic Noise Policy and the NCDOT Traffic Noise Manual. When traffic noise impacts are predicted, examination and evaluation of alternative noise abatement measures must be considered for reducing or eliminating these impacts. Construction noise impacts may occur if noise-sensitive receptors are in proximity to project construction activities. All reasonable efforts should be made to minimize exposure of noise sensitive areas to construction noise impacts.

The source of this traffic noise information is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (title, author, date of the TNR).

Traffic Noise Impacts and Noise Contours

The maximum number of receptors in each project alternative predicted to become impacted by future traffic noise is shown in the table below. The table includes those receptors expected to experience traffic noise impacts by either approaching or exceeding the FHWA Noise Abatement Criteria or by a substantial increase in exterior noise levels as defined in the NCDOT Traffic Noise Policy.

## **Predicted Traffic Noise Impacts by Alternative\***

|  |  |
| --- | --- |
| **Alternative** | **Traffic Noise Impacts** |
|  | Residential (NAC B) | Places of Worship/Schools, Parks, etc. (NAC C & D) | Businesses (NAC E) | Total |
| Build 1 |  |  |  |  |
| Build 2 |  |  |  |  |
| Build 3 |  |  |  |  |

 \*Per TNM 2.5 and in accordance with 23 CFR Part 772

The maximum extent of the 71- and 66- dB(A) noise level contours measured from the edge of the nearest travel lane is --- feet and --- feet, respectively.

*If there are multiple alternatives, delete the statement above and use the following table. Otherwise, delete the table below and retain the statement above.*

|  |
| --- |
| **Traffic Noise Contours** |
| Alternative | Location | 71 dB(A) (Feet from edge of nearest travel lane) | 66 dB(A) (Feet from edge of nearest travel lane) |
| Build 1 |  |  |  |
| Build 2 |  |  |  |
| Build 3 |  |  |  |

*[If using SR number in location description, provide the street name also. Location descriptions should be specific enough such that it is clear where the noise contour applies. For example, the 66 dB(A) contour applies to the “West side of Kim Highway between Martin Place and Sheth Court.”]*

Traffic Noise Abatement Measures

Measures for reducing or eliminating the traffic noise impacts were considered for all impacted receptors in each alternative. The primary noise abatement measures evaluated for highway projects include highway alignment changes, traffic system management measures, establishment of buffer zones, noise barriers and noise insulation (NAC D only). For each of these measures, benefits versus allowable abatement quantity (reasonableness), engineering feasibility, effectiveness and practicability *(practicability applies only on state-funded projects; if federal project, delete reference to practicability)* and other factors were included in the noise abatement considerations.

Substantially changing the highway alignment to minimize noise impacts is not considered to be a viable option for this project due to engineering and/or environmental factors. Traffic system management measures are not considered viable for noise abatement due to the negative impact they would have on the capacity and level of service of the proposed roadway. Costs to acquire buffer zones for impacted receptors will exceed the NCDOT base dollar value of $22,500 per benefited receptor plus an incremental increase as defined in the NCDOT Traffic Noise Manual, causing this abatement measure to be unreasonable.

Noise Barriers

Noise barriers include two basic types: earthen berms and noise walls. These structures act to diffract, absorb and reflect highway traffic noise. For this project, earthen berms are not found to be a viable abatement measure because the additional right of way, materials and construction costs are estimated to exceed the NCDOT maximum allowable base quantity of 4,200 cubic yards per benefited receptor plus an incremental increase as defined in the NCDOT Traffic Noise Policy.

A noise barrier evaluation was conducted for this project utilizing the Traffic Noise Model (TNM 2.5) software developed by the FHWA. The following table summarizes the results of the evaluation.

**Preliminary Noise Barrier Evaluation Results\***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Alternative/\*\*NSA** |  **Noise Barrier and Location Description** | **Length / Height**1**(feet)** | **Square Footage** | **Number of Benefited Receptors** | **Square Feet per Benefited Receptor / Allowable Square Feet per Benefited Receptor** | **Preliminarily Feasible and Reasonable (“Likely”) for Construction2** |
| Alt. A/NSA 1 |  NW 1 - I-40 Bus. eastbound, west of Crafton to east of Taylor | X | X | X | X / X | Yes (or No\*\*\*) |
| Alt. A/NSA 2 | NW 2 – description of location | X | X | X | X / X | Yes (or No) |
| Alt.B/NSA 1 |  NW 1– description of location | X | X | X | X / X | Yes (or No) |

1Average wall height. Actual wall height at any given location may be higher or lower.

2The likelihood of a barrier’s construction is preliminary and subject to change, pending completion of final design and the public involvement process.

3Barrier is not feasible due to an inability to achieve a minimum of 5 dB(A) of noise reduction for at least two impacted receptors. *USE AS APPLICABLE*

4Barrier is not reasonable due to the quantity per benefited receptor exceeding the allowable quantity per benefited receptor OR Barrier is not reasonable due to an inability to achieve at least 7-dBA noise reduction for at least one benefited receptor. *USE AS APPLICABLE*

*\*Option: It is also acceptable to provide a separate table for each alternative; this may be helpful where there are a lot of alternatives and/or a lot of walls.*

*\*\*Where there is only one alternative, delete “Alternative/” from leftmost column heading and report only NSA.*

*\*\*\*Every “NO” answer requires applicable footnote*

## Summary

A traffic noise evaluation was performed that identified X noise barriers that preliminarily meet feasibility and reasonableness criteria found in the NCDOT Traffic Noise Policy. A more detailed analysis will be completed during project final design. Noise barriers preliminarily found to be feasible and reasonable during the preliminary noise analysis may not be found to be feasible and reasonable during the final design noise analysis due to changes in proposed project alignment and other design considerations, surrounding land use development, or utility conflicts, among other factors. Conversely, noise barriers that preliminarily were not considered feasible and reasonable may meet the established criteria and be recommended for construction.

In accordance with NCDOT Traffic Noise Policy, the Federal/State governments are not responsible for providing noise abatement measures for new development for which building permits are issued after the Date of Public Knowledge. The Date of Public Knowledge of the proposed highway project will be the approval date of the *SELECT ONE* (Categorical Exclusion (CE), Finding of No Significant Impact (FONSI), or Record of Decision (ROD)). NCDOT strongly advocates the planning, design and construction of noise-compatible development and encourages its practice among planners, building officials, developers and others.