**Traffic Noise Analysis**

The CONSULTANT will prepare a Traffic Noise Analysis for STIP Project \_\_\_\_\_\_\_\_ in \_\_\_\_\_\_\_\_ County. The project includes \_\_\_\_\_ (detailed description) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The Traffic Noise Analysis will be prepared in accordance with 23 CFR 772, the 2011 NCDOT Traffic Noise Abatement Policy and the 2011 NCDOT Traffic Noise Analysis and Abatement Manual. A \_\_\_\_\_\_\_\_\_ (NEPA\SEPA environmental document type) is being prepared for this project. Federal funding will / will not be utilized.

**1. Review Existing Project Information**

The CONSULTANT’s traffic noise staff will review existing project information provided by NCDOT to gain a perspective of the noise sensitive land uses and potential noise impacts in the vicinity of the project.

**1.A. Land Use**

The CONSULTANT will identify noise-sensitive land uses in the vicinity of the project. Noise sensitive land uses will be classified per the Noise Abatement Criteria (NAC) specified in NCDOT Traffic Noise Abatement Policy. If applicable, equivalent receptors will be calculated per NCDOT Traffic Noise Analysis and Abatement Manual at \_\_\_\_\_ locations. The CONSULTANT will coordinate with the applicable local government to identify all noise-sensitive land uses with an approved building permit. Based on a review of project mapping, it is estimated that approximately \_\_\_\_\_\_\_ receptors will be included in the noise modeling.

**1.B. Project Initiation Meeting**

The CONSULTANT will meet with NCDOT Noise staff to determine specific parameters of the analysis, such as ambient noise monitoring locations, receptor numbers, likely abatement analysis locations and Noise Study Area limits. This meeting will confirm that the CONSULTANT is providing the level of detail desired by the NCDOT review staff. The project initiation meeting assumes *X Staff x 0.0 days.*

1. **Existing Base Year Noise Levels**

The CONSULTANT will evaluate the existing base year loudest-hour equivalent noise levels, Leq(h) for all noise-sensitive land use receptors within the study area with a combination of noise measurements and computer modeling.

**2.A. Ambient Noise Levels**

Short-term existing ambient Leq(h) noise level data will be obtained for 20-minute periods at up to \_\_\_\_ (\_\_) representative areas, with at least two (2), and preferably three (3), simultaneous measurements per representative area. If applicable, short-term existing ambient Leq(h) noise level data will be obtained for 30-minute periods at up to \_\_\_\_ (\_\_) representative areas where traffic is not the predominant source of ambient noise, with at least one (1), and preferably two (2), simultaneous measurements per representative area. A record of any unusual events and the time at which they occurred during the measurement period shall be documented. In accordance with NCDOT Traffic Noise Analysis and Abatement Manual, short-term ambient noise measurement data will be obtained in a geometric array of integrating sound level analyzers. If applicable, \_\_\_\_ (\_\_) long-term existing ambient Leq(h) noise level data location(s) will be obtained for up to 24 hours. All integrating sound level analyzers (meters) used to obtain existing ambient noise monitoring data shall meet ANSI and IEC Type I or Type II specifications. Simultaneous traffic will be counted and classified during each short-term noise measurement session for which data is obtained in the vicinity of existing traffic noise sources. A traffic noise modeler or reviewer who is prequalified by NCDOT must be present during all data collection in the field. *X Staff x 0.0 days*

**2.B. Baseline TNM Model**

Using acceptable and NCDOT-prescribed TNM modeling methodologies, the field-collected traffic data will be used to create a validated TNM 2.5 model of the traffic noise environment during the ambient noise monitoring sessions. TNM model validation will be acceptable when the Leq(h) modeled noise levels are within ± 3.0 dB(A), preferably ±1.7 dB(A), of the ambient data Leq(h) for all noise monitoring receptor locations for which traffic was dominant. All TNM validation models must be approved by NCDOT prior to predicting existing and future noise levels. NCDOT will provide comments on the submitted TNM validation files within 5 business days. This scope of work assumes that TNM model validation will be needed at \_\_\_\_\_\_ sites.

Existing loudest-hour noise levels will be assessed for all noise-sensitive land use receptors identified in Task 1.A. as the greater of field-monitored equivalent noise levels, or the hourly-equivalent noise levels predicted by TNM assessment of existing base-year peak-hour traffic volumes and speeds into the validated existing-condition TNM model(s).

1. **Design Year Noise Levels**

The CONSULTANT will use TNM®2.5 to predict \_\_\_\_\_\_\_\_\_\_\_\_ design year loudest-hour equivalent traffic noise levels at all noise-sensitive land use receptors identified in Task 1.A. Design year \_\_\_\_\_\_\_\_\_\_\_\_ TNM models will incorporate the build-condition design elements (these elements will be based on the best design information available at the time of the modeling), as defined in the NCDOT Traffic Noise Analysis and Abatement Manual, into the validated existing-condition TNM models. The following alternatives will be assessed in the Traffic Noise Analysis: No-Build Alternative and \_\_\_\_ (\_\_) Build Alternative(s).

TNM-predicted design year \_\_\_\_\_\_\_\_\_\_\_\_ loudest-hour noise levels will be assessed for all noise-sensitive land use receptors identified in Task 1.A.

Design Year \_\_\_\_\_\_\_\_\_\_\_\_ traffic noise impacts will be assessed per the NCDOT Noise Abatement Criteria and Substantial Increase criteria (the increase in predicted design year loudest-hour equivalent noise levels over existing base year loudest-hour equivalent noise levels).

The CONSULTANT will prepare \_\_\_\_\_\_\_\_\_\_\_\_ Design Year noise contours to assist land use planning efforts by local governments. It is anticipated that noise contours will be needed at \_\_\_\_\_\_ locations.

1. **Noise Abatement**

The CONSULTANT will assess potential noise abatement measures defined by NCDOT Traffic Noise Abatement Policy for all traffic noise impacts, if any, resulting from the project. In accordance with NCDOT Traffic Noise Analysis and Abatement Manual, the CONSULTANT will use TNM®2.5 to model and assess noise barrier(s) as a potential abatement measure per applicable NCDOT Traffic Noise Abatement Policy criteria. For the purposes of this scope of work, noise abatement will be considered for up to \_\_\_\_ (\_\_) Noise Study Areas (NSA’s)for \_\_\_\_ (\_\_) Build Alternative(s).

The results of this assessment shall be included in the Traffic Noise Analysis, with a discussion of the applicability of each potential abatement measure, based upon known project design and right of way limitations. The CONSULTANT will use TNM®2.5 to model and assess all noise barrier(s) that are considered for implementation as a potential abatement measure, per applicable NCDOT Traffic Noise Abatement Policy criteria. The noise barrier(s) will represent optimized design(s) that will preliminarily indicate feasibility and reasonableness of noise abatement for predicted traffic noise impacts.

1. **Traffic Noise Analysis**

The CONSULTANT will prepare a draft and final Traffic Noise Analysis. The Traffic Noise Analysis will contain the elements and follow the guidelines prescribed in the NCDOT Traffic Noise Analysis and Abatement Manual. A qualitative discussion of construction noise shall be included in the report. The final Traffic Noise Analysis shall be signed by a NCDOT-approved noise modeler and reviewer and *shall* *no longer be* *sealed* by a Professional Engineer registered in North Carolina. “Streamlined Traffic Noise Text”, per NCDOT guidance, will be prepared by the CONSULTANT for inclusion in the environmental document. In addition, the final Traffic Noise Analysis shall be accompanied by a matrix that details how each NCDOT comment is addressed in the final Traffic Noise Analysis.

1. **Deliverables**

The CONSULTANT will provide the following deliverables to NCDOT:

1. All TNM Validation Files to satisfy Existing Base Year conditions
2. All TNM Models (electronic copy)
3. Draft Traffic Noise Analysis (1 electronic copy)
4. Final Traffic Noise Analysis with NCDOT comments response matrix (\_\_ hard copies; \_\_\_ electronic copy(ies) of report with appendices; \_\_\_ electronic copy(ies) of report with appendices, TNM files and Cadd files)
5. “Streamlined Traffic Noise Text”

Prequalification Requirements

The Traffic Noise Report must be signed by CONSULTANT staff prequalified by NCDOT as an Analyst and a Reviewer under Work Code 00253 (Preliminary Traffic Noise Analysis [TNA] for NEPA Documents). The CONSULTANT proposes *insert staff name* as the Analyst and *insert staff name* as the Reviewer. The Analyst and Reviewer cannot be the same individual. These staff must be included in the CONSULTANT workday estimate.

Firm-owned noise meters will be paid for at the fixed rate of $25/day.

Estimates that include noise meter rentals must include rental quotes on rental firm letterhead.

No charges will be allowed for tripods.