2EN3 Stage 2 - Traffic Noise and Air Quality

QC Checklist for DESIGN NOISE REPORT

SPOT ID/Project TIP #: _____

County: _____

Note: This QC checklist is for the initial submittal only. For subsequent submittals, the Comment/Response matrix will serve as QC checklist.

Item #	Review Item	Yes	No	N/A
QC.1	**Reporting**			
QC.1.1	Prepared by a traffic noise analyst prequalified with NCDOT to prepare a DNR.	☐	☐	☐
QC.1.2	Traffic Noise Report Template has been followed, as applicable.	☐	☐	☐
QC.1.2.1	Includes a Cover Page with all information outlined in the applicable NCDOT Traffic Noise Manual.	☐	☐	☐
QC.1.2.2	Includes a Signature Page with all information outlined in the applicable NCDOT Traffic Noise Manual (only signed if Final version of the DNR).	☐	☐	☐
QC.1.2.3	Includes an Executive Summary with all information outlined in the applicable NCDOT Traffic Noise Manual.	☐	☐	☐
QC.1.2.4	Includes a Table of Contents with all information outlined in the applicable NCDOT Traffic Noise Manual.	☐	☐	☐
QC.1.2.5	Includes a Project Location, Description, and Background section with all information outlined in the applicable NCDOT Traffic Noise Manual.	☐	☐	☐
QC.1.2.5.1	Includes explanation on why the project is a Type I project.	☐	☐	☐
QC.1.2.6	Includes a Procedure section quoting or paraphrasing the statements provided in the applicable NCDOT Traffic Noise Manual.	☐	☐	☐
QC.1.2.7	Includes a Characteristics of Noise section in accordance with the applicable NCDOT Traffic Noise Manual.	☐	☐	☐
QC.1.2.8	Includes a Noise Abatement Criteria section that provides an informative description of NCDOT noise policy and criteria for the assessment of traffic and construction noise impacts and impact related abatement measures per the applicable NCDOT Traffic Noise Manual.	☐	☐	☐
QC.1.2.9	Includes an Ambient Noise Levels section with all information outlined in the applicable NCDOT Traffic Noise Manual.	☐	☐	☐
QC.1.2.9.1	Explanation of purpose and results of ambient noise measurements includes both short-term and long-term measurements (if applicable).	☐	☐	☐
QC.1.2.10	Includes a Noise Model Validation section that discusses how and why TNM was validated in accordance with the applicable NCDOT Traffic Noise Manual.	☐	☐	☐

Item #	Review Item	Yes	No	N/A
QC.1.2.11	Includes sections outlining the procedures for predicting existing and future noise levels in accordance with the applicable NCDOT Traffic Noise Manual.	☐	☐	☐
QC.1.2.12	Includes a Traffic Noise Impacts section that defines impacts and describes project-specific impacts in accordance with the applicable NCDOT Traffic Noise Manual.	☐	☐	☐
QC.1.2.13	Includes a comprehensive Potential Traffic Noise Abatement Measures section that discusses the various types of abatement outlined in the applicable NCDOT Traffic Noise Manual.	☐	☐	☐
QC.1.2.14	Includes a Construction Noise section with both general and project-specific discussions in accordance with the applicable NCDOT Traffic Noise Manual.	☐	☐	☐
QC.1.2.15	Includes a section discussing traffic noise levels for undeveloped lands where no building permits have been issued in accordance with the applicable NCDOT Traffic Noise Manual, as well as predicted traffic noise level contour distances and locations described in adequate enough detail for the reader to easily determine the locations using only Google Maps (e.g. North of Route X from Point A to Point B).	☐	☐	☐
QC.1.2.16	Includes a Conclusion section with all information outlined in the applicable NCDOT Traffic Noise Manual.	☐	☐	☐
QC.1.2.17	Includes a list of all applicable references used in the development of the DNR in accordance with the applicable NCDOT Traffic Noise Manual.	☐	☐	☐
QC.1.3	Green Sheet Commitments from the final Environmental Document have been reviewed for noise specific commitments.	☐	☐	☐
QC.1.3.1	If there are noise specific Green Sheet Commitments, they have been addressed appropriately in the DNR.	☐	☐	☐
QC.2	**Figures**			
QC.2.1	Figures include a representation of the entire project (study area) on one image (Vicinity Map)	☐	☐	☐
QC.2.2	Figures include detailed small-scale images as necessary to appropriately document project designs, receptor locations, impacts, and benefits.	☐	☐	☐
QC.2.2.1	Include a title block, legend, properly oriented north arrow, and map creation date.	☐	☐	☐
QC.2.2.2	Figures include aerial photogrammetry or other appropriate base mapping.	☐	☐	☐
QC.2.2.3	Figures include a consistent logical scale based on receptor density or are denoted as being not to scale (only if appropriate).	☐	☐	☐
QC.2.2.4	Figures show all NSAs, field measurement locations, receptors, land uses that are not noise sensitive, likely, and unlikely noise barriers, and any other features relevant to the traffic noise study using the recommended formatting and color-coding in the applicable NCDOT Traffic Noise Manual.	☐	☐	☐
QC.2.2.5	Figures accurately depict impacted and/or benefited and non-impacted and/or non-impacted receptors, as well as likely vs. unlikely noise barriers. Benefited receptors are included only for likely noise barriers.	☐	☐	☐

Item #	Review Item	Yes	No	N/A
QC.2.2.6	Proposed spatial limits of traffic noise study area generally follow guidance from the applicable NCDOT Traffic Noise Manual (may need to be expanded following the initial noise modeling effort if the outer limit of predicted traffic noise impacts and/or benefits is not defined).	☐	☐	☐
QC.2.2.7	Figures are landscape oriented and are oriented the same way the roadway plans follow the alignment.	☐	☐	☐
QC.3	**Appendices**			
QC.3.1	Includes an Ambient Noise Level Measurements appendix with all information outlined in the applicable NCDOT Traffic Noise Manual.	☐	☐	☐
QC.3.2	Includes an Hourly Equivalent Traffic Noise Level Tables appendix that presents accurate predicted noise level results for all noise-sensitive receptors and follows the table format from the applicable NCDOT Traffic Noise Manual.	☐	☐	☐
QC.3.2.1	Includes accurate equivalent receptor calculation tables for all appropriate locations following the format from the applicable NCDOT Traffic Noise Manual.	☐	☐	☐
QC.3.3	Includes a Traffic Noise Models appendix discussing all TNM input and procedures, as well as a description of the TNM validation process and results in accordance with the applicable NCDOT Traffic Noise Manual.	☐	☐	☐
QC.3.4	Includes a detailed Noise Barrier Analysis appendix that presents accurate noise level results for all evaluated noise barriers, both likely and unlikely, and follows the table format from the applicable NCDOT Traffic Noise Manual, as well as a table summarizing the accurate calculation of allowable quantity per benefit for all evaluated noise barriers.	☐	☐	☐
QC.3.5	Includes a Noise Barrier Envelope Drawings and Noise Wall Panel Design Tables appendix that includes all recommended noise barriers and follows the example on the NCDOT website and follows the guidance from the applicable NCDOT Traffic Noise Manual.	☐	☐	☐
QC.3.6	Noise wall stationing follows the direction of the alignment that the wall is offset from. If the wall follows multiple alignments (e.g. mainline and offramp), the engineer has determined the most logical stationing for the given situation.	☐	☐	☐
QC.3.7	Includes a Traffic Information appendix in accordance with the applicable NCDOT Traffic Noise Manual and provides a sufficient level of detail for the reader to recreate the development of traffic volumes for TNM.	☐	☐	☐
QC.3.8	Includes a copy of the applicable NCDOT Traffic Noise Policy.	☐	☐	☐
QC.4	**TNM Files**			
QC.4.1	TNM files with accurate run identification included that encompass the entire project study for every scenario and alternative included in the DNR.	☐	☐	☐
QC.4.2	All TNM modeling follows the guidance outlined in the applicable NCDOT Traffic Noise Manual.	☐	☐	☐
QC.4.2.1	All TNM roadways modeled in accordance with the applicable NCDOT Traffic Noise Manual.	☐	☐	☐

Item #	Review Item	Yes	No	N/A
QC.4.2.2	All TNM receivers modeled in accordance with the applicable NCDOT Traffic Noise Manual.	☐	☐	☐
QC.4.2.3	All TNM terrain lines modeled in accordance with the applicable NCDOT Traffic Noise Manual.	☐	☐	☐
QC.4.2.4	All TNM barriers modeled in accordance with the applicable NCDOT Traffic Noise Manual. The corners of TNM building barriers have unique elevations; the bottom of building elevations are not averaged.	☐	☐	☐
QC.4.2.5	All TNM tree zones modeled in accordance with the applicable NCDOT Traffic Noise Manual.	☐	☐	☐
QC.4.2.6	All TNM ground zones modeled in accordance with the applicable NCDOT Traffic Noise Manual.	☐	☐	☐
QC.4.3	For each TNM file, the traffic volume input is accurate and consistent with the Traffic Information appendix.	☐	☐	☐
QC.4.4	For each TNM file, all vehicle speeds are modeled as posted speed + 5 mph (not to exceed the design speed).	☐	☐	☐
QC.4.5	With noise barrier TNM models include all evaluated iterations of noise barrier design and demonstrate that barrier optimization has been conducted in a sufficient level of detail, making every effort to find feasible and reasonable noise barrier designs that achieve the NRDG for as many predicted traffic noise impacts as possible	☐	☐	☐
QC.4.6	Line-of-sight tool has been used for all recommended noise barriers.	☐	☐	☐
QC.4.7	The build condition TNM models match the design files.	☐	☐	☐
QC.5	**Miscellaneous**			
QC.5.1	With the exception of TNM model validation, all reported noise levels are rounded to the nearest whole decibel in accordance with the applicable NCDOT Traffic Noise Manual.	☐	☐	☐
QC.5.2	All predicted Build-condition noise levels are based on Build-condition TNM models (without noise barriers).	☐	☐	☐
QC.5.3	Includes noise barrier analyses for all appropriate and feasible locations with predicted traffic noise impacts.	☐	☐	☐
QC.5.4	Includes parallel barrier analyses and absorptive material conclusions for all appropriate locations in accordance with the applicable NCDOT Traffic Noise Manual.	☐	☐	☐
QC.5.5	Includes analysis of areas with existing noise walls consistent with the applicable NCDOT Traffic Noise Manual.	☐	☐	☐
QC.5.6	Includes a discussion of other (non-traffic) major noise sources in the project study area (railroads, airports, etc.)	☐	☐	☐
QC.5.7	Includes all relevant project design files.	☐	☐	☐
QC.5.8	DNR demonstrates that noise abatement measures have been adequately considered for all predicted traffic noise impacts and clearly shows the reasons(s) why any non-benefited impacts could not be benefited.	☐	☐	☐
QC.5.9	All tables clearly indicate where existing noise levels are determined by the measured loudest-hour ambient noise level (calculated using the "rolling hour" method) rather than TNM results.	☐	☐	☐

Item #	Review Item	Yes	No	N/A
QC.5.10	Includes stored alignments, bottom-of-wall profiles, and acoustic profiles for all recommended noise barriers in GEOPAK format.	☐	☐	☐
QC.5.11	A DNR Abatement Review Meeting has been conducted with TNAQ using the agenda template provided by TNAQ, in which the abatement findings of this DNR were presented and discussed. *Note: The purpose of this meeting is to review locations where abatement covers only a portion of a community or where abatement is not recommended due to minor differences in predicted noise levels (e.g., the impact threshold is within 1 decibel of being met or abatement is barely not reasonable due to a NRDG of 6.4 decibels).*	☐	☐	☐
QC.5.12	The results of the DNR have been checked against the project's TNR to identify any increases in noise levels or changes in likely abatement for any receptors in areas listed on, or eligible for listing on, the National Register of Historic Places. Any such changes have been reported to TNAQ for appropriate coordination with the NCDOT Historic Architecture Group.	☐	☐	☐
QC.5.13	Walls are designed to abate for impacted receptors that were permitted prior to the Date of Public Knowledge (DPK). In cases where there are permitted *post*-DPK receptors behind a wall that are incidentally benefited, the *post*-DPK receptors are counted as benefits in the cost-reasonableness calculations but are *NOT* shown or counted as impacts.	☐	☐	☐
QC.5.14	Noise wall turns do not exceed 45 degrees.	☐	☐	☐

For items marked NO or N/A that require further explanation, provide comments or action items in the table below.

Item #	Comments and Action Items

This checklist may not be comprehensive to every project. All items may not be applicable for smaller projects. It is the responsibility of the reviewer to ensure that an adequate review is performed.

I have reviewed the plans for consistency with this checklist and confirmed that all items have been completed.

QC Reviewer Name: _____ **Date:** _____

QC Reviewer (Signature): _____