



FDM 23-45-1 Projects Not Requiring a Detailed Noise Analysis

August 15, 2019

1.1 Traffic Noise

For projects that are not Type I or WisDOT Retrofit Projects, traffic noise is documented on the Environmental Report and Environmental Assessment Template (ER and EA Template) in Question 22, Environmental Factors Matrix. Under the Traffic Noise Factor, check the box indicating "No Impacts Identified". Include in the effects column, *"A detailed noise analysis was not required for this project. No impacts are anticipated."* It is not necessary to include the Traffic Noise Factor Sheet.

Environmental document templates, forms and guidance can be found on the Bureau of Technical Services Environmental Programs web site:

<https://wisconsin.gov/Pages/doing-business/eng-consultants/cnslt-rsrcs/environment/formsandtools.aspx>

FDM 23-45-5 Projects Requiring a Detailed Noise Analysis - ER and EA Template and Factor Sheets

August 15, 2019

For Type I and WisDOT Retrofit Projects, a discussion or definitive statement about traffic noise is an integral part of every environmental document. The impact assessment portion of the environmental document should at least summarize the noise analysis results and conclusions. Information produced during the early stages of the design process must be sufficient to satisfy environmental documentation requirements by identifying existing and future sound levels, project area receptors, receptors not impacted or impacted by alternatives carried forward for detailed study, evaluation of possible abatement measures, those abatement measures likely to be included in the project, and, an explanation why abatement is not feasible or reasonable for those receptors impacted, but for which noise abatement will not be provided.

This procedure details the documentation methodology for providing traffic noise analysis, impact identification and mitigation determination using the department's ER and EA template and Factor Sheets.

Question 22 of the ER and EA Template, Environmental Factors Matrix, in Question 23 of the ER and EA Template, Environmental Commitments, and the Traffic Noise Factor Sheet will be used to provide appropriate documentation.

An aerial or plan map identifying the location of the receptors analyzed shall be included in the environmental document.

Environmental document templates, forms and guidance can be found on the Bureau of Technical Services Environmental Programs web site:

<https://wisconsin.gov/Pages/doing-business/eng-consultants/cnslt-rsrcs/environment/formsandtools.aspx>

5.1 No Impacts Identified

In Question 22 of the ER and EA Template, Environmental Factors Matrix, check the boxes indicating "No Impacts Identified" and "Factor Sheet Attached". Include in the effects column, *"A detailed noise analysis was required for this project. No impacts are identified."*

In Question 23 of the ER and EA Template, Environmental Commitments, include "None" in the commitments column.

The Traffic Noise Factor Sheet shall be completed and included in the environmental document.

5.2 Impacts Identified, Abatement Not Feasible or Reasonable

In Question 22 of the ER and EA Template, Environmental Factors Matrix, check the boxes indicating "Adverse Impact" and "Factor Sheet Attached." Include in the comments column, *"A detailed noise analysis was required for this project. Some impacts are anticipated. See attached Traffic Noise Factor Sheet Pages ____."* Be sure to insert the page numbers.

On ER or EA Template question 23, include "None" in the commitment column.

The Traffic Noise Factor Sheet shall be completed and included in the environmental document.

The Traffic Noise Factor Sheet, Question 6 shall include a discussion of design features and noise abatement measures evaluated.

Design features evaluated that could reduce future sound levels (see [FDM 23-25-5](#)) should be discussed first. The discussion should include whether or not the design features would be incorporated into the project. If the features would not be included, an explanation why they would not be included shall be provided.

Noise abatement measures to include in the discussion that follows are; traffic control measures, buffer zones, noise barriers and soundproofing (if applicable). The discussion should include whether or not the noise abatement measures would be incorporated into the project. If the features would not be included, an explanation why they will not be included shall be provided. This discussion should be based on feasibility and reasonableness.

If a barrier analysis using the FHWA Traffic Noise Model (TNM) was completed, the discussion shall incorporate a table showing the results of the noise barrier analysis including; barrier length, average height, number of receptors benefited, estimated cost, cost per benefited receptor. The table should be followed by an explanation as to why noise barriers are not feasible or reasonable. The discussion should end with this statement, *"Because mitigation techniques on this project are not feasible and reasonable, noise abatement is not proposed."* The aerial or plan map included in the document showing the location of receptors and barrier evaluated and should also be referenced.

5.3 Impacts Identified, Abatement Feasible and Reasonable

For Traffic Noise in Question 22 of the ER and EA Template, Environmental Factors Matrix, check the boxes indicating "Adverse Impact" and "Factor Sheet Attached". Include in the comments column, *"A detailed noise analysis was required for this project. Some impacts are anticipated. See attached Traffic Noise Factor Sheet, Pages ___."* Be sure to insert the page numbers.

If the commitments to noise abatement are related to traffic control measures or buffer zones, include in the commitments column for Traffic Noise in Question 23 of the ER and EA Template, Environmental Commitments, *"Noise abatement has been determined to be feasible and reasonable."* Another sentence or brief discussion should follow explaining what noise abatement measure(s) will be incorporated and what impact it will have on noise levels.

If the commitments to noise abatement are related to soundproofing, include in the commitments Traffic Noise row in Question 23, Environmental Commitments, of the ER and EA Template, *"Noise abatement has been determined to be feasible and reasonable."* Another sentence or brief discussion should follow explaining what locations will be soundproofed and the type of soundproofing.

If the commitments to noise abatement are related to noise barriers, include in the commitments Traffic Noise row in Question 23, Environmental Commitments, of the ER and EA Template, *"Noise abatement has been determined to be feasible and reasonable. A separate public involvement process will be initiated to determine whether or not the benefited owners and tenants support noise barrier construction. If final design results in substantial changes in roadway design from modeled conditions, noise abatement measures will be reviewed."*

The Traffic Noise Factor Sheet shall be completed and included in the environmental document.

The Traffic Noise Factor Sheet, Question 6 shall include a discussion of design features and noise abatement measures evaluated. Design features evaluated that could reduce future sound levels (see [FDM 23-25-5](#)) should be discussed first. Abatement measures to include in the discussion are; traffic control measures, buffer zones, noise barriers and soundproofing (if applicable). The discussion shall incorporate a table showing the results of the noise barrier analysis including; barrier length, average height, number of receptors benefited, estimated cost, cost per benefited receptor and which barrier(s) are proposed for construction. A discussion should also be included identifying any barriers evaluated that are not proposed for construction and the reason why. The discussion should end with this statement, *"Noise abatement has been determined to be feasible and reasonable. A separate public involvement process will be initiated to determine whether or not the benefited owners and tenants support noise barrier construction. If final design results in substantial changes in roadway design from modeled conditions, noise abatement measures will be reviewed."*

This procedure details the methodology for providing traffic noise analysis, impact identification and mitigation determination documentation when preparing an Environmental Impact Statement (EIS) or narrative Environmental Assessment (EA).

EIS and narrative EA noise analysis documentation generally contains both a narrative impact discussion and supporting exhibits.

For an EIS or narrative EA, the noise discussion has typically been separated under two sections: "Affected Environment" and "Environmental Consequences". A common streamlining practice of environmental document preparers has been to combine these two sections into one section of the EIS or narrative EA. Supporting data should be included in the appendices or incorporated by reference. Some of the information that may potentially be included is described below.

10.1 Affected Environment

- An introduction to the basics of acoustics including explanations of; decibels, relative differences in sound levels, A-weighting (dBA) and variations in sound levels over time (Leq).
- Description of the 5 major traffic noise sources including; autos, medium trucks, heavy trucks, buses and motorcycles.
- The traffic noise components of those 5 major sources including; running gear and accessories, engine and aerodynamic/body noise.
- Description of any applicable background noise generators affecting the existing noise environment including; factories, airports, truck stops, etc.
- A land use description of project areas to ensure the proper land use categories in Table 1, Noise Level Criteria (NLC) For Considering Barriers (see [FDM 23-30](#)) are used for a determination of potential noise impacts. Noise sensitive areas including; residential areas, schools, hospitals, churches, and nursing homes should be identified.
- Brief summary of existing sound levels (measured or modeled). The locations of existing sound level measurements should be indicated on an exhibit. A more detailed discussion of existing sound levels will be provided in the Environmental Consequences section.
- Comparison of field data versus modeled sound levels (validation).
- Type of equipment used including the model/type of sound level meter.

10.2 Environmental Consequences

- Analysis methodology, including programs and procedures used.
- A description of applicable state policy for determining noise impact and the feasibility and reasonableness of mitigation.
- A comparative noise impact discussion of each alternative carried forward for detailed analysis shall be included. A tabular format similar to the table included in the Traffic Noise Factor Sheet or use of the actual table functions well to provide this discussion. The receptor descriptors, number of families or people typical at the site, Noise Level Criteria for the applicable land use category, existing sound levels, future sound levels, difference between future and existing sound levels, difference between future sound levels and Noise Level Criteria, and impact or no impact should be identified for each receptor or group of receptors analyzed.
- If impacts are identified, noise abatement should be addressed using the same format as that used in the Traffic Noise Factor Sheet, Item 6 detailed in Section 5.2 Impacts Identified, Abatement Not Feasible or Reasonable or Section 5.3 Impacts Identified, Abatement Feasible and Reasonable above.
- If abatement in the form of noise barriers has been determined feasible and reasonable, the discussion should end with this statement, "*Noise abatement has been determined to be feasible and reasonable. A separate public involvement process will be initiated to determine whether or not the benefited owners and tenants support noise barrier construction. If final design results in substantial changes in roadway design from modeled conditions, noise abatement measures will be reviewed.*"
- Exhibits accompanying the narrative portion are an important part of any noise discussion. An important tool is the use of tabular data in the EIS or narrative EA. Some of the types of exhibits that are very useful and meaningful are;
 - [FDM 23-30 Table 2.1](#), Noise Level Criteria (NLC) For Considering Barriers should be included.

- A table for each alternative carried forward for detailed study providing the comparative noise impact discussion referenced above.
- A table or graph showing the relative strengths of familiar sounds. This is very useful when reports are available to the general public. Such exhibits should relate to the technical knowledge of the probable reviewer. The “Typical A-Weighted Sound Levels” form could also be used.
- It is not necessary to include the individual output sheets produce by the FHWA Traffic Noise Model as exhibits in the EIS or narrative EA. Those sheets should be included in the project files.

FDM 23-45-15 Providing Sound Level Information to Local Officials

July 28, 2011

The FDM requires that local officials be notified of future traffic noise impacts on undeveloped lands. This notification should be included as part of the environmental document.

The methodology for preparing this documentation is found in [FDM 23-50-5](#).