

1. INTRODUCTION

Title 23 Code of Federal Regulations, Part 772 (23 CFR, 772) provides federal procedures for the evaluation and abatement of highway-related noise. These regulations require consideration of all available noise abatement methods to mitigate noise associated with Type I highway projects. As per 23 CFR, 772, a Type I project is a proposed Federal or Federal-aid project for the construction of a highway on new location or the physical alteration of an existing highway which significantly changes either the horizontal or vertical alignment or increases the number of through-traffic lanes.

As per 23 CFR, 772, federal funds may be used for noise abatement where: 1. A traffic noise impact has been identified; 2. The noise abatement measures will reduce the traffic noise impacts; and 3. The overall noise abatement benefits are determined to outweigh the overall adverse social, economic, and environmental effects and costs of the noise abatement measure. The Code identifies several abatement measures that may be incorporated into Type I (and Type II) projects to reduce anticipated traffic noise impacts. These measures include:

1. Traffic management measures;
2. Alteration of horizontal and vertical alignments;
3. Acquisition of property rights for construction of noise barriers;
4. Construction of noise barriers (including landscaping for aesthetic purposes) whether within or outside the highway right-of-way;
5. Acquisition of real property or interests therein (predominately unimproved property) to serve as a buffer zone to preempt development which would be adversely impacted by noise; and
6. Noise insulation of public use or nonprofit institutional structures.

While the Federal Highway Administration (FHWA) supports the range of noise mitigation techniques identified above, in many cases feasible and reasonable noise mitigation on a specific project is often limited to the use of structural noise barriers, particularly when the project involves widening of an existing roadway. This choice is often a function of the balance between mitigation effectiveness, cost, ease of engineering implementation, and potential environmental impacts associated with structural noise barriers.

While many of the other available mitigation measures identified in 23 CFR, 772 can provide benefits in response to anticipated highway-related noise impacts, many of these techniques have had limited opportunities for application, especially on projects involving expansion of existing roadways. The limited opportunities for these "alternative" mitigation methods may be due to potential conflicts with project needs; impacts to other environmental resources; engineering constraints; lack of public use/nonprofit institutional structures; or simply not effective or supported by the project-level noise analysis. For these reasons, historically throughout the United States, structural noise barriers have become the most commonly used form of highway-related noise mitigation measures.

The Ohio Legislature established a requirement in the fiscal year 2006 *Amended Substitute House Bill Number 66, Section 203.03.18 – Alternative Soundproofing directing the Department of Transportation* “to perform a study of alternate soundproofing methods or techniques that could be used as an alternative to traditional sound barriers.” The scope of this study is to investigate any and all potentially feasible and reasonable noise abatement alternatives available for use in Ohio, while maintaining compliance with 23 CFR, Part 772, FHWA – *Highway Traffic Noise Analysis and Abatement Policy and Guidance (June 1995)*, ODOT – *Analysis and Abatement of Highway Traffic Noise Policy*, and ODOT – *Standard Procedure for Analysis and Abatement of Highway Traffic Noise*.

In addition to the noise mitigation measures specifically identified in 23 CFR, Part 772, this study will expand on those options to include a complete analysis of all available noise mitigation techniques that may be available to the Department. Additional topics to be covered by this report include, but are not limited to:

- consideration of natural barriers such as trees, shrubs, mounds, and similar elements;
- alternate pavement types and surface treatments including “quiet pavements”;
- noise cancellation technology;
- noise masking; and
- noise-compatible land use planning.