4.7 Noise

4.7.1 Traffic Noise Impact Analysis

As noted in subsection 2.10.1, noise modeling to determine existing and design-year dBA at noise sensitive receivers was not undertaken during Tier One but will be during Tier Two. Rather, residential areas that could approach, meet, or exceed the NAC were identified using available information on the property types along the corridor. Noise-sensitive non-residential noise receptors within 500 feet of the proposed improvements, such as churches, schools, or parks, were also identified (see Exhibits 4-1A through 4-1E, Exhibit 4-9, and Table 4-24). Of the 48 noise-sensitive residential areas and 30 noise-sensitive non-residential receptors identified in the study area, 43 noise-sensitive residential areas and 27 noise-sensitive non-residential receptors were identified along Alternative 203. Alternative 402 has relatively fewer noise–sensitive residential areas (39) and noise-sensitive non-residential receptors (24) adjacent to the proposed footprint. These areas include both single- and multi-family residences, churches, and parks. Roselle, Des Plaines, Elk Grove Village, Medinah, Schaumburg, and Mount Prospect have the highest number of noise-sensitive residential areas for Alternatives 203 and 402. Schaumburg, Itasca, and Elk Grove Village have the greatest number of noise-sensitive non-residential receptors along both proposed corridors.

TABLE 4-24
Noise-Sensitive Residential Areas and Non-residential Receptors per Build Alternative

	Noise-Sensitive Residential Areas		Noise-Sensitive Non-residential Receptors[a]	
Community	**Alternative 203**	**Alternative 402**	**Alternative 203**	**Alternative 402**
Arlington Heights	1	0	1	1
Bensenville	0	0	1	1
Des Plaines	7	5	2	1
Elk Grove Village	5	5	5	4
Hanover Park	2	2	0	0
Itasca	3	3	6	6
Medinah	5	5	3	3
Mount Prospect	5	3	1	0
Roselle	11	11	3	3
Schaumburg	5	5	4	4
Wood Dale	2	2	1	1
Total	**43[b]**	**39[c]**	**27**	**24**

[a] Non-residential sensitive receptors include parks, schools, and churches.
[b] The number is fewer than the total number of noise-sensitive residential areas per community because three noise-sensitive residential areas are within multiple communities.
[c] The number is fewer than the total number of noise-sensitive residential areas per community because two noise-sensitive residential areas are within multiple communities.

Most of the noise-sensitive residential areas and non-residential receptors along Alternatives 203 and 402 are located along the Elgin O'Hare Expressway/Thorndale

Avenue corridor. Additional noise-sensitive areas and non-residential sensitive receptors are located along the Elmhurst Road connection to I-90 included in Alternative 203 and along I-90 improvements included in Alternatives 203 and 402.

Five noise–sensitive residential areas and four non-residential sensitive receptors were identified along Option A (see Table 4-25). These include two concentrations of single-family residences on the west side of County Line Road, three concentrations of single-family residences south of I-294, and four parks (Redmond Recreation Complex, Creekside Park, Legends of Bensenville Golf Course, and Maywood Sportsman's Club) on the west side of County Line Road. The three concentrations of single-family residences south of I-294 would also be considered noise-sensitive residential areas under Option D and two of the same parks on the west side of County Line Road (Legends of Bensenville Golf Course and Maywood Sportsman's Club) would also be considered non-residential sensitive receptors under Option D.

TABLE 4-25
Noise-Sensitive Residential Areas and Non-residential Receptors per South Bypass Connection Option

South Bypass Connection Option	Noise-Sensitive Residential Areas	Noise-Sensitive Non-residential Receptors
Option A	5	4
Option D	3	2

4.7.2 Traffic Noise Abatement Strategies

This subsection discusses traffic noise abatement strategies commonly applied to roadway projects. A comprehensive traffic noise impact analysis will occur in Tier Two, which will identify traffic noise impacts and evaluate the feasibility and reasonableness of mitigation measures using the FHWA Traffic Noise Model. Several proven traffic noise abatement strategies, both structural and nonstructural, could be used in combination to reduce the impacts of traffic noise. Traffic noise abatement strategies are discussed below, and traffic noise mitigation techniques are described in subsection 4.14.11. The construction of noise walls is a common method for mitigating traffic noise impacts in urban and suburban areas. Noise walls can absorb or reflect noise. Walls tall enough to break the line of sight from the noise source to the receptor usually are generally capable of achieving a five-dBA reduction in traffic noise levels.

Earth berms are effective for traffic noise mitigation, but they often require much larger areas of land (additional right-of-way) for construction than noise walls. Berms covered with grass, shrubs or small plants are more affective at attenuating traffic noise than harder surfaces.

Traffic noise abatement options must be feasible and economically reasonable. To be considered feasible, IDOT's noise policy requires that traffic noise abatement measures achieve at least an eight-dBA traffic noise reduction. Certain environmental conditions, such as frequent openings for driveways, access roads, recreational trails, or stream crossings, can limit the effectiveness and feasibility of a noise abatement structure. The traffic noise abatement measures must also be cost-effective to be considered economically reasonable. IDOT considers a cost of $24,000 per benefitted receptor a reasonable cost. A benefitted receptor is any sensitive receptor that receives at least a five-dBA traffic noise reduction from the traffic noise abatement option.

Nonstructural traffic noise abatement methods include traffic management plans and comprehensive land use planning. Traffic management plans can limit travel speeds, traffic volumes, types of motor vehicles in use, and time of operation. Traffic noise abatement is not often the primary concern of a traffic management plan, but it is a common ancillary benefit. An efficient and effective traffic noise abatement strategy is to implement an integrated and comprehensive land use plan through local communities and jurisdictions. Land use plans should include noise compatible concepts so that noise sensitive land uses are not located adjacent to highways or are developed so as to minimize traffic noise impacts.