



6.4 Noise Impacts

At all sensitive receivers where traffic noise impacts are predicted under the Build Alternatives, noise mitigation measures must be considered. One method of mitigation for traffic noise impacts is to construct a noise barrier in the form of an earthen berm and/or vertical wall. According to INDOT's Highway Traffic Noise Policy, when impacts have been identified, there must be consideration of any reasonable and feasible measures that would abate the traffic noise impacts. Abatement must be implemented if it is feasible and reasonable on any significant segment of the project.

In Chapter 5.8 the "feasibility" and "reasonableness" of abatement through the use on noise barrier walls was assessed at eighteen locations along Preferred Alternative G-Es alignment. The criteria for "feasible" and "reasonable" according to INDOT policy are as follows.

Feasibility of Abatement

"Feasible" means that it is structurally and acoustically possible to attenuate traffic noise occurring at a receiver by at least 5 dBA $L_{eq}(h)$. Traffic noise abatement measures include traffic control measures (TCM), alteration of vertical or horizontal alignment, acquisition of buffering land, noise insulation of impacted receivers, and construction of traffic noise barriers.

Reasonableness of Abatement

"Reasonable" means that INDOT believes abatement of traffic noise impacts is prudent based on consideration of all the following factors:

1. The number of benefited receivers, those for whom the mitigation will benefit by at least 5 dBA $L_{eq}(h)$ at the noisiest hour conditions. This number is not necessarily the number of receivers impacted.
2. The cost of abatement on a benefited receiver basis and on a project level basis. INDOT has set the acceptable cost per benefited receiver range as \$20,000 - \$30,000. This cost should be arrived at by applying a square footage cost basis on the square footage of the noise barrier. A reasonable square footage cost basis will be determined by the INDOT.
3. The severity of existing and future traffic noise level. The absolute level and the increase of the future noise are two aspects with which to assess the severity of the noise impacts.
4. The timing of development near the project. The state considers it appropriate to give more consideration for development that occurs before initial highway construction.
5. The views of noise impacted residents. Potential negative impacts of noise barriers include unsightliness, shortened daylight, poor air circulation, degradation by weather, reduced safety, vandalism, and restriction of access for emergency vehicles.



As a result of the preliminary barrier performance analysis for US 31, noise barrier walls were found to likely be feasible and meet all the reasonableness criteria at two locations in the northern end of the project. These sites are highlighted in green in Table 6.4.5.

ID	Location	NAC	No. Impacted	No. Analyzed	No. Benefited	Length	Height	Cost	Cost Per Benefited	Severity of Impact
5	West side of Alt GEs along Tyler Road	67	1	1	1	200	8	\$32,008	\$32,008	Severe = 1
13	East side of Alt GEs from Gilmer Street to Johnson Road	67	7	26	22	1856	12-15	\$493,433	\$22,428	Minor = 3 No Impact = 23
14	West side of Alt GEs from Johnson Road to Jackson Road	67	5	19	10	800	14-19	\$267,792	\$26,779	Minor = 1 No Impact = 18
15	East side of Alt GEs from Johnson Road to Jackson Road	67	5	15	11	1400	8-16	\$375,990	\$34,180	Minor = 4 No Impact = 11
18	Northeast side of Alt GES/US20 interchange along Reasor Street	67	4	4	4	800	9-10	\$151,998	\$36,999	No Impact = 4

Notes: Yellow shaded cells indicate locations where optimized barrier is slightly above the \$30,000 reasonableness criteria
 Green Shaded Cells indicate locations where optimized barrier is within the \$30,000 reasonableness criteria

- Site 13 occurs along the east side of Alternative G-Es from Gilmer Street to Johnson Road where a preliminary design for a barrier of 12 to 15 feet high and approximately 1,850 feet long at a cost of approximately \$493,000 is predicted to reduce the noise level by 5 to 12 dBA for an estimated 16 residences, 5 businesses and the Southlawn Church (Figure 6.4.1).
- Site 14 is located along the west side of Alternative G-Es from Jewel Avenue to Jackson Road where a preliminary design for a barrier 14 to 19 feet high and approximately 800 feet long at a cost of approximately \$268,000 is predicted to reduce the noise level by 5 to 10 dBA for an estimated 10 residences (Figure 6.4.1).

In addition to the two aforementioned locations, barrier performance at three additional locations resulted in cost per benefited receiver values of slightly over \$30,000, highlighted in yellow in Table 6.4.5. Barrier abatement is considered feasible at all three locations.

- The solution barrier at Site 5 at Tyler Road is not considered reasonable since it provides abatement to a single isolated residence; therefore, it is not currently recommended as an abatement measure.
- Site 15 occurs along the east side of Alternative G-Es from Johnson Road to Jackson Road where a preliminary design for a barrier of 8 to 16 feet high and approximately 1400 feet long at a cost of



approximately \$364,005 is predicted to reduce the noise level by 5 to 11 dBA for an estimated 11 residences (Figure 6.4.1). Despite a cost per benefited receiver of \$4,180 over the INDOT criteria, this location is recommended for further consideration during the design phase based on the number of residences that would potentially benefit from such a measure.

- Site 18 is located along Reasor Street northeast of the Alternative G-Es/US20 interchange where a preliminary design for a barrier 9 to 10 feet high and approximately 800 feet long at a cost of approximately \$151,998 is predicted to reduce the noise level by 5 to 6 dBA for an estimated 4 residences (Figure 6.4.1). Due to the relatively small number of benefited receivers, low severity of impact and cost per benefited receiver of \$7,000 above the INDOT criteria, barrier abatement at this location is not currently recommended, but should be given further consideration during the design phase.

If during final design these conditions substantially change, the abatement measures might not be provided. A final decision on the installation of abatement measure(s) will be made upon completion of the project design and the public involvement process. Federal guidelines allow for the insulation of public use or non-profit institutional structures. However, no such properties were identified as sensitive noise receivers along Preferred Alternative G-Es.

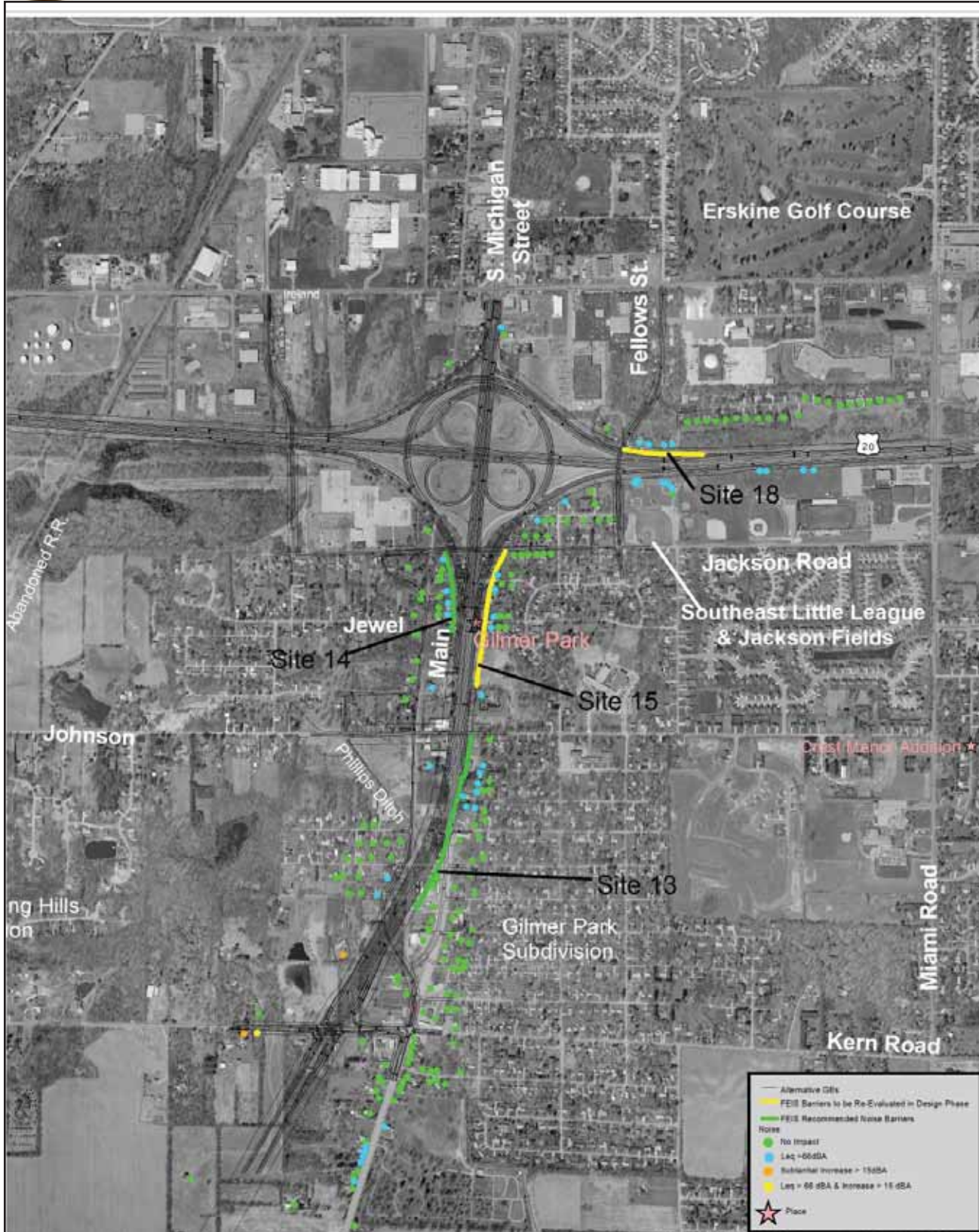


Figure 6.4.1: Proposed Noise Barrier Locations and Barriers Identified for Re-Evaluation During Design Phase