In addition to physical constraints, the feasibility of a noise barrier is based primarily on its effectiveness in reducing traffic noise levels. A barrier that reduces noise levels by a minimum of 5 dBA for front row receivers is considered effective. Noise barriers should preferably reduce noise levels by 8 dBA at receivers located adjacent to the proposed wall.

The reasonableness of a noise abatement measure is a more subjective measure than the feasibility of a noise abatement measure. In addition to other factors, reasonableness is based primarily on the cost-effectiveness of a barrier. A barrier is considered cost-effective by NCDOT policy if the cost of the barrier per protected residential property does not exceed $35,000 plus an incremental increase of $500 per dBA average increase in predicted noise levels for impacted receptors. In the analysis, each residential unit is considered a single residential property. The cost analysis also considers properties that are not impacted but would also benefit from the construction of a noise barrier. A benefited receiver is one that experiences a 5 dBA or more reduction in noise levels by the construction of a noise barrier. Barrier costs are estimated at $15 per square foot of noise wall.

The only reasonable locations for noise abatement along the proposed bypass alternatives are near the project termini along existing US 70. Noise abatement walls were investigated to mitigate noise impacts by the proposed bypass alternatives on the residences located near the project termini along existing US 70. Noise abatement walls are considered not feasible because US 70 is a non-controlled access roadway in the areas of these receivers. Along such routes, driveways would or could require openings that would significantly reduce the mitigation a noise abatement wall would provide.

Highway Alignment Selection - Highway alignment selection involves the horizontal or vertical orientation of the proposed improvements in such a way as to minimize impacts and costs. The selection of alternative alignments for noise abatement purposes must consider the balance between noise impacts and other engineering and environmental parameters. For noise abatement, horizontal alignment selection is primarily a matter of constructing the proposed roadway at a sufficient distance from noise sensitive areas. The selected alignment has been located to minimize impacts to residences, businesses, historic properties, and recreational areas.