

VI. RESULTS

A. General

The presentation of results is broken down into several sections. First, the existing conditions along the project are discussed. Following this, the noise environment for the Design Year 2030 is discussed for the proposed build condition. After that, traffic noise abatement measures are discussed.

B. Existing Condition

The existing noise levels were monitored in 2005 utilizing automated digital noise measurement instrumentation at various locations in the project vicinity. Six sites within the project limits were monitored. The levels ranged from 54dBA Leq to 69 dBA Leq. The existing noise levels at two of the six sites measured are well above the NAC for Category B land use. Figure 1 shows the location of the monitoring sites and Appendix B contains the monitoring data.

C. Projected Impacts

Predicted traffic noise levels for the proposed Build condition will increase up to 14 dBA over the existing noise levels for three areas adjacent to the project. In the design year 2030, 12 residences and 5 commercial areas will be subjected to noise levels that approach or exceed the NAC Category B or NAC Category C levels with the proposed project. Three multi-family buildings (12 units), a community pool will have noise levels that approach or exceed the NAC in the adjoining Route 206 Section 15N project and are discussed in this report due to their proximity to the bypass project.

These impacts are in the following locations;

- One resident and 5 commercial uses at the southern end of the project adjacent to Route 206.
- Two residences on Steinmetz Road (greater than 10dBA change).

- One residence off of Amwell Road (greater than 10 change).
- Four residences on Old Somerville Road.
- Four residences along northbound Route 206 at the northern end of the project.
- Three multi family buildings (12 units) and the associated pool at the Brookside Gardens. These impacts are in the adjoining Route 206 Section 15N project.

D. Traffic Noise Mitigation

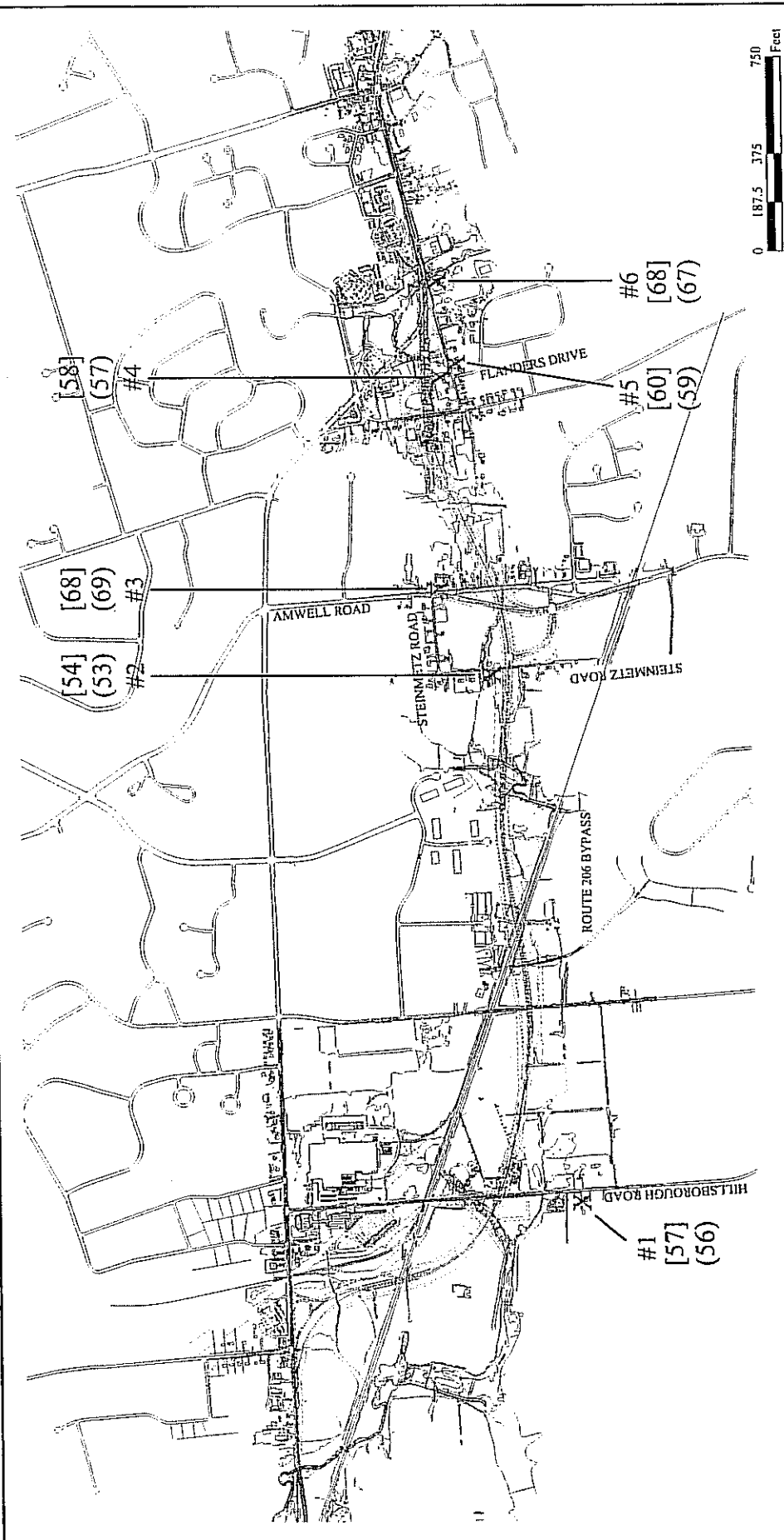
When predicted noise levels approach or exceed the NAC, or when there are substantial increases in predicted noise levels over existing noise levels, an evaluation of noise mitigation measures is made. The FHWA recognizes five methods of noise mitigation for the reduction of traffic noise levels. The following is a list of possible abatement strategies for mitigating traffic noise impacts:

- Traffic management strategies
- Roadway alignment alterations
- Property acquisition to create a buffer zone between source and receptor
- Noise insulation of public use buildings
- Installation of noise barriers within the right of way

The above treatments are evaluated using a number of criteria including public input, safety and aesthetics as well as noise abatement potential, implementation costs, and logistical factors.

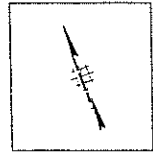
Traffic Management

Traffic management strategies for noise abatement purposes include alternate traffic routing schemes and prohibiting certain classes of vehicles from using the proposed alignment. This project is designed to facilitate the passage of any class of vehicle on a multi-lane thoroughfare, including private or commercial vehicles. Consequently, prohibiting classes of vehicles is not a viable option for noise mitigation in the project area.



Date	December 4, 2008
New Jersey Department of Transportation	
Route 206 Bypass Hillsborough Township; Somerset County	
Figure 1	
Noise Monitoring Locations	
Paul Carpenter Associates, Inc.	

Noise Figure Generated by Peak AM & PM Conditions	
X	Location of Noise Monitor
#	Noise Monitoring Location Number
[]	Peak AM Hourly Noise Levels - dBA (L _{Aeq})
()	Peak PM Hourly Noise Levels - dBA (L _{Aeq})
---	NIDOT Proposed Improvements



Roadway Alignment Alternatives

In most circumstances, the receptors exposed to the highest noise levels are those located in close proximity to the roadway. Alterations to the roadway geometry can serve to reduce noise levels by moving the source from the sensitive receptors. For the proposed project substantial alignment alterations were already considered in order to reduce the various environmental issues and further changes are not a viable option.

Property Acquisition

Property along a roadway corridor can be acquired to form a buffer zone between noise sensitive receptors and a roadway noise source. This action is usually only considered where unimproved property is available between the highway and the receptors. No undeveloped or scarcely developed areas exist along the remaining portion of the proposed alignment where effective buffer zones could be acquired. Additionally, this treatment would not alleviate the noise impacts to the existing receptors since the land separating the receptors from the proposed highway alignment already exists and fails to reduce noise levels sufficiently. Acquisition of this land, therefore, would do nothing to increase its noise attenuation capabilities.

Sound Proofing

Noise insulation of public use facilities and buildings can be considered for facilities affected by noise impacts. No such impacts occur within this project limits.

Noise Barriers

Noise barriers, when properly designed and installed, are an effective means for reducing traffic noise at noise sensitive areas located along a roadway. Several factors must be considered before noise barriers can be proposed as part of the project. These include the

engineering feasibility, the noise reduction attained, the direct benefit of the barrier, which is the number of noise impacts eliminated, any supplemental benefits of the barrier, the barrier cost and the cost per residence or the economics of the barrier.

Noise mitigation was investigated and found not to be feasible for 5 residences due to the need for direct access to Route 206 or local roads.

Noise mitigation was investigated for three residences and found not to be cost effective.

These residences include two on Steinmetz Road (one on the northbound side and one on the southbound side) and one north of the Amwell Road interchange, on the northbound side of Route 206. Because all of these barriers protect only a single residence and there are no supplemental benefits, the barriers are found not to be cost-effective and will not be included in the project.

The result of the investigation is as follows;

Steinmetz Road, southbound side- a barrier 207 meters long and 3 meters high would reduce noise levels up to 6 dBA at this residence at a cost of \$135,500.

Steinmetz Road, northbound side- a barrier 213 meters long and 3 meters high would reduce noise levels up to 7 dBA at a cost of \$139,500.

Amwell Road, north of interchange- a barrier 300 meters long and 2.5 meters high would reduce noise levels up to 10 dBA at a cost of \$180,000.

Noise mitigation was investigated as part of this study and found to be feasible and cost effective at one location. The barrier is located on the northbound side of the Route 206 Bypass to reduce noise levels for residences on Old Somerville Road. This barrier will reduce noise levels up to 10 dBA for 4 impacted residences and does not provide any supplemental benefits. The barrier is 2.5 meters in height (8.2 feet) and 238 meters (780 feet) in length and is estimated to cost \$127,900. The cost per residence is \$31,980, and is well below the

Departments current limit of \$50,000.

A second barrier was evaluated for Brookside Gardens due to the proximity of this community to the bypass project. A barrier located on the southbound side of Route 206 will reduce noise levels up to 12 dBA for 3 multi-family buildings (12 units) and a community pool and provide a supplemental benefit to 24 other residences. This barrier is 3.7 meters (12 feet) in height and 352 meters (1,150 feet) in length and is estimated to cost \$279,900. The cost per residence is \$13,995 and is well below the Departments current limit of \$50,000. The barrier for Brookside Gardens will be reinvestigated in the Final Noise Study for the adjoining Route 206 Section 15N contract.

A Resolution was received from the Township of Hillsborough supporting the proposed noise barrier at Old Sommerville Road. A copy of the resolution is included in Appendix C. The Noise Contour maps with and without barriers is in Appendix A.