1.4.2 Noise Barrier Inventory, Phase 1, for the Ohio Department of Transportation

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Noise barriers are solid obstructions built along highways designed to block the path of sound between traffic and nearby residences. Properly constructed and maintained noise barriers can reduce traffic noise levels by half. However, for a noise barrier to work effectively it must be free of damage or gaps in structure. With the first noise barrier wall built in Gahanna in 1975 through the end of 2001, Ohio DOT had erected 91.8 linear miles at a cost of $89.6 million. While the "Great Gahanna Wall" is still effective in reducing unwanted traffic noise for nearby residents, the wall is approaching the end of its operational lifespan.

Evans, Mechwart, Hambleton & Tilton, Inc., (EMH&T) was contracted by the Ohio Department of Transportation (ODOT) Office of Environmental Services (OES) to perform a Phase 1 inventory of 122 noise barriers along State and Federal highways within 8 counties around the Columbus, Cincinnati and Lima metropolitan areas. GPS was used to collect key locations along a noise barrier wall, including start and end points, as well as damage points identified on the front or back of each wall. LIDAR equipment – an extremely precise measuring device that uses a laser – accurately measured various wall dimensions. High-resolution digital photography documented general wall characteristics and site-specific damage.

Once back from the field inventory, EMH&T geographic information system (GIS) analysts compiled the data into a single, standardized database aligned with ODOT's prescribed data model. Using nearby GPS base stations, field data was differentially corrected to create point accuracies of less than 1 foot. "Hyperlinks" were created to form a logical connection between the digital photography and noise barrier wall locations.

The data will be used by ODOT to develop comprehensive state-wide noise barrier maintenance plans and replacement schedules. By reviewing digital photographs of damaged panels, OES will be better able to prioritize and track urgent repairs to improve the condition of older and compromised structures. The noise barrier database – designed to integrate directly with the ODOT roadway GIS system – will facilitate accurate and timely responses to questions and requests from local authorities, legislators, vendors, and the general public.

Phase 2, scheduled for the Fall 2005 and Spring 2006, will include the remaining noise barriers from the Akron, Dayton, Cleveland, Toledo and Canton metropolitan areas in 10 Ohio counties.