A Framework for Historic Bridge Preservation in Tarrant County

Background

Bridges possessing historic, artistic, and engineering significance deteriorate and must be maintained and rehabilitated in order to be kept in service. Ideally, all potentially significant bridges would be properly preserved and continue to beautify and bring character to their surroundings for years to come while serving as functional transportation links. The primary goal in historic preservation is to retain the historic integrity and character-defining features of significant bridges so that they can be enjoyed and appreciated by future generations. To best serve this purpose, programs should be proactive, focusing on preventing deterioration through maintenance and preservation.

However, funding is currently limited for transportation projects in general, and even more so for historic bridge preservation, which some may consider less critical in comparison to other transportation needs. This report presents a framework for planning and management strategies that can guide bridge-owning agencies to make the best use of available funding. Researchers designed this framework to assist the Texas Department of Transportation with the bridge inventory in Tarrant County, Texas. It can also serve as a model for other agencies or owners with some modifications to fit the inventory under evaluation.
What the Researchers Did

Researchers developed a framework for historic bridge prioritization and applied it to the Tarrant County bridge inventory to determine the top historic bridges in the county. In addition, they summarized guidance on financial and legal procedures, identified potential funding sources, reviewed and summarized bridge condition assessment practices and mitigation strategies, developed a template for individual bridge preservation plans, and proposed a framework for resource allocation within a bridge inventory.

What They Found

The first step in historic preservation for a bridge inventory is prioritization to determine the most significant structures. Funding for preservation may come from a variety of sources, including state and federal grant or loan programs, as well as public-private partnerships. Early detection of deterioration is especially important in older bridges; therefore, condition assessment should go beyond routine inspections and may include advanced nondestructive methods and structural health monitoring systems. Preventative maintenance is critical to avoid costly future repairs and minimize life-cycle costs. Mitigation strategies should be implemented with special attention paid to preservation of historic integrity, including original materials and character defining features.

What This Means

- Historical significance and sufficiency ratings provide initial guidance, but are not adequate parameters for an accurate prioritization of bridges. In this study, a quantitative rating system was applied to provide a more detailed assessment.
- Various options should be considered when procuring funding sources, including public-private partnerships and traditional grant and loan programs.
- Routine visual inspections are generally not adequate for the condition assessment of historic bridges. Problems that exist beneath the surface cannot be detected by visual inspection and advanced nondestructive evaluation techniques may be needed.
- Preventive maintenance is essential. In addition to maintaining the condition state of a bridge and reducing the likelihood of future member failures, it also lowers life-cycle cost.
- Original materials and character-defining features should be preserved whenever possible. Laws require consideration of historic integrity when work is performed on bridges eligible for the National Register of Historic Places.
- When determining possible preservation actions, all benefits and costs should be considered, but the weight given to each should be carefully determined based on the most important bridge characteristics.