**Objective**

Since prestressed concrete bridges are showing signs of damage and distress, this research reviews current practices and repairs, recommends best practices in concert with PennDOT, and identifies candidate structures for future demonstration projects.

**Problem Statement**

Prestressed concrete bridges throughout the Commonwealth and the Nation are exhibiting signs of deterioration and distress. Recent catastrophic collapses have led to a re-evaluation of the condition of many prestressed structures resulting in new postings and in some cases emergency decommissioning of structures. Although there are many research and case studies addressing repair of prestressed bridge girders, there is little comprehensive guidance available. NCHRP Project 12-21, ultimately completed in 1985 remains the most comprehensive national study to address the evaluation and repair of prestressed bridge members. A 1996 Texas study and a 2004 Wisconsin study have updated the earlier guides but are limited in scope: the TXDOT study addresses only impact damage while the WIDOT study focuses primarily on corrosion mitigation techniques at girder ends in cases where strengthening or structural retrofit is largely unnecessary. No present study addresses the two primary sources of deterioration of prestressed girders: corrosion and impact – and significantly the combination of these effects which has been demonstrated to be critical.

**Work in Progress**

This review and synthesis study will accomplish the following:

1. Provide an extensive review of current state-of-the-art and state-of-practice for the assessment of damaged and deteriorated prestressed concrete bridge girders.
2. Provide an extensive review of current state-of-the-art and state-of-practice for the repair of damaged and deteriorated prestressed concrete bridge girders.
3. Submit recommended best practices based on scenarios developed jointly by the investigators and PennDOT.
4. Identify candidate structures for future demonstration projects and conduct initial design of potential demonstration alternatives following recommended best practices.

**Results...**

CSTI is interested in fostering collaborative transportation research throughout the School of Engineering, the University, industry, and other academic institutions to expand its research program. If you are interested in learning more about CSTI and potential research collaboration, please contact:

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