

## RP 302 – Experimental Validation of Repair Methods for Earthquake-Damaged Bridges Incorporating ITD’s Precast Pier System

- Project Description:

ITD has used precast cap beams in more than five bridges so far, and more bridges are likely to be designed and built with similar connections in the upcoming years. Unfortunately, repair/retrofitting methods following a moderate or large earthquake is currently missing, which is an important piece of the proposed precast connection. This project will address the missing repair/retrofitting aspect of the proposed precast pier using experimental testing. Without experimental results, it would be very risky to implement solutions based on analytical results only. Quantifying the effectiveness of the repair methods using experimental investigations will enable ITD engineers to be confident in repairing damaged bridges following an earthquake.
- The objectives of this project are:
  1. Experimentally validate some of the proposed repair methods for the ITD precast pier connection using specimens from previous seismic performance experimental testing.
  2. Implement 2-3 retrofitting methods in the damaged precast pier specimens and re-testing them under quasi-static cyclic loads.
  3. Quantify the effectiveness of each repair method and compare the results against available data from the ITD Report 281.
  4. Develop recommendations for analysis, design, and detailing of the repair methods – incorporation of the results in the design of the bridge with the proposed precast pier connection and ITD’s Bridge Manual.
  5. Summarize experimental results in final presentation and final report submitted to ITD.
- Estimated Completion Date: August 31, 2023
- Budget: \$60,000
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