Research Projects:

***Title*:** Lateral Load Behavior of Clay Masonry Façade with Advanced Wood Framing

Summary***:*** This research looked at quantifying the structural strength and stiffness contribution of Clay Masonry Façade (CMF) to timber framed walls. The team designed and built two 4 ft. x 8 ft. walls within the structures laboratory. One wall was built as a traditional framed wall with CMF and the second as an advanced framed wall with CMF. Both walls were built following building code standards. The walls were tested under cyclic loading until failure. Hysteresis Loops were developed from the measured load. A comparison of the two systems was completed and results published.

Title: Sensitivity Analysis of Load Testing Parameters for Damage Detection

Summary: This research focused on the sensitivity of using different load testing parameters as damage detection indicators for highway bridges. Data gathered from an experimental load test was analyzed to determine the effectiveness of using the neutral axis of bending and load distribution factor. Damage was implemented to the bridge at the end of its service life. This data was used to capture a change in the bridge response as a result of the damage. A sensitivity analysis was conducted using the peak-to-peak noise in the measurement signals.

Damage Locations

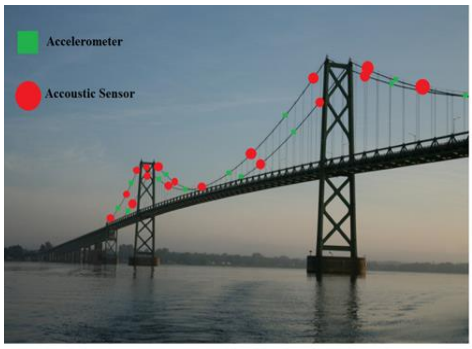
Damage Level 1 Damage Level 2

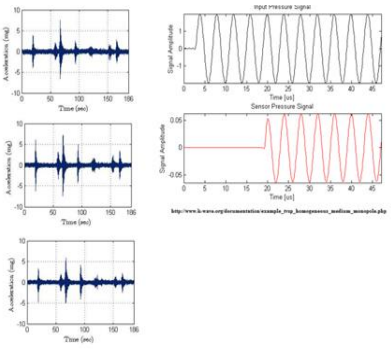
Bearing Condition

Connection 2 Connection 3

Title: Development of In-Service Monitoring Tools for Long-Span Bridges Using Advanced Sensor Networks

Summary: This project focuses on the development of protocols for monitoring long span bridges in particular suspension bridges. It is proposed to implement the developed assessment tools on an in-service long span suspension bridge which has significant





importance to New York State. The system will be deployed on the bridge for a period of time to measure the response and quantify any change in performance.

Title: Condition Assessment of Bridges Using Advanced Sensor Networks

Summary: Develop a method of quantitative condition assessment for highway bridges to complement existing bridge inspection protocols. Based on various strain based load testing parameters gathered from numerous field tests, a Performance Index frame work was developed. The Performance Index is similar to a condition rating number which is currently based solely on qualitative assessment. The goal is to allow bridge inspectors to implement advanced sensor technologies during their routine inspection, thus providing rapid quantitative assessment into the bridge performance. The information can then be incorporated into the Bridge Management System (BMS). This research area is not complete and more results are still to come.