

Public Abstract

First Name:Joseph

Middle Name:Caleb

Last Name:Philipps

Adviser's First Name:Glenn

Adviser's Last Name:Washer

Co-Adviser's First Name:

Co-Adviser's Last Name:

Graduation Term:FS 2007

Department:Civil Engineering

Degree:MS

Title:Sensor Characterization for Long-Term Remote Monitoring of Bridge Piers

Structural instability of bridge piers resulting from scour or other natural hazards can lead to bridge collapse. A monitoring system that analyzes bridge pier behavior could prevent this type of failure by detecting conditions, such as pier tilt, that may lead to instability. The sensor system developed during this project consists of an array of tilt sensors to monitor structural behavior of a bridge pier. The goal of the research presented in this thesis is to characterize the behavior of the sensors that are to be used in this system. Characterization of the sensors required analysis of several distinct sensor attributes that can often be specific to individual sensors. This thesis will describe the process of designing test systems required to complete the sensor characterization. The experiments performed to characterize the sensors using these test systems will be defined. Finally, the results of the testing conducted to characterize sensor behavior, and the implications of sensor characteristics on the final system's operational capability will be discussed.