PROBABILITY OF DETECTION STUDY FOR BRIDGE INSPECTION RELATED TO STEEL BRIDGES

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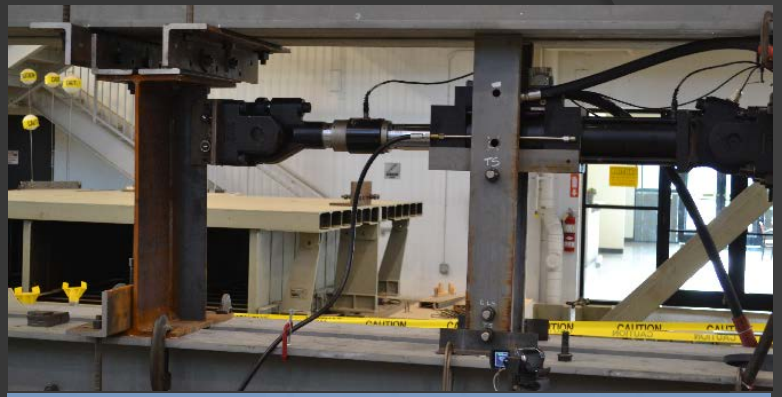
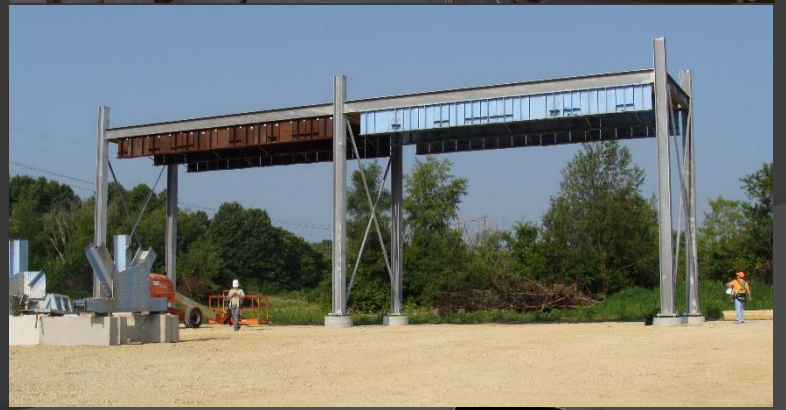
BOWEN LABORATORY

PURDUE UNIVERSITY

Research Objectives

- Develop laboratory fatigue test procedures to create realistic cracks on various steel bridge components for inspection testing
- Conduct performance tests using trained bridge inspectors to determine the reliability of visual inspection
- Develop recommendations for visual inspection procedures, trainings and qualifications





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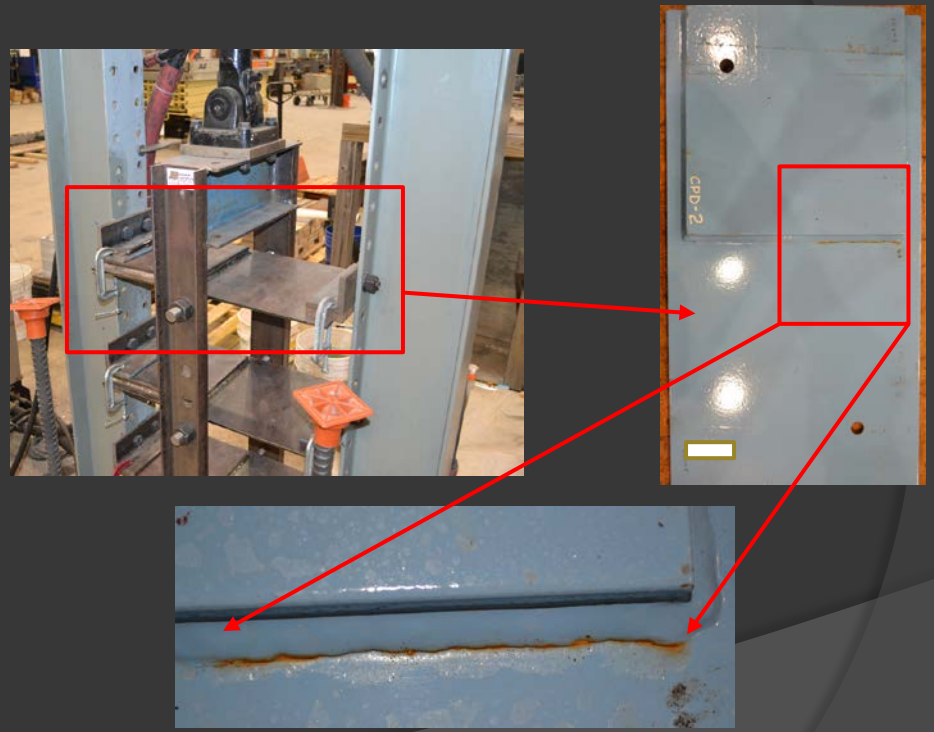
Research Tasks

- Determine what types of cracks to include in the study matrix
- Create fatigue cracks on select steel bridge details by performing laboratory tests
- Develop procedures for making laboratory fatigue cracks
- Expand on methods to create various types of fatigue cracks found in steel bridge inspection



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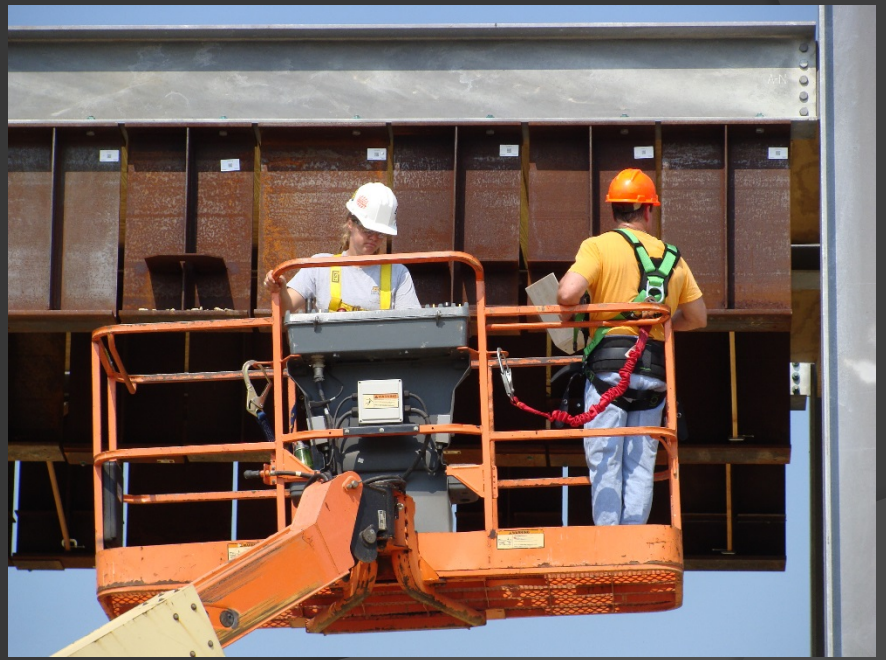
Research Tasks

- Develop performance testing course and procedures
- Conduct performance testing using current bridge inspectors
- Determine probability of detection for visual inspection of cracks in steel bridges
- Recommend performance testing protocols for visual inspection



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Probability of Detection Study for Bridge Inspection Related to Steel Bridges

To evaluate the current performance of inspectors with the industry's present standards of training, a comprehensive Probability of Detection (POD) study is underway to determine the likelihood of inspectors finding cracks of various sizes and surface corrosion on a bridge structure. This study will test an inspector’s ability to identify different defects under various environmental conditions on a bridge structure. The study will provide state transportation agencies, as well as private inspection agencies, invaluable information regarding typical inspector performance. The outcomes will be used to establish procedures to improve visual inspection reliability and develop inspector performance-based certification criteria and procedures.

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