Developed Singular Value Decomposition Based Novelty Index for Damage Detection in full scale in-situ Bridges.

by

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Overview

- Develop technologies and tools to help identify and assess damage in bridges.

- Performed full-scale field experiments on a bridge mock-up and two in-situ rural steel multi-beam bridges scheduled for replacement.

- Measured response of the bridges – Strain & Acceleration

- Singular Value Decomposition (SVD) was utilized as a damage feature and input for novelty detection framework.
Instrumentation Plan

- Rail
- 3" Overlay
- Bridge Deck
- 5 Strain Sensors
- 40 Sensors total
- Reinforced Concrete Grade Beam
Data Collection
Field Test

Bridge Mock-Up

• Healthy Bridge (UN)
• Crash-Induced Damage (CR)
• Concrete Barrier Damage (CB)
• Deck Damage (DE)

Steel Bridges

• Healthy Bridge (UN)
• Flange Cut (D1)
• Web Cut (D2)
Results (Novelty Indices)

Bridge Mock-up

Novelty Index vs. Vehicle Passages

Y-181 Bridge

Novelty Index vs. Vehicle Passages
THANK YOU FOR LISTENING!

Questions?