

Safety & Security RD&T

FHWA Update to AASHTO T1

June 26, 2018

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Bridge Security Design Manual (HIF-17-032)

❑ Available at:

www.fhwa.dot.gov/bridge/security/hif17032.pdf

❑ Next Step – NHI training course development

Publication No. FHWA-HIF-17-032
Infrastructure Office of Bridges and Structures
June 2017

Bridge Security Design Manual



U.S. Department
of Transportation
**Federal Highway
Administration**

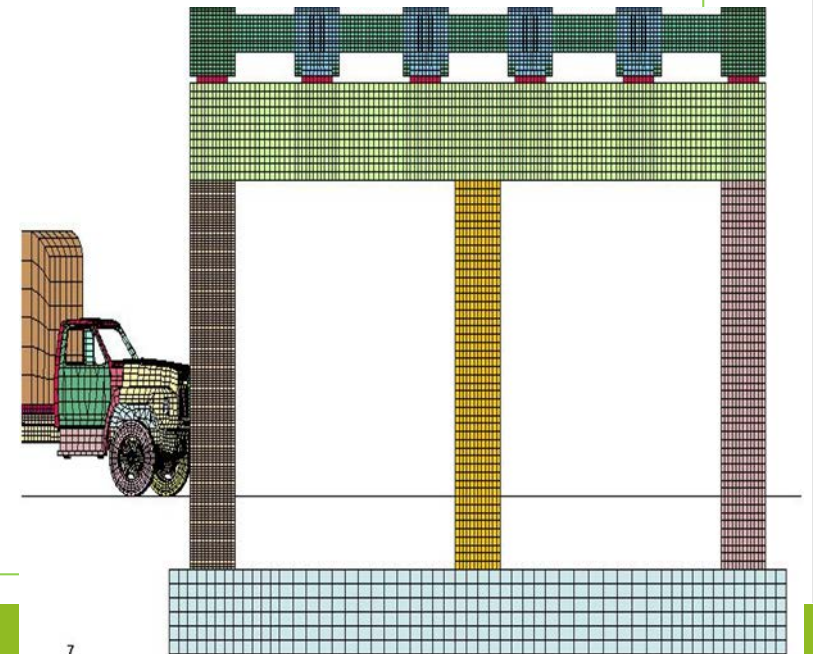


Performance Based Approach for Loading Definition of Heavy Vehicle Impact

- ❑ Develop performance based approach for design of bridges susceptible to impacts
- ❑ PI – Dr. Anil Agrawal, CUNY
- ❑ FHWA Study Manager – Waider Wong

Status – complete

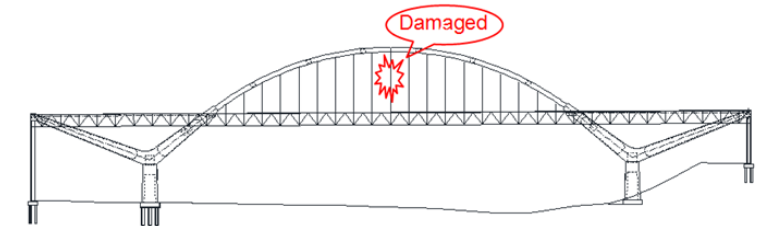
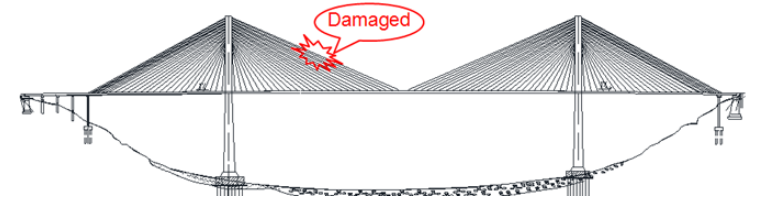
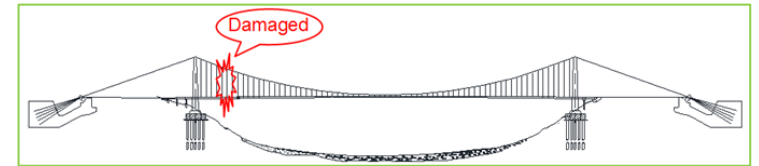
Final Report – under FHWA review



Redundancy in Long Span Bridges for Risk Mitigation

- ❑ Improve current methodologies to quantify system redundancy for design and evaluation of major bridges
- ❑ Develop a methodology for routine evaluation of redundancy in complex bridge systems
- ❑ PI – Dr. Anil Agrawal, CUNY
- ❑ FHWA Study Manager – Waider Wong

Status - Phase 1 – complete
Phase 2 - initiated



Alternate Load Paths Around Damaged/Destroyed Steel Truss Members

- ❑ Focuses on major trusses
- ❑ Develop/assess alternate load paths to prevent progressive collapse and allow for safe repairs
- ❑ PI – Dr. Anil Agrawal, CUNY
- ❑ FHWA Study Manager – Sheila Duwadi

Status: Study complete/final report being written



Interagency Agreement with the Army Corps of Engineers

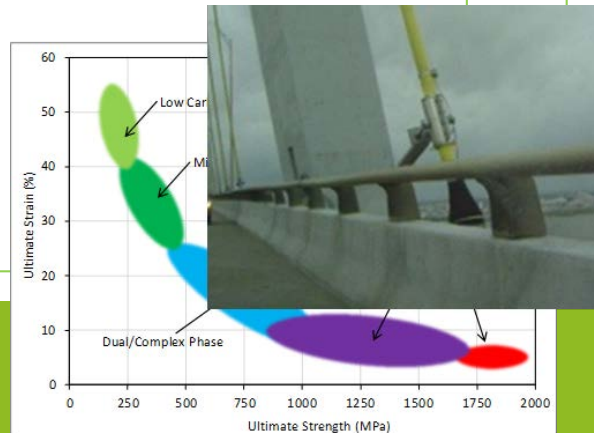
- PI – Kennan Crane, ERDC
- FHWA Program Manager – Sheila Duwadi

Material Specifications for Attack Countermeasures on Bridges

- ❑ Rate Material Performance in Countermeasure functions:
 - ❑ Inertial Resistance
 - ❑ Strain Energy Absorption
 - ❑ Momentum Transfer
- ❑ Improve performance by developing/ testing the use of modified or advanced materials

Bridge Security Roundtable

- ❑ Bringing together major bridge owners to have a dialogue on existing critical needs to protect/harden important assets





Post Hazard



New Initiative

- ❑ **Post Hazard Response** – develop framework and guidance for constituting Post Event Damage Inspection (PDI) & Post-event Engineering Investigation (PEI) teams; study feasibility of & framework for a disaster resilience database
- ❑ **Peer Exchanges** – share States practices in identifying and mitigating bridge vulnerabilities to extreme events and identify needs.

Questions to ask ourselves

Are we learning from extreme events to be able to improve our designs?

Can better assessment of infrastructure performance (engineering performance) improve on the continuous cycle of destruction and rebuilding after every major event?

What could we have done better or, more importantly, what should we be doing when designing bridges to increase their resilience to extreme events?

- ❑ Jerry Shen, FHWA Headquarters
- ❑ Derek Soden, FHWA Resource Center
- ❑ Sheila Duwadi, FHWA TFHRC



Thank you

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