



Priority, Market-Ready Technologies and Innovations

Bridge and Tunnel Security

New

Problem: Owners and operators of highway structures need to protect a vulnerable transportation system that is so important to the local, national, and global economy

Some of these structures (595,000 bridges and over 300 highway tunnels) could easily be terrorist targets because they are easily accessible to all kinds of vehicles without screening or inspection and have high economic value. Preliminary studies indicate that there are approximately 1,000 bridges across the United States where substantial casualties, economic disruption, and other societal ramifications could result from isolated attacks.

Significant investment to prevent or reduce the consequences of such attacks may be justified as an alternative to the high cost of response, recovery, and subsequent socioeconomic damage.

Solution: The use of an assessment tool to ensure the security of critical bridges and tunnels

Risk Management for Terrorist Threats to Bridges and Tunnels

An assessment tool to analyze and prioritize mitigation strategies for critical bridges and tunnels using a component-level analysis.

Due to the sensitive nature of the subject, limitations in this topic are mostly in the sharing of commendable practices between bridge and tunnel owners. Also, owners need additional funding to support additional mitigation strategies.

Successful Applications: Identifying and securing vulnerable bridge and tunnel components

Many State Transportation Departments and other bridge and tunnel owners have used the process from *A Guide to Highway Vulnerability Assessment for Critical Asset Identification and Protection*, developed for the American Association of State Highway Transportation Officials (AASHTO), to prioritize their critical bridges and tunnels. In addition, States, such as New Jersey and Oregon, have supplemented their bridge design manuals with basic guidance for considering terrorist threats during design.

Also, many critical structures have applied a component-level analysis to identify the critical members of structures and have developed mitigation strategies to reduce the vulnerabilities of these members with the goal of preventing a progressive collapse of the structures.

Deployment Statement

Using a systematic risk management process for critical structures has proven useful in developing cost-effective mitigation strategies to protect vulnerable components.

Deployment Goal

All State Transportation Departments will identify and prioritize their critical bridges and tunnels.

All State Transportation Departments will develop and prioritize mitigation strategies for new and reconstructed bridges and tunnels that are critical.

- Deliver six *Risk Management for Terrorist Threats to Bridges and Tunnels* workshops by the end of 2008.
- Deliver four *Blast Analysis and Design for Bridge Structures* courses by the end of 2008.

Benefits

- Identify critical infrastructure.
- Identify threats to bridges and tunnels.
- Identify vulnerable components.
- Develop effective, cost effective mitigation strategies.
- Improve safety and serviceability of the critical infrastructure.

Deployment Status

The Federal Highway Administration (FHWA) has a team of engineers trained to identify terrorist threats, understand explosive phenomena, and

identify risk of members of critical bridges and tunnels. Based on this knowledge, the FHWA has developed training courses to educate bridge and tunnel owners and emergency responders on the following:

- *Risk Management for Terrorist Threats to Bridges and Tunnels.*
- *Blast Analysis and Design for Bridge Structures.*

Additional Resources

Additional information and resources can be found at AASHTO's Special Committee on Transportation Security Web site at: <http://security.transportation.org/>.

Funding is needed to continue the current training and assessment initiatives.

For more information, contact:

Steve Ernst
FHWA Office of Bridge Technology
(202) 366-4619
steve.ernst@fhwa.dot.gov

Shay Burrows
FHWA Resource Center
(410) 962-6791
shay.burrows@fhwa.dot.gov

To request additional copies of this publication, contact:

Carin Michel
carin.michel@fhwa.dot.gov
(410) 962-2530

TaMara McCrae
tamara.mccrae@fhwa.dot.gov
(202) 493-3382