Transportation System Resilience:
Research Roadmap and White Papers

Project Context

Although state DOTs have made substantial efforts to improve transportation system resilience over the past decade, they continue to struggle with providing the degree of resilient and reliable service expected by society. This concern underscores a crucial fact of the 21st Century: even though transportation undergirds the quality of life around the globe, it is increasingly difficult to meet new challenges. NCHRP Project 20-59(54) originated from the dilemma inherent in this finding.

Project Objectives

- Draft a program of discovery, exploration, and implementation to develop new resilience-based knowledge and practices, where necessary

- Document and communicate certain aspects of resilience in order to increase the level of shared knowledge within the transportation sector

- Inform, complement, and augment the work arising from NCHRP Project 20-59(55) Transportation System Resilience: CEO Primer & Engagement and NCHRP Project 20-59(117) Deploying Transportation Resilience Practices in State DOTs

- Participate in the 2018 National Summit and Peer Exchange on Transportation Resilience.

Figure 1. Many Faces of Resilience

Resilience Research Roadmap

A plan documenting high-priority research needs, potential programs, and strategic initiatives encompassing the funding period 2020-2025

- Informed by USDOT, FHWA, AASHTO, DHS, TSA, TRB, and other transportation leaders
- Developed cooperatively and collaboratively by government, industry, and academic participants
- Two planned releases of the Transportation Resilience Research Roadmap
    - Pre-summit Draft Roadmap (Summer 2018)
    - Post-summit Final Roadmap (Winter 2018)

Solicitation of Research Needs

The research team invites interested parties to submit resilience research needs or problem statements in the following topical areas for inclusion in the road mapping process. Submissions may include existing resilience research projects, plans, and other resilience initiatives encompassing the period of interest.

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- Cyber systems resilience (including risks such as space weather)
- Economics of resilience
- Climate change/sea level rise/extreme weather risks
- Other human-caused or natural risks
- Choke points/single points of failure
- Continuity of Operations/Continuity of Government considerations
- Human and social factors
- Information for decision-making
- Automated/connected vehicles
- Workforce development
- Community resilience

Resilience Discussion Papers

The second major objective of this project is to document and communicate certain aspects of resilience in order to focus discussion and enhance knowledge within the transportation sector. These executive-level briefing papers will be 12-15 page summaries of three topical areas:

- Extreme Weather/Sea Level Rise Aspects of Resilience (March 2017)
- Economic Aspects of Resilience (July 2017)
- Cyber Aspects of Resilience (November 2017)

Each discussion paper will explore the interdependencies associated with various state DOT resources that are impacted by the actions or inactions taken to build resiliency around that particular subject area. The papers will also address vital questions such as: What should I know? What should I worry about? What can I do now?

The research team welcomes additional material and comments on these topics. Contact us for additional ways to participate in the editorial process.

FUNCTIONS	The assignments, tasks, and positions in a state DOT that are critical to the performance of continued transportation service
ASSETS	The infrastructure, equipment, resources, tools, vehicles, hardware, and facilities owned and operated by a state DOT
NETWORKS	The relationships maintained by a state DOT with the private sector and other branches of government that ensure continuity of transportation operations
SYSTEMS	The critical technology and applications, including data, used to operate the DOT and the infrastructure and enable reliable network communication
PEOPLE	The necessary personnel needed by a state DOT to ensure resilient transportation services

Figure 2. State DOT Resources

For more information

Visit the NCHRP Project 20-59(54) webpage for additional information
http://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=4259

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