



# Transportation Consortium of South Central States

## Key Points

**Project Number:**  
18PPLSU04

**Start Date:**  
03/15/2018

**End Date:**  
09/15/2019

**Principal Investigator(s):**  
*Vanessa Valentin*  
University of New Mexico  
vv@unm.edu

*Chao Wang*  
Louisiana State University  
chaowang@lsu.edu

**Lead Institution:**  
University of New Mexico

**Funds Requested to UTC:**  
\$80,000

**Funding Source(s):**  
Tran-SET  
University of New Mexico  
Louisiana State University

**Total Project Cost:**  
\$160,000

## Strategies for Prioritizing Needs for Accelerated Construction after Hazard Events

### Brief Project Description

There is a need for further research and guidance to assist state DOTs in identifying and prioritizing needs for accelerated construction after hazard events. This study will investigate current practices and institutional barriers to identify and quantify important decision criteria and to develop a decision support tool for prioritizing needs for accelerated construction after disaster events, specifically hurricanes and flooding which commonly affect Region 6.

### Problem Statement

There is a need for rapid and responsive infrastructure repair and construction after natural disaster events such as hurricanes, wildfires, and tornadoes. These natural disasters often shut down basic infrastructure systems, including roads, bridges, water supply, and power supply, as experienced recently in several Region 6 states as well as in other states around the country. These infrastructure systems are critical systems which the public relies on, and it is important that these systems become operational again as soon as possible.

Accelerated construction practices are often used in these situations to speed up the traditional, and often slow, project delivery process. However, after a natural disaster, several and different types of transportation infrastructure components are in need of inspection, rehabilitation or reconstruction, and transportation agencies are challenged with the task of prioritizing these accelerated projects.

Even though the current body of knowledge has investigated accelerated construction and post-disaster project prioritization for transportation infrastructure, the studies do not overlap between accelerated construction, emergency operations, and prioritization of infrastructure projects at a programmatic level for post disaster recovery. Also, prior studies have not focused on a diverse portfolio of projects and have mostly concentrated in projects with similar characteristics.

### Objectives



# Transportation Consortium of South Central States

To ensure that this research responds to the needs of transportation agencies about prioritizing accelerated construction projects, the following objectives have been established:

- Identify and quantify the importance of decision criteria when prioritizing post disaster accelerated construction projects.
- Develop a multi-criteria decision making tool for prioritizing accelerated construction needs after a natural disaster, including the classification of the transportation infrastructure component, primary population served, and resource constraints; and
- Evaluate strategies for accelerating construction in a cost-effective manner post disaster for a program of critical transportation infrastructure projects.

## Intended Implementation of Research

The research team will work to develop technical support documents and training programs to educate state DOT employees regarding post-disaster, prioritization of needs, and the use of accelerated construction for inspecting, repairing and reconstructing crucial infrastructure systems post disaster. The entire research team will work on the implementation support task which will consist of the following components:

- Presentations for DOTs highlighting the process for prioritizing and accelerating infrastructure repairs and construction
- Web-based training program for current and potentially future DOT staff. The training will include factors for prioritizing post-disaster accelerated construction needs and techniques that could be used to quantify the importance of those factors.
- Online decision support tool that transportation agencies can use to help prioritize and accelerated critical infrastructure projects after a disaster occurs. Training and educational information will be available to help DOTs setup and use the decision support tool effectively.

## Anticipated Impacts/Benefits of Implementation

The expected deliverables from this study include a decision support tool, best practices and recommendations for prioritizing needs post disaster and applying accelerated construction strategies to multiple projects concurrently. The research team will work closely with all of the DOTs within Region 6, particularly the Louisiana Department of Transportation and Development (LaDOTD) and the New Mexico Department of Transportation (NMDOT) as these are the states represented by the research team. While the focus will be on Region 6, it is expected that the research results will be relevant to other DOTs outside of Region 6 and will provide an overview for the methods used for prioritizing post-disaster infrastructure repair nationwide.

## Weblinks:

- [Tran-SET's website \(http://transet.lsu.edu/research-in-progress/\)](http://transet.lsu.edu/research-in-progress/)
- [TRB's Research in Progress \(RIP\) database \(https://rip.trb.org/View/1505413\)](https://rip.trb.org/View/1505413)