



Structure

JANUARY 2020

Project Title:
Bridge Rapid Assessment Center for
Extreme Events (BRACE2)

Task Number: 3703

Start Date: April 1, 2020

Completion Date: March 31, 2022

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Bridge Rapid Assessment Center for Extreme Events

Develop a data and simulation center for real-time rapid assessment and comprehensive assessment of Caltrans bridges during seismic events.

WHAT IS THE NEED?

Gaining the understanding of the condition of a major toll crossing immediately following a large earthquake is imperative to the Bridge maintenance personnel and emergency responders, a tool is needed to assess how a large bridge structure reacted to strong seismic shaking. This project will take advantage of the seismic motion sensors already placed on toll crossings. A data and simulation center, Bridge Rapid Assessment Center for Extreme Events (BRACE2 Center), will monitor the movement of the toll structures and will give an immediate status of these bridges following an earthquake.

WHAT ARE WE DOING?

This research is to develop a data and simulation center for real-time rapid assessment and near real-time comprehensive assessment of California Department of Transportation (Caltrans) designed and operated bridges during seismic events. The real-time rapid assessment will be designed to help Caltrans' Emergency Management plan immediate responses after an extreme event. Rapid assessment results will be sent to several locations within Caltrans.

The near real-time comprehensive assessment will be designed to help the Division of Engineering Services and their designated groups with detailed bridge response reports, analytic models comparison, and damage assessment at various component levels. Initial focus will be on the toll bridges in the San Francisco Bay Area.



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WHAT IS OUR GOAL?

The goals of this project are to rapidly process the recorded seismic data from the toll structures and compare the recorded motion to predetermine capacity calculations to ascertain the condition of these bridges following a seismic event. Once the BRACE2 Center is developed and running, it will need to be maintained and monitored for years to come.

WHAT IS THE BENEFIT?

The benefit to Caltrans will be an immediate understanding of how much movement a toll structure experienced in an earthquake and determine if that structure can be used safely following an event. This will allow for an uninterrupted flow of emergency vehicles, or closing of the structure for life safety concerns.

The BRACE2 Center will be designed and built; and it will monitor the toll bridges 24/7 for damaging seismic motions. This data will be Caltrans' first tool to determine the condition of major toll crossing following extreme seismic ground shaking.

WHAT IS THE PROGRESS TO DATE?

The research is expected to begin in early April 2020.