Bridging the Gap

Your Connection to Engineering Services

April 2026

Bridge Design Assists National Effort

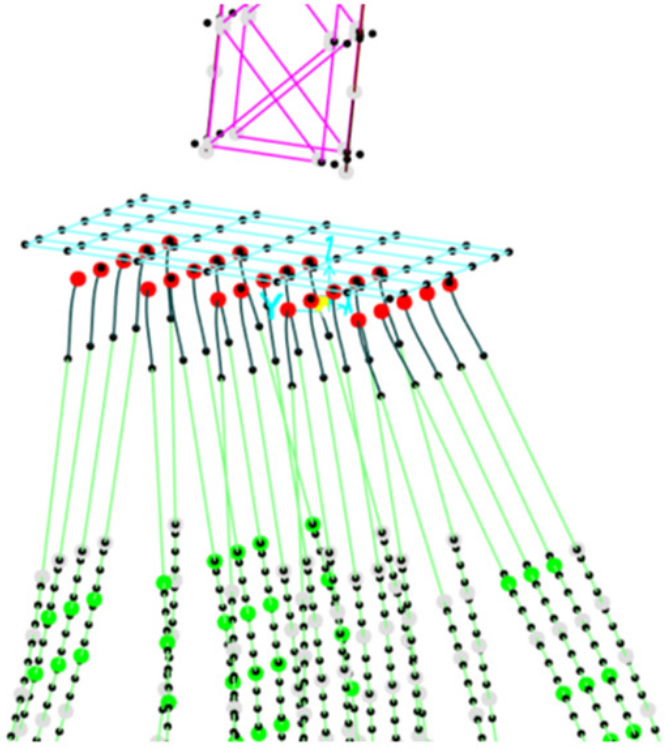
California's bridges do more than carry travelers from one point to another—they stand as critical lifelines for communities, commerce, and emergency response. At the Division of Engineering Services (DES), our Bridge Design offices take that responsibility seriously, not only delivering contract plans for new structures but also stepping up when national safety efforts call.

Designing and generating contract plans for bridges and earth-retaining structures along the State's highway system are the main duties of DES' Bridge Design offices. At times, they are also called to assist with national efforts to build safe structures.

With the support of the Office of Earthquake Engineering, Analysis & Research (OEEAR), Bridge Design recently completed vulnerability assessments for several California bridges spanning along navigable waterways. The National Transportation Safety Board (NTSB) initiated this effort following the March 26, 2024 collapse of the Francis Scott Key Bridge in Baltimore, Maryland, after the containership Dali collided with one of its main span piers.

The assessments were carried out in accordance with the American Association of State Highway and Transportation Officials (AASHTO) Guide Specifications and Commentary for Vessel Collision Design of Highway Bridges. This probability-based analysis evaluates a range of risk factors including, including bridge element geometry, ultimate pier resistance, waterway characteristics, and characteristics of vessels navigating through the channel.

Bridge Design used sophisticated software models to evaluate the nonlinear structural response to vessel collision loads.



Ultimate lateral resistances of piers were determined based on the observed governing failure modes of the structure during pushover, as illustrated in the model shown above.

As the NTSB prepares to release its findings, our teams remain committed to advancing the safety and resilience of California's infrastructure. If you're inspired by the engineering challenges behind efforts like this, we invite you to explore opportunities to join us in shaping the future of the State's bridges. Visit Working with the Division of Engineering Services for more information about job openings to begin your career with Caltrans.