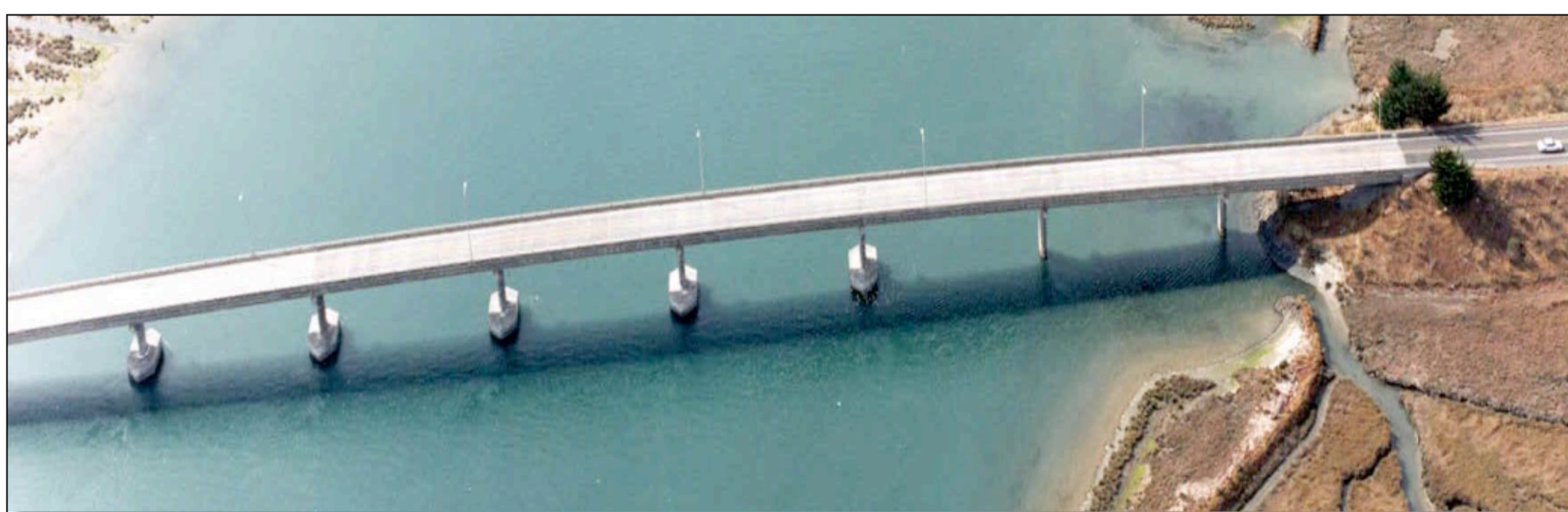


# Bridge-Foundation System Response

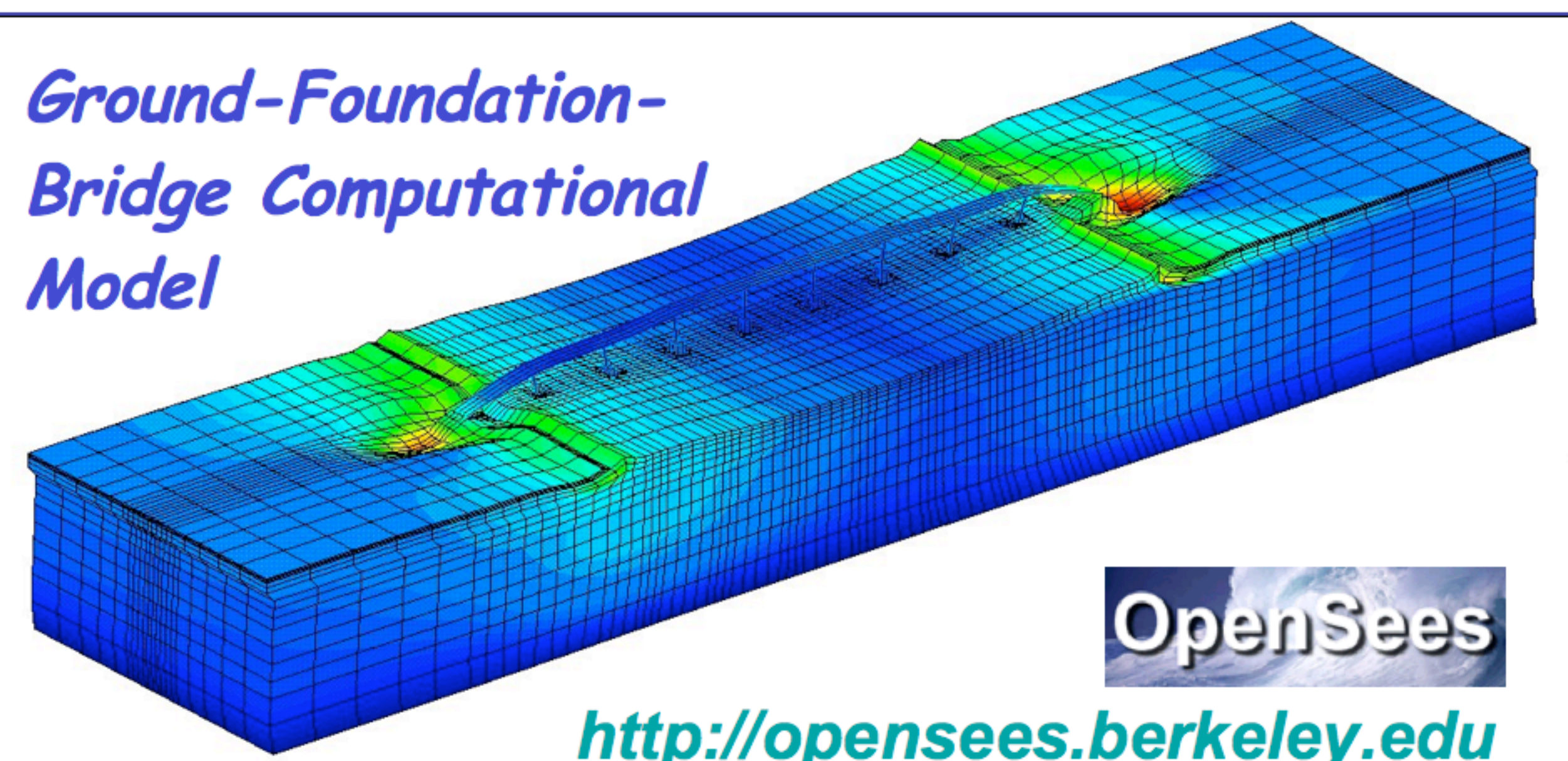


Ground-foundation interaction dictates the level and characteristics of earthquake excitation. Lateral ground deformation can unseat the bridge deck, and/or damage the bridge approach ramps. In recent earthquakes, bridge damage resulted in prolonged traffic disruptions and Billion Dollar level replacement expenses.

PEER is contributing to the solution through high-fidelity computational simulation of actual bridge Testbed scenarios



PEER Humboldt Bay Bridge Testbed: Assessment of Ground Deformation Effects on Bridge System Response

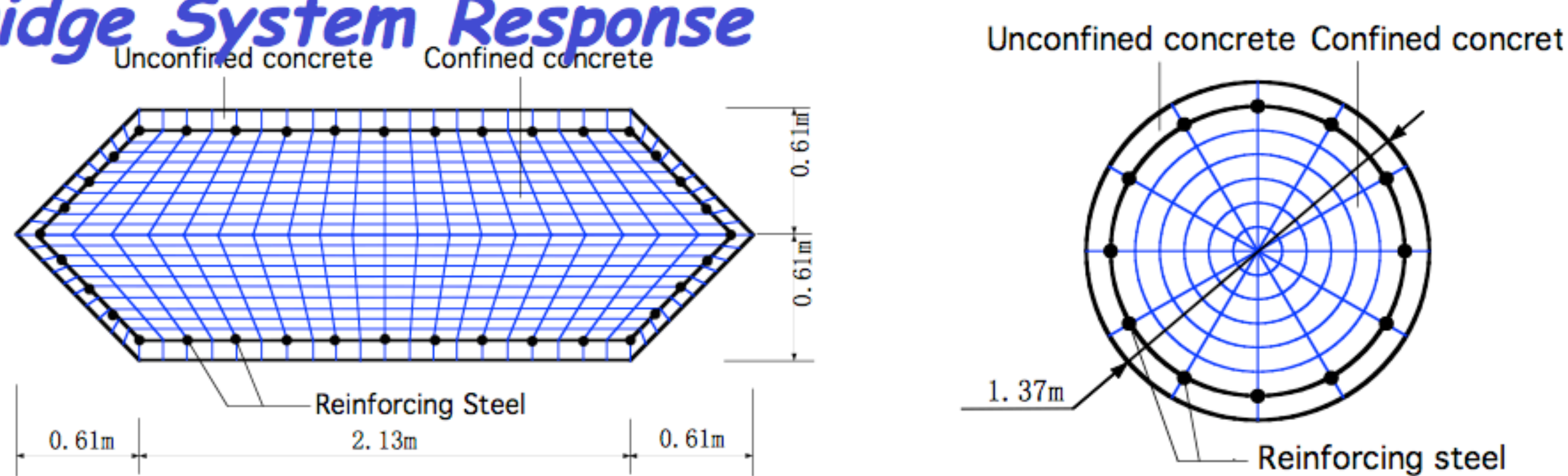


Ground-Foundation-Bridge Computational Model

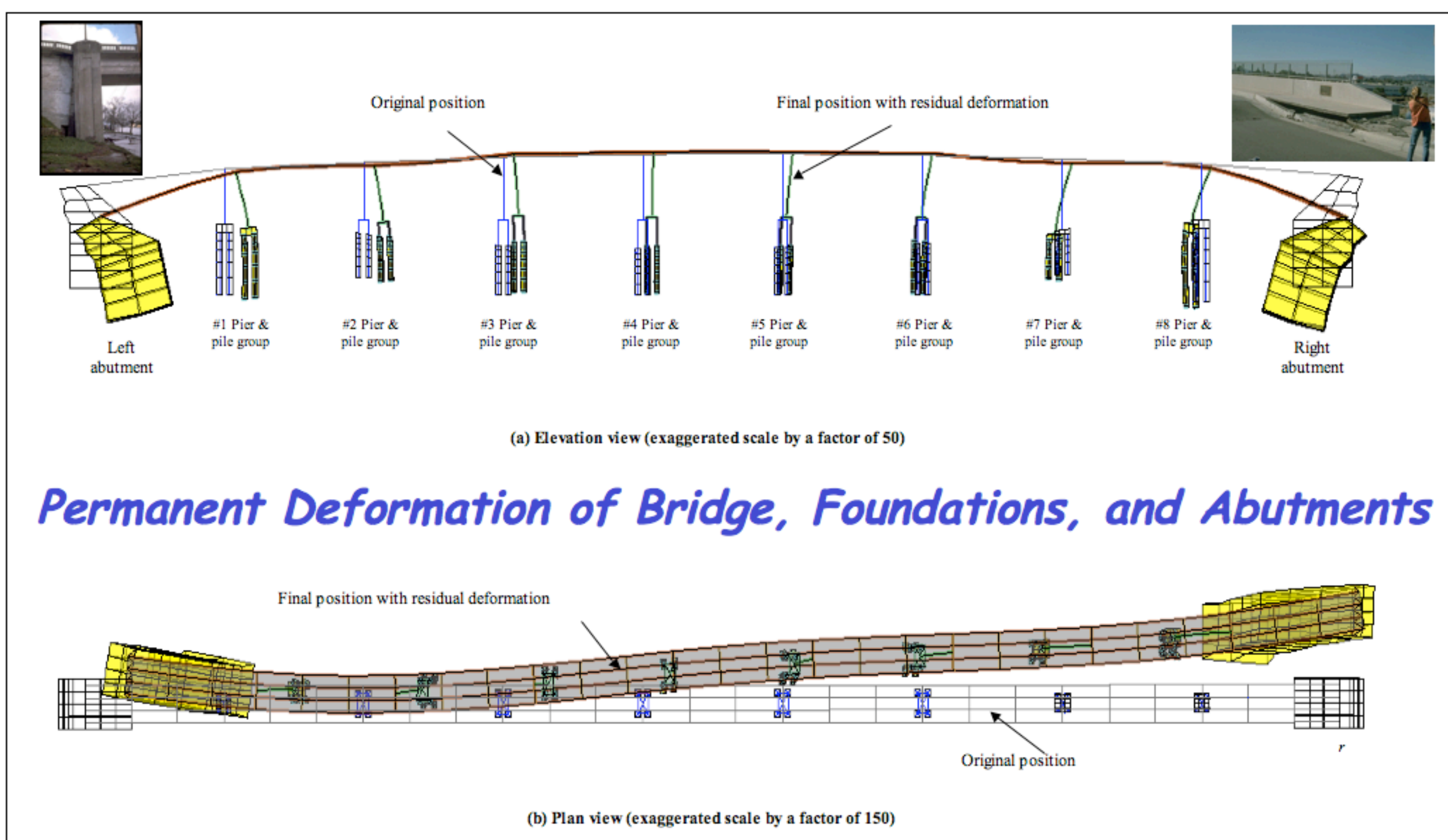
OpenSees

<http://opensees.berkeley.edu>

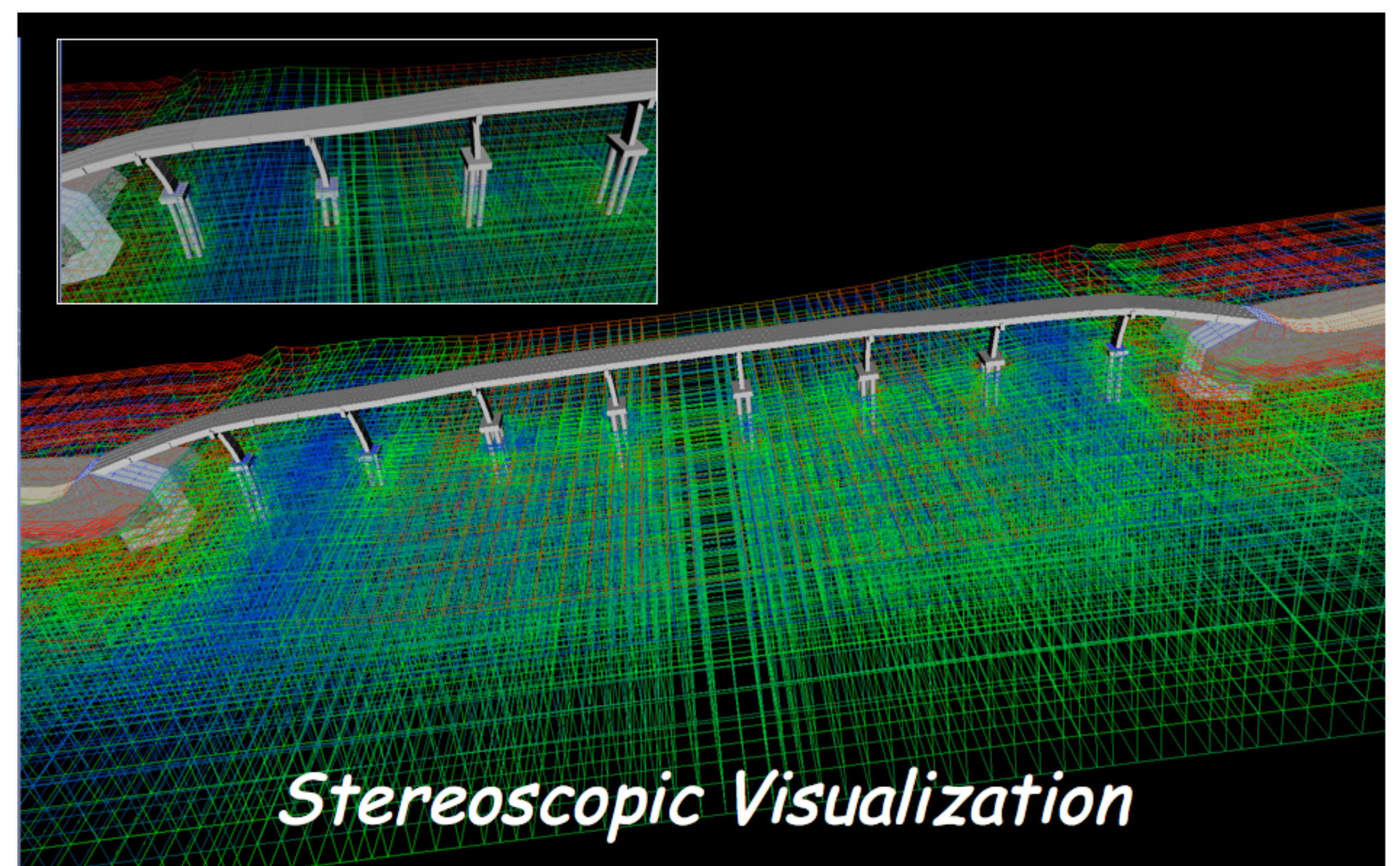
The PEER OpenSees simulation platform enables large-scale earthquake simulations employing state-of-the-art computational models for ground materials, pile foundations, and bridge structural elements.



Nonlinear Fiber Bridge Pier & Foundation Pile Cross Sections



Permanent Deformation of Bridge, Foundations, and Abutments



Stereoscopic Visualization

The Pacific Earthquake Engineering Research Center  
headquarters at the University of California, Berkeley  
for more information see <http://peer.berkeley.edu>



Poster by A. Elgamal, J.-P. Conte, L. Yan, Z. Yang, and J. Lu (UC San Diego)