

# MITIGATION OF THE SURFACE FAULT RUPTURE HAZARD

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Recent earthquakes have reminded the profession of the devastating effects of earthquake surface fault rupture on engineered structures and facilities. Insights from these events are discussed with special emphasis on describing how ground movements associated with surface faulting affect structures. Similar to other forms of ground failure, such as mining subsidence, landslides, and lateral spreading, effective design strategies can be employed to address the hazards associated with surface faulting. These design measures include establishing non-arbitrary setbacks based on fault geometry, fault displacement, and the overlying soil; constructing earth fills, often reinforced with geosynthetics, to partially absorb underlying ground movements; using slip layers to decouple ground movements from foundation elements; and designing strong, ductile foundation elements that can accommodate some level of deformation without compromising the functionality of the structure.



## Biography of Professor Jonathan Bray, Ph.D., P.E.

Jonathan Bray is a Professor of Geotechnical Engineering at the University of California, Berkeley. Before coming to Berkeley, he was an assistant professor at Purdue University. He earned engineering degrees from West Point (B.S.), Stanford University (M.S.), and the U. C. Berkeley (Ph.D.). Dr. Bray has been a registered professional civil engineer since 1985, and he has served as a consultant on several engineering projects and peer review panels, and he has served as an expert geotechnical engineer in several legal cases. Professor Bray has authored more than 200 research publications. His expertise includes the seismic performance of earth and waste fills, earthquake surface fault rupture, seismic site response, liquefaction and ground failure and its effects on structures, and post-earthquake reconnaissance. He has received a number of honors, including the Prakash Research Award, ASCE Huber Research Prize, Packard Foundation Fellowship, and NSF Presidential Young Investigator Award.