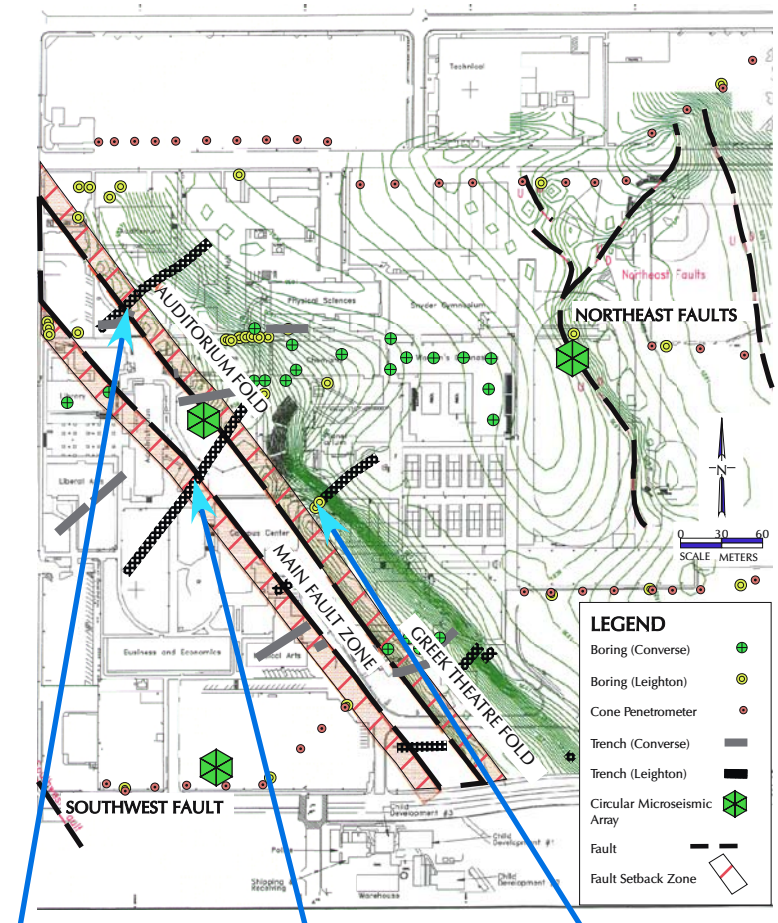
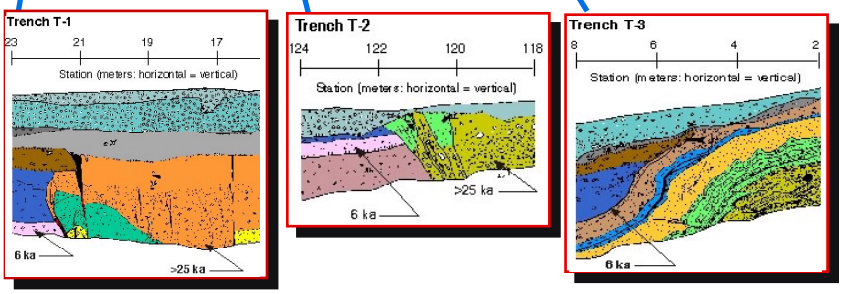
Quantitative Assessment of Coseismic Faulting and Folding Deformation Hazards at San Bernardino Valley College, California

PROJECT DESCRIPTION

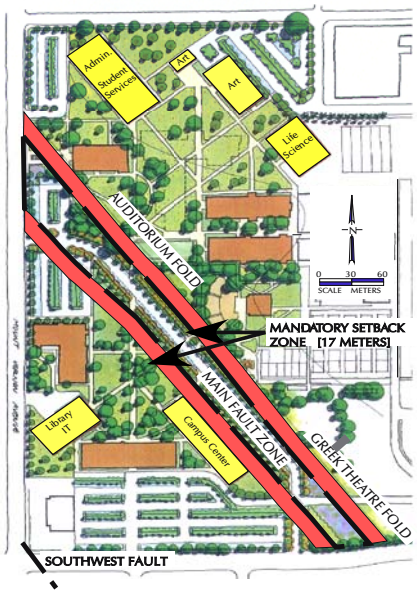
San Bernardino Valley College was founded in the late 1920s on a pressure ridge uplifted along the San Jacinto fault, with most buildings built between 1927 and 1976. In the 1990s, the school began to redevelop the campus. As part of the redevelopment planning team, *Earth Consultants International* was tasked to quantitatively investigate the locations and magnitudes of the surface deformations that would be induced by a future earthquake on the fault. Substantial risk of structural collapse was present at the college, and the administration was receptive of incorporating seismic hazard improvement into the plan as part of a campus-wide redevelopment and expansion project. The primary problem was precisely defining the location of the active faults through the current and proposed campus area, and defining the faults' impact on the planning program.





SOLUTION

The investigation included the excavation of trenches, borings and Cone Penetration Test probes. The fault zone was mapped across the site, and a co-seismically generated compressional fold was also mapped parallel to the fault (left). Appropriate setbacks were determined from the active faults. We retrodeformed the fold to determine and contour the angular tilt and differential uplift across the site that would be expected from the next earthquake. Maps were prepared of the pattern of deformation. Structural engineers were retained to perform building vulnerability analyses. Six buildings were planned for demolition, and new sites were selected for their replacement (below).



Earth Consultants International

1642 E. Fourth Street • Santa Ana • California • 92701
714.544.5321 • www.earthconsultants.com