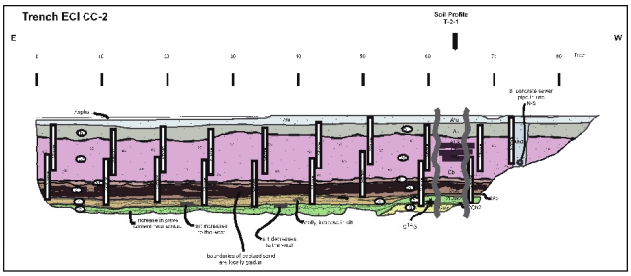
FAULT HAZARD SCREENING STUDY
for New Buildings at San Bernardino Valley College, San Bernardino, California

PROJECT DESCRIPTION

San Bernardino Valley College is located directly atop the San Jacinto fault zone, one of the most seismically active faults in southern California, and one that is expected to rupture in the not too-distant future. In the early 1990s, the College started to develop a new master plan for the campus that called for the updating of their classrooms and laboratories. Per the Education Code, however, extensive retrofitting of public school buildings is not permitted unless geological studies that address the potential for surface fault rupture and other seismic hazards are conducted first.

As a result, in 1994 ***Earth Consultants International (ECI)*** personnel conducted an extensive seismic hazard study of the campus that included fault trenching, liquefaction susceptibility assessment, and strong ground motion modeling for structural design. Trenches were excavated to precisely locate the San Jacinto fault through the campus. Unfortunately, nine of the existing college buildings were found to be located astride the main fault zone, or within a secondary zone of deformation located to the east of the fault zone. Based on these data, the architects prepared a new master plan that includes the demolition of several of the impacted buildings, and construction of five new buildings. In 1999, *ECI* was retained to trench the areas where the new five buildings are proposed, and to prepare a new probabilistic ground motion analysis that reflected the changes to the California Building Code of 1998. More recently, *ECI* has been retained again to conduct fault investigations for other proposed new buildings on campus.

Photo showing Trenches ECI-2 and ECI-2b excavated at the site of one of five new proposed buildings at the San Bernardino Valley Community College campus



Log of Trench ECI CC-2 excavated to investigate the location of the proposed child-care facility

SOLUTION

In 1999, *ECI* excavated, logged, photographed and sampled four trenches excavated through or adjacent to the locations of the five new proposed buildings. No faults were observed in any of the trenches, and no evidence for tilting or folding was observed in three of the trenches. The amount of tilting observed in one trench was deemed not to pose a structural hazard to the new building proposed in that area. As a result, the college proceeded with the design and construction of the new buildings.

In 2001, *ECI* completed a fault screening study, using Cone Penetrometer Tests (CPTs), for the northeastern corner of the campus, where a new child-care facility was proposed. The data collected with CPTs suggested the presence of a fault in the area of the proposed new building. Based on these data, the college administration moved the proposed location of the child-care facility to the southeastern corner of the campus. *ECI* conducted a fault trenching study to evaluate the potential for surface fault rupture in this area. The two trenches that we excavated and logged in this area did not expose faults or folds that would pose a constraint to construction of the proposed structure, allowing the college to move forward with their plans. All new buildings at the College have been designed to withstand the ground motions that we calculated for the campus.

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