

PROJECT DESCRIPTION

Earth Consultants International, Inc. (ECI) conducted a geologic study to quantitatively evaluate the development planning constraints posed by the Palos Verdes fault at Chandler's Quarry on the Palos Verdes Peninsula in southern California. Prior characterization of the fault by geophysical techniques (high resolution seismic reflection) had indicated a broad zone of faulting through the proposed development area. Because the fault is considered an active fault and a surface rupture hazard, detailed geological investigations were needed to precisely locate fault-setback zones for use in the development planning process. Specifically, could geologic fault trenching more accurately establish the active fault traces and narrow the area impacted by coseismic ground deformation?



SOLUTION

ECI's geologic study began with a review of previously published geologic maps and reports covering the study area, and unpublished geologic and geotechnical reports prepared by other investigators on the Palos Verdes fault. We then completed a detailed geologic map of the site, and supplemented it with a focused subsurface investigation consisting of eight trenches across four traces of the fault that were within the development footprint. The trenches were excavated in locations determined to have late Quaternary sediments within the fault zone that could provide evidence for the timing of fault activity. After shoring and extensive wall cleaning, the trenches were geologically logged and interpreted for evidence of fault activity. Where faults were found, they were evaluated to estimate their age of last displacement and their impacts to the development planning.

RESULTS

Of the four geophysically interpreted faults, two were shown not to exist, one was observed to be only a zone of small faults and fractures that did not affect older soils, and the fourth fault, the main trace of the Palos Verdes fault, was shown to be outside of the proposed development area. As a result, *ECI* was able to determine, in accordance with the California definition of active faulting, that there are no faults that would prevent normal development of this area. Subsequent studies evaluated slope stability, dynamic consolidation of the fill, and groundwater constraints for development.



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