

PROJECT BRIEF



“Resolution of Site Response Issues from the Northridge Earthquake” (ROSRINE)

The Project

ROSRINE brought together under one umbrella a strongly coordinated group of geologists, geotechnical engineers and seismologists from a number of organizations to address geotechnical site characterization and ground motion response issues resulting from the Northridge earthquake of January 17, 1994. The work is co-funded by the National Science Foundation and the California Department of Transportation (Caltrans), and was heavily leveraged by cost-sharing from the Electric Power Research Institute (EPRI), the Southern California Earthquake Center (SCEC), and the U.S. Geological Survey (USGS) with cooperation from the California Division of Mines and Geology (CDMG). SCEC served as administrative coordinator for the various co-investigators. GEOVision was the principle contractor

Objectives

The objectives of this project were:

- 1) collection, compilation, and rapid dissemination of high-quality site geotechnical and geophysical data to the research community; and
- 2) focused analyses limited to the following:
 - determining the extent to which local site and regional wave propagation effects controlled strong ground motion, including nonlinear site response;
 - evaluating the adequacy of the conventional approach to estimating site effects using measured shear-wave velocities, results of laboratory tests, and one-dimensional equivalent-linear and nonlinear analyses;
 - assessing the degree of model complexity (2- and 3- D analyses) required to adequately explain site effects; and
 - determining the uncertainties in measured properties and how these uncertainties affect ground motion predictions

Work Performed by GEOVision

GEOVision participated in site selection with representatives from the Southern California Earthquake Center (SCEC), USGS, and Caltrans, and managed construction of 20 boreholes, including depths from 100 to 1100 feet, both in soil and hard rock. The management effort included all permitting, site access, subcontract negotiation and management. GEOVision performed the borehole geologic logging and geophysical measurements for surficial geology response studies. The benefit of this effort has been the coordinated acquisition of data of unprecedented quality.



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