American Society of Civil Engineers
Los Angeles Section
2009 Awards

Outstanding Private Sector Civil Engineering Project

Bluebird Canyon Landslide Remediation Project

Geofirm/Stoney-Miller Consultants, Inc.

The June 1, 2005 Bluebird Canyon Landslide in Laguna Beach, California was initiated by an elevated groundwater level from the 2004-2005 Winter's high rainfall. The failure involved an area of about 7 acres on the northern flank of Bluebird Canyon. The landslide mass was approximately 800 feet long, 400 feet wide, up to 90 feet deep, and involved an estimated 550,000 cubic yards of material.

Nineteen residences were destroyed or damaged, Flamingo Road was severed, and all utilities were severed. The Bluebird Canyon drainage was dammed by 60 feet of landslide debris. Flamingo Road, which traversed the upper portion of the landslide, moved downslope horizontally approximately 75 to 85 feet and vertically approximately 20-30 feet. The resulting risks to the public improvements and the community included downstream flood hazard, headscarp retreat, potential mudflow-debris flow hazards along the landslide margins, and the potential loss of three more public streets.

The emergency mitigation and the eventual public infrastructure repair was conducted in two Phases. Phase I consisted of winterization of the slope by removal of the destroyed homes, surface regrading and drainage control, dewatering, removal of slide debris in the Bluebird Canyon drainage, installation of a storm drain, construction of a gravity buttress in the canyon, and stabilization of the headscarp with a temporary tieback/shoring wall. This work was fast-tracked and required constant coordination between the design and contracting teams to respond to difficult field conditions. Phase II included removal of the majority of the landslide mass, construction of two soil-cement shear keys, placement of a subdrain network, and placement of engineered fill to rebuild the slope.

The total project cost was approximately $37 million.