In the West, When it Rains, it Slides

▲ The view, looking up, at a recent landslide in Malibu, Calif. — this house was saved — others in Southern California have not been so lucky.

Landslides hit Malibu, Calif., causing homeowners to seek methods to keep their property on stable ground.

By Rick Walsh

The recent heavy rains in Southern California reminds us of the inherent danger of building on hillsides. While the pictures from La Conchita provides the most dramatic visual reminders of the danger, there are also countless instances of slope instability and landslides that disrupt the lives of many families.

As development in Southern California progresses farther and farther from the population centers, the majority of the land left is some of the most difficult to develop and often found on hillsides.

For years the hillsides were economically unfeasible to develop because of the amount of grading required or other measures necessary to create buildable pads. However, the incredible rise in home prices in the past few years in California has made many of these areas economically feasible for development.

Building in these problematic areas requires the knowledge of design professionals who know how to identify problems and provide recommendations for mitigation before they occur.

Even with the best planning, there are some things that are simply unavoidable. Whether due to "acts of god" or human error, there will be situations that arise where problems

▼ D.J. Scheffler crew members do the preparation work prior to shoring the site to prevent further progression of the landslide.

will occur. At such times, choosing the right specialty foundation and shoring contractor is critical.

Malibu landslide

On Jan. 11, the Pomona office of D.J. Scheffler was contacted to look at a landslide in Malibu that was threatening a guest house. The slide was approximately 50 to 60 feet in width, and the slope height impacted was approximately 70 feet. At the first arrival, the scarp of the landslide was approximately six feet high and extended to approximately 12 feet from the rear wall of the guesthouse.

The homeowner had engineers on site, as well as engineers and geologists from the city of Malibu. After a brief site visit and consultation with the assembled building professionals, it was decided that the most prudent course of action was to implement an emergency shoring repair.

An emergency permit was issued, and design was progressing as construction began. The shoring wall was constructed based on verbal recommendations without a formal set of plans. On the same day, a drill rig and steel beam reinforcement was mobilized to the site.

The day after the initial site visit, six steel beam reinforced concrete soldier piles were constructed. Within the next few days, a total of 14 soldier piles were constructed. As we were finishing the ends of the soldier pile wall the slide movement progressed to the point that the leading face of each of the soldier piles was exposed to a height of approximately 12 feet. The piles were constructed approximately six feet from the rear wall of the guest house.

▲ **This home in Malibu was saved from a catastrophic landslide during the recent torrential rains on the West Coast thanks to a quick response time from the design team.**

Given the progression of the landslide, it is apparent that if not for quick action the guest house would likely have been lost to the landslide. At the very least, the working area would have been lost and the structure would not have been able to be protected from additional movement.

It is likely that if the start of construction had been delayed even two days it would likely have been too late to construct the shoring to save the guest house.

As we progress into the hills, the attention to detail in developing land becomes ever more important. Design professionals play an even greater part in determining the ultimate success of a project. A project team with the right geotechnical engineers, geologists and other design professionals can keep a minor problem during the development stage from turning into a catastrophic problem some years after the development is completed.

The investigative and design phase is not the prudent time to be searching for the low bid. The relatively few thousands of dollars that can be saved by shopping for design services can be dwarfed by the liability that can result from something relatively simple that is missed.

▼ **The cement piles just visible in this photo are driven deep into the face of the landslide to provide the anchors for the shoring wall that will stabilize the hillside.**

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