



## West Cliff Soil Nail Wall Sinkhole Emergency Repair

Santa Cruz, California

Civil & Structural Engineering



The 40 foot wide and 20 foot deep sinkhole opened up after a winter-long series of El Nino storms pushed heavy swells against the bluff, eroding the sandstone and protective boulders from below an existing retaining wall along West Cliff Drive.

Sinkholes are not a new occurrence for the soft bedrock bluff along West Cliff Drive, which is particularly vulnerable to coastal erosion. West Cliff has eroded at an estimated rate of up 6 inches a year in recent decades, although erosion tends to occur episodically during sustained periods of high surf and high tide.

To repair the latest sinkhole, MME quickly provided emergency design details for Salinas-based contractor Don Chapin Co. to shore up the existing retaining wall using 200 tons of 5 ton boulders and protect the area from further damage.

The second phase, concentrating on ensuring the long-term viability of the area, involved creating a drilled pier-supported retaining wall inside the existing soil-nail structure. MME worked closely with geotechnical and coastal engineers Haro Kasunich & Associates to develop the creative and cost-effective design. Our expertise enabled the City to rapidly restore this beloved coast road and walking path.

### Client Reference:

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