

Penitencia Delivery Main and Penitencia Force Main Seismic Retrofit Project-Pipe Deflection Monitoring System

Owner:

Santa Clara Water District

Design Engineer:

Carollo Engineers

Contractor:

Ranger Pipelines

Location:

San Jose, CA

Value Provided:

- Development of instrumentation methodology to monitor pipeline displacement over an active landslide.
- Design, installation, and commissioning of Pipe Deflection Monitoring System for Ranger Pipelines, Carollo Engineers and the Santa Clara Valley Water District.
- Software development and training in operation of Pipe Deflection Monitoring System for the Santa Clara Water District.
- Ability to identify buried pipe joint movements as a result of event driven conditions.

Background & Project Challenges

The Penitencia Delivery Main and Force Main pipelines are owned by the Santa Clara Water District and located on a slow moving landslide within 1.2 miles of the Hayward fault. The project retrofitted the 60" PDM, 66" PFM and 72" South Bay Aqueduct (SBA) pipelines for the landslide displacement. The pipelines use articulating joints to accommodate the landslide displacement of 7.7' (seismic), 1.7' (creep) for a total of 9.4' at the landslide toe.



Geocomp Role & Accomplishments

Geocomp was contracted to develop a Pipe Deflection Monitoring System. We provided a solution to monitor pipe deflections and measure ranges used by the articulating joints from active landslides or earthquakes. Horizontal SAAs were buried immediately below the pipes with vertical SAAs installed between two of the pipe runs to provide a three dimensional profile of pipe movements.

Geocomp installed and commissioned the Pipe Deflection Monitoring System. The data is collected with a battery back-up data logging system and are remotely posted to Geocomp's iSiteCentral™ database management system. This allows multiple user access to the data through a password protected website. The system will be used to monitor future pipeline deflection from on-going landslide creep and/or a seismic event.

