

# Case Study

Structural Health Monitoring  
Corporate Center Building (CHUBB)  
San Juan, Puerto Rico



In Cooperation With  
GeoSIG Partner



## Background

Established in 1999, Dorado Services of Puerto Rico, LLC, is a Puerto Rican-owned corporation based in San Juan. Since their founding, the company have successfully expanded the scope and geographic coverage of services offered to both governmental agencies and the private sector. Dorado's services vary from waste management, demolition, land management, disaster recovery, general contracting, structural/civil engineering services, facilities maintenance and environmental engineering. What unites them is a focus on safety, technological advances, quality workmanship and experienced management.

Dorado Services are headquartered at The Corporate Center Building (CHUBB) in San Juan, which is an 8-story building that houses office space for 17 businesses in total. The CHUBB building has an occupancy limit of 500 people.

The Puerto Rico Trench, north of the island, is an undersea fault zone. As the North American plate slides under the Caribbean plate there -- at a rate of about 2 cm per year, according to the USGS -- it creates the potential for earthquakes and undersea landslides.

## Challenge

As there have been notable earthquakes/aftershocks in Puerto Rico, particularly in recent years, Dorado Services were concerned that were an earthquake with a higher magnitude to strike, employees in the CHUBB building would have to evacuate the building for it to be surveyed before it could be reoccupied. They appreciated that the inconvenience and loss of revenue due to a potentially unnecessary evacuation could be avoided if their building were monitored. Furthermore, as a GeoSIG Partner, they wanted to experience the Structural Health Monitoring Solution they offer firsthand, as well as use it as a demonstration building for the many interested people on the island.

## Solution

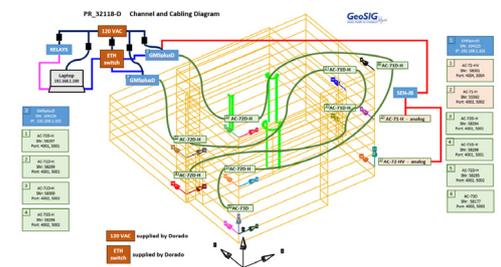
[Dorado Services of Puerto Rico](#) installed a customised SHRM solution consisting of six AC-7X accelerometers in the main office building, four AC-7X accelerometers in the parking garage structure, and two GMSplusD digital seismic recorders used to record and store data from the accelerometers. Additionally, a relay card has been installed to activate emergency risk indicator lights across all floors to notify building occupants of the status of an event, with red indicating a high risk level and green indicating low risk level and no need to evacuate.

As Dorado Services have installed and commissioned the solution in their building, they can have full confidence in supporting any new installation they may make on the island. Additionally, they felt the reduction in their insurance premium was further incentive to carry out such a project.

Another solution using GeoSIG instruments and a capable partner showing that quality and reliability can also be cost effective.



The Corporate Center Building (CHUBB) is an 8-story building located in San Juan that houses office space for 17 businesses.



The accelerometers and digital seismic recorders are strategically placed. GeoSMART software monitors the data received from the sensors and sends an alert if exceedances are detected.



GeoSIG accelerometers (left) detect motion as part of the structural monitoring of the building. If the exceedance is deemed unsafe, red lights in the corridor (right) will alert people that evacuation is necessary.

## Product links

[AC-7X & AC-7XD](#)

[GMSplusD](#)

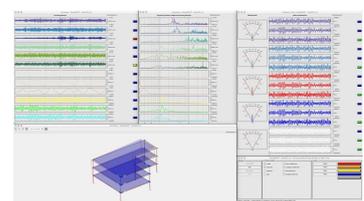
[GeoSMART](#)



GMSplusD digital seismic recorders



AC-73D and AC-7X accelerometers



GeoSMART software