# Nuevo Eden de San Juan Bridge

El Salvador, Central America

## Summary

Through a grant agreement signed on November 29, 2006, the Government of El Salvador received a US$ 460.9 million grant from the Government of the United States of America via the Millennium Challenge Corporation (MCC), a US Government corporation created to help to facilitate the reduction of poverty through sustainable economic growth. A portion of the proceeds will fund a major infrastructure project that involves the construction of CA-03 highway sections 3 and 4, the Nombre de Jesus Bridge and the Nueva Eden de San Juan Bridge. Both bridges cross over the Lempa River and are an integral part of the Northern Transnational Highway. The project will unite two areas of the country that are separated by the Lempa River, permitting permanent traffic and connectivity. This project is bringing many benefits to the local communities including the creation of over 1,050 local jobs, new tourism development, increased market access for local products and services, a reduction in regional travel times, and improvements to the quality and efficiency of vital transportation corridors. Previously the more than 44,000 habitants of the area could cross the Rio Lempa only by ferry.

| Project Info | |
|---|---|
| Owner: | Government of El Salvador |
| Drilling Contractor: | Rodio Swissboring Guatemala S.A. |
| Builder: | Astaldi S.p.A. |
| Completion Date: | August, 2012 |
| Project Cost: | $16.8 Million |
| Maximum Load | 10.15 MN |

**Services Provided**

- Two Single Level O-cell Load Tests on opposing sides of the Lempa River

## Project

The Nuevo Eden de San Juan Bridge is located between Cabañas and San Miguel provinces, between the municipalities of Dolores and Nuevo Eden de San Juan. This bridge is 330 meters long, with four 60-m spans and two 45-m spans over the main riverbed. The foundations are concrete piles and the superstructure consists of prestressed box girders. The Nueva Eden de San Juan Bridge is the third longest and third tallest bridge in the country, cost $16.8 million to build and was completed in 2012.

*Completed production rebar cage with O-cell*

## Bi-directional load test arrangement

Two bored piles were to be tested at the Nueva Eden de San Juan Bridge. Both were production piles that utilized 1420mm rock sockets and were located on opposite sides of the Lempa River. The O-cell® configuration at one of the test piles used a single 20-inch diameter O-cell located at the toe of a bored pile that had been socketed 7.7-meters into weathered basalt. The O-cell configuration at the other test pile used a single 16-inch O-cell again located at the toe and was socketed 7.5 meters into weathered basalt. Each of these two production test shafts had a maximum test load required of 8.0 MN.

## Conclusions

In October 2010 and in March 2011 Fugro Loadtest performed bi-directional static load tests using Loadtest's patented Osterberg Cell® method. Load increments were applied using the Quick Load Test Method for Individual Piles (ASTM D1143-07). In the first test the 20-inch O-cell was loaded in fourteen increments to a bi-directional gross O-cell load of 10.15 MN. In the second test the 16-inch O-cell was loaded in sixteen increments to a bi-directional gross load of 7.6 MN. These two testing events were designed to act as proof tests in order to confirm the foundation design of the bridge. In each case Loadtest was able to far exceed the maximum test load required, providing confidence in the foundation design and bored pile construction practices of El Salvador's Nuevo Eden de San Juan Bridge.