

STRUCTURAL ENGINEERING SEMINAR  
CE 691S

*Rehabilitation of the Caracas-La Guaira Highway Viaduct No. 1*

by

**Luis B. Fargier Gabaldón**

Spectrum Engineering  
The Universidad de los Andes  
Venezuela

TUESDAY, SEPTEMBER 9, 2008

CIVIL 1144

4:30 p.m.

The Viaduct No. 1 (Figure 1) located on the Caracas-La Guaira highway was designed by Professor Freyssinet, opened to traffic in 1953 and later was affected by a landslide thrust detected in 1987. The bridge consisted of three parallel double-hinged arch ribs spanning over 152 meters and two approach viaducts located at either side of the arch rib span. This presentation will summarize the rehabilitation measures conducted on the structure to extend its service life, which included the construction of a redundant gravity and lateral load resisting systems, external post-tensioning of the arch ribs and the design of a plastic hinge at the crown of the ribs. The rehabilitation measures allowed the Viaduct to accommodate large net deformations of approximately 1.90 meters before collapsing. Causes leading to collapse will be explored and lessons learnt from this project will be presented.

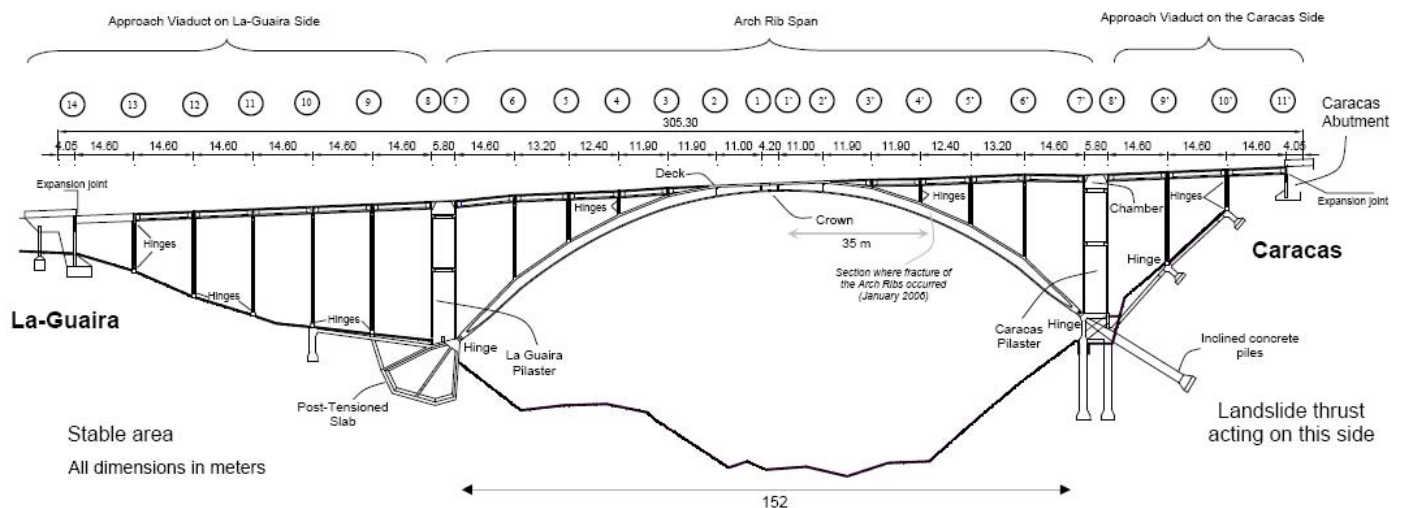


Fig. 1: The Viaduct Subjected to the Thrust