

2008 ICRI PROJECT AWARDS
**REHABILITATION AND SEISMIC RETROFIT
OF RESIDENCIAS GALILEO**
Caracas, Venezuela

Submitted by B.R.S. Ingenieros, C.A.

Abstract

Residencias Galileo is a ten-story building located in Caracas, Venezuela. It has a basement for parking, one level for office and commercial space and eight levels for residential apartments. The building was constructed in 1950. Initially, it had been used for rent for a period of 40 years. Then, it had been abandon until 2006 and finally, the owner decided to refurbish it for subsequent selling.

At the time the original structure was designed and constructed, seismic provisions in building codes were underestimated. Current codes have at least triplicate seismic loads. In addition, the new codes emphasize the need for retrofitting the structure of any building that has done mayor repairs, refurbishes or modifications in use. This was what motivated the seismic upgrade of Residencias Galileo.

The project was part of a multidisciplinary work, involving not only the structural repair and retrofit, but also a complete refurbishing of the building. The project involved a site inspection, non destructive and destructive tests, dynamic analysis and design of the rehabilitation.

Lateral stiffness, strength and ductility deficiencies were detected in the original structure. The main repair and strengthening methods applied were: section enlargement of some columns and beams, construction of additional reinforced concrete beams, strengthening of columns and joints using carbon fiber reinforced polymers (CFRP) and some minor corrosion repairs.

Some adjustments to the retrofitting project were necessary. A challenging team effort, among the owner, the designer and the contractor, was necessary to deal with the modification without affecting execution time and costs. Finally, the project was executed with less than 10% deviation from the original budget cost and the estimated time schedule. Building restoration proved to be much more profitable and cost effective than demolishing the old structure and constructing a new equivalent building.

Owner:

GRUPO IMALCA

Project Engineer/Designer:

EDISISMO

Repair Contractor:

B.R.S. INGENIEROS, C.A.

Material Supplier:

SIKA VENEZUELA