



THE WORLD'S GATHERING PLACE FOR ADVANCING CONCRETE

INTERNATIONAL LUNCH

SUNDAY, MARCH 24, 2024
11:30 AM – 1:30 PM
\$50 USD PER PERSON

Performance-Based Design of BIOMA Tower

Traditionally, design provisions in Panama follow a prescriptive design approach. REP-2021 (Panamanian Structural Design Provisions) allows the use of performance-based procedures for the seismic design of buildings in the Republic of Panama. Such procedures provide greater flexibility to select the structural system that best fits the intended performance of a building. The BIOMA tower is a very slender (slenderness ratio $H/B = 18$) and tall (height $H = 800$ ft) reinforced concrete residential building, located in Costa del Este, Panama. This is a good example of a building for which a prescribed seismic-force-resisting system, such as a moment frame or a dual system, is disqualified because of architectural and cost restraints.

The structural system of BIOMA consists of a pair of core shear walls connected to some outer columns through a system of outriggers located at two preselected stories of the building. In this presentation, the lateral and vibration responses of the building under wind loading are validated by climate studies and wind tunnel testing performed at RWDI Canada. Also, a performance-based design approach, following the 2020 Los Angeles Tall Buildings Structural Design Council (LATBSDC) Guidelines and ACI 318-19, is used to explicitly evaluate the seismic performance of BIOMA.



Dr. Oscar M. Ramirez, PE, PhD, is the Founder and President of OM Ramirez and Associates, S.A., a structural engineering consulting firm based in Panama City, Panama. Ramirez is responsible for the design of a large portfolio of high-rise buildings in Panama and Brazil, including some of the tallest and most slender buildings in Latin America.

The ACI Concrete Convention will take place at the Hyatt Regency New Orleans hotel in New Orleans, LA, USA, March 24-28, 2024. Visit www.aciconvention.org to register for the International Lunch!