Award of Excellence

KRUDWIG & ASSOCIATES, INC.
STRUCTURAL ENGINEERS

OCEAN 14 CONDOMINIUMS CONCRETE RESTORATION PROJECT

Recognized for **Excellence** in the **Repair of High-rise Structures** – December 3, 2009
International Concrete Repair Institute – Great Plains Chapter

Structure characteristics:

The Ocean 14 condominiums structure is a seventeen-story multi-unit structure. Existing plans were available at the time of the project to determine the date of construction, which indicated that the building was constructed around 1966. The area of structural concern was the deterioration of the exterior concrete elements including the beams, columns and balcony slabs. An attached parking garage was also included with the project. Construction consisted of cast in place concrete members. Progressed exterior and interior concrete deterioration was observed in multiple locations. The project began in late 2007 and was completed in July 2009 at a construction cost of $2.2 million.

Problems that prompted repair:

The Owners were concerned about spalling concrete and exposed reinforcing steel on many of their balconies, beams and columns. In addition, they were interested in having the building coated to mitigate water intrusion.

Inspection/evaluation methods:

On-site structural investigations were performed to the entire structure to develop a set of repair drawings that would indicate the locations of and types of repairs to be completed. Structural deficiencies were identified during the condition survey thru destructive testing methods by manually removing loose delaminated concrete. Non-destructive testing included visual observations and soundings. No concrete strength, chloride content or ph level testing was performed since entire concrete elements were identified to be removed and replaced.

Repair system selected:

High-strength polymer modified repair mortars that contain corrosion inhibiting admixtures as well as epoxy bonding agents were used to replace sections of deteriorated concrete.

Application method selected:

Most repairs were performed with form and pour procedures while a few locations were performed with hand-applied methods. Swing stages were utilized in vertical stacks to access the exterior of the building structure.

Surface preparation:

Edges of concrete to be repaired were scored a minimum of ½" with square edges and care was taken to not cut any existing reinforcing steel to remain in place. Existing exposed reinforcing steel was cleaned with mechanical wire wheels and grinders. Epoxy bonding agents were used to coat existing reinforcing steel as well as any concrete surfaces that would bond with new repair mortar.