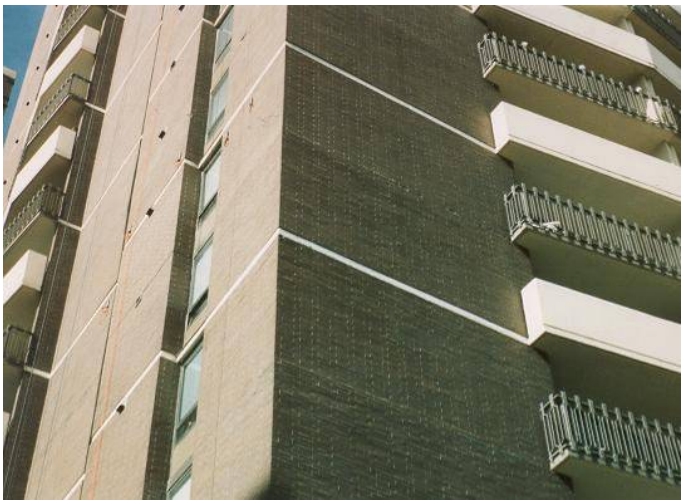
PROJECT

High-Rise Apartment Building
Denver, Colorado



CLIENT

Confidential

PROJECT DESCRIPTION

Cracks, spalls, and related damage were observed throughout the height of this high-rise apartment building. Constructed in the early 1970's, the building has a reinforced concrete frame with exterior brick veneer. Through testing and analysis, the cause of the distress was found to be a buildup of stress in the masonry veneer due to the combined effect of brick expansion and frame shortening. A repair program was implemented to relieve veneer stress and accommodate future veneer expansion. A network of electronic gages was also installed to monitor strains at critical locations during the repair process.

SERVICES PROVIDED BY ATKINSON-NOLAND

- Condition survey to identify damage conditions throughout the exterior
- In situ stress tests using the flatjack method to measure stress buildup in the veneer
- Design and implementation of a system to monitor repair effectiveness
- Assistance in design of the repair program, including repair sequencing
- Collaboration with Bridge Diagnostics, Inc., for design and installation of monitoring system

In situ stress tests, using the flatjack method of ASTM C1196, were used to identify stress buildup over the height of the building. Over 700 psi compression stress was measured in the veneer near the base.

The repair scheme involved relieving the built-up stress by installing a series of horizontal expansion joints. Also shown in the image are electronic gages, used to monitor the veneer during stress relief.

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