



PROJECT PROFILE

North Capitol Ramp

Prepurchase Survey and Conceptual Design of Enhancements | Lansing, MI



CLIENT

Lansing Community College

BACKGROUND

Constructed in 1972, the North Capitol Ramp contains four elevated parking levels and one level at grade. Elevated floors comprise one-way cast-in-place concrete slabs with a paper-wrapped button-headed post-tensioning system, supported by precast concrete single-tee beams that span between precast concrete columns and load-bearing spandrel panels.

To address parking deficits, the college was considering the purchase of an existing multilevel parking structure. In conjunction with the potential purchase, the college desired a condition assessment of the structure and a five-year plan to restore and maintain its structural integrity. A primary objective of the assessment was to identify probable costs of anticipated repairs and maintenance for use during purchase negotiations. The college also sought an assessment of feasibility and probable costs for several proposed architectural and functional enhancements.



SOLUTION

WJE performed a comprehensive condition assessment of the parking structure, including the following tasks:

- Evaluation of the original structural design
- Visual survey of garage and sounding of concrete surfaces to identify corrosion-related deterioration
- Examination of the slab post-tensioning system at inspection openings in representative locations
- Laboratory analyses of concrete samples to determine chloride ion concentrations

WJE determined that chloride-induced corrosion was the primary source of the deterioration and concluded that repairs to the slabs would likely become necessary within the next five years to maintain structural integrity and serviceability. To minimize the potential for future corrosion-related damage, WJE recommended repairing distressed elements and installing waterproofing membrane systems on the elevated levels. WJE also developed conceptual designs for the requested enhancements, including renovation of retail spaces, partial exterior recladding, snow removal improvements, and security upgrades. Construction cost estimates for both the maintenance repairs and enhancements were provided to facilitate the financial implications of the purchase.

