

Carle Foundation Hospital Masonry Upgrade and Vertical Expansion

Urbana, Illinois

Range of Services

- Investigation of brickwork distress
- Exploratory brickwork analysis
- Repair design; coordination and field observation services

The Problem

The South Clinic of the Carle Foundation Hospital was two stories and had a brick veneer that was visibly in distress – sealants were fractured, brick units were spalling, vertical fractures in the brickwork were evident at the corners, localized fractures were randomly present and mortar was falling out of joints. A three-story vertical expansion was contemplated; however, these problems had to be addressed in preparation for that addition.

The Creative Solution

The solution involved investigation of the exterior brickwork problems, along with exploratory openings to expose typical hidden conditions. It was revealed that flashing stopped short of the brick surface, no weeps were installed, and shelf angles were shimmed more than two inches by means of pieces of steel channels to accommodate a concrete building frame that was very much out of plumb. The steel shelf angles were badly detailed at the corners, allowing brickwork to move differentially and crack as noted. Bolts connecting the steel channel pieces to the concrete frame were loose in many locations allowing the brickwork to move down to bear on the brickwork below. These conditions differed on all four elevations of the stair/elevator tower, necessitating different details to respond to conditions as they were exposed during repair. Rapid response was required from our office to keep masonry and iron-worker crews busy. We created over 50 details in the field that became drawings of record and kept the project on schedule for the repair and the vertical expansion. The shelf angles for the basic building elevations were repaired in place by removal of brickwork in five-foot long horizontal sections one foot high in a stagger pattern as shown in the photos below. We were also the masonry consultants for the vertical expansion, where one set of details is all that was necessary for the new construction.



Shelf angle repair



Vertical expansion



integrating
STRUCTURAL
design
focused on
quality