

Loomis Laboratory Masonry Rehabilitation

University of Illinois
 Urbana, Illinois

Client: Capital Development Board, Springfield, IL
 Prime A/E: Glerum Wachter Architecture, Urbana, IL



1

Range of Services

- ▶ Schematic design; structural planning; structural design
- ▶ Construction documents; construction administration and observation

Project Overview

This 1950's building is a four story cast-in-place concrete beam and column frame. The exterior wall is composed of three 4 inch thick wythes of masonry. The inner wythe is concrete block, the middle wythe is common brick, and the outer wythe is exterior grade brick veneer. The inner two wythes bear on the concrete floors at each level and are set in-between the columns. The brick veneer is header bonded to the back up center Wythe every sixth course. There are no provisions for brickwork expansion vertically or horizontally.

The brick expanded in both the horizontal and vertical directions, starting from the center of each elevation and grew out to the corners horizontally, and growing vertically bending shelf angles and raising the parapet copings. The horizontal expansion pushed the brickwork off at the corners, bending and displacing the brickwork and creating major veneer fractures as shown in image 1. The Header bonding to the backup forced the middle and inner wythes to be dragged with the expansion and push against the corner columns. This resulted in column/spandrel beam fractures at all four corners in the upper two floors. See image 2.



2

The scope of the repair work included:

1. Saw-cut vertical expansion joints (see image 3) uniformly spaced around the building.
2. Repair/replace existing damaged brickwork and add shelf angles where omitted.
3. Replace parapet coping joints with sealant to prevent water from entering the walls.
4. Repair damaged corner columns with epoxy injection to restore column strength.
5. Anchor existing brickwork in areas without adequate ties to the backup.
6. Replace existing torn or hardened caulk.
7. Install missing flashing at all existing horizontal shelf angles.



3

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