

CASE STUDY: JAMES M. HANLEY FEDERAL BUILDING Building Envelope Investigations

Situation

In September 2012, a piece of concrete detached from the façade of the James M. Hanley Federal Building in Syracuse, NY and fell to the ground, after which fences were installed around the perimeter of the building and sidewalk bridges erected at the east and west entrances for public safety.

Challenges

The emergency nature of the detached concrete at the Hanley Building required immediate action as well as discretion.

Actions

Using both industrial rope access and aerial platforms, a hands-on inspection of all concrete surfaces of the 15-story main tower and 4-story annex of the Hanley Building was performed. During the hands-on survey, the location, severity and quantity of conditions such as



spalling and cracking in the concrete were recorded. The concrete materials were sounded with 16-ounce acrylic mallets and steel hammers during the investigation to help in the assessment of their condition. As part of the façade investigation, loose concrete was removed to address immediate public safety concerns.

Results

A hands-on periodic inspection program would likely have identified the spalled and loose concrete on the façade of the Hanley Building before it fell. The façade inspection utilizing industrial rope access took a total of seven days on site. The inspection was performed with no impact on the building occupants. A similar inspection using suspended scaffolding would likely have taken at least twice as long due to the time required to move staging from one part of the building to another and had a greater impact on building occupants. The total cost for swing stage access, not including professional fees for the inspection is estimated to be 10% more than the cost of the rope access inspection, which included the professional documentation of existing conditions.



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Adding Value to Building Envelope Investigations

Situation

One of the largest municipal buildings in the United States, Buffalo City Hall is a massive 29-story steel-framed Art Deco building clad in sandstone and limestone with a granite water table and extensive terra cotta ornament. To assist with the development of construction documents for façade repairs, a hands-on survey of existing conditions on the tower was required.

Challenges

This government building is used extensively by the general public and is located in a busy downtown environment. Minimal disruption to the operations and building occupants was required.

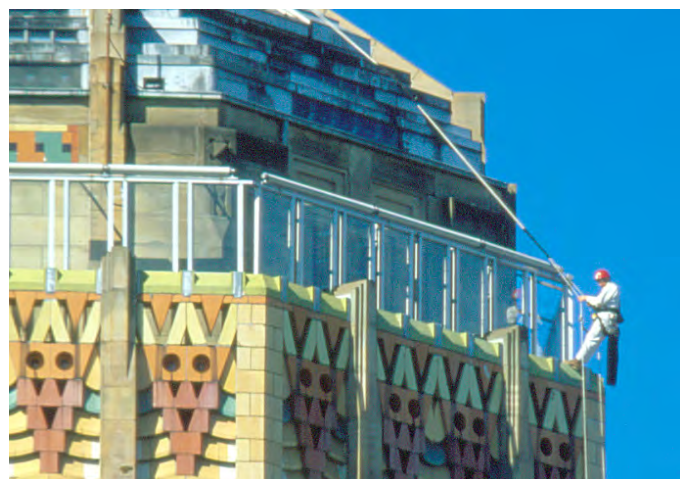
Actions

Industrial rope access techniques were used to allow technicians a hands-on inspection of the exterior. The primary focus of the investigation process was to document locations of displaced, cracked and spalled units and failing and open mortar joints in the masonry where repairs are required. Faults were documented on elevation drawings using a typology

of masonry repairs. Field notes were entered into AutoCAD drawings using a direct-to-digital annotation system indicating the material to be repaired, the type of repair required, the quantity of repair, and photo identification numbers associated with that repair location. Repair quantities were extracted from the AutoCAD drawing into an Excel spreadsheet which were used to develop repair cost estimates and construction documents.

Results

Deliverables from this study included a volume of over 500 photographs, a set of 41 annotated AutoCAD elevation drawings and copies of videotapes made during the course of the investigation.



Between 2002 and 2009, the City of Buffalo, NY undertook a phased exterior masonry rehabilitation project of the monumental City Hall. The first step of the rehabilitation project was to perform a detailed conditions survey to locate, quantify and evaluate the conditions of deterioration.

Adding Value to Building Envelope Investigations

Situation

The Mayo Clinic in Rochester, MN comprises scores of buildings dating from the 19th century to the early 21st century and spread out over two campuses. As part of a proactive building maintenance and operations program, the Facilities Department has instituted a periodic inspection program based on the Chicago's city-mandated façade inspection ordinance

Challenges

Due to the sensitive nature of research conducted in the buildings of the Mayo Clinic and out of concern for privacy of the buildings' occupants, any work on the buildings must have as little impact on the operations and occupants as possible.

Actions

Periodic inspections of four buildings at the Mayo Clinic were performed over several years. At each building existing

conditions were documented to help prioritize and plan maintenance and capital repair projects.

Results

The industrial rope access approach used to perform the periodic inspections of the buildings of the Mayo Clinic allows for hands-on access with minimal impact on the buildings' occupants. Rigging is easily moved around the roofs of the buildings and from building to building, reducing site time. In the case of the Gonda Building, which is fairly amenable to setting up and moving around suspended scaffold platforms, the estimated cost of industrial rope access was approximately three-fourths the cost of using suspended platforms for the inspection. The price difference would be greater at other buildings at the Mayo Clinic where suspended scaffold would be more time-consuming to install and move around.



Periodic inspections of four buildings at the Mayo Clinic were performed over several years to help prioritize and plan maintenance and capital repair projects. (Left: Joseph Building in the front and the Francis Building behind. Right: Gonda Building Skyway)