

## MORE THAN JUST A FACE LIFT: FAÇADE REPLACEMENT IN OCCUPIED BUILDINGS

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Replacing the façade of an older building is usually required by more than just the desire to give the building a “face lift.” In many cases, it’s an absolute necessity because the façade is literally falling off the building or the energy losses through the façade need to be addressed. However, it can be a challenge to design a solution that can be implemented without moving the current occupants out of the building or, at the very least, with the minimum disruption possible.

In one such instance, the building envelope at the University of Massachusetts (UMass) Medical School needed to be replaced, a significant undertaking as the complex houses over a million square feet of medical education and research as well as a hospital with both diagnostic inpatient and outpatient activities. Additionally, the façade replacement, representing over 330,000 square feet, had to be completed without evacuating major portions of the facility.



University of Massachusetts Medical school exterior view

The primary challenge was to come up with a strategy that minimized the disruption to ongoing activities in the complex while re-cladding the entire facility.

The UMass Medical Center was built in two phases from 1971 through 1974 and designed by two different design teams. While similar in appearance, construction details often varied. Consisting of a large multi-wing nine-story building that houses both the Medical School and the Medical Center Hospital, the original construction was a reinforced cast-in-place concrete structure clad with large granite panels with an aluminum and glass curtainwall system and aluminum and glass-striped windows.

In the spring of 1998, the facilities management staff at the Medical Center became concerned about the apparent movement and bowing of the granite panels forming the façade of the building. After an extensive investigative study by Simpson Gumpertz & Heger (SGH), one of the country’s foremost forensic exterior envelope engineering firms, it was determined that the only long-term remedy was to remove both the granite panels and the windows and replace the entire exterior envelope with a new one.

However, the removal of the exterior wall would require an extensive amount of temporary weather-tight protection internal to the building envelope, necessitating significant coordination within the complex to temporarily relocate occupants at the perimeter of the building.

But there was also a golden opportunity being presented: the existing architectural quality of the complex was no longer suitable for such a major medical center. Independent of its technical issues, the existing granite was very dark in color and created a rather severe appearance to the entire building complex. Its imposing institutional structure was cold, and did not reflect the personality nor the mission of an academic Medical Center.

The replacement of the façade offered a unique opportunity to create an exterior architectural expression that was much more appropriate to both the mission and the personality of this fine institution.

Beyond the required replacement of the façade, other opportunities presented themselves for increasing office space by “clipping on” an extra twelve feet of space to an exterior corridor. This strategy added five floors of new offices and conference rooms to the Medical School wing at an efficient cost. Additionally, much needed new entries to the School and the Hospital were incorporated into the project.

To eliminate the need to relocate building occupants during construction, a window cladding strategy incorporated a unitized curtainwall system. This approach involved removing the failing granite panels while leaving the existing windows in place. The exterior wall was wrapped with an air vapor barrier membrane and insulation, over which the unitized curtainwall was installed.



*View of facade before Replacement*



*View of facade after Replacement*

This “direct attached system” was tied into the new building membrane and aligned with the existing windows mullion for mullion. Once installed, the glass was removed from the existing frames and the joint between the two frames was sealed from the building interior. This final operation took an average of four hours per room and could be managed with a minimal amount of disruption which required each room to be out of service for only one day instead of the duration of the project.

What started out as a project to technically address the failure of the exterior façade evolved into a project that has created an entirely new identity for the Medical Center. The new façade approach has not only addressed the technical failure of the original façade, but it has made the new façade far more energy responsive than that of the original, changing the facilities relationship to the environment, and through its ability to strategically capture space, provided important new growth space in critical areas across the campus.

This façade replacement project won a design award sponsored by AIA/Central Massachusetts and Preservation Worcester. This design competition had a special interest in honoring adaptive reuse, restoration, and preservation projects. According to the design awards jury, “This is a fine example of a façade replacement project that resulted in a modernized and enhanced image for a busy medical school campus and hospital. Every aspect of the project is thoughtfully considered. The details are knit together with bright new materials resulting in a whole that is more than the sum of its parts.”

Not only did UMass Medical Center replace the façade without disrupting day-to-day operations and improved the energy efficiency of the building, the number of visits to the hospital has increased since the façade replacement. A win-win situation for everyone involved.