

BY MICHAEL C. DAVIDS

Elmhurst Condo Sustains Window Replacements

Windows shouldn't fail after just a decade, but for one Condo building located in Elmhurst, Illinois, it happened. A few small leaks were signs of widespread issues which eventually led to several window sashes actually falling out of the five story fifty-six unit building that was built in 2002. The condominium building is a structure clad in brick, limestone, cast stone, fiber cement siding, and 192 vinyl-clad wood windows.

The condo board President when the window problems were addressed was Loretta Kalina. She had her hands full with complaints about the window leaks from residents of the building while also leading the condo board on a number of other important matters.

Turning a Challenge Into a Positive

Kalina reflected on the situation, "I was President of our Association Board and it still amazes me how we were able to take on this very challenging problem and turn it into a great positive."

She adds, "I was one of the very first residents of the building. At the time I had lived in the building for 11 years, so to have a failure of the windows seemed beyond belief to me." Typically windows should have a useful life of 20 years or better, provided they are fabricated and installed correctly, and adequately maintained. One of the biggest reasons that any windows eventually fail is because of water penetration.

Look to Professionals for Solutions

Kalina continues, "We did look to our man-

agement company for help in figuring out a solution to our window problems. Their suggestion was to hire a consulting engineering company specializing in building envelope issues to study the problem."

"The issues started to become more frequent and window sashes actually fell out of the building," relates Charles Perry of Lieberman Management Services, Inc. Perry was a Senior Portfolio Manager and responsible for overseeing the property management at the Elmhurst Condo building when the window problems came to light. He is now Director of Business Development for Lieberman Management. Perry and the board hired Building Technology Consultants (BTC) in October of 2010 as the Engineers to investigate why some of the window sashes were falling out.

Patrick Reicher of BTC served as the project engineer, "We were able to start small with an investigation in a single residential unit, which ultimately led to a larger investigation of the entire complex," states Reicher. "We reviewed 100% of

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the windows from both inside and outside the building. From within each residential unit, we opened each operable window to assess the hardware attachment to the window sills."

During the investigation, BTC observed hair-line cracks and tears in the vinyl cladding materials at many of the windows. They also observed displaced and/or discontinuous vertical trim strips, unsealed and missing mull end caps, deteriorated window perimeter sealant, and water-damaged interior window trim. Exploratory openings through the vinyl cladding revealed rotted wood window framing.

Reicher adds, "Deterioration of the wood window framing was primarily attributed to water penetration at the hinge hardware fasteners and displaced mull strips. During our evaluation, approximately 30% of the windows were found to have loose hinges. At these locations, water can penetrate through the holes in the vinyl cladding and saturate the wood frame. The sashes at many of these locations were not adequately attached to the wood frames, and were susceptible to falling from the building."

Subsequent to the investigation, BTC issued reports detailing their findings so management, the board and the residents could have a thorough

understanding of their window issues. "Upon conclusion of our investigation, we were able to provide the facts and report the overall condition of the windows to the Association. Ultimately, we found there were many deficiencies with the existing windows which would either allow water penetration or pose fall hazards to building occupants or others on the ground below."

Window Replacement Remedy

Kalina stated, "They did a very thorough study and came back with very serious proposals to remedy the problems that we had. There were no band-aid or low cost solutions." Reicher echoed Kalina and said, "Any repairs to the existing windows would not have been long term in nature, and implementing such repairs would not be prudent. Window replacement was necessary."

After much discussion and consideration by the board, among residents and with their professional advisors including management and attorneys, the Association decided that replacing all the windows at the property would be the proper solution and serve their long term interest best.

Certainly there were some unit owners who were not in favor of the window replacement project. "That's a decision that any board facing a

significant capital improvement project needs to make, 'what is the best option for the Association,'" adds Reicher.

Selecting Window & Manufacturer

The engineers at BTC worked with Marvin Windows to help find a solution using their Ultimate Casement Window, an aluminum-clad wood window. Marvin's extensive experience with large scale replacement projects in condos, apartments and dorms was a primary factor in choosing them to get involved in this project. According to Reicher, "Given the facts, the Association ended up choosing aluminum-clad wood windows so that they could keep a similar appearance to the existing windows, while ensuring the new windows met specified performance requirements. The new windows also exceeded minimum Illinois Energy Conservation Code requirements."

Reicher continued, "The original installation did not include properly installed pan flashing below the windows in accordance with industry standards. For the replacement project, it was important to provide pan flashing, but we needed to avoid anchoring the new windows through the flashing material. To accomplish this, we worked with the Architectural Department at Marvin. For the final design, we used

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brackets that could be anchored directly to the rigid pan flashing back dam, thus ensuring no penetrations through the pan flashing horizontal drainage surface. Therefore, the pan flashing assembly served two purposes: It provided a drainage system below the windows, and also allowed for window anchorage along the sill.

As a quality assurance measure, we specified all windows to be milled in the factory and shipped to the site as fully assembled units. With the complete assembly of the windows taking place at the factory, we were able to limit some variables that would be present if the windows were milled in the field. Even the largest windows were shipped to the site as fully assembled units.

Choosing a manufacturer up front gave us the opportunity to design the project more efficiently, and work out installation details in advance. This was especially helpful during the bidding phase of the project, as each potential contractor was provided detailed information



regarding the proposed installation.”

Window Installation

Once the Bidding Documents (Drawings and Specifications) had been created for the project, an

installer had to be selected before any pre-construction meetings and window mock-ups could begin. Perry states, “We moved forward with the bid analysis process and the board ultimately selected Woodland Windows and Doors as the

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contractor for the project. When we began to implement installation of windows into the building, we were able to get a homeowner in one of the first floor units to agree to be a test case." This helped overcome the fears and concerns that a few residents had about noise, debris and having workers in their homes. The Elmhurst condo resident owners found as the project progressed and they saw the quality of the new windows and the quality control assurances that were going into the construction and installation of the windows that the results and feedback was very positive.

Woodland Windows and Doors, a third generation family business, employed its second and third generation to manage the window replacement project. Ken Mariotti, the current President of Woodland and nephew Phil Mariotti, Project Manager for the company, worked together to oversee their aspects of the project.

"After we finished the mock-up (test case), we found that everything was coming together very well, with a few minor adjustments, so it gave everyone the ability to see what they're up against before actually getting into the project," said Ken Mariotti.

The project involved a total of 192 openings

that ranged from small twin casements which are 4'X5' to a larger composite of 7'X7' in size. Mariotti adds, "We actually brought the windows up utilizing our own articulated lift to raise the new windows up to the openings from the exterior."

One aspect that made the installation a lot easier was having Marvin apply masonry brackets to the windows before they were shipped to the site. "We had 3 installers on the crew that worked on the Elmhurst condo project. They started the job and they finished the job – there were no different faces out there for the entire job so there was a good strong relationship with each of the unit owners.

Marvin did a really nice job of labeling the windows before they came out. It's kind of a small feature, but when you get into a project of this size and complexity, if there's anything specific about a particular unit, it gives the installers the ability to look at the marked label and know which opening it's supposed to be installed at."

Communication & Technology

"Our installation coordinator looked at the entire project and he forecasted the work out for the duration of the project," Mariotti continued. "When we are responsible for interacting with the

homeowner regarding the work schedule it can result in better efficiency and we are glad to take on some of the communication work to assist the property manager in that regard." Another important scheduling item that minimized inconvenience to residents was that the installation crew did not begin work on the next unit until they were completely done with the previous unit on the schedule.

"When you are working with property managers and homeowner associations, there's a lot involved in those relationships because everyone has a different need," Mariotti contends. The use of modern technology and open communication was instrumental to the success of the window replacement project. Management and the board held three meetings open to all residents dedicated to discussing the project in advance. Additionally, all submittals were required to be completed prior to the project being started which reduced the need for communication on those items during the project.

Mariotti adds, "When you are dealing in a home environment, you are working around furniture and a lot of valuable personal items. It's paramount that everyone involved including the actual crews doing the work understand that they have



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to respect the resident's home. So having our own people doing the work becomes very important. On this project, many of the residents came to know our crew members by first name because they were the only three workers that performed the installation of the windows for each resident. Some residents were even baking them cookies by the time we were done!"

During the installation process, technology was utilized to increase efficiency. As crews came upon any issue of uncertainty, they snapped a photo from their Smart phone and immediately sent it to the engineer. "In most cases, we could determine the solution via phone communication without requiring the engineer to perform a site visit. And when it was necessary for the engineer to perform an inspection, it was done that same day"

Funding the Window Replacements

Paying for necessary capital improvements is a critical part of achieving a successful solution to a challenge such as having windows falling out of your building. The window replacements at the Elmhurst Condo were funded by a loan and a special assessment that was passed by the board and approved by residents of the Association. The collateral for the loan was the assignment of association assessments. The loan was secured through Community Advantage, A Wintrust Company. The Special Assessment had two payment options. Residents could elect to make payment on the special assessment in one lump sum (saving the owner on interest charges), or they could make payments over a five year period. Community Advantage President Pete Santangelo stated, "We were pleased to provide a loan to fund this window replacement project. One of the significant factors for us to offer financing for the Association members was because of the use of the highly credentialed professional management, engineer and contractor that were involved."

Positive Result

Perry concluded, "The best thing for me as a manager is to not have to take any complaint calls and not have to make any apology calls. If you can get a project where you can do that you're very lucky and I can say this is one of those projects."

The use of aluminum-clad wood windows with argon-filled insulated glass units resulted in windows that exceed minimum State of Illinois Energy Conservation Code requirements. Additionally, installation of low-rise foam insulation will reduce thermal loss around the window frames. As such, the replacement windows are expected to provide much greater energy efficiency than the original windows installed just 11 years ago.

Additionally, due to the proximity of train



➤ Shown here is the inside of a condo unit protected with plastic covering to avoid any damage during window replacement work.



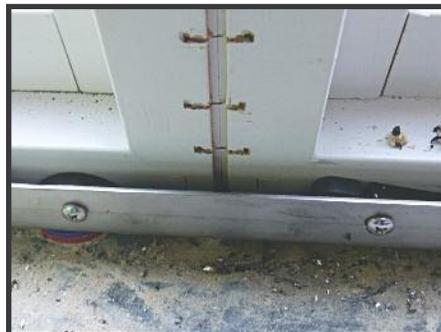
➤ Shown here is one of the window sills that had rotted wood from water penetration and caused a potential hazard of a window falling out.



➤ Window perimeter sealant was installed around the interior and exterior of the windows to limit air leakage through the gap between the window frame and building.



➤ Shown here is the installation crew using their articulating boom lift to place a new window.



➤ Shown here is the pan flashing assembly back dam. Screws were used to attach the back dam to brackets installed along the window sill.



➤ Shown here is a view of one of the new windows from inside the condo unit.

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Elmhurst Condo Window Replacement Project Highlights:

- » Marvin Windows consisted of argon-filled insulated glass units with low-E coating. Replacement windows had a U-Factor=0.29 and a Solar Heat Gain Coefficient (SHGC)=0.29, exceeding minimum State of Illinois Energy Conservation Code requirements.
- » Sheet metal pan flashing assemblies included a thermal break to improve thermal performance of the window systems.
- » Window perimeter sealant was installed around the interior and exterior of the windows to limit air leakage through the gap between the window frame and building.
- » Low-rise foam insulation was installed along the jambs and head prior to installation of interior perimeter sealant to reduce thermal loss around the window frames.
- » Windows were milled in the factory, and shipped to the site as fully assembled units. This limited the possibility for field fabrication errors and installation issues.
- » Wood window interiors were primed and painted in the factory. This reduced the time required for installation and finishing within units.
- » Due to the proximity of the train tracks to the building, unit owners were provided the option to reduce sound transmission through the windows. Sound transmission reduction was accomplished by providing thicker panes of glass and a slightly larger air space between glass panes. For a small increase in window material and fabrication costs, an approximate 30% reduction in sound transmission was achieved.

(source: Building Technology Consultants)

2010	2011	2012	2013	Project Task
				BTC Contacted by LMS
				Initial Evaluation/Report
				Additional Evaluation/Report
				Design Authorized
				Preparation of Bidding Documents
				Pre-Bid Meeting
				Contractor Selection/Funding
				Pre-Construction Meeting
				Submittals
				Mock-Ups
				Unit Owner Meeting
				Construction
				Closeout

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Kalina summarized her feelings about the project saying, "The owners that preceded the work done at my unit all praised the operation in spite of the fact that it was so deep into the construction elements of the building. So I went along thinking that everything would work out fine at the end of the project – and it did! The operation of the windows is smoother, easier, giving better performance than what was replaced." 🍃

Design Installation Maintenance Repairs

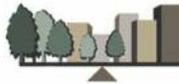
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