



This system was developed by UBS to restore Perry's Memorial on Lake Erie.

## Ensuring Safety

UNIVERSAL BUILDERS SUPPLY HAS PATENTED SYSTEMS THAT ENHANCE SAFETY IN HIGH-RISE CONSTRUCTION. BY RUSS GAGER

More than just supplying construction materials, Universal Builders Supply Inc. (UBS) invents systems that become industry standards. The now ubiquitous sidewalk bridges used in all big cities to protect pedestrians from falling debris during high-rise construction originally were developed by UBS.

**MILESTONE**  
**80**  
**YEARS**

"My grandfather started the company in 1931," relates Kevin O'Callaghan, president and CEO who is the third-generation and sole owner of the 80-year-old company. "My grandfather supplied material to the Empire State Building. We've tried to always remain cutting-edge and ahead of the time, and over the 80 years, we've been thankfully lucky to be able to do that."

The level of safety required of high-rise con-

### *Universal Builders Supply Inc.*

*www.ubs1.com*

- *2010 revenue: \$70 million*
- *Headquarters: New Rochelle, N.Y.*
- *Employees: 100*
- *Specialty: Construction access products*

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struction in urban areas like New York has evolved over the decades. "Twenty-five years ago, we were probably the largest sidewalk bridge contractor in the city," O'Callaghan remembers. "That was very good technology, but it became somewhat commoditized, which is why we tend to do a lot less of it."

Despite sidewalk bridges, construction debris sometimes can blow past and pose a danger to those on the ground. It was to avoid those incidents that the next evolution of construction safety products was developed by UBS during the 1980s - horizontal nets that would travel up with the construction of a building.

"You'd have these horizontal nets that in practice and hope we would catch anything that got loose within three to four floors of the construction floor," O'Callaghan explains. "So if a piece of wood or a person - God forbid - fell or got loose, you'd have these catch platforms of netting that would ideally catch them." UBS developed a solution to the nets being blown by the wind up against the building so they were ineffectual when they were needed most. "We had this hard rubber cam, so when they needed to be out, they stayed out. We had a patent on that system," O'Callaghan says.

### Cocooning Safety

The next evolution of safety system that UBS developed was a cocoon. "The cocoon began around 2008, and we're about on our eighth or ninth generation of it," O'Callaghan recalls. "Our customers made us aware of the demand for a solution. We now have our cocoon safety system that encapsulates the top of construction projects as they're being built and virtually eliminates the risk of fall or debris getting loose from the uppermost floors."

The cocoon system is comprised of vertical panels, solid horizontal flaps and a secondary safety net. It connects to the top two floors of a project that were most recently constructed and extends approximately two-and-a-half additional floors. It provides perimeter protection of the top floor and the next one that will be built.

The system can be raised as construction rises because of a series of interlocking panels and slider rails that are custom-designed, extruded and fabricated to a building's specifications. The lower two floors have solid decks to contain debris. A net with a fine debris liner is installed below the system to catch any small debris. Handrails are at each floor elevation.

"It's cutting-edge technology that we've developed in concert with the demands of the industry," O'Callaghan notes. "We developed and patented it. You still have sidewalk bridging, because other things are going on in the building where you'd want to protect pedestrians. The cocoon has taken safety precautions to a heretofore unprecedented level."

## 80 Years of Innovation

O'Callaghan attributes the company's 80 years of existence to its attention to detail and technological innovation. "That has separated us from a lot of people who have been in the business over the years," he says. "We do our best to solve customer requirements with real workable solutions."

UBS has engineers on staff and affiliates along with a manufacturing facility in the yard of its Red Hook, N.Y., location. "We have a large inventory of standard stock components, but we're often asked to come up with a unique solution, and sometimes that requires specially fabricated design systems," O'Callaghan notes. "I think we're always striving for that new technology in an industry that oftentimes is passed from generation to generation."

He acknowledges that sometimes new developments are not readily embraced. "We've been very successful in working with the private and public sector in introducing some new technology that has taken hold and greatly improved the safety and quality of our industry," he says. "Who knows what the next evolution will be?"

## Access Specialties

One of UBS's specialties is scaffolding and high-speed hoisting for unusual applications. "I would call us an access company," O'Callaghan maintains. "It's getting workers and materials access to the areas they need to work, and that encompasses a lot."

An unusual project during the summer of 2008 was providing the scaffolding for artist Olafur Eliasson's New York City Waterfalls, a temporary monumental public art project commissioned by The Public Art Fund and presented in collaboration with the city of New York. It consisted of four man-made waterfalls at locations within the New York harbor along the shores of Brooklyn, Manhattan and Governor's Island. One of the waterfalls was positioned next to a pier of the iconic Brooklyn Bridge.

The scaffolding was nearly as high as the bridge and supported the mechanisms to create a man-made waterfall that rivaled Niagara. Lit dramatically at night, the waterfalls brought the public to the waterfront and creat-

ed additional tourism for businesses like the Circle Line, which sails sightseeing boats along the rivers surrounding Manhattan.

In 2009, UBS installed the scaffolding to restore Perry's Victory and International Peace Memorial, a 352-foot-tall Doric column on a narrow strip of land on South Bass Island in Lake Erie off the coast of Ohio. "They were going to have scaffolding from the ground up," O'Callaghan relates. "We came up with a way they could work with trusses we had specially designed and made. We hung work platforms below so they can do the required cutting and patching and pointing on the lower area. We're saving them a lot of time and money."

Completion of the job is scheduled for 2011.

UBS also has provided the scaffolding to support seating and stages in front of the U.S. Capitol

building in Washington, D.C., during the 2005 and 2009 presidential inaugurations. Another UBS project was providing scaffolding for an interior and exterior renovation of a major armory at 68th Street and Park Avenue in Manhattan that covers an entire city block.

"They didn't want the scaffolding to be from the ground up all over the place," O'Callaghan explains. "So we used a hanging system that provided them with all the access they needed without having the ground floor have anything on it. We hung the supports from the existing structure that was trussed. It is somewhat unusual."

## Grand Central Terminal

O'Callaghan maintains one of the company's most famous projects is its scaffolding of Grand Central Terminal in New York City. "You talk about working with a customer - they were going to fill the entire area with scaffolding and just have tunnels for the 500,000 daily commuters," he remembers. "We developed a system where we would scaffold the walls and hang a deck to access the ceiling. We would hang from the light holes - put threaded rod through there - and hang a system so you'd have scaffolding only on the perimeter yet still allow all ceiling work to proceed."

Although the solution was appreciated, implementing it meant they would have to wait on completing the HVAC and lighting restoration until the hung scaffolding was removed. "So on hearing that, we developed a



system where we spanned one end to the other on the scaffolding about 100 feet across and 30 feet wide," O'Callaghan recalls. "They were not going to be able to work on the entire ceiling at one time, so why not put it on a set of rails and work it where you need to be? You have the flexibility to go back and forth with a lot less equipment. We saved them a lot of money and knocked a year and half off the schedule."

### The Statue of Liberty

Another famous UBS scaffolding job was for the Statue of Liberty in 1984. Along with the scaffolding that made the "Guinness Book of World Records" as the largest freestanding scaffold in the world, UBS designed, fabricated, and installed the special crane in the highest corner tower that safely lowered the old torch to the ground for restoration under controlled conditions.

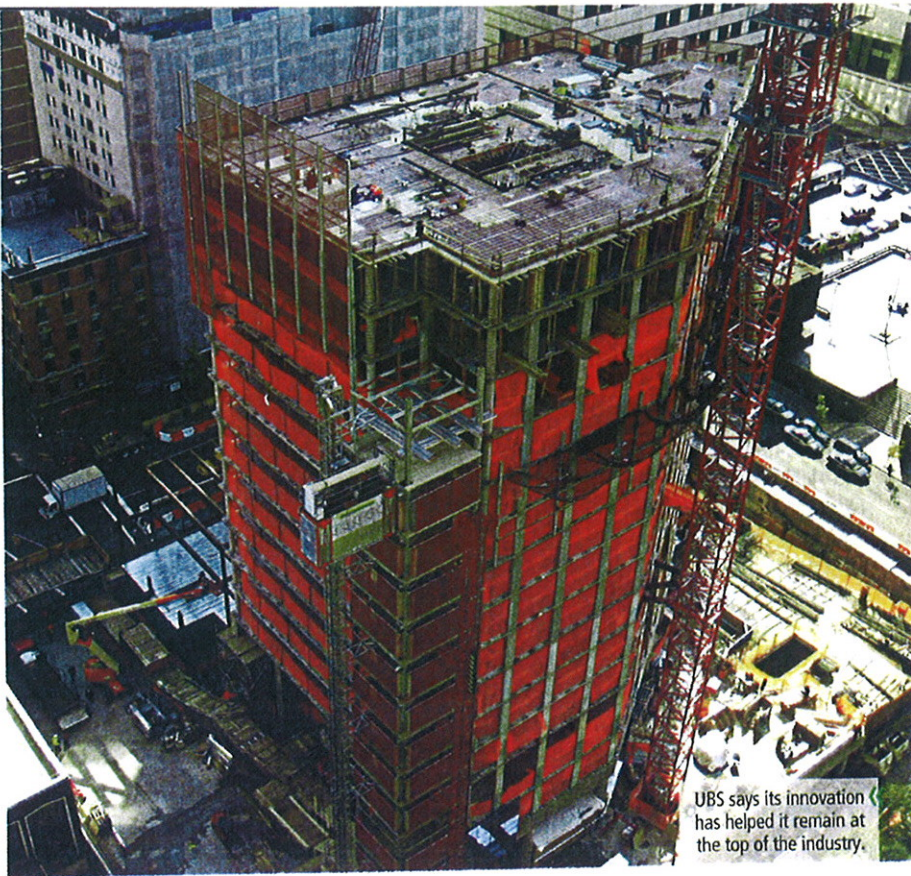
UBS won the project at the end of 1983. Work started immediately during what turned out to be one of the most severe winters the New York area had seen in many years. The crew of 30 skilled workmen completed the task without serious injury over the next four months.

Besides the exterior scaffold, UBS also installed scaffolding along the entire perimeter of the interior shell of the statue to access the thousands of rusted iron attachments that needed to be replaced due to the corrosive galvanic action between the copper and iron. UBS also designed and built the custom lifting attachments to the torch, the housing for the torch at the base of the scaffolding and the shoring and transfer beams, which safely transmitted the scaffold loading on the museum roof to the foundation below.

UBS constructed the work platforms and the long access ramp that brought personnel and material from the dock over the fort's walls to the museum-level staging deck. The company installed a personnel/material hoist tower along with a 350-step stair tower that gave access to the top of the statue.

Because the scaffolding could not come in contact with the statue, UBS designed it as a free-standing structure, capable of sustaining 100 mph winds. The last tie was placed at the top of the stone pedestal. The aluminum scaffolding was so stable that the torch's 6-inch movement due to the wind could be measured.

There were 2,100 frames and more than 20,000 scaffolding components used weighing more than 300 tons. It took more than a minute for a non-stop hoist tower trip to travel from the staging deck to the top landing.



UBS says its innovation has helped it remain at the top of the industry.

### The National Shrine

UBS also scaffolded the Incarnation Dome for the National Shrine in Washington, D.C., which is the largest Catholic church in the United States and ranks among the largest in the world. The shrine's upper church has two large domes directly over the nave floor that required the existing domes' plaster finishes to be removed and replaced with a Portland-cement-based material suitable to accommodate the redemption and incarnation dome mosaics.

Because of year-round activities, the shrine insisted that the upper church remain open. UBS was able to accommodate the shrine's request by designing a scaffold that would be supported from the shrine's main columns by two large collector trusses weighing approximately 12,000 pounds each. These trusses would be affixed with an elaborate roller system that would allow the scaffold platform to travel on top of these collectors.

"Our cutting-edge technology combined with our large investment in aluminum – which is a lightweight, high-strength, non-corrosive alloy for restoration and access work – gives us a great advantage in minimizing loads put on a structure," O'Callaghan asserts. "When people are trying to build something new or repair an old edifice or national treasure, they can look to our aluminum to not rust and deface what they're spending money to repair."

### High-speed Hoisting

UBS has developed several generations of high-speed hoisting systems. In the 1980s, UBS patented an aluminum backstructure system that allowed multiple hoists to be clustered in one location. This improved cost, efficiency and constructability.

Twenty years later, UBS developed a high-speed hoisting system approximately 90 percent of which can be erected at ground level. Assembling the 16-foot-square modules on the ground reduces the time workers are exposed to great heights, allows the work to be done in a controlled environment and keeps safety systems nearby.

UBS' in-house engineers attack solutions for customers' desires aggressively, O'Callaghan emphasizes. "We have a saying here that we're always looking to make things safer, faster and less expensive, and we believe that's been a real driving force for us," he says.

The company has worked on projects recently in Philadelphia; Ohio; Washington, D.C.; Maryland; San Francisco; and the United Kingdom. O'Callaghan points out that it takes more than money to make a project safe.

"You can always throw money at safety, and there's still no guarantees in our business," O'Callaghan stresses. "As long as you have human beings, there's always the chance of human error and mistakes being made." ♦