



From the Ashes



From the ashes: The Pentagon, (top to bottom) on September 14, February 6 and April 17. Project Phoenix's goal is to have people back in the outer (E) ring of the Pentagon by September 11, 2002.

PROSOCO and Project Phoenix

On the morning of September 11, 2001, Haywood Miller's crew was finishing work on the limestone exterior of Wedge One—the Pentagon's southwest-facing corner.

"I had two people on the roof and one inside," said Mr. Miller, operations manager for Forestville, Maryland-based MBS Inc., a masonry restoration firm. "The rest were on the ground."

Then the unimaginable happened. At 9:38 A.M., Flight 757, hijacked and carrying 64 people and 10,000 gallons of fuel, slammed into the west side of the wedge. Along with the passengers, crew and hijackers, 125 people in the Pentagon died. Hundreds more were injured.

The MBS people were all on the south side of the wedge, Mr. Miller explained. Luckily for them, they happened to be at the job site's furthest point from impact.

"They were bruised and scraped," said Mr. Miller, who had left the job site at 8 A.M. to attend a meeting, "but they survived. And for that we're very, very grateful."

Prelude to disaster

Mr. Miller and his crew had spent the summer of 2001 cleaning, patching and tuckpointing the 71,000 square feet of the Wedge One exterior. Their work was part of an overall \$1.2 billion Pentagon renovation, inside and out, due to be completed in 2014. They encountered the usual soiling found on aged urban masonry, Mr. Miller said. Carbon, water stains and dirt.

For most of the project, they used Sure Klean® Limestone Restorer, an acidic cleaner for moderately dirty unpolished limestone. The restorer works by uniformly dissolving the thin, stained outer layer of the limestone. Workers applied the cleaner with garden sprayers, and lightly scrubbed the treated surface with nylon brushes. They rinsed away the dissolved staining and the spent cleaner with high-pressure water.

Where staining was worst, such as under windowsills, the crew used Sure Klean® 766 Limestone & Masonry Prewash, followed by Sure Klean® Limestone & Masonry Afterwash. The two-step treatment uses the powerful alkaline prewash to break up tough soiling, followed by the mildly acidic afterwash that neutralizes and brightens the cleaned surface.

"The products worked great," Mr. Miller recalled. "Our results were good and the Pentagon officials seemed happy with the way the stone looked."

Continued on page 2, see "Project Phoenix"

Can You Identify This Project?



The architect who designed this southern structure in the mid-1840s is entombed within its walls. He took to his grave the secret of the location of the building's cornerstone. It has never been located. In 1987, workers used one ton of Sure Klean® Marble Poulitice to strip away decades of smoke, pollution and other grime from the locally quarried gray-blue interior limestone walls.

Can you identify this project?
Answer in the Fall 2002 edition of PROSOCO News!

Answer to last issue's CYITP:

Congratulations and a PROSOCO travel mug go to the following folks for identifying last issue's CYITP—*The Franklin School*, Washington, D.C.

Bill Lineburg, Kenseal Construction Products Corp., Herndon, Virginia.

Chloe Mercer, Alabama Historical Commission, Montgomery.

Don Williams, MHTN Architects, Salt Lake City.

John M. Wall, Pepco, Washington, DC

Robert C. Mack, Donald & Mack Ltd., Minneapolis, Minnesota

Stuart Johnson, Stephen Tilly, Architect, Dobbs Ferry, N.Y.

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The façade stones, 5 feet long, 2 feet wide and half-a-foot thick, each weighed about 600 pounds.

"Project Phoenix" from page 1

MBA's façade cleaning of Wedge One capped a major milestone in the renovation. It was one of the final steps in the three-year renovation of the wedge. The wedge itself, one of five Pentagon sections, represented 20 percent of the project. Done.

And in a few catastrophic seconds, undone.

Between then and January 1, workers labored 24/7, refusing to take holidays. Even now they work six days a week in 10-hour shifts. The effort is nicknamed "Project Phoenix," after the mythical bird of fire that rises from the ashes of its own destruction. Crews have cleared away wreckage, put up support columns, poured concrete.

They are racing the clock to have the exterior "E" ring of Wedge One rebuilt and re-inhabited by September 11, 2002. It's a real clock. A big digital clock with the words "Let's roll" emblazoned across the top lets the crews know, second-by-second, how much time is left. Workers are shooting to have the wedge entirely repaired by Spring 2003.

Congress has added \$300 million to the renovation budget, to speed up overall completion from 2014 to 2010. The repair of Wedge One alone is budgeted at \$740 million.

Salvage and clean

The job of salvaging and cleaning the damaged limestone facade around the point of impact fell to Bessemer, Alabama-based MasonryArts. MasonryArts had just finished installing the blast-proof windows in Wedge One that were widely credited with helping to limit the attack's destruction.

The task required workers to take the burned and blackened stones off the wall, and clean them in a secured parking lot. The facade stones, 5 feet long, 2 feet wide and half-a-foot thick, each weighed about 600 pounds. Larger stones from the cornice above the fifth floor windows weighed between 4 and 5 tons each. Some stone was too damaged and had to be discarded. The MasonryArts crew cleaned the stones with PROSOCO's EnviroKlean® Degreaser, an industrial-strength multi-surface detergent. Applied in concentrate and pressure-rinsed with clean water, it stripped away thick coatings of black carbon and jet-fuel residue.

The degreaser uses "chelating" (key-late-ing) agents, a technology that's been known for some time, but that's only now beginning to show up in the pressure washing industry.

Chelating agents are molecules that chemically latch onto the atoms of tiny contaminant molecules, like the jet-fuel residue



Workers attach a limestone panel to the concrete exterior of the Pentagon's E-ring.

Photo courtesy of Pentagon Renovation Program

on the Pentagon limestone. The term comes from the word “chela.” A chela is a pincer-like claw, as on a lobster or crab.

Instead of drawing the tiny contaminants out of the limestone pores like a poultice, or emulsifying them like a surfactant, the chelating agents go in after the particles, where the bigger molecules of detergents can't reach. But the particles can't escape the “tweezer-like” chelating agents. They grab the rust particles and suspend them in solution, to be rinsed away.

Chemically what's happening is that metal ions in the contaminating molecules are irresistibly attracted to charged molecules in the chelating agent. Since molecules come in structures like rings or chains, when the ions bond, the contaminating molecules are pulled away from the surface and bound to the chelating agent.

Scientists have known about chelating agents for decades, but the technology has only recently been applied to building cleaning. It has widespread application, from spot-cleaning laundry stains to cleaning skyscrapers.

Some of the stone was splattered with melted roofing tar. Solvent-based Sure Klean® Asphalt and Tar Remover was approved for that cleaning task.

By April, MasonryArts workers were putting the stone back on the poured concrete walls, both salvaged stone and newly quarried replacement stone, trucked in from Indiana.

The new stone came in on 50 flat-bed trucks, said MasonryArts Project Executive Roy Thompson. Each load of light-gray to buff-colored limestone weighs about 20 tons.

“The original Indiana limestone we salvaged is excellent material,” Mr. Thompson said. “It looks as good and will perform as well as the new stone. After all, it came from the same place.”

Urgency fueled by patriotism

Like everyone else at the job site, the MasonryArts crew is hustling to meet the September 11 goal.

“There's a definite sense of urgency,” Mr. Thompson commented. “It's fueled in large part by patriotism. I can't publish the schedule, but I can tell you we're ahead of it. We'll make that September 11 goal. There's no doubt it will happen.”

On June 11, exactly nine months since the attack, workers reattached the last limestone block. It was a salvaged stone, burnt and discolored, but still whole and strong, and purposefully not cleaned. It capped a niche in the façade, for a special dedication capsule. Inside the capsule—hundreds of cards and letters from school children, a plaque with the names of all 184 victims, Arlington County police and firefighter badges, and more.

The stone is inscribed with the date of the attack.

A final cleandown with Sure Klean® Vana Trol® to remove excess grout and general construction soiling before the September 11 deadline is the last step in the facade restoration. MBS, meanwhile, is eagerly awaiting the call to take up where they left off.

With Wedge One complete, MBS will join MasonryArts in renovating Wedges Two through Five, according to Mr. Miller.

“As MasonryArts gets the blast-proof windows in, we'll follow along, cleaning and repairing the façade,” Mr. Miller said.

Though normal practice is to clean before installing windows, the procedure is reversed in this case.

“Replacing the windows involves some pounding to get the old windows out,” Mr. Miller explained. “That could affect our patching and tuckpointing.”

“I always wanted to work on the Pentagon,” said Mr. Miller, who is in his 25th year in the industry. “I wanted to add it to the list of historic buildings I've worked on.”

“My feelings go way beyond that now,” he said. “This is something that will go down in history. It's a privilege to be part of that.”

‘Classic’ cleaner cleans classic brick building

Tourism is a top industry for Boulder, Colorado, and Pearl Street Mall is one of the biggest draws.

A four-block, pedestrian-only, historic preservation area at the foot of the Rockies, the outdoor mall is lined with trendy shops, galleries, microbreweries, restaurants and offices.

In 2000, the City of Boulder built a parking, retail and office building one block east at 1500 Pearl Street to help accommodate the crowds that stroll the mall each year. The building includes parking for about 700 cars on eight levels, two below grade, and 15,000 square feet of office and retail space.

RNL Design in association with Shears+Leese Architects, LLC, created a classic look for the building, to integrate it with neighboring historic structures. It's also an award-winning look



Photo by Gary Henry

Central Masonry used PROSOCO's “classic” Sure Klean® 600 Detergent for post-construction clean down of this Boulder, Colorado, parking structure. The building adjoins Pearl Street Mall, an historic preservation area.

—1500 Pearl Street has garnered several awards including an Award of Excellence from the International Parking Institute.

Masonry contractor Central Masonry of Littleton, Colo., used PROSOCO's “classic” brick cleaner—Sure Klean® 600 Detergent—for post-construction cleandown of the brick and limestone facades.

“We always clean what we build,” said Project Supervisor Mike Seubert. “We followed right behind the construction crews, cleaning each section as it went up.”

The effort was aided by unusually wet spring and summer weather for the normally semi-arid climate, Mr. Seubert said.

“All the snow and rain helped us prewet the brick. That's the whole secret to a good cleandown,” he commented. “When the brick is soaked, the cleaner stays on the surface where it does its job, dissolving excess mortar.”

The Central Masonry crew used brushes to apply and agitate the cleaner on the wet bricks. They pressure-washed the spent cleaner and dissolved mortar and dirt off the brick.

“The 600 did fantastic,” Mr. Seubert said. “It works a lot better than muriatic acid. What I like about it is that you get the same consistent results out of every 55-gallon drum.”

Sure Klean® 600 Detergent is the world's number-one selling proprietary cleaner for new masonry.

New product line solves concrete cleaning problems

A new product line based on PROSOCO's successful model of problem solving has advanced the art and science of cleaning and maintaining decorative and standard gray concrete.

The ConcreteScience® line of cleaning and protective treatments lets cleaning contractors achieve significantly better results on all kinds of concrete surfaces than traditional methods have allowed, said Paul Grahovac, PROSOCO's director of new business development.

"Washing concrete with high-pressure water may move surface dirt around, and even rinse some of it away," Mr. Grahovac commented. "But it won't remove gum wads, tar and tire marks, or embedded stains like oil, rust and grease."

"Embedded dirt that makes concrete dull and dingy usually escapes the cleaning process, too," he said.

PROSOCO's research and development chemists tackled those problems after the company was approached by officials of Minnesota-based ConcreteScience® International. They wanted PROSOCO to develop new products for use with their patented "vacuum extraction" concrete cleaning system.

The result, Mr. Grahovac said, was a versatile line of general and specialty products for concrete. The cleaning products work well with both the vacuum extraction equipment and standard pressure-washing gear.

An associated line of compatible, easy-to-apply protective treatments offers contractors an added business opportunity, Mr. Grahovac pointed out. They can offer clients "one-stop shopping" for cleaning and protecting concrete.

"It's a particularly good deal for maintenance contractors," Mr. Grahovac said. "A protected surface is much easier and faster to clean on the next visit. Labor cost goes down, while income remains steady."

PROSOCO is paying particular attention to the booming decorative concrete market. Currently estimated at 4-6 million cubic yards per year, demand for colored concrete alone is expected to double by 2007.

"People who pay for the beautiful appearance that decorative concrete brings are not likely to be tolerant of dirt, stains, oil and gum on their surfaces," Mr. Grahovac said. "These owners and managers will increasingly turn to the pressure-washing industry to keep their concrete looking the way it should."

"PROSOCO is making sure the industry has the tools to do that."

Photo by Gary Henry



Jeff Plumlee, general manager of ConcreteScience® of Kansas, uses vacuum extraction to rid concrete of deeply embedded oil and grease stains after pretreatment with a PROSOCO product.

Q&A

Q. I have an adhesion problem with paint on a split-faced concrete block commercial building. The building is barely a year old, yet the paint is already blistering and flaking. I don't want to strip and repaint until I have some idea of how to keep this from happening again. Is it possible that the paint is defective?

A. Instances of defective paint are rare. Paint failure is mostly due to improperly cleaned and prepped surfaces. Severe climatic conditions also take a toll on paint. Water intrusion into the masonry in particular can cause what you describe. Check the building for any structural defects or failed flashings that might let water in. Repair if needed. When you're satisfied that the building is sound, remove the old coating with Enviro Klean® Safety Peel 1 or Safety Peel 3. Choose based on testing. After stripping, clean the masonry with Sure Klean® Custom Masonry Cleaner. PROSOCO's Breathable Masonry Coating® II is a good choice for recoating. Along with being a color coat for masonry, it's also a breathable water repellent. A less advanced version of the product was used on the U.S. Capitol. Adhesion shouldn't be a problem. In adhesion test ASTM D 4541, the concrete pulled apart before the BMC® II could be pulled off. BMC® II stuck tight against tensile pressure of up to 367 psi.

Q. My new brick building needs masonry cleandown inside and out. The problem is that I've already got doors, windows, flooring, hardware and everything else installed. It's a lot to protect with plastic sheeting. Any suggestions?

A. Enviro Klean® Safety Klean is a new-masonry cleaner safe for use around metal. It uses no hydrochloric or other traditional acids. This low-odor, environmentally responsible cleaner will get rid of mortar smears and other common job-site staining. You'll still need plastic sheeting secured with masking tape to protect nonmasonry areas, such as wood and carpet. You can use traditional masonry cleaners, such as Sure Klean® 600 Detergent or Sure Klean® Vana Trol®, but, as you mentioned, plastic sheeting will be required for everything that isn't masonry. Whichever method your masonry cleandown uses, there is no substitute for being careful around nonmasonry areas. Your contractor can also help ensure a successful cleandown by following closely all preparatory and precautionary guidance on the product label.

If you have a question/solution, please write it on the Fax Back form or email marketing@prosoco.com.

For a free brochure on PROSOCO's new ConcreteScience® line of cleaning and protective treatments, including cure and seals, call Customer Care toll-free at 800-255-4255, or e-mail marketing@prosoco.com.

PROFILE

Frank Lloyd Wright's Robie House

Location

Hyde Park, Chicago

Project

Restoration Cleaning

Contractor

Midwest Pressure Washing & Restoration

Distributor

McCann Industries Inc.

Substrate

Brick, Limestone

Products Used

Sure Klean® 766 Limestone & Masonry Prewash

Sure Klean® Limestone & Masonry Afterwash

Sure Klean® Restoration Cleaner

Sure Klean® 1260 Marble Poulitice

Thirty thousand people a year visit Frank Lloyd Wright's Robie House in Hyde Park, Chicago. Students, tourists, architecture buffs, and others come from as far as Japan and as close as Chicago's own neighborhoods.

The house shows Wright's distinctive take on space and form to create a living area where everything works together, from the tiniest trim to the largest architectural elements. Built in 1910 for bicycle manufacturer Frederick Robie, the house is Wright's ultimate expression of "Prairie Style" architecture.

The style is known for its use of masonry, horizontal lines, large windows, and use of interior wood. The look, prevalent in the Midwest, produces buildings that look part of, rather than imposed on, the landscape.

In 1997, the owner—University of Chicago, and the operator—the Frank Lloyd Wright Preservation Trust, began a 10-year, \$8 million effort to restore and recreate the building as it existed in 1910.

A few of the jobs: reinforce the floor for the thousands of visitors, replace the clay-shingle roof, install climate controls, and repaint 95 percent of the brick.

The job of cleaning Robie House's brick and limestone masonry fell to Don Zuidema, president of Griffith, Indiana-based Midwest Pressure Washing and Restoration. They began in February 2002.

"Robie House went through the coal age," Mr. Zuidema said. "The masonry was covered with soot, carbon and dirt."

Inside masonry included about 1,000 square feet of brick fireplace and chimney with limestone trim. The chimney went through all three stories, and the roof. Structural brick columns in the house's lower level also needed cleaning.

The brick, brown, with iron-spot highlights, was dulled by decades of soot and dirt. In some places, a lacquer had been applied. It all had to go to restore the masonry's original appearance.

Mr. Zuidema and his crew used Sure Klean® 766 Limestone & Masonry Prewash followed by Sure Klean® Limestone & Masonry Afterwash to hand-clean the brick using brushes and buckets. The 766, an alkaline gel, breaks up contaminants for rinsing away. The mildly acidic Afterwash pH-neutralizes and brightens the cleaned surface.

Sure Klean® 1260 Poulitice removed deeply embedded stains. Troweled on and covered with plastic, the light gray paste dwelled 24 hours. Peeling off the dried paste the next day, workers pulled away the surface soiling and much of the deep-seated stains.

Controlling rinse water indoors was a challenge, Mr. Zuidema recalled. "There are a lot of historic wood surfaces in that house—like the oak floors. It only takes a little water to make them swell and warp." Wet vacs, absorbent socks and tubes and double-covering the floors with plastic and tape were all part of Midwest's protective tactics.

"We kept the windows open to limit the humidity in the house," Mr. Zuidema said. "Of course our best resources for protecting the house were the top-notch mechanics we had doing the job."

Controlled cleaning was also important on Robie House's 10,000 square feet of exterior brick, and limestone trim. The lot is landscaped. The neighborhood has plenty of foot and automobile traffic. The house's windows, copper gutters and flashing needed protection too.

The protection included plastic sheeting, tape, and silicon spray. To avoid wind drift, workers brushed on rather than sprayed the brown bricks with Sure Klean® Restoration Cleaner. They let the cleaner dwell two to three minutes.

Though rinsing the spent cleaner and dissolved soiling off the brown bricks requires a high-pressure fresh-water rinse, workers rinsed with low pressure first. This ensured any wind drift from the high-pressure rinse was harmless.

"Some areas showed a really dramatic difference after cleaning," Mr. Zuidema said. "Overall, the house has brightened up quite a bit to its original finish. I think Mr. Wright would appreciate it."



Frank Lloyd Wright Preservation Trust

Frank Lloyd Wright's Robie House—Early 20th Century "coal-age" soiling was removed in the late 20th Century with PROSOCO restoration products.

FAX BACK

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Or mail your requests to Editor, PROSOCO Inc. 3741 Greenway Circle, Lawrence, KS 66046

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Company _____

Address _____

City _____ State _____ Zip _____ Phone _____

World of Concrete
Jan 9-13 • New Orleans, LA

Masonry Showcase
Feb 6-9 • Phoenix, AZ

Masonry Expo
Feb 6-10 • Kansas City, MO

NAHB Builders Show
Feb 8-11 • Atlanta, GA

Restoration & Renovation
March 20-23 • Boston, MA

BIA Brick Show
April 7-9 • Phoenix, AZ

ALA Expo
May 9-11 • Charlotte, NC

CSI
June 27-30 • Las Vegas, NV

StoneExpo
Dec 5-7 • Baltimore, MD

OTHER INDUSTRY EVENTS

SWRI Annual Meeting
February 24-25 • Cabo San Lucas, Mexico

SEAL Spring Meeting
April 7-8 • Nashville, TN

APT Annual Conference
September 12-14 • Toronto, Canada

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