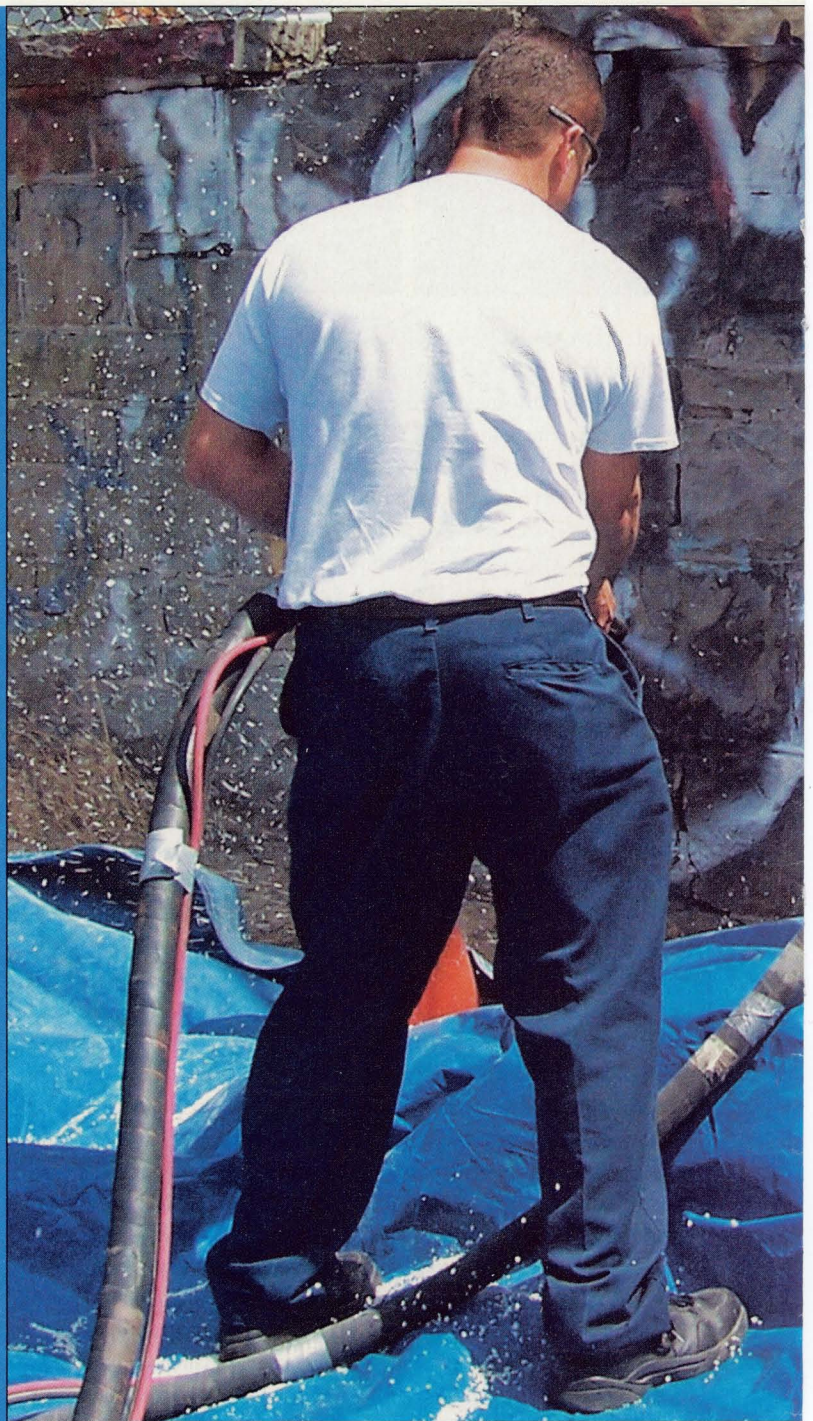


# Soft-sponge Abrasive Helps Presidio Get Tough on Graffiti



*by Jack Innis*

"Leave no stone unturned" was the goal of conservators of the Presidio Trust when it came to finding a long-term method of dealing with graffiti on its historic sandstone-masonry Boundary Wall.

The Presidio Trust manages a portion of the former U.S. Army base known as The Presidio of San Francisco. According to the National Park Service Web site, the base has a rich cultural history, beginning with the native Ohlone people, the Spanish arrival in 1776, 24 years of Mexican rule, and finally U.S. Army control in 1846.

Since 1994, the Presidio has been a part of the Golden Gate National Recreation Area. Among the park's most enduring features is the Presidio Boundary Wall, a five-mile-long, broken-range, ashlar-pattern sandstone wall along the Presidio's south and east perimeter





Photos courtesy of Sponge-Jet Inc.

that was built in 1896 and is now a National Historic Landmark.

Lately, portions of the wall have been targeted by taggers. Although graffiti has been around a long time, it is a relatively recent occurrence on this wall. "There are a lot of areas in the Presidio that get graffiti, but we are able to take care of them more readily because they're not on historic surfaces," says Presidio Trust Senior Preservation Conservator Christina Wallace. "The Boundary Wall is sandstone, historic, and it's fragile."

Presidio Trust maintenance personnel — trained in masonry, conservation, and graffiti removal — have used chemical strippers on the sandstone in the past. But they wanted to explore whether new technology would allow cleaning with minimum effect on the substrate.

Architectural Resources Group (ARG), which for 25 years has

provided architectural, planning, and materials conservation services to clients in the San Francisco area, was charged with the task of evaluating a wide variety of graffiti removal methods, apparatus, and materials. ARG performed field tests on the most heavily marred parts of the wall to determine what works best. The firm's report was used to create a set of standard operating procedures for future Presidio maintenance crews and contractors to follow.

One of the first objectives was to analyze the sandstone substrate. The task was difficult in that the exact origin of the original stone is lost to history. Much of the wall appears to be comprised of original and replacement stone blocks from different sources, none of them local.

According to a 1997 study of several wall gates, the masonry is best characterized as Franciscan sandstone: composed primarily of quartz,



feldspars, and lithic grains in equal parts held together with a binding matrix of argillaceous materials, including chlorite, clay, biotite, and possibly serpentine. The stones are mostly gray-green in color.

## Tests and trials

"In the past, our firm has worked on some of these stones at the gates, so we have some familiarity," says ARG conservator Katharine Untch. "In an ideal world, each stone would be independently tested, each layer of graffiti would be tested, and each stone would be microscopically examined after treatment."

Given that the Presidio's budget authorized by Congress decreases with each passing year, a more pragmatic approach was required. ARG researched previous documentation on the wall's construction, materials, and prior graffiti removal methods. ARG also researched current practices used for removing graffiti on historic sandstone substrates.

Based on graffiti coverage, accessibility, and ease of environmental cleanup, a field test site was chosen at the wall's Broadway Gate. Each stone unit within the test area was examined, and the results recorded.

Masonry condition problems included spalling and loose and missing mortar. Graffiti, comprised of varying types of solvents, binders, and pigments, went several layers deep into the wall. Binders included oils, acrylics, and alkyds. Paint layers adhered well to the substrate and underlying paint layers. For the most part, there were no signs of peeling prior to testing.

## Chemicals methods tested

Chemical removal systems tested included products developed for professional use in cleaning stone, such as Prosoco's Heavy Duty Paint Stripper, Fast Acting Stripper and Safety Peel, and Dumond's Peel Away. Solutions marketed as environmentally friendly were tested including SOYsolv and Enviro-Solutions Paint Stripper & Graffiti Remover. Consumer products such as WIPE OUT Porous Surface Graffiti Remover, Taginator biodegradable graffiti remover, Disappear Organic Graffiti/Adhesive Remover, and Motsenbocker's Lift Off were tested. Ammoniated latex was also tried.

Of the chemical products tested, Prosoco's Heavy Duty Stripper was found to be effective on small areas in a fairly controlled manner. A dwelling time of one hour removed upper paint layers, while a dwelling time of three hours removed almost all layers. However, shadows from red paint were not completely removed, and minor spalling of previously loose surface occurred as a result of rinsing with pressurized water.

The report stated that some amount of surface loss is likely to occur with any chemical process due to the need to rinse the surface with water to remove residue — even garden hose pressure of about 40 psi loosened some stone due to the wall's condition.

## Mechanical methods tested

Cleaning systems involving mild mechanical abrasive action were tested, including hot and cold pressurized water, micro-abrasives, the JOS Cleaning System from Stonehealth, and Sponge-Jet's Sponge Blasting System. Among mechanical frontrunners, the JOS system uses a rotational vortex to increase surface action while reducing the pressures of air and water and the volume of abrasive. The Sponge-Jet system uses variable air pressure to propel water-based polyurethane foam particles, which are impregnated with a cleaning agent. The pliant foam media flattens upon impact, exposing the cleaning agent or abrasive. The sponge component is softer than other abrasives and provides less of a hard edge upon impact on surfaces. Sponge-Jet's system allows opera-



tors to control the aggressiveness of their removal to protect sensitive substrates.

## Test results

The Sponge-Jet system was selected for future graffiti removal along the Presidio Boundary Wall. The media that worked best was the sponge impregnated with spherical precipitates of calcium carbonate, which removed paint very gradually and in a very controlled manner. Among advantages listed were minimal sandstone surface disruption with the exception of some minor spalling of already-loose stone and mortar. The system uses no volatile organic compounds (VOCs) or other hazardous chemicals, is environmentally friendly, is easy to clean up, and requires no water or rinsing. Adjustable air pressures allow lower levels to reduce spalling. In addition, the Sponge-Jet equipment has an observer-operated cut-off switch for added control. Although initial set-up may involve a capital expense or rental fee, Sponge-Jet's blast medium is reusable, thus lowering overall costs.

## Overall recommendations

Every graffiti removal project has variables — from substrate to paint to size — and no particular system solves every problem. In fact, ARG was adamant that their findings not be construed as an overall endorsement for any process. Their only conclusion was that the Sponge-Jet system worked best on the Boundary Wall's masonry.

"In terms of preservation, graffiti is among the bigger problems we face on the wall because it's fragile sandstone," says Wallace. "In the past, we've had to use chemicals on the sandstone because that's what was available. Now, we have available gentle abrasive measures. We haven't done a huge amount of it yet, but we plan to within the next few months." ■