The water-soluble and versatile compound's initial claim to fame was for the removal of coal tar resin from the delicate interior copper skin of the Statue of Liberty before its centennial celebration. The soda blasting process was developed by Church & Dwight Co., Inc., makers of Arm & Hammer brand products, as part of its ARMEX® cleaning and coating removal systems. The process uses specially engineered baking soda-based formulations and has been used in many other restoration and industrial maintenance applications.

John Zoubek of Zoubek Associates, Inc. (Parlin, New Jersey) was one of the first people in the restoration/public works field to recognize baking soda's potential. His company distributes construction supplies and equipment to restoration contractors and concrete contractors specializing in preserving and repairing highways, roads, bridges, and buildings. Zoubek has worked with top New York City architects and contractors, explaining and demonstrating the benefits of "soda blasting" for various projects. Its non-toxic properties allow it to be used safely in confined spaces and it is easy to clean up, adding to its practicality for use in a crowded city, he says.

**VARIETY OF PROJECTS**

The following are just a few examples of soda blasting projects across the country.

**Holland Tunnel—New York City.** The more than 17 million vehicles passing through the Holland Tunnel each year caused its once gray granite walls to become coated with an unsightly black grime. Soda blasting was recently used to remove the grime, along with a coating that had Main photo: Worker shown cleaning the National Memorial Arch (photo inset) at Valley Forge National Park.
been applied to the walls some seven years earlier. Maintenance personnel had tried just about everything to remove the coating, including a special cleaner for tunnels, an all-purpose liquid cleaner, even a household cleanser. But nothing worked until they tried soda blasting.

It took a blast air pressure of just 50 psi to remove the grime and stubborn coating at rate of approximately 3 sq ft per minute. Work was done between 12:30 a.m. and 4:30 a.m., with one lane of traffic moving through that tube of the tunnel while the blasting was underway. Now that the granite substrate is thoroughly clean, regular cleaning of the walls is planned for every six months.

**Tacony-Palmyra Bridge—Philadelphia.** Cleaning the bridge bearings of the Tacony-Palmyra Bridge linking Philadelphia to New Jersey was a small but important part of an overall refurbishment of the structure. The bearings, which help to provide flexibility to the bridge, needed cleaning to allow application of a penetrating oil and a protective coating. Baking soda media was a logical choice for the job because it does not damage bearings or rotating parts. A small, portable WADU® Soluble Media Injector, a Church & Dwight accessory that works with a power washer, delivered the media to the areas being cleaned. According to Jim Heffer, president of ESCA Industries Ltd. (Hatfield, Pennsylvania), a company involved with the project, the WADU’s light weight made it easy to maneuver on the bridge. "Also, the bridge bearings were packed tight in a very hard-to-reach space. The narrow nozzle we were working with made it possible to reach way in to do the cleaning."

Cleaning was done at about 3,500 psi water pressure using a special baking soda-based media called ARMEX HydroFlex® Formula XL. It was chosen because of its ability to capture grease and wash it away. The process was also used to clean the drawbridge machine house, an area containing huge gears and much heavy grease.

**Picasso Sculpture—Chicago.** The unnamed 50-ft tall Pablo Picasso-designed steel sculpture is probably Chicago’s most famous piece of outdoor art. Located in the recently renovated plaza of the Richard J. Daley Center, the sculpture was cleaned this past spring by Soda-Strip Systems, a local company that has built its business around soda blasting technology.

The Picasso sculpture is made of CorTen steel, which develops an overall rust patina when exposed to the elements. During the years since its 1962 creation, however, the sculpture had become dirty, its rust patina marred by small sections of denser rust, with some areas defaced by graffiti. According to Soda-Strip President Ray Sullivan, it took just one and a half days of soda blasting to clean and restore the sculpture’s surface, without any unwanted etching of the steel. Following blasting, the water-soluble baking soda-based media was rinsed off and the plaza was washed down. The ARMEX media used is nontoxic and nonhazardous per EPA and OSHA regulations. Its benign nature and relatively low pH pose no special disposal problems. In fact, if the waste goes for further treatment, the spent media can act as a buffering agent in the process. Contractors should consult applicable worker and environmental safety regulations before use, however.

**National Memorial Arch—Valley Forge, Pennsylvania National Park.** Cleaning the granite base of the National Memorial Arch at Valley Forge was part of a year-long reconstruction project. The arch, built between 1912 and 1917 to honor the soldiers of the Continental Army, had been in such a severe state of disrepair that the National Park Service had closed it until repairs could be made. The $1.5-million project—paid for by the Grand Lodge of Free and Accepted Masons of Pennsylvania—included structural repairs, cleaning, and stone replacement. Soda blasting was used to remove unsightly calcium and other hard-water deposits from the structure’s base. The smooth-flowing ARMEX media used contained special additives that eliminated clumping and clogging.