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Marking history with Indiana limestone & StoneLite™ Panels*

Select Buff Indiana limestone was combined with bands of gray granite to create a distinctive look for the National Constitution Center in Philadelphia, which held its grand opening on the Fourth of July 2003

by Jennifer Adams



The National Constitution Center, the first museum devoted to honoring and explaining the U.S. Constitution, opened on July 4, 2003 in Philadelphia, PA. The exterior of the building features a facade of Select Buff Indiana limestone broken up by 8-inch bands of Chelmsford granite. The limestone was supplied by Indiana Limestone Co. of Bedford, IN, and the granite by Fletcher Granite Co. of N. Chelmsford, MA. StoneLite™ panels were produced by Stone Panels, Inc.

Often referred to as the “City of Brotherly Love,” Philadelphia has stamped its mark in history many times over. William Penn, who had received the title to Pennsylvania in a land grant from King Charles II of England, first established a site for Philadelphia in

October 1682, and the community was incorporated as a city in 1701. Since that time, it has hosted many significant assemblies where historic documents such as the Declaration of Independence and the Constitution have been drafted and signed; served as residence to prominent

citizens and statesmen such as Benjamin Franklin and Betsy Ross; and is home to the Liberty Bell and first American flag. So it is only fitting that a city that has received such accreditation is now host to another great landmark, the National Constitution Center, which opened its



Pei Cobb Freed & Partners' design team investigated a number of Stone Panels' installations before specifying 9,000 square feet of StoneLite™ panels for exterior walls over the atrium.

doors on July 4, 2003 at the northern end of Independence Mall.

The National Constitution Center was established by the Constitution Heritage Act of 1988, which was passed by Congress and signed at the time by President Ronald Reagan. The Act created the Center as an organization and first established building the facility as an important national goal. On September 14, 1998, the architectural firm of Pei Cobb Freed & Partners and the exhibit design firm Ralph Appelbaum Associates – both of New York – were commissioned for the project, which is the first museum devoted to honoring and explaining the U.S. Constitution. The design of the 285,000-square-foot building was conceived by Henry N. Cobb with partner Ian Bader, along with exhibit designer Ralph Appelbaum.

And while the building's design was applauded by architectural critics, it does veer away from the traditional red brick found in the majority of neighboring

structures. But the soft tones of Indiana limestone, which are broken up by 8-inch-high bands of light gray-colored Chelmsford granite, create an unobtrusive design that meshes well with the surrounding environment. Introducing the granite bands into the design of the exterior façade helps to provide a less formal look, reducing the scale of the structure and emphasizing its horizontality.

Complementing the stonework is a two-story glass entrance, which is called the "front porch" by Cobb. As Cobb told *The New York Times*, "It couldn't be too official. It's not a government building. Nor could it be extremely monumental, since it is neither a museum nor a shrine. It had to be more relaxed."

As is the case with many projects, budget was a concern for the owner and architects. As a result, an alternative solution had to replace initial plans for the interior design of the two-story lobby. "Originally, we designed the walls to be

solid stone," said Project Architect Craig Dumas. "Unfortunately, when the drawings went out to bid, it was a 'hot time' on the market, so we had to cut costs. The general contractor offered savings by using lightweight stone panels."

The lightweight stone was fabricated from the same Select Buff limestone and Chelmsford granite that was employed for much of the exterior. Indiana Limestone Co. and Fletcher Granite supplied slabs to Stone Panels, Inc. of Coppell, TX, who in turn produced the StoneLite™ wall panels, which weighed only 3 1/2 pounds per square inch.

"StoneLite™ panels are an alternative to solid heavy stone," said Craig Carroll of Stone Panels, Inc. "Solid rough sawn slabs of limestone are sandwiched between two 3/4-inch-thick pieces of aircraft quality aluminum honeycomb by adhesion, using a proprietary high-strength, fiber-reinforced epoxy. After curing, the slabs are cut through their center thickness by a

Photo courtesy of the National Constitution Center (Scott Frances, Ltd.)



Inside the National Constitution Center, the interior wall panels were fabricated from slabs of Select Buff limestone and Chelmsford granite. Turner Construction offered savings by using lightweight StoneLite™ panels from Stone Panels, Inc. of Coppell, TX. Approximately 20,000 square feet of StoneLite™ limestone and granite was installed on interior walls and 9,000 square feet on the exterior.

diamond tip saw, resulting in 3/4-inch stone thickness.”

This patented manufacturing process offers substantial impact resistance and flexural strength, according to Carroll. The fiberglass skins directly behind the stone provide an impermeable waterproof barrier, which eliminates the necessity for a secondary water barrier.

Approximately 20,000 square feet of StoneLite™ limestone panels were installed on interior walls over steel stud framing by Dale Construction Co. of Glendale, PA. The average size of panel

was 5-ft. by 3-ft., 4-in., but the pieces only weighed 60 lbs., making installation quick and easy. Some of the panels were fabricated to various angled corner shapes. Stone Panels, Inc. also fabricated some pieces to a convex curve, and some to a concave curved shape, at a fraction of the cost that would have been incurred for solid heavy stone.

Dale Construction also installed approximately 9,000 square feet of StoneLite™ limestone panels on the upper exterior walls over the atrium.

“This was somewhat new for us,” said

Dumas. “We had done limited applications like this before.” To ease some of the design team’s reservations, the architects visited a number of installations that had employed StoneLite™ panels. “In the end, it was a pretty efficient system,” said the architect.

Groundbreaking for the National Constitution Center was held on September 17, 2000 – 213 years to the day the U.S. Constitution was signed. President Bill Clinton presided over the official ceremonies, which included the naturalization of 75 new American



Photo Courtesy of the National Constitution Center (Scott Frances, Ltd.)

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citizens and the announcement of a \$10 million gift from the Annenberg Foundation. According to Dumas, construction lasted about 27 months, although there was a hiatus of about six months between bid and the start of construction.

When the museum opened on the Fourth of July of this year, national, state and local dignitaries came to celebrate, as well as more than 22,000 visitors from across the country. An approximate 1 million visitors are expected annually.

Upon seeing the results, all those involved have expressed delight with the project. "We were quite sure what we wanted to do," said Dumas. "It was a bit of an adventure getting the owner on board."

National Constitution Center Philadelphia, PA

Architects: Pei Cobb Freed & Partners, New York, NY;
Ralph Appelbaum Associates, New York, NY (exhibit design)

General Contractor: Turner Construction, Philadelphia, PA

Stone Quarries: Indiana Limestone Co., Bedford, IN (limestone);
Fletcher Granite Co., Chelmsford, MA (granite)

Stone Fabricators: Indiana Limestone Co., Bedford, IN;
Stone Panels, Inc., Coppell, TX (StoneLite™ wall panels);
Granit Bussiere, Quebec, Canada (granite)