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## Jefferson Would Be Proud

Extensive testing of materials, historical research, and delicate construction coordination went into the restoration and expansion of the nation's oldest continuously operating capitol building, originally designed by our third president.

By Barbara Horwitz-Bennett, Contributing Editor -- Building Design & Construction, 9/1/2007 12:00:00 AM

The Virginia State Capitol Building—originally designed by Thomas Jefferson and almost as old as the nation itself—has proudly served as the oldest continuously used Capitol in the U.S.

But more than two centuries of wear and tear put the historical **landmark** at the head of the line for restoration.

The Building Team—led by the Gilbane Building and Christman Companies—installed entirely new M/E/P systems and added a 27,000-sf underground expansion featuring a visitors' center and ADA-compliant main entrance, office space and meeting rooms, and improved centralized security management.

However, digging near the building's foundation to create the underground expansion was no simple task. To prevent the building from moving, a slurry wall had to be constructed in a six-month process that involved excavating 10-foot sections, pumping bentonite grout to prevent the soil from collapsing, and then replacing the grout with concrete once each section was completed.

With the new entrance, visitors pass through the surrounding landscape, avoid climbing stairs, and are

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treated to a spectacular view from the south portico—the way Jefferson originally intended for the building to be viewed.

"Getting the tunnel in and making it work was quite a feat," observed BD+C Renovation Awards judge K. Nam Shiu, P.E., S.E., MISE, VP, Walker Restoration Consultants, Chicago. "This project involved a great degree of discipline."

**To preserve the Capitol's historical splendor**, dating back to 1906 when the east and west wings were added, extensive inspection, study, and research had to be conducted. Core samples were taken from the portico columns and key interior locations to assess the building's condition. Radar, metal detection, thermography, and ultrasound were utilized to assess the building's structure and layout. Scientists even chiseled away at the rotunda walls to determine the original paint color.

While working on the building's exterior, it was discovered that the stucco had been sealed with paint that prevented the building from breathing, thereby creating moisture and mold problems. Every speck of paint had to be removed, but due to the building's historical significance, only free-standing scaffolding could be utilized.

The stucco also had to be stripped so that damaged bricks could be replaced. Deteriorated mortar joints had to be tuck pointed with fresh, waterproof mortar. Finally, natural hydraulic lime stucco was applied to allow the building to breathe.

While all of the exterior doors were replaced and the building received a new roof, the original windows were temporarily removed, shipped to Kansas City, and restored. Even the original doorknobs bearing the Great Seal of Virginia were restored.

As for the Capitol's century-old granite steps, they had to be temporarily removed in sections weighing around 1,400 pounds in order to be repaired and restored. Once all the construction was completed, the steps were carefully returned to their original location.

**During the meticulous process** of restoring the Capitol, some areas of the building were found to be more deteriorated than projected. In addition, extensive testing of historic materials, in-depth historical research, and the application of specialized preservation techniques added to the project's complexity.

Judge Nam Shiu also pointed out the challenge of working on a hill and recognized the team's restoration efforts: "They also preserved all the environments and did not disturb the original entrance."

The Building Team preserved Jefferson's legacy so future generations can enjoy this important American **landmark**.

## PROJECT SUMMARY

Virginia State Capitol Building

Richmond, Va.

Building Team

any type of building.

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**Submitting firm:** Gilbane Building Company (construction manager)

**Owner:** Commonwealth of Virginia, Department of General Services

**Architect/interior architect:** RMJM Hillier Architects

**Structural engineer:** Robert Silman Associates

**Mechanical/electrical engineer:** Joseph R. Loring Associates

**Construction manager:** Gilbane/Christman

#### General Information

**Size:** 110,000 sf

**Cost:** \$67 million

**Construction time:** May 2004 to April 2007

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