

# Project Profile



## Levelrock® 3500 Floor Underlayment

**Application/Building Type**  
Government Building

**Project**  
Philadelphia Post Office

**Location**  
Philadelphia, PA

**Product(s)**  
LEVELROCK® 3500 Floor Underlayment

**LEVELROCK Applicator**  
Creative Surfaces Inc.



### **LEVELROCK® 3500 floor underlayment delivers successful transformation at Philadelphia post office.**

Philadelphians recently said farewell to a trusted old friend where generations of local citizens conducted their postal business for nearly three-quarters of a century. The iconic post office, located at 30th and Market Streets, closed its doors in 2009 after 73 years of dedicated service. But the facility is being transformed and gaining new life as a showcase office of the Internal Revenue Service.

Constructed in 1935, the certified historic building was a unique and innovative postal facility for its time. When it was built, the post office was the only one in the nation that could be reached by four different modes of transportation: auto, train, boat and autogyro (similar to a helicopter). But to better meet the changing needs of today's customers, the U.S. Postal Service built a new state-of-the-art downtown facility and sold the building, which will house Internal Revenue Service offices after it is rehabilitated.

Brandywine Realty Trust of Radnor, Pa., now owns the building and is also handling the financing, while Philadelphia's Keating Development Group is the construction manager. The building's transformation will cost more than \$200 million when all work is completed in 2010.

Yet transforming the old post office into a 21st century office building posed a variety of challenges. One of the most significant was how to effectively level and smooth the floors in the five-story, 950,000-sq.-ft. structure.

The original wood floors were covered with a variety of flooring materials throughout the building. These old surfaces were removed prior to the facility's rehabilitation so that only the original concrete substructure remained. However, that left widespread voids 1-1/2 to 2 in. deep. In addition, there were many low areas on the floors, especially where the old wood was removed.

"We were brought in early on by Keating Development Group to recommend an effective flooring solution," said Tom Compton, president of Creative Surfaces Inc. (CSI), West Conshohocken, Pa. "We have worked frequently with the company in the past and provided successful flooring solutions on other major projects, so they were confident we could do so again at the old post office building."

Founded in 1993, CSI specializes in providing innovative concrete flooring solutions for a wide variety of customers in Pennsylvania, Delaware and New Jersey. During the past decade, the firm has been involved with virtually every major Philadelphia-area flooring project. Its services include concrete resurfacing; shot blasting; self-leveling underlaments; coatings, overlays and acid stains; fire-, sound- and moisture-control systems; and oil-containment coatings.

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“Adding to the complexity of the old post office project was that fact that Brandywine Realty Trust and Keating Development Group wanted a very strict floor flatness tolerance of ¼ in. for every 10 ft.,” said Mike Morrow,



vice president of CSI. “The floors are very open and range in size from 150,000 to 160,000 sq. ft. The work also needed to be completed quickly so that the other trades did not get behind schedule.”

#### **Up to the Task**

Working closely with building products leader USG, the CSI team conducted floor bonding tests on three of USG’s LEVELROCK® floor underlayment products to determine which option would perform best in the old post office building. Mockups were also created so that the products could be compared side by side. Jim Torello, technical sales manager for Alcorp Marketing Inc., which services LEVELROCK products for USG, worked closely with the CSI team throughout the testing phase and project work.

“These tests and mockups were essential in convincing the various manufacturers of the VCT (vinyl composition tile), carpet tile and sheet goods being installed over the underlayment that it would provide the excellent bonding, strength and durability levels they require,” said Compton.

After comparing the options and test results, CSI and Torello recommended LEVELROCK® 3500 floor underlayment, a high-quality, poured cementitious underlayment for use in light-commercial and renovation construction.

“The product is versatile and we knew it would meet all the demands of the project,” said Morrow. “We needed a minimum strength of 3000 psi (pounds per square inch) and LEVELROCK 3500 typically offers a minimum strength of 3500 psi, which meets the minimum compressive strength standards of many commercial floor-covering manufacturers. Because we have used the underlayment frequently on other projects, we were quite confident that it would exceed that threshold and perform well.”

The underlayment can be applied easily over wood and concrete subfloors at a thickness of up to 3 in. The product’s high compressive strengths at low thicknesses provide superior underlayment performance for higher-traffic areas. Moreover, its light weight with high compressive strength, combined with exceptional sound and fire resistance, make the underlayment an ideal alternative to lightweight concrete floor applications. Higher production rates on the old post office project also resulted from the fact that the existing substrate did not require shot-blasting.

Each LEVELROCK floor underlayment batch is mixed precisely at the job site. First, a skid-steer loader operator measures out a bucket of sand that has been tested and approved by USG and pours it into the concrete pump’s mixer, then adds the appropriate number of underlayment bags. Next, a specified amount of water is metered into the mix and added to the underlayment/sand mixture and pumped up to the floor, where it is poured to meet the height of the grade pins placed at various locations on the floor to create the desired

height. The slurry is then finished smoothly. It sets quickly – in as little as 90 minutes – and hardens to a minimum compressive strength of 3500 psi. After the underlayment has dried completely, the finished flooring can be installed.



### Smooth Pour

Given the scope of the old post office project and tremendous size of each floor, the scheduling and timing of all work were especially critical factors.

“Because 15 different trades worked on the building, it was necessary for us to prep and prime the floors and pour the underlayment in sections and as quickly as possible so that nobody was delayed,” said Morrow. “Besides the need to meet the strict flatness tolerances, there were lots of different elevations that needed to be blended, especially around doorways and pipes. Fortunately, we experienced few problems with other trades because they worked hand in hand with Keating Development Group, which did an outstanding job orchestrating the scheduling.”

Another obstacle for CSI was pumping the slurry up each floor through a hose and down the long length of each floor. That equated to more than 100 ft. vertically up to the fifth floor and about 300 ft. horizontally on all five floors of the building. Further complicating the work was the fact that CSI had a limited area in the loading dock to mix and pump the approximately 60,000 bags of underlayment used on the project.

Despite the challenges, the six-month pour was completed on time and given excellent reviews by the building owner and construction manager.

“We actually exceeded all of the required flatness tolerances and the strength tests came in at more than 4100 psi,” said Compton. “All of the pours went very smoothly and the floors have held up very well with the heavy trade traffic.”

With the rest of the building work well underway, the old post office building is quickly being transformed into a 21<sup>st</sup> century facility that should provide decades of satisfactory public service.