

Recently at CSP

Pratt Institute preservation students, accompanied by professor, Eric W. Allison, Ph.D. came to Cathedral Stone for a 2-day training seminar. Students attended various presentations as well as hands on demonstrations. All attendees were certified as Jahn Authorized Installers. Listed below are the testimonials from Professor Allison, Ph.D. as well as preservation student, Katie Nolan.



Starting from the top, left: Delaney Harris-Finch & Tara Kelly. Right: Lisa Santoro & Lisa Buckley.

Bottom left: CSP's Dennis Rude and Katie Nolan. Right: Yasuyuki Mizushiro.

“ The Cathedral Stone training course proved to be more than we had expected. Students and Faculty who attended learned an incredible amount in a short period of time. It was a wonderful experience. ”

Eric W. Allison, PhD, AICP
Coordinator and Adjunct Associate Professor
Historic Preservation

“ I heard about Cathedral Stone from a good friend who went to Columbia. As I watched her mix mortar and apply a patch, I knew I had to get my classmates from Pratt Institute there. Since our program is more planning based, this was a chance to supplement our coursework with indispensable practical training. My classmates loved their time at Cathedral Stone and want this to be a yearly class trip! The instructors are wonderful people with tremendous enthusiasm for their work, their product, and teaching conservators proper techniques. They treated us like professionals and tailored the program for our area of specialty, showing us hands-on techniques while also explaining the theoretical basis for their methods. After only a two-day training session, we gained skills, knowledge, and confidence necessary for our future careers. Thank you so much for everything Cathedral Stone!! ”

Katie Nolan
M.S. Candidate in Historic Preservation, Pratt Institute



Cathedral Stone would like to thank Craig Nelson, Professional Restoration & Repair, Phil Warnock, Champan Technical Group, as well as Eric Allison, Ph.D. and Katie Nolan, Pratt Institute for their contributions to this issue of the Cathedral Stone Newsletter.



Cathedral Stone WORKSHOPS



Cathedral Stone Products, Inc. offers three-day training workshops at our facilities in the Baltimore-Washington area. Our classes welcome masons, contractors, craftsmen, specifiers, and other preservation professionals. Architects can receive AIA/CES credits, upon request. Workshops are available throughout the year. Successful completion of the Jahn Restoration Workshop is necessary to purchase Jahn Repair Mortars M70, M100, M120, and M160.

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Upcoming Workshops

DATES	CLASS NUMBER
May 19-21, 2008	#08003
Jul 21-23, 2008	#08004
Sep 15-17, 2008	#08005
Nov 17-19, 2008	#08006



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The Cathedral Stone NEWSLETTER

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Upshur County Courthouse Restoration

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Upshur County Courthouse after restoration.

Built in 1899, The Upshur County Courthouse, is an impressive brick and sandstone structure, with four sandstone columns and pilasters that stand 30 feet tall from plinth base to their cast iron capitals. Both monumental and charming, the courthouse provides the city of Buckhannon, West Virginia with a sense of dignity, pride, and presence.

In 2006, the Upshur County Commission wanted to repaint the stonework at the portico on the courthouse. Chapman Technical Group, architects for the project, discovered in a previous effort to protect the stonework, the portico area columns, railings and plinths were coated with a cementitious parging, and painted with a waterproofing used for pool liners. However,

waterinfiltrated the system and could not get out. The water was trapped in the sandstone through freeze-thaw cycles and hot days, which essentially caused the deterioration of the stone below. The deteriorated stone pulled away, creating larger cracks and exacerbating the problem until sections of the parging began to fall from the columns. Unfortunately, the bond strength of the parging was greater than the material strength of the sandstone, and in many areas the parging ripped good stone away as it went.

Once informed of the seriousness of the problem, the Commission approved removal of the existing parging, uncovering previously unknown repair attempts.

(Continued on page 2)



Coatings were stripped revealing severely deteriorated stone.

Repairs finished and coated with Silin Silith.



Coatings were stripped revealing severely deteriorated stone.



Repaired stone with Jahn M70 Repair Mortar before coating.

Upshur County Courthouse, *continued from page 1*

Repairs reinforced with iron nails had rusted and failed, but very large chunks of non-shrink grout repairs remained. These repairs were near the base on two separate columns, and spanned as much as 42" wide, 20" high and 10" deep. A careful investigation of the columns was performed by the Chapman Technical Group team, which included CAS Structural Engineering and Historic Preservation Consultant, Bill Kostellic. Cathedral Stone Products was recommended as a respected source of information and products to repair and restore the stone. A plan was developed, and in 2007 historic preservation contractor, Keystone Waterproofing, Inc., of Greensburg, PA was added to the team to perform the work.

Cathedral Stone Products was a key player in the diagnosis of the problem as well as the solution. Physical property testing of the core samples as well as color matching was provided. Keystone Waterproofing masonry restoration contractors, who are Jahn Authorized Installers, used Jahn M70 stone repair mortar, Jahn M80 anchor setting mortar, Jahn M30 micro injection grout, Jahn M40 crack and void injection grout, and Silin Silith mineral coating to restore the stone work.

Some cracks completely transected the column shafts and were stitched together with stainless steel pins, anchored with Jahn M80 Setting Mortar. Ports were created to fill the crack with injection grouts and adhesive as appropriate. Surface cracks were cut out from the stonework and filled with Jahn M70 stone repair mortar, engineered to match the properties of the existing stone. The large non-shrink grout repairs at the column shafts required steel bracing to be installed before removal. Keystone Waterproofing contractors also used Jahn Repair Mortars to recreate the original profiling of the plinth area railings, column bases, pilaster bases and the scrollwork for an ionic column.

The importance of matching stone properties with repairs was clearly illustrated by the previous attempts where repairs had failed. If the thermal expansion and contraction rate is different between the repair and the stone, cracks will develop, and water will penetrate the repair. When the vapor permeability of the repair is too low, water will be trapped and the

repair will delaminate. If the bonding strength of the repair is too high, it will remove good stone with it, should the repair fail or need to be removed. Therefore, a stone repair mortar engineered to the existing stone's properties, like Jahn Mortar, can help to restore and protect the existing stone.

After all the mortar joints were repointed, the smooth-tooled areas of stone were coated with Silin Silith. This mineal coating has a very high rate of vapor permeability (70 perms). At the rock-faced stone, color-matched mortar and dutchman were used to match repairs to the existing substrate.

The Restoration Team, utilizing CSP products not only restored the structural

integrity of the foundations, pilasters and columns, but artfully provided material stability improvements as well. The sandstone columns, foundations, and railings were preserved and restored by removing damaged areas, including previous attempts at repair, and building them back with stone repair mortar engineered to match the existing stone properties. The restorations to the Courthouse have provided the people of Upshur County with a courthouse complex that is stable, accessible, beautiful, and well-positioned to serve the community for the next 100 years.

Cathedral Stone Products, Inc. would like to thank Keystone Waterproofing as well as



Upshur County Courthouse prior to portico restoration.

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Chapman Technical Group for their dedication and fine craftsmanship to the restoration of the Upshur County Courthouse.



GUEST ARTICLE

Case Study with Silin Lasur

Craig Nelson

The Colorado College opened its doors in Colorado Springs, CO in 1874 and still has its original building in use as the College's admissions office, after a multi year complete interior and exterior restoration completed in 2005. This prestigious Liberal Arts College has 2,000 students, a faculty and support group of 600, and 100 buildings on 1,000 acres, with 13 buildings on the Historic Register. Further information on the college can be found at their informative website: www.coloradocollege.edu.

Shove Chapel was constructed in 1930 out of Indiana Limestone with a three colored, flat clay tile roof. On August 17, 2007 lightning struck the SW pinnacle, exploding the masonry and damaging both the pinnacle and roof. Similar sized salvaged clay tiles were found and the roof was soon repaired. The pinnacle was made safe, stones were measured and shop drawings were made. Replacement stone was ordered and the pinnacle rebuilt by Professional Restoration & Repair (P.R. & R.) in November and December 2007. Cathedral Stone Limestone Restoration Mortar (M70LS) was used to repair six of the stones with only minor damage.

In October, while the roof was repaired and the building dry, the repair was visually obvious. Mr. George Eckhardt, Assistance Director of Facilities Services, for the college, and Central States Roofing wisely decided not to try to "blend" the repair into the field of the roof, as this would not only cost more, but would not have worked due to tile color differences.

Professional restoration & Repair tested a color matching process using original tiles and, non-matching, salvaged tiles that included: Sandblasting with various media to selectively remove black and "wavy stripe"

the surface. As well as developed three colors of Silin AZ staining to produce the colors/textures of the historic tile.

Cathedral Stone Technical Service indicated that the Potassium Silicate fixative/binder/vehicle in the Silin AZ system would tenaciously bond to the unglazed terra cotta and would be color stable. Paint would provide none of these benefits.

With a large fan-fold color chart assisting in selecting colors, and the quantity of stain ingredients for the specific blend, the Silin AZ system can produce a wide variety of stains. The possibilities are endless with stain densities from translucent washes through vivid, high color density opaque stains.

The Colorado College is quite happy with how the roof looks, but the contractor would like to take it one step further by selectively providing staining to match the gray/green lichens that are the lightest element of the color scheme on the roof.

Cathedral Stone Products can help you on difficult visual issues with a tool-box containing: Silin AZ, Silin Silith, Silin Lasur, Epochrome and D/2 Biological Solution. Professional Restoration & Repair would not use anything else. Give us a call on your next project @ 719-632-3996.

This article was provided by Craig L. Nelson of Professional Restoration & Repair. P.R. & R. has provided restoration and/or repair to problems in the built environment since 1986.



An area of tile damage prior to repair.



The three color/three texture roof tile (note biologicals).



The roof area repaired.



The roof tile after selective sandblasting.



The roof tile after Silin AZ stain.