ROYAL MILLS RIVER POINT APARTMENT REHABILITATION

BY KEVIN YUERS

The unique and historic Royal Mills apartment complex in Rhode Island was originally built in 1890 as a hydropowered cotton mill and operated as one of the world's busiest mills for over 30 years until it was partially destroyed by fire in 1919. After cotton production was moved from the site, Royal Mills housed numerous manufacturing operations until its official closure in 1993.

The abandoned site was purchased in 2003, and the massive conversion project began. The derelict buildings were converted into 250 trendy loft-style apartments, public spaces, retail spaces, and a completely revived riverfront, including a public walking path. The former dam on site was also renovated and is now used to produce green energy in the form of hydroelectric power.

ASSESSMENT NECESSARY

Royal Mills' location on the river, years of harsh weather abuse, heavy industrial use, fire, and years of neglect presented a big challenge for the developer. The developer invited a local cementitious waterproofing firm and distributor of integral crystalline waterproofing products to conduct an extensive repair study assessing the various conditions that plagued the complex. The waterproofing firm was then retained to perform remediation work to bring the facility to a higher rentable condition and restore the complex to its former glory.

Royal Mills survived many years of harsh weather and industrial use

The firm's assessment found severe water intrusion—including wet stone and brick inside occupied apartments—poor conditions in many subgrade units, and no insulation or weather-stop from the outside, allowing the weather to migrate right through the walls from the outside.

When the waterproofing firm was brought on the project, nearly 15% of the apartments had signs of internal moisture. Some had mold growing, and it didn't look like they would be able to be brought up to living standards.

WATERPROOFING WORK

Along with extensive cosmetic work, significant waterproofing work was needed to bring the space to habitable levels. The waterproofing firm used a line of integral crystalline waterproofing products for the job. The products were selected because they allowed the company to waterproof from the inside out, leaving the building's beautiful stone exterior intact. The waterproofing products selected for the repair and waterproofing work also feature self-sealing abilities; the crystalline technology reacts with incoming water to self-seal the cracks that inevitably develop in concrete, protecting the structure against water and contaminants that can weaken or destroy the concrete. Because the site sits along a canal and waterfall, the resistance to hydrostatic pressure that the waterproofing products offered was a very important benefit.

Sustainability was also important to the developer; much of the original flooring was refinished, and 50% of all construction debris from the historic site was reused in signage and other public areas. The crystalline waterproofing products used at Royal Mills are environmentally friendly because they are added directly to the concrete mixture. There is no need for old-fashioned petroleum-based external membranes, and the concrete waterproofing admixture contains no volatile organic compounds and has no affect on air quality. Not using traditional external membranes also greatly decreased the job-site waste.

Nearly 2400 sills and lintels were repaired

Extensive stone veneer repair work was completed

The riverfront location and waterfall posed a waterproofing challenge

Crack repair was needed in elevator pits

Extensive waterproofing and repair work was needed to revive the old mill

Extensive rubble elevator wall crack repair allowed the facility to pass inspection from authorities

Historic reproduction of veneer stone—much with crystalline mortar

Canal dam head section received extensive reconstruction to stave off canal head pressure from lower apartment units

The waterproofing project was finished ahead of schedule and on budget

The extensive waterproofing repair work included:

- 1000 linear ft (305 linear m) of sealed cracks;
- Cementitious concrete waterproofing slurry applied to interior walls to waterproof below the river level;
- 250,000 ft^2 (23,225 m^2) of water-repellent sealer used to seal the original stone exterior and reduce water absorption;
- A crystalline admixture added to the mortar used to repair the historic stone veneer to reduce permeability;
- Several slabs poured using the same crystalline admixture to provide a permanent waterproofing solution and eliminate the need for an external membrane;
- Extensive windowsill and lintel repair with a variety of crystalline material;
- Several concrete and rubble elevator pit repairs; and
- Mold remediation to the areas that required it.

Because of the extensive waterproofing and repair work, the developer was able to use a number of additional units that were once deemed unsuitable for living.

The project was finished ahead of schedule and on budget, and the owners and investors can now rest assured that their investment will be much improved.

Royal Mills was added to the national historic registrar in 2004.

Royal Mills River Point Apartments

OWNER
Struever Brothers Eccles & Rouse
Baltimore, MD

PROJECT DESIGNER
New England Dry Concrete
Danbury, CT

REPAIR CONTRACTOR
New England Dry Concrete
Danbury, CT

MATERIAL SUPPLIER
Kryton International, Inc.
Vancouver, BC, Canada

PROJECT ENGINEER FOR MT & T BANK
PCI Consultants

Kevin Yuers *is a lifelong veteran of the construction industry, having spent many years running his own contracting company before joining Kryton International, Inc. in 1994. Today, Yuers is responsible for Product Development and Technical Services at Kryton. He spends most of his time providing customers with real-world solutions to their challenges throughout Kryton's worldwide network. Yuers writes a weekly blog offering advice and comments on all things concrete-related, with a focus on waterproofing, restoration, and repair. Read it at www.waterproofconcrete.com.*