



CEMENT & CONCRETE PRODUCTS™

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**HYDROELECTRIC PLANT HARNESSES POWER
THROUGH NEW QUIKRETE® SHOTCRETE LINED PENSTOCK**
Project Wins Outstanding Repair and Rehabilitation Award

FALLS VILLAGE, Conn. (April 22, 2020) – Constructed in 1914 along the Housatonic River, Falls Village Hydroelectric Generating Plant recently rehabilitated Penstock #1 with a custom-designed structural shotcrete liner. Repairing the steel-riveted pipe with spray-applied QUIKRETE® Shotcrete MS over metal reinforcement proved a durable, cost efficient system that meets the operational capacity and strengthen requirements. Completed by Knowles Industrial Service Corporation (KISC) on behalf of FirstLight Power Resources, the plant produced power at expected customer service levels during the project.

Selected instead of hand-applied fiberglass mats and structural epoxy liners, the reinforced shotcrete design is a self-sustaining system that will withstand static and hammer pressure generated by water traveling through the penstock to the turbines during plant operation. In addition, the reinforced shotcrete liner did not significantly increase the pipe's thickness, so the plant will continue to produce nine megawatts of electricity. Finally, a bulkhead gate was installed upstream forcing water flow through Penstock #2 and Penstock #3 at the plant to maintain power output while providing increased jobsite safety on the 13-week project.

The full nine-foot diameter, 360-foot long penstock was buried in the river bank, so two large holes were created as access points rather than excavating the entire area. After cleaning the interior pipe with a 5,000 PSI industrial pressure washer, 2,100 feet of 1 ½" reinforced bar mat was welded onto the surface as a continuous slab along with 6.5 miles of longitudinal-spaced #4 rebar and radial hoop shaped #5 rebar. KISC then spray-applied 150 cubic yards of QUIKRETE Shotcrete MS delivered in 3,000-pound bulk bags through a silo system. The four-inch-thick shotcrete lining was finished smooth to eliminate any friction that could slow water flow and decrease plant power generation. The reconstruction was completed by abrasive brush blasting the 10,200 square-foot penstock liner and applying two 30 millimeter coats of high-build epoxy to increase service life and further support unobstructed water flow.



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The Falls Village Penstock #1 project won the American Shotcrete Association 2019 Most Outstanding Repair & Rehabilitation Award.

QUIKRETE® Shotcrete MS is a single component Micro Silica enhanced repair and restoration material that achieves a compressive strength of more than 9,000 PSI at 28 days, and features very low rebound and permeability characteristics. The QUIKRETE® Companies offers a full line of shotcrete products that can be applied through a wet or dry process to deliver the combination of high strength, high adhesion, low rebound and low sag. These characteristics make QUIKRETE® Shotcrete MS ideal for use in rehabilitating bridges, tunnels, parking garages, ramps, piers, dams and other concrete structures.

For more information on QUIKRETE products and projects, visit www.quikrete.com.

The QUIKRETE® Companies

The QUIKRETE® Companies is the largest manufacturer of packaged concrete and cement mixes in the U.S. and Canada, and an innovative leader in the commercial building and home improvement industries. QUIKRETE® also offers related products through numerous wholly-owned subsidiaries including, Keystone Hardscapes®, Custom® Building Products, Contech® Engineered Solutions, Rinker Materials™, Pavestone®, SPEC MIX®, Target Technologies®, Daubois® and QPR®. Collectively, The QUIKRETE® Companies operates about 250 facilities in the U.S., Canada, Puerto Rico and South America, allowing for unsurpassed distribution and product depth. Technical centers across the QUIKRETE® network also ensure that professionals and consumers alike are provided with the most innovative and highest quality products available on the market. For more information on The QUIKRETE® Companies or its products, visit www.quikrete.com or call (800) 282-5828.

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