

Shotcrete

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Industry News

Shotcrete Helps Restore Spokane Riverbed Weirs Improve Water Flow to Reclaim Natural Geology and Landscape

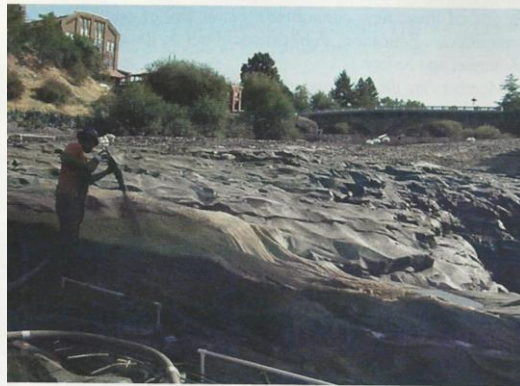
The QUIKRETE® Shotcrete MS-Fiber Reinforced was used to fill channels and create weirs to help return



the Spokane River to its natural flow pattern in downtown Spokane, WA. In the late 1800s, the growing demand for increased energy to support the businesses and residents of Spokane, WA, resulted in channels being created at the bottom of the Spokane River's North Channel to divert water from stagnant pools in the city's downtown area to mills using hydropower. While the channels did relieve many of the pools, they also prevented the Spokane River from flowing properly, which basically left the riverbed empty and unsightly each summer. Fortunately, the team of Berry Ellison, LLA, Land Expressions (landscape architect), ARC (architect), TD&H Engineering and Cemrock Concrete & Construction Ltd. (concrete contractor) were able to restore the Spokane River to a more natural flow for Avista Utilities using an effectively creative solution.

After conducting extensive research and considering various building solutions, an approach to spread less water over more area by strategically placing a series of permanent modifications (weirs) to neutralize manmade excavations was initiated. The challenging terrain required the use of material that could be applied in tight spots, far removed from large vehicle access, and finished to match the surrounding landscape. QUIKRETE Shotcrete MS-Fiber Reinforced, a single component micro-silica-enhanced repair and restoration material that achieves more than 9000 psi (62 MPa) at 28 days, and features very low rebound and permeability characteristics, was chosen. The undulating riverbed is 150 ft (46 m) deep and 300 ft (91 m)

wide in some areas, so the shotcrete was pneumatically conveyed dry through a hose to each predetermined weir location, in some cases more than 500 ft (152 m). Water was then added to the mixture at the nozzle during the dry-mix shotcrete application process. This minimized material waste, created a consistent application, and made the process extremely mobile, according to the shotcrete contractor. In addition, the shotcrete was artistically finished to match the color, texture, and shape of the natural basalt riverbed as well as the surrounding geology and landscape.



In the end, the project turned out better than imagined. The amount of habitat restored to herons, beavers, raccoons, and native red band trout is immeasurable. The Spokane Falls has been restored as has the sound and intangible energy that the river brings to the atmosphere of downtown Spokane and Riverfront Park. The river corridor is a thriving ecosystem and the restoration will impact the Spokane community for decades to come and remain an example for future environmental improvements.

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