

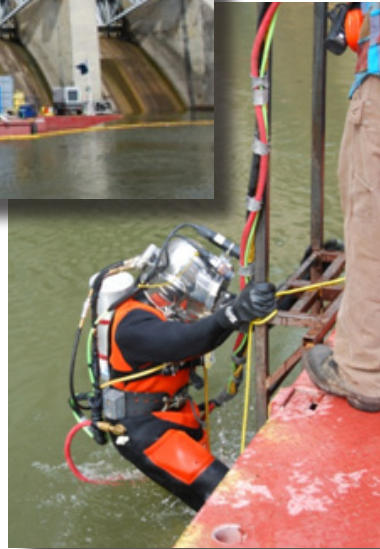


# HARRY S. TRUMAN DAM SPILLWAY STILLING BASIN REPAIR

OSAGE RIVER - BENTON COUNTY, MISSOURI

U.S. ARMY CORPS OF ENGINEERS

BUILDING STRONG



The Kansas City District was the design and construction agent in 2010 for upgrades to the Harry S. Truman Dam Spillway Stilling Basin, located on the Osage River in Benton County, Missouri. The spillway stilling basin experienced severe concrete erosion caused by abrasion of rocks and nodules striking the concrete slabs during spillway releases. The district's highly experienced structural engineers developed the repair and upgrade design for the existing concrete erosion. Extensive investigation and analysis was performed to identify pertinent design and risk issues. It was determined that the loss of a slab section would seriously compromise release capabilities and could potentially cause the loss of the dam. The recommended repair consisted of a single lift of unreinforced 4.40 ft. thick mass concrete overlay anchored to the existing basin weir and underlying rock layer. The 100 ft. length repair extended over the full stilling basin width based upon the hydraulic behavior of the basin. Drains were installed after concrete placement was completed to reduce uplift pressures on the overlay.

The Harry S. Truman Dam Spillway Stilling Basin was not dewatered during the placement of the concrete and the repair was completed below 50 ft. of water. The project was chosen to be constructed in this manner due to economic advantages. Anchors were located to avoid existing anchors and drains in the original construction and new drains. The upstream portion of the overlay gradually became thinner due to the curvature of the tailrace. Engineers detailed this region of the overlay in such a way to prevent large concrete failures and developed the dive requirements for this project. All Corps and industry safety requirements were followed during construction. The repair will extend the life of the stilling basin slab by over 30 years.

Key Messages	Facts & Figures
<ul style="list-style-type: none"> <li>● District is known nationwide for their expertise in under-water spillway repair design</li> <li>● Staff of 6 registered professional engineers with over 50 years of combined design experience</li> <li>● Repeated business nationwide, not only due to technical expertise, but also responsiveness, dependability and attention to detail</li> </ul>	<ul style="list-style-type: none"> <li>● Designed 180 ft. wide x 100 ft. long x 4.4 ft. thick mass concrete overlay anchored to the bedrock</li> <li>● Over 400 (#14 ASTM A615 Grade 75) threaded bars 44 ft. long were anchored 35 ft. into bedrock</li> <li>● The test placement and test anchors were critical to success of the project</li> <li>● \$2M project constructed within budget</li> <li>● Repair was performed under water and completed on time</li> <li>● Extended the stilling basin slab life by over 30 years</li> </ul>

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