

HATCHERY MAINTENANCE

Hagerman National Fish Hatchery

Hatchery II Epoxy Coating



U.S. Fish and Wildlife Service

January 19, 2011

Worn Tanks



The Hatchery II concrete tanks at the Hagerman National Fish Hatchery (Hatchery) were purchased in 1982. Twenty-nine years of fish production has deteriorated the unfinished concrete surfaces and created refuge for diseases and accumulation of fecal material. During 2010, the Hatchery researched several coating options and decided to coat two trial tanks with epoxy coatings.

The first and most important step of the project was preparation of the concrete surface. The tanks were allowed to dry for several months after fish rearing activities. The dried tanks were then ground with an angle grinder and cup brush to remove loose concrete and laitance. Bug holes were chipped to expose cavities in the concrete. After grinding, a 12" x 12" sheet of plastic Visqueen was duct taped to the tank floor. Inspection of this moisture test after 24 hours revealed a dry surface, so the coating process was ready to begin.

Due to cold temperatures, the Hatchery built a temporary visqueen shelter to raise the concrete temperature to the specifications of the epoxy coatings. Heating was accomplished with a "space heater" and light bulbs rather than propane heaters that could introduce additional moisture. Once temperatures increased, the coating was ready for application.

Steel Seam Application



To fill the large ($> 1/4$ " bugholes), the first step of the coating process was to use Steel Seam[®]. This product is a relatively thick epoxy that can be forced into the bugholes with a trowel or similar tool. As with the other epoxy products, this material requires two-part mixing and has a relatively short application window.



The Steel Seam[®] was spot applied to large holes. The largest holes required two coats of steel seam sealer. This step sealed air pockets that could cause expansion/contraction problems in the block filler and finish epoxy coats.

Block Filler



After the Steel Seam[®] had set (24 hours at 70⁰ F), the next step was an application of block filler. The block filler fills the smaller holes (< 1/4") in the concrete and preps the surface for the final epoxy coating. The Hatchery used a roller application method, but a spray-on method may have produced a more even coating.



The Kem Cati-Coat HS[®] (B42V401 and B42W400) block filler required two coats with 24 hours of curing time between coatings. The top coat could be applied anytime between 24 hours and 30 days of the second coating of block filler.

Epoxy Coating



The Hatchery chose a topcoat of Macropoxy[®] epoxy coating used for potable water supplies. The finish coat was also applied with a roller. The first roller we used was relatively low-quality and resulted in roller material bonding into the topcoat of epoxy. The Hatchery quickly learned that a high-quality roller is needed for this type of application.



The finished product has a light blue color and is vastly superior to the deteriorated concrete surface. The material costs were \approx \$400 per 16x3x3' tank. The Hatchery will evaluate the performance of these two trial tanks during Brood Year 2011. If all goes well, the Hatchery will tackle coating the remaining 18 tanks in Fiscal Year 2012.