Environmentally Friendly Epoxy Coating System Offers Big Benefits to Hydroelectric Station

Presented By:
Hunter Sansone, Project Engineer

COATINGS

Hydro Project

- One of the largest electric power holding companies in the U.S. began a hydro project in 2015.
- Project included improvements to provide additional fish passage around the dam.

Fish Passage

- The “fish lift” improvements were to help re-establish historical populations of American shad and blueback herring.
- The passage would allow access around the dam for juvenile fish.

Fish Passage

- A downstream passage was installed using two existing 48-inch steel penstock headwall pipes.
- Pipes required rehabilitation including structural repair.

Rehabilitation Method

- In conjunction with an engineering firm, the owner evaluated several methods based on the following factors:
  - Safety, risk, schedule, cost, constructability, and impact to operations

Rehabilitation Method

- A high-build, single coat epoxy was chosen as the best solution.

Epoxy Coating System

Selected based on the following considerations:

» Structural

» Single coat

» Non-hazardous

» Aquatic safe

» Expected service life

EXTENDS LIFESPAN

SINGLE COAT

AQUATIC SAFE

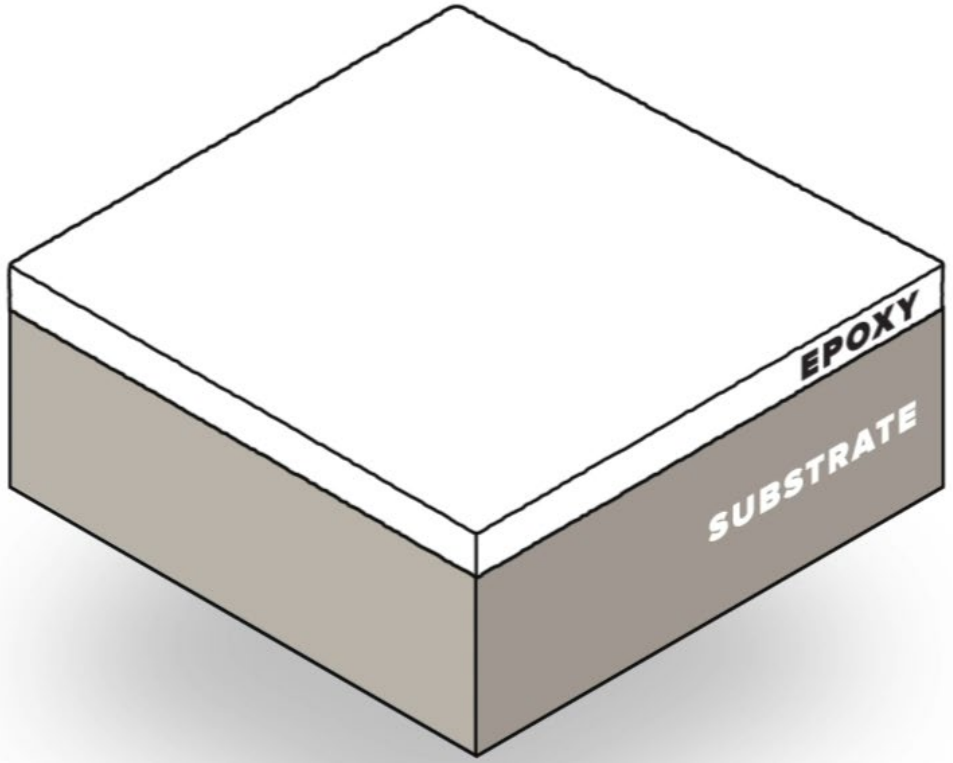
STRUCTURAL

Structural

The deteriorated wall thickness of the steel led to concerns of groundwater infiltration and continued corrosion of the penstocks, which could lead to eventual failure.

Structural

An engineer hired by A&W Coatings completed ASTM F1216 calculations based on the head pressure inside the penstocks.



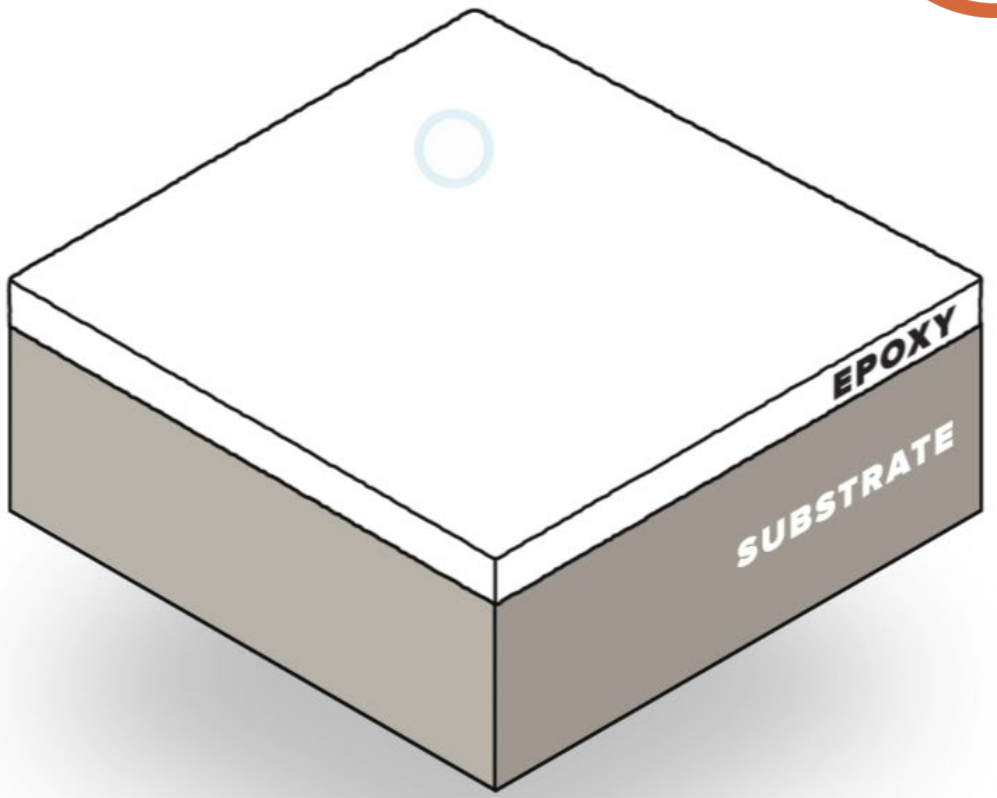
Single Coat

Capable of being spray-applied in excess of 500 mils (1/2-inch) thick within a single coat, easily meeting the required liner thickness of 375 mils in a single pass.

Aquatic Safe

The epoxy selected has no adverse short or long-term impacts on marine life.

It's believed to be the only epoxy on the market that has a 100% survival rate in rigorous laboratory testing (EPA 2007.0).



Project Challenges

On April 28th, 2020, a progress meeting determined that the headwall pipe rehabilitation restricted the General Contractor's main scope, moving our scope into the critical path.

Project Challenges Cont.

We completed our scope by May 9, 2020, just 10 days after the April 28 progress meeting, **keeping the project on schedule and minimizing disruptions.**


Downstream Access Point

Project Challenges Cont.

Due to the pipe's location, access was severely limited. On the upstream side, a coffer-dam provided the access point, which offered the simplest access.

Due to a rain event and rising river levels, A&W had to use the downstream side access point.

Pipe Preparation

The steel pipe was washed down with a 5,000 psi hydroblaster to remove a thick layer of silt.

Dry-abrasive blasting followed with a coarse blast media to create a deep, angular profile in the steel.

Application

Next, 375 mils of high-build epoxy was spray applied.

The project spanned six days from start to final inspections due to the epoxies single coat capabilities and fast cure times.

The Results

- Nearly failing assets were structurally repaired and given years of additional service life.
- The fish passage will remain safe to all aquatic life, including the American shad and blueback herring.

The Results Cont.

- The electric company is on their way to meet their goal of increasing the native fish species' historical populations.

QUESTIONS?

Hunter Sansone
A&W Coatings
(972) 821-2543
hsansone@awmain.com