

Pit 5 Powerhouse

“Keeping Divers off the Streets since 1979” – Global Diving and Salvage, Inc.

US SPEC Products: MP Grout

Contractor: Global Diving and Salvage, Inc.

Engineering Group: PG&E

Date of Completion: Spring 2013

The Pit River is a major river draining from north-eastern California into the state’s Central Valley and is used for hydroelectric energy in several powerhouses including the Pit 5 Powerhouse. The Pit 5 Powerhouse was built during the early 1940s during World War II as a wartime project. It began operating April 29, 1944.

The original concrete bullnose had deteriorated over the last 68 years and needed to be rehabilitated. The powerhouse wall and floors had been beaten up over the years by up to 24” and 500 pound river rock tumbling in the refuse channel. One inch thick steel plates were added as cladding to the powerhouse to protect it from rock damage during generations and heavy runoff. The steel plates were also used as forms to contain the grout which was pumped underwater into the annular spaces.



The steel plates were also used as forms to contain the grout which was pumped underwater into the annular spaces. New anchor bolts were imbedded in the original concrete to support the new forms and encapsulate the anchors preventing corrosion. River gates were installed to dewater interior spaces which needed more precise welding. Once the exterior of the facility was finished, Global Diving dewatered the unit and performed additional welding in the dry space. In the dry space, MP Grout was placed in the annular spaces after welding was complete.



US SPEC MP Grout was selected for this project. While the engineer had suggested a competitor’s grout, the contractor, Global Diving, had success in the past with MP Grout and recommended it to the engineer. They liked pumping MP Grout because the spherical aggregate facilitates less friction promoting higher fluidity than traditional angular sands. MP Grout’s ability to not “wash out” was a welcomed trait as the product needed to completely fill voids while immersed in water. They also liked the aggregate size as it was beneficial in entering any small cracks in the original concrete.

The grout was placed in the 36 foot column through a 1” hose in 12 foot lifts. Due to permitting issues in this highly environmentally sensitive area, no grout entrained water was allowed to re-enter the river. During grouting operations Global Diving used a 1-1/4 inch return hose to catch all displaced water and overflow grout.



While an extensive amount of grouting and welding was done above ground, it was primarily done underwater. Divers used diving suits that had 125 degree water pumped inside to keep them warm for up to 2 hours per dive while working in 10 hour shifts.

The repairs and steel plates will likely extend the life of the outlet flow for at least 60 years.