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COP CHRONICLE

THOMPSON FALLS FISH LADDER

Thompson Falls, MT

On September 8, 2010 a dedication ceremony was held for the new fish ladder constructed at PPL Montana's Thompson Falls Dam and Hydro Plant. The Thompson Falls Fish Ladder is the first facility of its kind in the Continental United States designed specifically for bull trout, which are a unique bottom-dwelling, reclusive species that tend to migrate mostly at night.

After 100 years of being unable to gain access beyond the dam, this new \$7.5 million fish ladder reopened hundreds of miles of the Clark Fork River of the Columbia and its tributaries to native bull trout, westslope cutthroat trout and other fish species that swim upstream to spawn.

The fish ladder was constructed of steel and concrete and has 48 step pools that rise 48 feet from the river below the dam. This rise in pool elevation allows the fish to pass to the upstream side of the dam by maneuvering through these pool channels and ultimately through a 36 inch cored hole.

At the 45th pool, a trap and elevator were constructed to divert the fish and lift them to a sampling facility operated by Montana Fish, Wildlife & Parks where they will be counted, classified, tagged and tested. Once this is completed, the fish will be returned to the ladder and released into the 48th pool to continue on their journey through the dam.



Connecting the fish ladder to the existing log sluice structure.



Concrete pour in progress.

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The fish ladder was constructed on the west side of the dam which was limited to foot traffic and light pickup access only. Due to this access limitation, it was a logistical challenge to determine how to access and deliver 1551 CY of concrete and 172,600 lbs. of rebar, as well as the manpower, equipment, tools and forms needed to build the fish ladder. A work bridge was constructed on top of the existing concrete apron below the dam gates on the downstream side. The apron had a height change of 24 feet from one end to the other, occurring in steps that followed the curve of the dam. Our access work bridge was 900 feet long and comprised of 18 steel bents ranging from 10 feet to 20 feet high anchored into the concrete apron. Over 500 anchor bolts were drilled and installed and then had to be cut flush with the apron once the project was completed and the access work bridge was removed. For added stability the work bridge was built with all the caps welded to the supporting H-pile, and all the beams were welded to the caps.

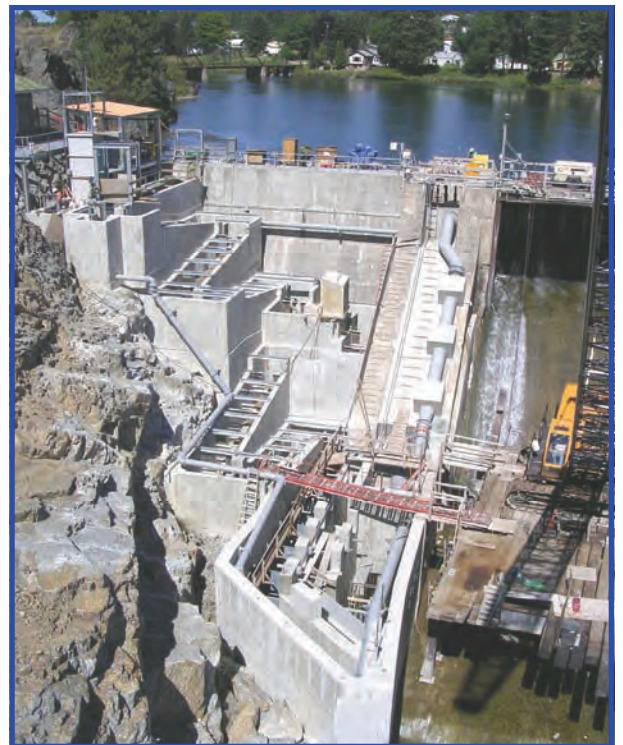
The fish ladder was designed with a very small footprint for a project of this nature. Construction was restrictive because the walls for the pools were only 5 feet wide. To tie rebar, and form and brace the walls in this limited narrow space, was a daily challenge. Form panels were not able to be ganged as the pools and their layout changed all the way up the ladder.



Apron height change of 24 feet following curve of dam.



Access bridge during heavy spring runoff.



Construction progress.

The annual spring runoff presented a real threat to the work bridge being compromised, but this was taken into consideration during its installation to permit water to be discharged under the bridge. As spring approached, the spring melt from the snow pack in the mountains was below normal. However, Mother Nature presented above normal rainfall, feeding the tributaries of the Clark Fork River with more moisture than seen in many years. The flow in the river exceeded normal spring runoff levels, testing our access work bridge which stood strong with no structural failure of any kind.

MEET THE FACES of COP

John G. May, Project Manager for the Thompson Falls Fish Ladder, has been in the construction industry for over 35 years and with COP Construction since 1996. He enjoys projects that demand a full gamut of his skill and experience and says the Thompson Falls Fish Ladder definitely provided this. "PPL was instrumental in our success, from Blaine Hildreth, the Project Manager; Noel Jacobson, the Plant Manager; and everyone on down. What a great group of people to work with!"

Of COP Construction John stated, "I like working for COP because we have the best support team in the industry, right in our own office!"

When not working, John favors the outdoors and enjoys fishing, hunting, backpacking, and camping with his three children.



Scott Grasma, Engineer/Superintendent has been with COP since April 2008. He enjoys the challenge of coming in under budget on projects, while maintaining safety. Scott is people-oriented, well organized, and takes great pleasure in the final construction product. "The people that work under me are my reason for success with COP. We all have a good relationship, and I include them in every part of the construction process. That way we all win." In his free time, Scott enjoys riding motorcycles, hunting, fishing and traveling with his wife, Anastasia and son, Chance.



Jeff Monaco has been in the construction industry since 2001, joining COP Construction in 2008. As Superintendent on the Thompson Falls Fish Ladder Project, he was responsible for safety, job site production, and subcontract management.



YEARS OF SERVICE

July

Ryan Stansfield	12
Harold Stewart	8
Larry Riddle	7
Debby Holmes	4



August

Ed Allen	37
Mark Rieker	19
Kim Hope	7
Josh Pearson	5
Ed Decker	4
Justin Tomison	4
Jeff LaBard	3

September

Joel Hoagland	8
Dan Vogt	8
Teresa Milligan	3



October

Tom Kittson	19
George Werhonig	11
Justin Biehl	8
Kathy Thorson	7
Jasen Bennie	5
Jade Lee	5
Don Hayes	2
Jeff Monaco	2

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Sam Vaitai	5
Kelly Newman	3
Rod DeBuff	1

December

Betty Warner	12
Barry Benke	3



HAPPY ANNIVERSARY TO THESE EMPLOYEES

IMPROVING SAFETY ATTITUDES

Developing and maintaining good safety attitudes is a cornerstone of workplace safety. Here are some ways that employees and their supervisors can build on this foundation, minimize hazards, prevent accidents and keep our work sites safe and healthy.

Talk About Safety. The more we talk up the importance of safety, the better the discussion at all levels. The more we talk about safety, the more we generate interest, inclusion and the sharing of information.

Encourage Safety Suggestions. Who knows their jobs better than the employees who perform them – especially the experienced and skilled employees? Ask them for their ideas (big or small) for making the workplace safer.

Act Promptly to Fix Problems. If you see a hazard or employees report safety problems, correct the situation NOW! Not only fix the problem, try to make it safer. If we ignore safety problems, so will our employees.

Provide Information and Training. Skilled and knowledgeable employees understand their jobs and work safely to avoid accidents. We will continue to provide the safety training; you need to improve your safety attitude.

Acknowledge Safe Performance. When you see an employee doing something safe, make a big deal about it. Praise safe work performance loud and clear. Supervisors have the authority to reward safe employees.

Set a Positive Example. Managers and supervisors MUST lead by example. Never take shortcuts or violate safety rules and policies. Your employees will always notice and follow your lead.



Chris Cull, Safety Manager



The dam early 1900s.

The fish ladder was designed with an intake screen weighing over 20,000 lbs. The reach required for the lift with our 100 ton crane was outside of the chart limits, so we had to dismantle the screen and reassemble it assisted by underwater divers. The sampling facility and the high velocity attraction flow pipeline are supplied with water from new 36 inch and 24 inch water pipes. These supply pipes were constructed in the old log sluice and were also part of the design to attract fish to the fish ladder. In earlier times, the logging industry used the log sluice to send logs down river to the mill. This practice was abandoned as time passed and the sluice was filled with concrete and that part of the original dam was retired. Subsequently, to adapt for the new fish ladder design, we had to cut a hole in the dam 8 feet wide, 15 feet high, and 10 feet thick at the bottom using a wire saw. This work was made difficult because the concrete was in bad shape and kept filling the wire saw cut and jamming the wire. It took a week to complete this cut with the needed assistance of divers.

Construction progress.



Construction progress.



Project 99% complete.

COP Construction LLC, along with PPLM, initiated this project with a goal for an injury free project. With the help of PPLM, our supervisory staff and more importantly, our workers, we logged over 38,000 man hours of injury free work. It was a great goal to meet, and we extend congratulations to all involved – John May, Project Manager; Jeff Monaco, Project Superintendent; Scott Grasma, Assistant Superintendent; and all of the workers on the Thompson Falls project. Job well done!

A special thanks to PPLM's Blaine Hildreth, Noel Jacobson and crew at Thompson Falls for all their efforts in making this project a success!



P.O. Box 20913 Billings, MT 59104

From the desk of the President –



Sometimes simple is the best.

I want to take this opportunity to thank our customers, consultants, suppliers, subcontractors, friends and especially our employees for all of the support and dedication that COP Construction has been fortunate enough to enjoy over the past two challenging years. Without you, we would not have been able to survive the storm and emerge in the healthy condition that we are presently in. While 2011 will require us to work smarter and do things better, I am convinced that the worst is over.

Let's all step back from our busy lives and take the time to enjoy our friends, family and the simple things that are the foundation of our lives. At this time of year, it is important to be thankful for all the good things in our lives. On behalf of COP Construction, I wish everyone a very happy holiday season.

