Bear Creek Hydro Project

Sechelt, BC, Canada (2011)

PRODUCT USED:
Hard-Cem®

OWNER:
Regional Power

ENGINEER:
MWH Engineering

CONTRACTOR:
TRP Construction General Contractors

READY-MIX SUPPLIER:
West Fraser Concrete Ltd.

DISTRIBUTOR:
Brock White Canada Co.

BACKGROUND

Located near the town of Sechelt, British Columbia, and accessible by barge only, the Bear Creek Hydro facility is one of a number of sustainable energy sources in Canada. It maintains its sustainability thanks to its ability to generate electricity through a run-of-river (ROR) hydro, which is powered by natural stream flows and their differences in elevation. To help with its electricity generation, this facility has two power stations: Upper Bear and Lower Bear. The first of which produces 500 m of hydraulic head, and the second produces about 125 m of hydraulic head. In total, this amount of hydraulic head gives Bear Creek Hydro the capacity to create 20 MW of electricity.

To ensure that the community of Sechelt had a reliable source of power for years to come, the facility owner, Regional Power, wanted Bear Creek Hydro to have a highly durable concrete structure. After all, as part of a ROR facility, the concrete structure would need to withstand substantial amounts of erosion and abrasion. Without the right durability, the structure would wear away, reducing structural safety, hydraulic capacity, facility functionality, and the structure's overall service life.

SOLUTION

With these structural concerns in mind, MWH Engineering, a global leader in hydraulic infrastructure, chose to specify the integral hardening admixture Hard-Cem for Bear Creek Hydro's construction. They knew that adding Hard-Cem to the facility's concrete water diversion structures, such as the sluiceways, canals, and spillways, would significantly increase the structural integrity of Bear Creek Hydro's facility while also improving its structural resistance to erosion and abrasion.

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In turn, this would improve Bear Creek Hydro's structural safety, maintain its hydraulic capacity and functionality, and extend its service life. All of which would help the facility avoid having costly concrete surface repair work done, which would have otherwise taken it out of service for prolonged periods of time.

Hard-Cem is not just great at providing these benefits, however. It is also designed to harden air-entrained concrete in both vertical and horizontal structures. As a result, it is the only concrete hardener capable of working effectively in projects with similar deliverables as the ones called for in Bear Creek Hydro's concrete specification, which involved Exposure Class F1 concrete with around 5% air content.

In short, Hard-Cem met all the needs for Bear Creek Hydro's construction and allowed Regional Power to provide the community of Sechelt with an energy source that still stands today.

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