

Mactaquac Generating Station 451

Case study

Focus products: Intercrete® 4842, Intercrete 4822, Intercrete 4802, Intercrete 4810, Intercrete 4809, Intercrete 4875

Location: New Brunswick, Canada

Client: NB Power Corporation

Contractor: RCJ Concrete Restoration & Coatings Inc

Summary: Waterproofing and protection of water intake passages suffering from alkali silica reaction



Background

Mactaquac Dam is part of a hydroelectric plant on the Saint John River in the Canadian province of New Brunswick operated by NB Power Corporation.

It has a capacity of 672 megawatts with 6 turbines generating 20% of New Brunswick's power. Building started in 1964 and by the 1970's distress was visible with leakage soon becoming evident through joints in many parts of the structure. Tests revealed expansion of the concrete caused by alkali silica reaction due to reactive silica present in the greywacke used in construction. In 2003 coatings trials were initiated with Intercrete products chosen as the only ones suitable to fully waterproof the concrete.

The solution

Following preparation, any small voids and rough areas were filled prior to coating. Intercrete 4822 was used in areas exhibiting little or no water infiltration and Intercrete 4802 for areas of moderate infiltration. In areas of severe water ingress, Intercrete 4809 was used as a water plug. All horizontal surfaces were then sealed with Intercrete 4810 diluted 1:1 with water to prevent outgassing. The first coat of Intercrete 4842 was applied at 1.25mm thickness and Intercrete 4875 embedded into the wet material, before applying a second coat at the same thickness to provide complete protection.