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### 2003 Award of Excellence

#### **Seven Sisters Generating Station Rehabilitation**

Seven Sisters, Manitoba, Canada

**Submitted by Vector Construction Group**



In 1979, a major rehabilitation program was undertaken on the Seven Sisters Generating Station to extend the life of the structure for an additional 50 years. The rehabilitation consisted of rebuilding the North non-overflow dam, replacing 13 spillway piers, replacing portions of two sluiceway piers, replacing portions of the sluiceway rollways, and installing insulation and new overlay slab on the spillway rollway.

The rehabilitation was required for several reasons. First, to replace concrete that was extremely low strength as a result of its original mix and placing technique. Secondly, to alleviate concerns about the freeze-thaw damage within the structure and loss of mass from concrete loss due to freeze-thaw damage on

#### **Owner**

Manitoba Hydro  
*Winnipeg, Manitoba, Canada*

#### **Project Engineer/Designer**

Manitoba Hydro  
*Winnipeg, Manitoba, Canada*

#### **Repair Contractor**

Vector Construction Group  
*Winnipeg, Manitoba, Canada*

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the surface. All this was critical due to the original design having a very low safety factor for overturning.

The nature of the rehabilitation required the use of many innovative solutions, in the design, materials and construction techniques. The project's success was due, in a large part to the synergistic cooperation between the owner and repair contractor in shared ideas and an openness to try new and innovative methods. The result of this innovation and synergy was a project that was completed one year ahead of schedule and over \$2,000,000 under budget.

Looking at the spillways and sluiceway today, over 20 years later, they have performed as they were expected and show no signs of deterioration. There appears to be little trouble meeting the expectation of another 30 years of successful performance of the structure.

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