

BERMINGHAM

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SINCE 1897

PROJECT REPORT

Bolsover Dam, Ontario



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In 2013, Birmingham began a challenging construction project at Lock 37 on the Trent-Severn Waterway. The Bolsover Dam, built in 1903 is one of the deepest fully manual lock structures on the Waterway and is also a Canadian National Historical Site.

Birmingham was contracted to design-build, and subsequently remove a cofferdam, allowing for dewatering and demolishing the existing structure, and to allow for the construction of a new dam. The project presented Birmingham with many challenges including working over water through one of the coldest winters on record, working in an environmentally sensitive area and a requirement that the ancient

locks remain operational throughout the duration of the project.

The first challenge of the project was to come up with a method of diverting up to 50 cubic meters per second of water that pass over the dam every day. The concept drawings denoted a six foot square concrete culvert, however calculations showed that this was grossly inadequate. Birmingham was retained to build a 40 foot wide diversion channel the length of three football fields with drop structures that provided a controlled diversion around the dam and locks.

To facilitate the replacement of the existing dam structure a number of distinct shoring systems were used. Upstream, a bin-wall cellular structure system was installed with the downstream portion consisting of a combi-wall (the combination of sheet piles interlocking with pipe piles). This bin-wall retained a head of 55 feet (17 meters).

Immediately adjacent to the existing and operating 112 year old lock, Birmingham was challenged to install a secant pile cutoff wall to create a watertight seal and provide stability for the existing deteriorated lock structure.

Due to the concern of the turbidity of the water downstream of construction, Birmingham installed a temporary sheet pile wall, surrounded by gravel. In addition two layers of silt curtains were installed immediately downstream. This combination proved very effective as was evidenced by the pure blue colour of the water downstream of the curtain.

In total Birmingham installed 2 million pounds of steel sheet and combi-wall in order to tame and control the Trent Severn during the rebuilding process of the Bolsover Dam. The reconstructed dam is expected to be completed in 2016.

