

Deer Creek Dam Intake

New Intake Tower Construction



Location:

Provo, Utah

Owner:

Provo River Water Users
Association

Designer:

Black & Veatch

Geotechnical Sub-Contractor:

Malcolm Drilling Company, Inc.

Products used:

MasterRoc[®] MP 650 microfine
cement

MasterRheobuild[®] 1000 high-
range water-reducing admixture

The Background:

The Deer Creek Dam Intake Project encompasses the construction of a new water intake tunnel, employing advanced micro-tunnel boring machine (MTBM) technology. This critical infrastructure upgrade aims to enhance the operational efficiency and long-term reliability of the Deer Creek Reservoir, a vital water source serving over 1.5 million residents along Utah's Wasatch Front.

The Challenge - Mitigating Groundwater Risks

The new intake tunnel was constructed through a highly permeable zone where groundwater seepage poses a major risk to the tunneling operations. To mitigate this, a grouted rock mass collar about 8-10 feet thick needed to be formed around the circumference of the proposed tunnel alignment.

Project Profile

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The Solution

Malcolm Drilling, the geotechnical contractor for the project, executed pre-excavation grouting at the launch portal, implementing a comprehensive approach that involved drilling and grouting 9 primary, 9 secondary, and 3 verification holes, each extending to a depth of 30 feet.

The grouting process utilized a cementitious grout made with MasterRoc microfine cement supplied by Master Builders Solutions. The grout was developed based on water testing results to effectively address the diverse fracture zones present in the rock formation. Through the injection of over 1,800 gallons of grout, the goal of completely sealing all water leakage around the tunnel portal was successfully achieved, ensuring optimal conditions for subsequent construction.

Project Facts at a Glance:

- Successfully constructed a new intake tunnel utilizing a micro-tunnel boring machine.
- Effectively sealed water leakage around the tunnel through pre-excavation grouting.
- Utilized MasterRoc MP 650 for superior grout penetration and durability, ensuring long-term tunnel integrity

About Master Builders Solutions

Master Builders Solutions is a leading global manufacturer of concrete admixtures, as well as other sustainable solutions for the construction industry, focussed on delivering its vision: **Inspiring people to build better**. Master Builders Solutions provides value-added technology and market-leading R&D capabilities to improve the performance of

construction materials and to enable the reduction of CO2 emissions in the production of concrete. Founded in 1909, Master Builders Solutions has ca. 1600 employees operating 35 production sites globally, supporting their customers in mastering their building challenges of today – for a decarbonised future.

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