

Lone Tree Water Tank - 10 Million Gallons

US SPEC PRODUCTS

US SPEC Products: NA-50 Grout

Contractor: Garney Construction

Grouting Sub-Contractor: VSL

Engineering Group: Denver Water

Date of Completion: August 2012

Denver Water's Lone Tree Facility consists of Basin No. 1, which is a 10 million-gallon circular buried tank constructed in 1983, and a pump station. Due to the limited storage capacity at the site, Denver Water has made it a priority to increase storage at this facility. Denver Water has deemed it necessary to build a second reservoir, Basin No. 2, at the site.

Basin No. 2, will be very similar to Basin No. 1, except the roof will not be buried. Roughly a foot of the 10 million gallon tank will be exposed and the concrete will be stained to blend with the surrounding area. Denver Water no longer buries tanks because of water quality and maintenance issues. Construction started in June 2011 and will continue through August 2012.

For decades, storage tanks have been the primary resource to store municipal water and wastewater. Yet today's technology is making them more durable. "The use of post-tensioning in water storage and water treatment tanks has increased significantly over the past several years," says Dan Harger of VSL's Denver office. "Post-tensioned tanks have superior corrosion protection on the prestressing steel. And all cast in place concrete members are post-tensioned bi-axially to assure water tightness without joints in the floor or roof slabs." In many cases, tendon tanks are partially or fully buried to limit visibility and access. Since there are no coatings, joints or liners required for water tightness, post-tensioned tanks are relatively maintenance free and eliminate construction and maintenance costs associated with construction joints. "Since the prestressed steel strands are in tension and the concrete is in tension," says Harger, "each material is in its ideal state."



US SPEC NA-50 Grout was used to fill the annular space between the conduit and steel cables and was then tensioned. VSL used a colloidal grout pump to mix and pump the grout through the lines. NA-50 was chosen because it was specifically designed to provide maximum flow. NA-50 is an aggregate free formulation, so it is ideal to use where clearances are minimal, when grouting tendon cables. VSL was able to pump the grout over long distances and through tight spaces. In addition, NA-50 has an extended working time which provided the contractors with a bit of extra time if they ran into any equipment issues.

A final benefit is that NA-50 will provide corrosion protection to the steel tendons by encapsulating them and not allowing corrosive elements to come into contact with the steel. Overall, US SPEC's NA-50 was a great choice for this project and the contractors were very happy with its performance.