

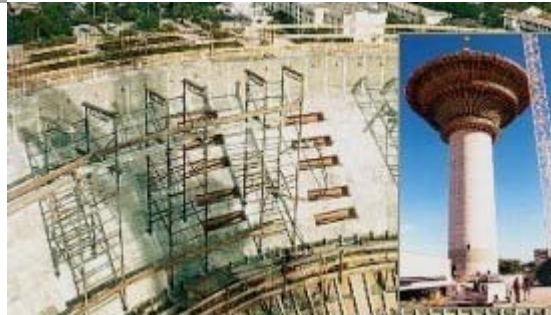


Tanks

Reference Details:

Owner City of Boynton Beach +++ **Design and Build Contractor** The Crom Corporation, Gainesville, Florida

DSI Services Supply of DYWIDAG ring and vertical tendons.



US Water Tank Projects, Boynton Beach, Florida

The extensive variety of DYWIDAG post-tensioning tendon technology (strand-bar, bonded-unbonded, mono-multi, straight-circumferential) shows effective applications in a water tank projects in North America.

The Boynton Beach concrete water tower in Florida has a capacity of approximately 8.000m³, and is one of the first of this type of US-tank ever designed in concrete instead of steel. Relative to a steel design, prestressed concrete results in higher mass and greater stiffness, an important factor in the high Wind load region of Boynton Beach.

The principal structural elements of the 49.3 m tall tank are:

- Foundation: the 1,98m thick, 18m Ø foundation rests on ground that was improved by applying a special vibroflotation compacting method. The foundation has a design capacity of about 17,000t.
- Tower shaft: it is a 30 m high, 46 cm thick and 9.7 m Ø concrete cylinder and was cast with a jump forming system in 1.2 m lifts.
- Vessel floor: the elevated concrete floor of the tank varies in thickness from 1.5 m at the tower shaft connection to 46 cm at the center of the tank.
- Conical vessel wall: cast in three sections, the cone rises 15.2 m high at a 45° angle. The thickness of the conical section varies from 61 cm at the floor level to 40 cm at the top. The cone is vertically and circumferentially post-tensioned.
- Free span dome roof: the tank is closed with a 34.4 m Ø, 10 cm thick free span concrete dome supported by a 61 cm x 1.5 m dome ring on top of the conical vessel section. This ring is prestressed and transfers weight and lateral thrust from the dome roof to the conical vessel wall.

18t of bonded 7-0,6" DYWIDAG ring tendons were used for the circumferential post-tensioning of the conical vessel. The DYWIDAG type M anchorages, installed at 180°, allow a smart and cost-effective prestressing solution by eliminating the need of obtrusive concrete buttresses. Vertical post-tensioning consisted of bonded 4 0,6" DYWIDAG strand tendons uniformly spaced around the conical wall of the tank.