



■ **Repair & Strengthening**

**Reference Details:**

**Owner** City of New Stanton, Pennsylvania, USA +++ **Client** Fox Rothschild, LLP, on behalf of Lexington Insurance Company, USA +++ **Consulting Engineers** Di Salvo Engineering, New Stanton, Pennsylvania, USA +++  
**Subcontractors** Allegheny Restorations, Inc., Greensburg, Pennsylvania, USA; Cappelli Industries, Cannonsburg, Pennsylvania, USA ++  
**Owner's Consultant** Gibson & Thompson, Latrobe, Pennsylvania, USA +++ **Operator** Hempfield Township, New Stanton, Pennsylvania, USA

**DSI Unit** DSI USA, Tucker, Georgia, USA  
**DSI Services** Supply, installation and assembly of DYWIDAG Ring Tendons.



**DYWIDAG Ring Tendons increase Capacity of Digester Tanks**

**External Strengthening of Digester Tanks, New Stanton, Pennsylvania, USA**

The capacity of the two concrete digester tanks of the city of New Stanton, Pennsylvania, USA, was no longer sufficient to meet the increased requirements. Since the construction of a new digester tank was to be avoided for cost reasons, an investigation was made to determine whether or not the capacity of the existing digester tanks could be increased through expansion.

The tanks have an inside diameter of 19.8 m and wall heights of 27.4 m. The thickness of the tank walls varies and measures 45.7 cm at its base, tapering to 35.5 cm at its top. The outer walls of the existing two digester tanks were originally designed as cantilever walls with their main reinforcement oriented vertically.

However, in their existing form the tanks were not capable of accommodating the additional pressure caused by an increased volume. For the strengthening of the walls the engineers considered the subsequent installation of external horizontal prestressing strands more efficient than strengthening through an additional horizontal reinforcement.

DYWIDAG-Systems International USA, INC. was contracted by Fox Rothschild on behalf of Lexington Insurance Company in December, 2004 to strengthen the two concrete digester tanks. To this end, the clay bricks on the outside surface of the tanks were first removed. Some soil excavation was performed in order to access the portion of the tanks below ground level.

For the actual reinforcement of the walls DSI USA installed a total of 56 sheathed and greased DYWIDAG Ring Tendons 0.6" around each tank and anchored them in movable ME type couplers. The strand ends were overlappingly spliced in pairs and tensioned by means of special bent adapters. Subsequently, the DYWIDAG Ring Tendons and Couplers that had been installed on the outer walls were painted to match the color of the concrete wall.

To finish the works the clay bricks were replaced on the outside surface of the tanks restoring them to their original appearance. DSI executed this project in 5 months to the complete satisfaction of the client.