# Water Purification Plant Tank Anchoring Project PH2

INNOVATIVE™ PIERING

For this phase of the project, Innovative Piering practiced some of the most technical of piering operations. Tiebacks were required to laterally support an existing underground aeration tank.

**Project:** FTW #10969
**Structural Engineer:** BFMJ, Inc.
**General Contractor:** Ottenweller Contracting, LLC
**Location:** Fort Wayne, IN

The major design constraint was ensuring that the tiebacks could laterally support the unbalanced loads on the 17' deep tank in fully saturated soils. The site was in a flood plain, and the tank will abide in a totally submerged state at some point in the future.

The required load of 64-kip Ultimate meant that MacLean Power Systems 1.75" Helical Anchors were the perfect pier for the job! To achieve the load, Innovative Piering had to install each anchor to approximately 35'.

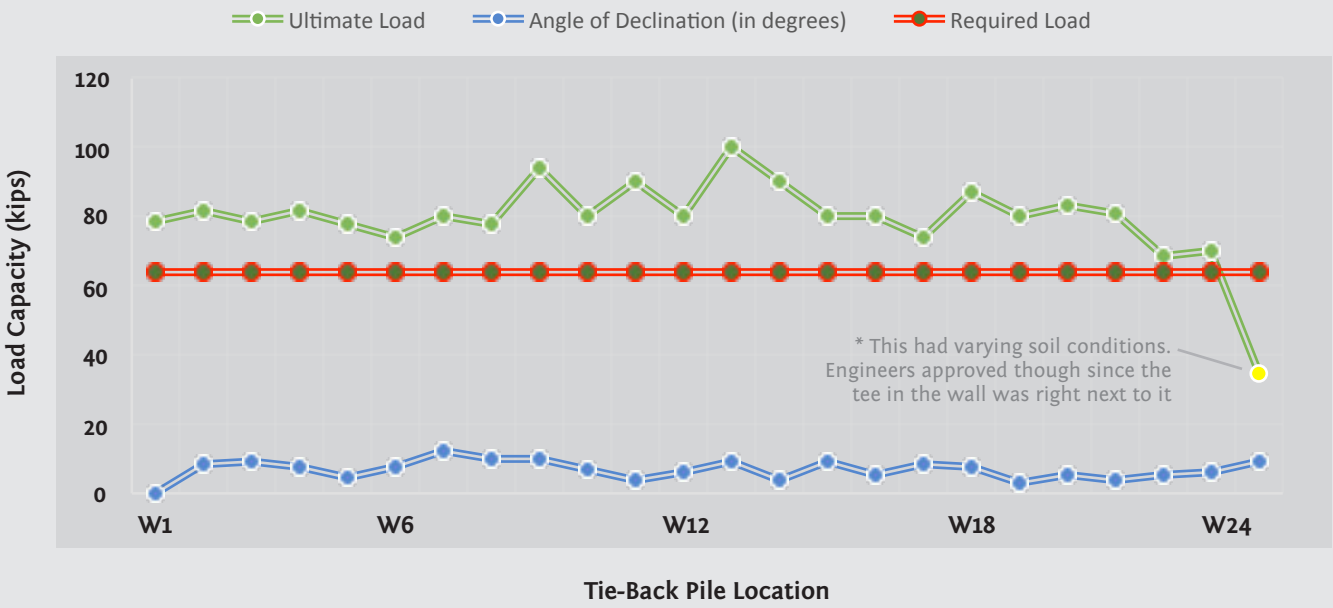
Because of space restrictions in the bottom of the tank, it was decided that Innovative Piering would have to operate from on top of the tank. This presented significant challenges. Mostly, the fact that the operator had to operate completely in the blind! Careful coordination was practiced to ensure safe and efficient operations.

Additionally, the geotechnical report indicated that a minimal declination was mandatory, to avoid bearing in extremely poor soils. This required a shallow declination of 7-12 degrees.

The tolerances for this project was razor sharp! 18" holes were core drilled through the 18" concrete wall about every 7' on-center. The helical anchors had a 14" helical configuration, which meant with the declination, the team had to thread the needle with only 1-2" to spare, in the blind!

Once the piers were installed, they had to then be load tested, to verify that they did in fact produce the required lateral loads. All the piers exceeded the load tests. The total duration for this phase of work was about 5 days.

# Tie-Back Installation Chart




"The project specs required (1) pre-production pile test and 10% production piles to be tested. This meant that our pre-production pile needed to be tested to 200% Design Load, or an Ultimate Load of 64 kip. The production piles needed to be tested to the design load, or 32 kip.

Each test was closely monitored by oversight engineers, owners and the general contractor to ensure accuracy. Testing tension loads in wall anchors requires a hollow bore ram, which is sometimes difficult to source."