Job Spotlight

The Vertical Loop Reactor recently constructed for the Birdsboro Municipal Authority in Berks County stands alone as the first VLR ever constructed by Dutchland, and quite possibly the first ever VLR constructed using precast concrete.

Birdsboro, Berks County Pennsylvania

In total, Dutchland, Inc built three tanks for the Birdsboro project, the VLR, and two circular clarifiers with precast launders.
The VLR biological treatment process is proprietary to Siemens Water Technologies, and is best identified as an Oxidation Ditch turned on its side.

When the engineering firm Spotts Stevens & McCoy put the Birdsboro project out to bid, the design was based around cast-in-place concrete, as has historically been the case. However, Dutchland was allowed to bid the project through an addendum, after SSM completed a review of our preliminary design.

The original cast-in-place VLR design utilized a 24-inch base slab with an 18-inch thick wall. However, the superior strength of the precast post-tensioned design allowed for only a 16-inch base slab with a 14-inch wall thickness, saving over 856,000 pounds of concrete alone. Due to the substantial savings on materials the low bidder for the project and General Contractor, Worth & Company, subcontracted the tanks to Dutchland Inc.

The adaptation of the VLR tank design suitable for precast concrete construction methods in conjunction with the need to provide for the possibility of future expansion on an extremely limited site were just two of the hurdles for Dutchland to overcome during the design phase.

The provisions required for future expansion created a condition where the VLR would, in the future, be completely excavated on one side. After a bit of "out-of-the-box" thinking, the VLR was designed with five counterforts, a triangular shaped panel attached perpendicularly to a wall requiring support, to offset the soil loads from the unexcavated areas. Birdsboro also marked the first project were strand tails were left attached and covered with concrete shrouds for the future attachment of post-tensioned walls utilizing a coupler. This concept provides a superior method of attachment to the existing tank for our wall panels in the future.

Additionally, equipment retrieval was a major concern in designing the tank, and because of such, walkways could not be provided around the top of the basin, as is typical with Dutchland designs. In response, our team of engineers designed multiple lateral beams to be pinned and tensioned to the outside of the VLR wall panels as a substitute for walkways.

With the successful engineering, manufacturing, and installation of the VLR now behind Dutchland, our company resume has yet again expanded, increasing the possibility of constructing similar projects in the future, and adding yet another impressive tank to an even more impressive list of successful Dutchland projects.