



# Concrete Protection & Restoration Mount Carmel SBR Tank #1 Repairs

## Location

Mount Carmel, Pennsylvania

## Project Size

\$1,001,450.00

## Owner

Mount Carmel Municipal Authority

## Engineer

Thornton Tomasetti, Inc.

## Project Information

The MCMA Wastewater Treatment Plant was built in 1975 and it was originally designed for 1.5 mgd average daily flow & 2,500 lbs/day of organic capacity, but on September 2011, the devastation of Hurricane Sandy played its toll on the SBR Tank #1 causing slab buckling, foundation movements, foundation wall displacement, walkway displacement, and column structural damage.

Therefore, immediately upon discovery of the structural damage, an extensive shoring system was designed and installed to stabilize the structure while the adjacent tanks, SBR #2 and SBR #3, stayed in operation. Repair sequencing was systematically designed to stabilize the structure while allowing the adjacent tanks to stay in full operation. Work was performed in a precise, step-by-step process so as not to jeopardize the structural integrity of the post-tensioned foundation slab and walkway bridges.

The hydrostatic pressure exerted by the flooding mine forced the mat foundation of SBR Tank #1 to buckle resulting in a chain reaction when the forces were released by the post-tension system embedded in the slab. Overall resulting damage included slab buckling, foundation movements, foundation wall displacement, walkway displacement, and column structural damage.

This project involved methods, materials, and equipment that are not typically used in new-construction post-tensioned projects. Temporary repair anchors (“lock-offs”) were used to maintain stress on the tendons that extended into the adjacent tanks. Splice couplings and center stressing anchors (“dogbones”) were used to connect new 0.60 PT strand and restore the tendon. Some new end anchors had to be installed inside of the dis-placed wall because the wedges had released on some tendons when the floor buckled. All of the repaired tendons were stressed to 80% of the ultimate stand tensile strength. This project was a perfect example of the importance of a repair contractor, engineer, and owner working together to provide a durable, economical, and quality repair. Through communication, innovation, and strategic planning, the project was a success from beginning to end.



Concrete Protection & Restoration  
Saving the life of concrete!

2811 Lord Baltimore Drive  
Baltimore, MD 21244

601 NE 44<sup>th</sup> Street  
Oakland Park, FL 33334

www.concretecpr.com  
Toll Free: 800-452-3137  
E-mail: info@concretecpr.com

