

ENR**Engineering News-Record**

Global Best Projects Awards

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**TECH MASHUPS
BRING INCREASING
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SALIENT SOLUTIONS

Rehab Brings New Life to Deteriorating Plant

The Challenge

The Raccoon Creek Water Treatment Plant in Summerville, Ga., processes over 6 million gallons of water per day and the communities utilizing it are dependent on its continuous operation. This 50-year-old facility was so deteriorated that an engineering study was needed to determine whether to totally replace

it or see if it was possible to restore its structural integrity. Replacement proved prohibitive. It would have taken years to complete a full engineering study and to gain EPA approval. Further, the \$25-million replacement cost was out of the question. The plant had to be upgraded and remain in service during the rehabilitation to process water for the surrounding communities.

The Technical Solution

The engineering team determined that a complete retrofit could be achieved for just \$1.5 million by using Xypex concrete repair and resurfacing products. Over 306,000 lb of Xypex Megamix II were used to repair the deterioration of the concrete surfaces caused by years of exposure to chemical attack. It also served to restore the concrete's structural integrity. Megamix II was used primarily in the flocculation tanks and sedimentation basins. Xypex



Examples of areas of the water treatment plant that were treated with Megamix II

Concentrate and Megamix I were applied to the exposed exterior walls and the interior surfaces of the filter tanks. The horizontal beam walkways that separate the individual tanks were treated with Xypex Concentrate followed by two coats of FCM 80 to provide a slip-resistant surface. Exterior walls were repaired using Patch'n Plug and Concentrate. ■



Typical deterioration of concrete when exposed to water treatment chemicals

PHOTOS COURTESY OF XYPEX



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SALIENT SOLUTIONS

Building Codes and Budgets Converge

The Challenge

To design a pump station that not only meets tight budgeting and scheduling requirements, but also adheres to strict building appearance codes to conform to the guidelines of the gateway zone in which it is located on the major approach road into historic Albemarle County, Va.

The Technical Solution

As part of the \$10.7-million North Fork Regional Pump Station project, Virginia's Albemarle County Service Authority (ACSA) demolished the existing Camelot Wastewater Treatment Plant and their Research Park pump station. The construction of two remotely located regional pump stations replaced the outgoing stations. The two are located across from each other on the busy Route 29 divided highway and are joined by 1,500 ft of 12-in. force main. Each pump station includes emergency standby generators, instrumentation and SCADA systems.

ACSA met its budget in part by specifying an Easi-Set precast-concrete transportable building. The design called for a brick finish with a metal standing-seam roof. Cost-savings in materials were achieved by using an Easi-Brick™ grid in the Smith-Midland Corporation precast plant to simulate brick on the 10 wall panels that comprised the 20-ft x 30-ft buildings. This method also produced savings by removing the cost of on-site masons. The design also called for a non-standard height of 13 ft. The use of 13-ft-high precast wall panels simplified construction and eliminated the use of a knee wall. Delivery and assembly of the wall and roof panels were completed in only two days, saving weeks over on-site construction methods. ■



Precast concrete transportable buildings allowed Virginia's Albemarle County Service Authority to meet a tight budget while adhering to strict building-code guidelines.



The two pump stations provide emergency standby generators, instrumentation and SCADA systems.

EXTENDING SERVICE LIFE WATER TREATMENT STRUCTURES



Leakages, cracking, joint failure, chemical attack and surface deterioration are problems common to water treatment systems. Whether for new or rehabilitated structures, Xypex Crystalline Technology is a most effective and permanent solution which significantly extends the service life of concrete structures. Worldwide, Xypex has proven to cost effectively waterproof concrete, protecting against reinforcing steel corrosion, chemical attack, faulty joints and leaking cracks.

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