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SPECIAL PRINT | CONCRETE TECHNOLOGY

WWTP Upgrade Gets Crystalline Waterproofing Protection



Xypex Chemical Corporation, Richmond BC, Canada

WWTP Upgrade Gets Crystalline Waterproofing Protection

As part of a larger sanitary sewer improvements project, Alliance Water Resources is constructing the Sandfort Creek Lift Station in St. Charles, Mo., for East Central Missouri Water and Sewer Authority (ECMWSA), a not-for-profit corporation formed by Public Water Supply District #2 of St. Charles County to provide water and sewer utility services to areas in Missouri's St. Charles and Warren Counties where municipal service is unavailable. The addition of crystalline waterproofing technology to a concrete mix at the time of batching makes the concrete waterproof and protects against sulfate attack and microbial induced corrosion. The technology works within the concrete to improve durability by filling and plugging the pores, capillaries and micro-cracks with a non-soluble, highly resistant crystalline formation. Wherever water can penetrate the concrete, the crystalline formation will follow forming an integral and permanent part of the structure.



The addition of crystalline waterproofing technology to a concrete mix at the time of batching makes the concrete waterproof and protects against sulfate attack and microbial induced corrosion.

The wastewater collection system includes a conventional gravity sewer system with lift stations and force mains. The lift station will have an estimated design average flow of 587,000 gallons per day.

Key in the new lift station design is a 32-ft deep, 10-ft x 10-ft underground wet well and valve vault with a 300,000 gallon storage basin. The lift station is located in an area with a high water table.

Kevin Hampe, utilities engineer with Alliance Water Resources, explains, "It's imperative that we do everything we can to keep groundwater out and sewage in our structures. That's why we looked for extra reinforcement to provide lifecycle protection of concrete structures from groundwater ingress and aggressive chemical attacks common in sewage."

The Cochran Engineering & Surveying LLC, the project engineer, specified Xypex crys-

talline waterproofing admixture for all the concrete used to cast the underground concrete structures (both the wet well and the storage structure).

Brian Gentges, project manager at Cochran, adds, "Concrete failing is a concern in this type of environment and the Xypex will ensure the integrity of the concrete strength over time."

Specifically, the concrete crews added C-500 Admix at the concrete plant to about 480 cubic yards of Type III concrete (20 lbs of admix per cubic yard) for the poured in-place walls and base of the lift station wet well and the excess flow storage structure. St. Louis Prestress, a provider of precast and prestressed concrete materials, also used C-500 Admix in the concrete mix for the precast rectangular beams that cross the top of the wet well, as specified by Cochran. The beams are 12-in. thick x 48-

in. wide x 25-ft long. Once complete in fall 2015, the lift station will send sewerage to the Spencer Creek Wastewater Treatment Facility in the City of St. Peters. Alliance Water Resources is the operations and maintenance manager for Public Water Supply District #2 and ECMWSA. ECMWSA's service area includes an estimated population of about 2,150. ■

FURTHER INFORMATION

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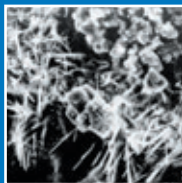
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Concrete
(Untreated)



Xypex Crystallization
(Initiated)



Xypex Crystallization
(Mature)

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