

# SOUTH COBB TUNNEL



**PROJECT**  
**INDUSTRY**  
**LOCATION**  
**PRODUCTS**

South Cobb Tunnel Pump Station  
Water Treatment / Sewage  
Atlanta, GA, USA  
PENETRON ADMIX®

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## CASE SUMMARY

The Cobb County Water System (CCWS) collects and treats wastewater for most of Cobb County, a metropolitan county located northwest of Atlanta, Georgia. The CCWS provides water, sewer, and storm water management services to more than 680,000 people in a 348 square mile area. An evaluation of projected population growth led the CCWS to invest in an upgrade and expansion of its infrastructure.

The South Cobb Tunnel project was carried out by Shea-Traylor J.V. (a joint venture of J.F. Shea Construction and Traylor Brothers); PENETRON waterproofing specialists also provided expertise to address the potential water pressure levels that can result from the unique depth of the tunnel construction.

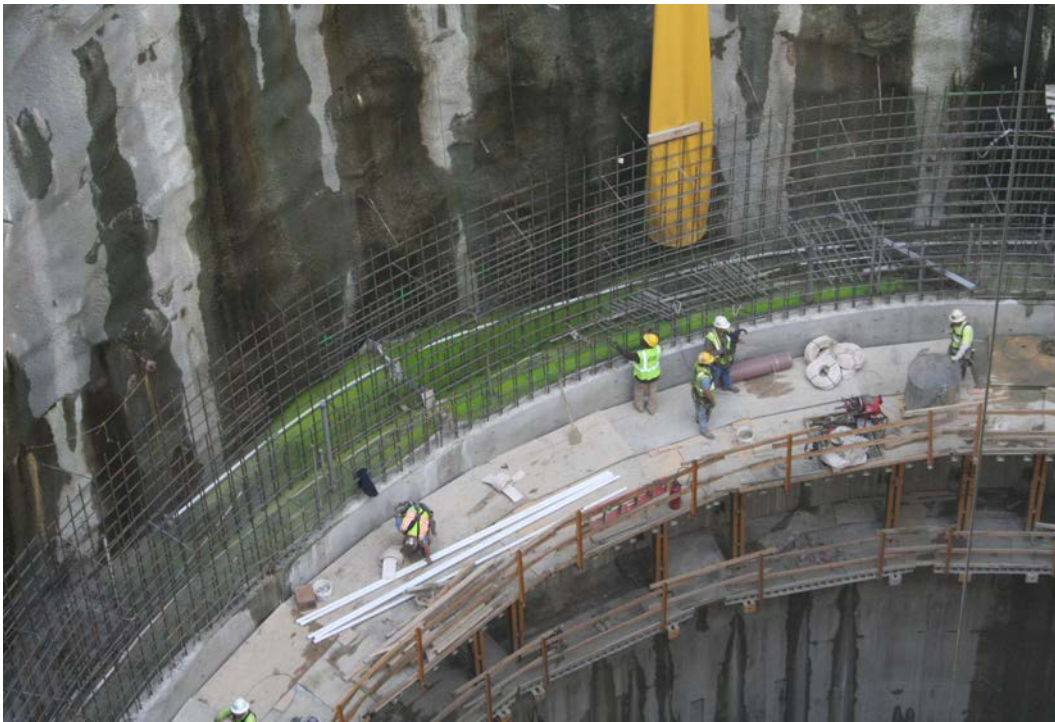
### Bigger Tunnel, Better Tunnel

Two primary interceptor sewers and two wastewater pump stations that formed the South Cobb Basin wastewater collection system were nearing capacity and unable to support future requirements. The South Cobb Water Reclamation Facility (WRF) needed to expand capacity to better equalize influent flow rates, which fluctuate during each 24-hour period, and also handle precipitation inflows.

**“PENETRON ADMIX® was used to treat the concrete lining for structural support and to control groundwater flows at extreme depths.”**



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With a length of 5.5 miles (8.9 km) and an 27 ft (8.2 m) diameter, the South Cobb Tunnel was built through hard rock. At a maximum depth of 400 ft (122 m), it is the deepest tunnel in the Atlanta area. The project also included a 130 MGD lift station to transport wastewater flows from the tunnel to the plant, with six 32.5 MGD vertical non-clog centrifugal pumps in a conventional wet well/dry pit configuration. The height of the lift station was approximately 212 ft (64.6 m).

The new South Cobb tunnel allowed CCWS to eliminate two major pumping stations and 87,000 linear feet (26.5 km) of aging sewer line and force main.

## Structural Support and Groundwater Control

A “permeability-reducing admixture for hydrostatic conditions (PRAH),” as defined in the “Report on Chemical Admixtures for Concrete” (ACI 212.3R-10 / January 2011, published by the American Concrete Institute), PENETRON ADMIX was the ideal waterproofing admixture to resist high levels of water pressure, as well as for watertight tanks, foundations and containment structures. While the groundwater inflow rates were relatively low at the considerable depths of the South Cobb Tunnel, the concrete lining was used to support areas of fractured rock and groundwater inflow. The design called for partial lining with cast-in-place concrete for structural support and/or groundwater control. PENETRON ADMIX was used to treat over 25,000 cubic yards of concrete.



The six-year South Cobb Tunnel project was completed a year ahead of schedule. Although working at the extreme depths resulted in a number of difficulties during construction, all issues were quickly resolved, resulting in cost savings and schedule improvements. This project turned out to be a paradigm of seamless cooperation between the owner, contractor, construction manager and engineer.