



# WSSC BI-COUNTY WATER TUNNEL

- MONTGOMERY & PRINCE GEORGE'S COUNTIES, MARYLAND



## PROJECT DESCRIPTION...

The Washington Suburban Sanitary Commission's (WSSC) Bi-County Water Tunnel is a new 84-inch (213 cm) diameter water main being constructed to meet the growing needs of customers in Montgomery and Prince George's counties, Maryland. The new main will ease demands on the existing 54-inch (137 cm) supply main and provide water system redundancy. Jacobs Associates was first a subcontractor to Louis Berger & Associates, performing a feasibility investigation of design alternatives and to address horizontal and vertical alignments for pressure tunnels. Now we are leading the construction management effort for the tunnel in a joint venture with EA Engineering, Science, and Technology.

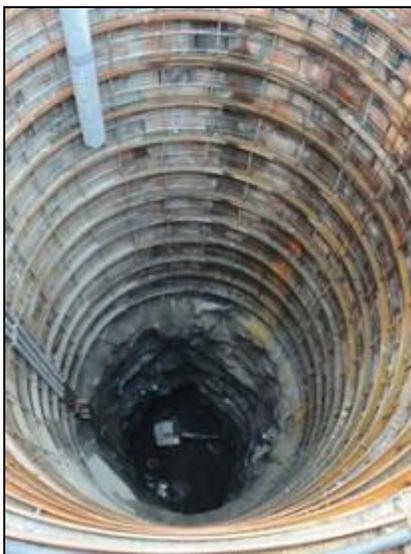


Construction involves excavation of three 150-foot-deep (46.7 m) shafts through overburden and rock; excavation of one starter tunnel and two retrieval tunnels for mobilization and retrieval of the tunnel boring machine (TBM); mining using a TBM of 5.3 miles (8.5 km) of hard rock tunnel with a 10-foot (3 m) excavated diameter, at depths between 90 and 280 feet (27.4 m and 54.8 m) below the ground surface. The final lining consists of welded steel pipe, and surface valve chambers will be constructed to connect to existing surface main pipelines. The relatively small tunnel diameter versus the tunnel length presents significant logistical challenges for conventional tunneling, most notably muck handling and ventilation.

Excavation by TBM will occur in two separate drives: the first extending 4,124 feet (1,257 m); the second extending 4.5 miles (7.2 km) without intermediate access shafts. The project must adhere to a tight schedule and is slated for completion in 2012.

## SCOPE OF WORK...

Balter was involved with subsurface explorations and the installation of ground-monitoring instrumentation as part of the construction team of this major infrastructure project. The tunnel, which will contain an 84-inch water main, will run approximately 200 feet underground along I-270 and I-495. The water tunnel will connect two existing 96-inch mains and have a capacity of 100 million gallons of water per day. The subject site is located below and to either side of the WMATA Subway elevated dual tracks, and immediately west and downhill from the ramp for Rockville Pike Northbound to I-270 Northbound.



The scope includes drilling the boreholes utilizing a combination of hollow stem augers and performing 2.5-ft interval standard penetration tests utilizing automatic hammers, roller bits, and rock coring equipment to penetrate through soil, saprolite, and rock, to termination elevations slightly above el. 114 (the crown of the future tunnel). Subsequent to drilling the boreholes to specified elevation, Balter installed deep Multiple-Point Borehole Extensometers (MPBXs) with the depths of the instruments ranging from 117 to 125 LF beneath the ground surface which required approximately 80- LF of rock cored from each location.



**THE ROBERT B. BALTER COMPANY.**

*Geotechnical Engineering, Subsurface Exploration  
Construction Inspection and Materials Testing*



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## - MONTGOMERY & PRINCE GEORGE'S COUNTIES, MARYLAND

### PROJECT OWNER

- Washington Suburban Sanitary Commission (WSSC)

### POINT OF CONTACT

- John Arciszewski, Prj. Mgr.  
*Renda Southland SAK JV*  
(240) 669-7662

### TOTAL PROJECT COST

- \$168 Million

### FIRM COST

- \$80,000.00

Maintenance of Traffic (MOT) was carefully coordinated as the project location required ramp and lane closures in heavily-trafficked areas.

### ADDED VALUE...

The combination of Balter's extensive knowledge of the subsurface conditions throughout the mid-Atlantic and our drillers extensive experience allowed for the project to be performed within the required schedule, which allowed for the instrumentation to be put online sooner than anticipated. This ultimately helped the project schedule keep on track.



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