

WATER SUPPLY

# Excavation Complete On Manhattan Tunnel

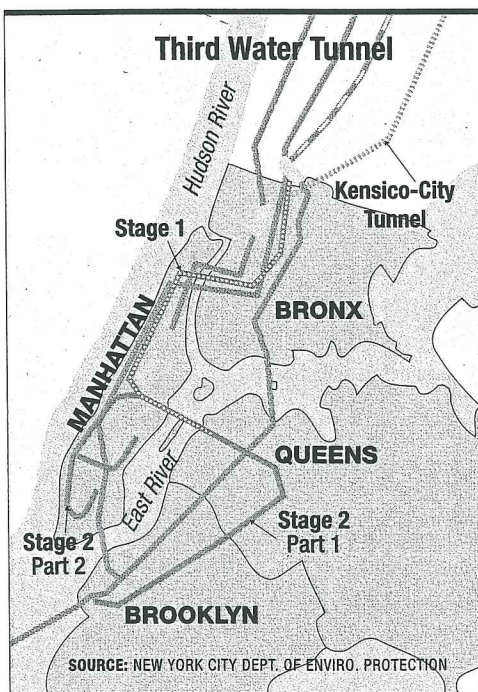
New York City does early planning on next project while contractor finishes tunnel segment

**W**ith the completion of excavation below Manhattan's East Side early this month, New York City's epic Third Water Tunnel project passed another milestone. While work continued on 10 shafts along the 8.5-mile-long tunnel section, Mayor Michael Bloomberg (R) descend-

ed 550 ft to operate the tunnel-boring machine mining out the tunnel's last few inches of granite. The multibillion-dollar project is finally nearing operation. Across the East River, lining and disinfection are continuing in the Brooklyn-Queens portion of the project, with the goal of putting it in service by 2008. The Manhattan section is scheduled to enter service in 2012.

"We finished on time," says Anthony Deldescovo, project manager of the joint venture of Schiavone Construction Co., J.F. Shea Construction Inc. and Frontier-Kemper Constructors Inc. that performed the work under a \$670-million contract. Excavation began in October 2003 from a point on Manhattan's West Side. Workers assembled the 12.5-ft-dia Robbins hard-rock TBM and its 700 ft of trailing gear in a bell-out at the bottom of a 580-ft-deep shaft. From there it excavated the 3.5-mile leg beneath lower Manhattan.

In 2005 it was backed to the bell-out,



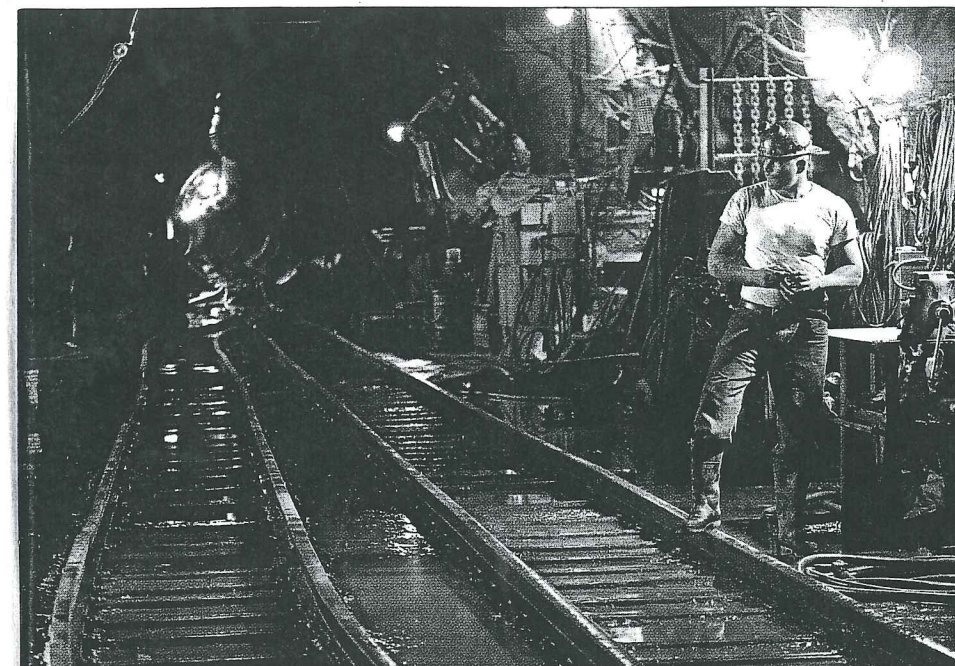
rotated 180° and pointed north toward Central Park, where it connected with Third Water Tunnel Stage 1. Excavation of a third leg, running east from the bell out and then north, began earlier this

year and was just completed.

Ten shafts now must be excavated from the new tunnel, says Deldescovo. Two are complete, two have not yet started and the rest are in varying stages of construction. Schiavone-Shea-Frontier now will begin to place 14 in. of concrete lining in the completed tunnel. Using 500-ft forms and working five 24-hour days per week, work will take about a year and a half, says Deldescovo.

The Third Water Tunnel, first proposed in the 1950s to provide redundancy in the city's water supply system, was begun in 1970. Continuing intermittently through city fiscal crises and contract disputes, its first stage, 13 miles from Hillview Reservoir in Yonkers, N.Y., through the Bronx and Manhattan into Queens, cost \$1 billion and entered service in 1998 (ENR 7/13/98 p. 16). Stage 2 consists of two distinct portions. The 10.5-mile tunnel in Brooklyn and Queens was constructed in two segments that were connected in 1997 and lined by 2001, costing \$750 million (ENR 2/17/97 p. 5). The tunnel just completed in Manhattan is the second part of the Stage 2 work.

Further extensions of the system are already in the works. A 16-mile tunnel called the Kensico-City Tunnel is "in the late stages of planning," says Alfonso Lopez, deputy commissioner of the New



▲ No Accident. New York's Third Water Tunnel is the city's largest public works project.

York City Dept. of Environmental Protection (ENR 3/17/03 p. 17). It would deliver water into the City Tunnel at the Van Cortlandt Valve Chamber in the Bronx, near the Hillview Reservoir, from the Catskill-Delaware Ultraviolet Treatment Facility near Kensico Reservoir. Site preparation for the \$597-million UV facility began last year (ENR 7/4/05 p. 17). A joint venture of Gannett Fleming and Earth Tech is establishing the alignment for the tunnel, says Lopez. "The driving force is going to be the geology," he adds.

The Kensico-City Tunnel project is

## Further extensions to the city's water system are already in the works and funded at \$4 billion.

funded at \$4 billion, but is 13 to 15 months behind schedule because the Army Corps of Engineers has not issued a permit required by the Clean Water Act, says Lopez. "We don't have a schedule on it now. We're in the process of developing a schedule," he says. Stage 4 of the tunnel program is planned to run 14 miles from the valve chamber in the Bronx under the East River into Queens. "It's

more of a distribution improvement," Lopez says.

When Stage 2 work is completed in 2012, DEP will be able to close Tunnel No. 1 for inspection and maintenance for the first time since it was built in 1917.

The tunnel just completed runs at an average depth of 540 ft beneath the city's streets. The rock encountered was Manhattan schist and granitic gneiss, says Deldescovo, noting the TBM made "a fairly smooth run" through it. "There were no major problems, no water inflow," he adds.

Since the project began in 1970, 24 workers have been killed in workplace accidents, but none in the last 10 years, says Deldescovo. He credits use of the TBM and vertical-belt mucking for the improvement, noting that it is safer than the drill-and-blast method used on the Stage 1 tunnel work.

The old rule-of-thumb—that each mile of tunnel would cost one worker's life—is no longer accepted, he says. "Technology has gotten better, and people are more cognizant of safety." ■

By Thomas F. Armistead

COMPANIES

## Turner Appoints Davoren CEO

Following the exit at y Thomas C. Leppert as Turner Corp., Peter J. Davoren executive of the company's pricing unit, Turner Construction assume Leppert's duties while existing position. "We're trying the company and we will continue positions," says Davoren. Leppert, a former financial management consultant, has

## The new chairman will New York but will the Dallas corporate o

chairman and CEO of the parent the country's second biggest tractor—since 1999. That's many's Hochtief AG completed Turner Corp. and moved the from New York City to Dallas; the company now receives about pretax earnings from business the last five years, such as pro insurance.

"That's significant," Leppert. "But it's also taken a total involving all the company's operations company reported \$6.32 billion construction revenue.

Hochtief picked Davoren Leppert and play the dual role parent company and the pricing unit. A 28-year construction an, Davoren has spent his entire Turner. "Peter Davoren is a deeply rooted in the Turner organization," says Herbert Lutke Hochtief executive board member of its American business.

No plans exist for shifting the company's headquarters but Dallas will be based in New York City policy [in New York] and Dallas. I will be staying in New York