

METROPOLITAN SECTION

| Newsletter |

Section Chairman

My Fellow Met Section Members,

The ASME Met Section is one of the oldest continuous operating sections. Over the years the section has sponsored technical dinner meetings and field trips for our members. These were done at minimal cost or free when possible. The section even established a scholarship fund to help finance the education of deserving students.

The section was and will continue to be dedicated to our members, but now we need your help. The ASME no longer provides funds to the Met Section, to support our programs. We are asking that when you renew your membership you consider making a small donation to the Met Section. A donation from you will allow us to continue holding technical dinner meetings, which are great ways to meet other engineers make friends and have fun. Also, your donation will allow us to continue supporting our student sections with matching funding for their design projects and special events. Helping these young engineers is a great way for us help the next generation.

So, when you renew your membership, please think of us, and give what you like. Even \$1 will help. Thanks!

Ahmed Zaza - Chair Met Section



Mechanical Engineering Aspects of New York City's Water Tunnel #3 By Gerald Hillenbrand

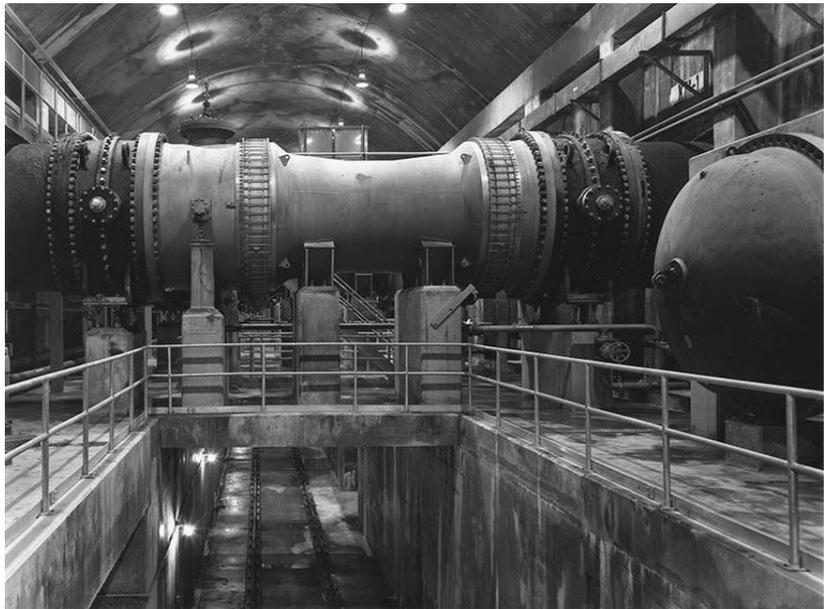
The ASME's Metropolitan Section hosted and sponsored a Technical Dinner Meeting at the National Grid Headquarters, One MetroTech Center in Brooklyn, NY on Thursday June 15, 2017. The topic of the presentation was the mechanical engineering aspects of New York City's water tunnel #3. The speaker covering this topic was Neal Bierman, P.E, Chief of Tunnel Mechanical Systems at the City's Department of Environmental Protection Offices in Corona, Queens, where he heads the organization's Bureau of Engineering, Design and Construction.

The City's Department of Environmental Protection, consisting of more than 6000 employees, is in

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https://community.asme.org/metropolitan_section/groupleadership.aspx



responsible charge of supplying clean drinking water, collecting waste water, and reducing air, noise and hazardous materials with safety, support, sustainability, transparency and innovation with the most modern technology available. The department's staff



continuously monitors water and sewer operations along with providing in-house design, support and testing, while reviewing bid documents, drawings and proposed revisions.

Mr. Bierman first summarized the City's water supply and storage facilities for 580 billion gallons with 19 reservoirs providing 1 billion gallons per day to N.Y. City along with 100 million gallons per day to upstate

counties.

He then reviewed the system's construction history with Tunnel #1 completed in 1917, Tunnel #2 completed in 1936 and Tunnel #3 connecting the system to the Bronx and Manhattan Tunnels in 1998. After completion of Tunnel #2 a connection to Staten Island was installed. The Tunnel #3 system is organized in a series of four stages:

Stage 1: The 1998 completion in the Bronx and Manhattan as reported above.

Stage 2: Integrated the system through-out Manhattan and finished in 2013.

Stage 3: The future connection of this tunnel between the Kensico Reservoir and N.Y. City tunnels.

Stage 4: The future connection of the Bronx and Queens systems.

Mr. Bierman then showed a video presentation illustrating the design and construction of City Tunnel #3 with emphasis on the access shafts, the uptake piping, the riser and distribution chambers, and the street level distribution valving. The Queens portion of the tunnel was bored deep underground by a tunnel boring machine utilizing concentric, rotating cutting heads connected to special machinery for installing concrete forms for tunnel lining trailing the cutting heads. Also shown was a video illustrating the factory testing procedures employed before actual construction, along with designs of the connections for shafting to control discs.

The Question and Answer Period was equally informative. The tunnel boring techniques used for the Queens tunnel were also employed for water supply work in San Francisco and Seattle with variations in the concrete lining layers, and the conveyor belts to remove the cuttings from the boring machine.

The Metropolitan Section extends sincere thanks to Mr. Bierman for his interesting and informative presentation on the mechanical engineering perspectives for New York City Water Tunnel No. 3.