

PROJECT ELEMENTS

- Temporary Flood Control System Design
- Pipe Jacking Design.
- Transition Pipe Design
- Tunnel Precast Steel-Fiber Reinforced Concrete Segmental Lining Design
- TBM face pressure evaluation
- Construction Support Services

ROLE

- Tunnel Design – Engineer of Record (EoR)

PERIOD OF SERVICE

- Feb 2018 – Present

COST

- Est. Construction: \$190M

OWNER

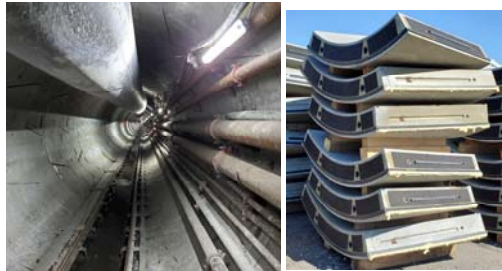
- Suffolk County Department of Public Works

CLIENT

- OHL – Posillico – SELI Overseas Joint Venture

Bergen Point WWTP Outfall Replacement

Suffolk County — Babylon, NY



Bergen Tunnel – Concrete Segmental Lining

chamber, and launch and receiving shafts as well as HVAC and electrical works.

The tunnel construction included 400-ft. long pipe jacking as a starter tunnel to facilitate TBM assembly and the remainder of the tunnel was supported with segmental lining. A reinforced concrete transition pipe section (adapter) was installed at the pipe jacking/segmental lining interface.

Subsurface & Tunnel Engineering Ilc (STE), the Engineer of Record (EoR), provided the tunnel detailed support system design including reinforced concrete pipe jacking, precast fiber-reinforced concrete segmental lining, reinforced concrete transition pipe (between pipe jacking and segmental lining) as well as, TBM face pressure analysis and recommendations. In addition, STE provided the flood control support system, including sheet piling walls.

The Bergen Point WWTP Outfall (Bergen Tunnel) Project is approximately 14,200-ft. long, 10-ft. finished ID tunnel lined, with precast segmental lining support system. The new tunnel extends from Bergen Point WWTP launch shaft to Barrier Island receiving shaft. The tunnel was constructed slurry TBM. The project includes the replacement of the pipe and valves within the existing Final Effluent Pump Station, new site piping, gates, valve chamber, meter chamber, and launch and receiving shafts as well as HVAC and electrical works.

DESIGN PACKAGES:

- Detailed design for precast fiber-reinforced concrete segmental lining. The design included geotechnical evaluation, empirical and numerical analyses, recommendations for steel fibers, and assessment of temporary and permanent load cases.
- Detailed design for precast steel reinforced pipe jacking. The design included geotechnical evaluation, empirical and numerical analyses, and assessment of temporary and permanent load cases.
- Detailed design for precast steel reinforced transition pipe (adapter). The design included geotechnical evaluation, empirical and numerical analyses, and assessment of temporary and permanent load cases.
- Analysis for estimating TBM required face pressure ranges based on existing ground conditions shown in the GBR.
- Detailed design for flood control support system including sheet piling system based on ground conditions and maximum possible flood elevation, per contract documents.