

Pawtucket CSO Tunnel Project Narragansett Bay Commission (NBC)

Location: Providence, Rhode Island

Date: 2020 - Present

Structure: TBM Storage Tunnel, Large Diameter Shafts, SEM Tunnels, SEM Adits, TBM-Adit Connections

Length: Approx. 2.2 miles (3.5 km) – TBM
Approx. 850 feet (260 m) – SEM Tunnels

Cross-Section: 30.0 ft (9.1 m) – TBM Internal Diameter
~39.0 ft (11.9 m) – SEM Starter Tunnel
~11.0 ft (3.4 m) to ~18.0 ft (5.5m) – SEM Adits

Geology: Man-made granular fill, Glaciofluvial sands, Rhode Island formation (sandstone with lesser amounts of conglomeratic sandstone and siltstone, and small amounts of mudstone, shale, and coal)

Cost: US \$368 Million

Client: AECOM

Owner: Narragansett Bay Commission (NBC)

The design of the adit connections to the TBM liner include the design of specialized TBM segments and shear-coupling elements around the break-out area, as required. In addition, GZ is providing Independent Design Verification (IDV) services for the TBM Segmental Lining, which covers a full check of temporary and permanent loading of the liner along the entire alignment.

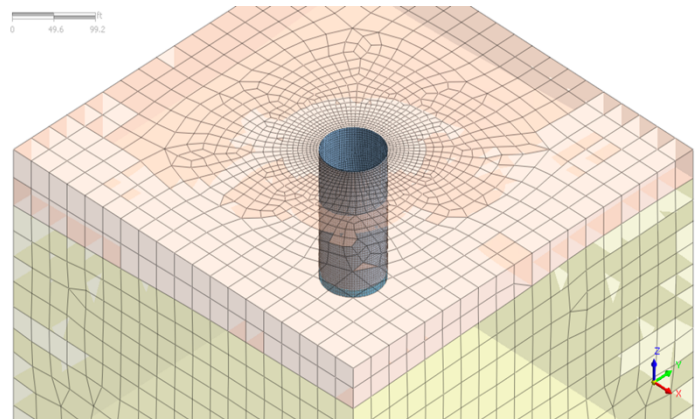


Figure 1. Large Diameter Shaft Analysis.

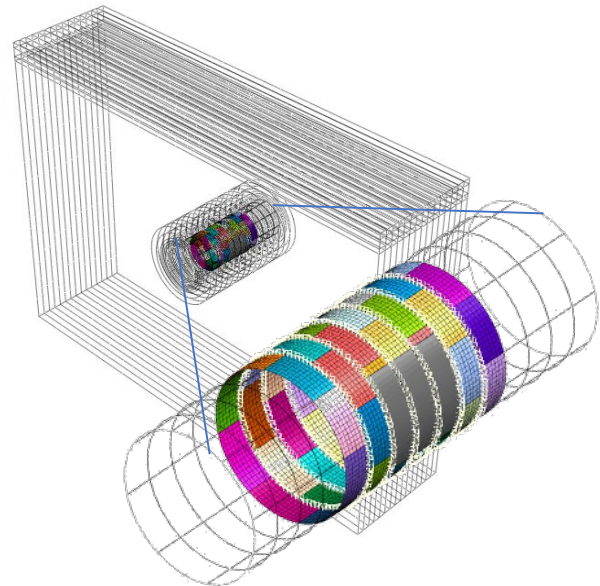


Figure 2. TBM Segmental Lining Opening Analysis.

Design Services for Large Diameter Shaft, SEM Tunnels and Adits, IDV for Segmental Lining:

Narragansett Bay Commission (NBC) has commissioned the third and final phase (Phase IIIA) of Pawtucket CSO tunnel project. This phase of the program will be executed as a Design-Build project and is focused primarily on the Bucklin Point Service Area. Phase IIIA includes a 30 ft (9.1 m) ID TBM tunnel, ancillary underground features (i.e. drop shafts, launch shaft, receiving shaft, tunnel pump station shaft, adit tunnels) to support the functionality of the tunnel to serve as a CSO storage facility. The tunnel is designed to have sufficient volume to store all contributing overflows during a storm event up to the three-month storm for subsequent pump-out and treatment at the BPWWTF.

Gall Zeidler Consultants (GZ) is responsible for the temporary and permanent works design of all SEM tunnels, the permanent works design for large diameter shafts, and the design of the temporary and permanent adit connections to the TBM segmental lining.