



## Bergen Tunnel Rehabilitation New Jersey Transit Authority

**Location:** Jersey City, New Jersey

**Date:** 2001 – 2002

**Structure:** Twin-Track Railway Tunnel

**Length:** 0.9 miles (1.5 kilometers)

**Cross-Section:** Approximately 1,000 square feet  
(93 square meters)

**Geology:** Massive, Fractured Diabase;  
Groundwater Inflow Along  
Discontinuities and in Fractured Zones

**Cost:** Approximately \$60 Million

**Client:** Merco, Inc.

**Owner:** New Jersey Transit Authority (NJT)



**Figure 1.** Waterproofing installed, final lining installation ongoing.

### Tunnel Construction and Support Services:

The north tube of the partially brick-lined, 125-year-old Bergen Tunnel required rehabilitation to meet today's clearance and safety requirements. Gall Zeidler Consultants (GZ) provided consulting to the contractor for excavation and support requirements, portal redesign, as well as general support for submittals, materials selection, rehabilitation procedures, adapting the initial lining to the geology encountered, waterproofing system, and final lining adaptations.

The project required stabilizing of two open cuts, stabilizing and backfilling five existing ventilation shafts, removing brick, enlarging the tunnel with drill-and-blast techniques, relining it with shotcrete, and installing a drained membrane waterproofing system and cast-in-place concrete final lining.



**Figure 2.** Final tunnel lining in place and finishing out.