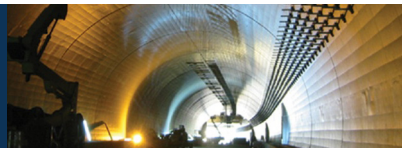
Gall Zeidler Consultants
Geotechnics | Tunnel Design | Engineering



Port Authority Trans – Hudson (PATH) Tunnel Rehabilitation
Port Authority of New York / New Jersey

Location:	New York, New York / Jersey City, New Jersey
Date:	2002 – 2003
Structure:	Tunnels E & F and Exchange Place Underground Station
Length:	6,000 feet (1,829 meters) Each
Cross-Section:	Running Tunnels with Varying Size Station Tunnels
Geology:	Hard, Massive to Fractured Schist, and Igneous Rock, High Groundwater Table
Cost:	Approximately $160 Million
Client:	Gannett Fleming, Inc.
Owner:	Port Authority of New York / New Jersey

Figure 1. Rehabilitation of the PATH Systems Tunnel 'E'.

Construction Ventilation Design:

The over 100-year-old underground railway tunnels and station scheme beneath the Hudson River between New York City and New Jersey required refurbishment and upgrading. The station improvements included the construction of several cross-tunnels, which connected the existing tunnels and allowed for track crossovers, and replacement of an existing signal relay room. Tunnel E and F works encompassed a complete renovation of the tunnels' interiors. Rails, controls, power, lighting, and related structural components of Tunnels E and F were replaced.

Gall Zeidler Consultants (GZ) advised on the construction of tunnel ventilation, developed associated contract documents (specifications and layouts), and performed a check of the contractor's ventilation design.

Figure 2. Station upgrade with enlargements constructed using shotcrete for the final lining.