



Dulles Corridor Metrorail Project The Metropolitan Washington Airports Authority

Location: Vienna, Virginia

Date: 2004 – 2012

Structure: Metrorail Tunnels at Tysons Corner and Running Tunnels and an Underground Station at Dulles International Airport

Length: Two Single Track Tunnels 1,700 feet (520 meters) Each at Tysons Corner and Two Single Track Tunnels, 1.96 miles (2,800 meters) Each at Dulles Airport

Cross-Section: 21.5 foot (6.5 meter) Diameter Running Tunnels and 40 foot (12.2 meter) Springline Diameter for Mined Station Tunnels at Dulles International Airport

Geology: Fill, Residual Soils, Saprolite, Claystone; Balls Bluff Formation (Mudstones and Siltstones)

Cost: Approximately \$5 Billion

Client: Dulles Transit Partners (DTP), a Joint Venture of Bechtel, Inc. & Washington Group International

Owner: The Metropolitan Washington Airports Authority (MWAA)

Machine (TBM) selection for both soft ground (Earth Pressure Balance Tunnel Boring Machine) and hard rock conditions (mainframe gripper type Tunnel Boring Machine), in addition to one-pass and two-pass tunnel lining designs.

The NATM tunnel at Tysons Corner earned an Excellence in Automation Award from the American Society of Civil Engineers (ASCE) and was a finalist for the International Tunneling Awards in 2011. During construction of the soft ground NATM tunnels at Tysons Corner, GZ provided construction support and inspection services.



Figure 1. NATM tunnel excavation, April 2010.



Figure 2. Project Location.

Metrorail Tunnel and Station Design:

The Dulles Corridor Metrorail is a new 23 mile (37 kilometer) line extending the metro service from an existing line at the East Falls Church Station in Fairfax County to Route 772 in Loudoun County, Virginia. The project is constructed in two phases. Phase 1 was put into operation in 2014 and construction of Phase 2 is ongoing with substantial completion expected in 2019. The corridor features running tunnels at Tysons Corner (Phase 1) and running tunnels and a mined New Austrian Tunneling Method (NATM) underground station at Washington Dulles International Airport (IAD) (Phase 2).

Gall Zeidler Consultants (GZ) provided tunnel and station design services from the conceptual to final engineering stages of the project for Phase 1 and the conceptual design for Phase 2 tunnels and station caverns. This expertise included design drawings, specifications, structural calculations and construction cost estimates. Preliminary design activities included Tunnel Boring