Gall Zeidler Consultants
Geotechnics | Tunnel Design | Engineering

Tuscarora Tunnel Rehabilitation
Pennsylvania Turnpike Commission

Location: Fannettsburg, Pennsylvania USA

Date: 2013 – Present

Structure: Highway Tunnel

Length: 5,326 feet (1,623 meters)

Cross-Section: Width: 28.5 feet (8.7 meters)
Height: 26 feet (7.9 meters)

Geology: Oswego & Juniata Formations (Re Fine to Medium Grained Sandstone); Tuscarora Formation (White Quartzitic Sandstone and Quartzite)

Cost: $90 Million

Client: Gannett Fleming

Owner: Pennsylvania Turnpike Commission

Figure 1. Tuscarora Tunnel Portal

Tunnel Rehabilitation Design Services:

In rural Fannettsburg, Pennsylvania, the Pennsylvania Turnpike passes through the Tuscarora Mountain via twin highway tunnels, which are each 5,326 ft in length. The first tunnel was constructed between 1938 and 1940, while the westbound tube was added be- tween 1962 and 1968. Over the many years of service, the tunnels have experienced water infiltration from the mountain above which has led to deterioration of the concrete tunnel lining and suspended concrete ceiling.

Gall Zeidler Consultants (GZ) is working with Gannett Fleming on the final design of the rehabilitation work of the tunnels, which includes new ventilation system, lighting, fire life safety systems, roadway drainage, and structural repair. GZ is responsible for the waterproofing design for both tunnels. As the eastbound tunnel is experiencing worse deterioration than the newer westbound tunnel, the remediation work in the eastbound tube includes demolishing the existing ceiling slab and installing a new waterproofing system and shotcrete final lining. For the westbound tunnel, new groundwater relief holes and drainage system will be installed to collect and divert water entering the tunnel.

Figure 2. Installed lattice girders and rebar mesh.