

Pearl River CSO Tunnel Project

Triad was the sponsoring member of the Triad Frontier Kemper Joint Venture. This Joint Venture completed the Pearl River CSO Tunnel Project in Lafayette, Indiana. The project required soft ground mining in mixed face conditions under the water table. The soils were a combination of glacial till overlain by water bearing sands and gravels. The project used a tunnel machine designed with a compressed air pressurized face in front of a steel bulkhead. This permitted the work space to be in free air.

The tunnel is approximately 2,300 feet long under Second Street in downtown Lafayette, Indiana. In addition to the challenging soils, the tunnel is 12 feet in diameter, yet only 30 feet deep to the invert. Tunnel excavation required strict instrumentation and monitoring, as many existing utilities were very close to the tunnel crown. In addition, the tunnel crossed under the major rail link between Chicago and the southern United States with approximately one diameter of tunnel cover. The tunnel alignment contained three curves including an S curve and four access shafts.

A unique primary liner was designed by Joint Venture engineers, in cooperation with Underground Structural Solutions. A reinforced steel segment system was designed and installed behind the tunnel digging machine. This solution was more economical and practical than precast concrete segments, due to the length of the tunnel being only 2,000 feet. The final lining is 9.5 feet in diameter, monolithically poured, reinforced concrete.

