

## N. St. Elmo Drainage System Upgrade Chattanooga, TN



### PROJECT OVERVIEW AND CHALLENGES

Bradshaw constructed three tunnels as part of a stormwater sewer improvement project for the City of Chattanooga. Bradshaw originally intended to construct the 84" liner plate tunnels and 72" direct-jack FRP tunnel with conventional tunnel boring machines. However, the local foundry sand fill material contained numerous obstructions, with slag, bricks, reinforced concrete, glass and various trash found while excavating the shafts. Given the risks of settlement and blocking the TBM, Bradshaw elected to install a 96" liner plate tunnel by hand several feet underneath an active 4" gas service line. Despite encountering and removing countless obstructions, no settlement occurred and the 72" FRP was successfully installed. For the two 84" liner plate tunnels, a tunnel shield was utilized for both crossings as they passed underneath active Norfolk Southern tracks. The 60" and 66" FRP lines were installed after completing the drives.



### PROJECT INFORMATION - 566

**OWNER:**

City of Chattanooga  
Department of Public Works  
423-425-6311

**ENGINEER:**

Civic Engineering & IT, Inc.  
615-425-2000

**CONTRACTOR:**

Wright Brothers Construction

**COMPLETION DATE:**

3/9/2018

**GEOLOGY:**

Foundry Sand Fill, Glass Fragments  
and Slag

**EXCAVATION METHOD:**

Hand Tunneling

**MINING DIMENSIONS:**

137', 195' x 84" & 250' x 96"

**FINAL LINING:**

60", 66", 72" Fiber Reinforced Pipe

**FOR MORE INFORMATION:**

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Refer to Project 566