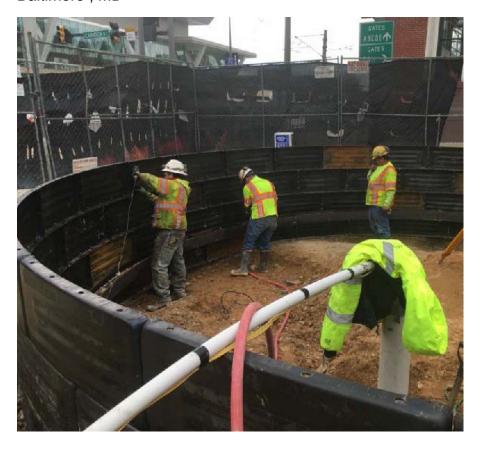
# **Project Profile: HAND TUNNELING**



# CSX Transportation Howard St. Tunnel, Camden St. Drain Replacement Baltimore, MD



### PROJECT OVERVIEW AND CHALLENGES

Bradshaw completed this high profile project in downtown Baltimore, MD as part of a design-build team. An existing storm drain located in the invert of the Howard Street CSX Rail Tunnel had been the cause of frequent flooding. This project replaced that 48" storm drain with a larger, deeper siphon drain which eliminated the flooding and allows CSX to increase the depth of the existing tunnel to gain freight capacity through the area. A total of three tunnels were mined out of a 26' diameter by 55' deep shaft. The subsurface conditions consisted of poorly graded sand with silt and gravel, which required extensive grouting prior to tunnel excavation. The first was the Upper Adit Tunnel, 32' of 66" liner plate hand-mined for a 48" FRP storm drain. The second tunnel was 68' of 48" liner plate hand-mined for 18" PVC pipe, which will ultimately serve as the drain for the Howard Street Tunnel. The third tunnel consisted of 122' of 74" steel casing installed by







#### **PROJECT INFORMATION - 576**

#### OWNER:

**CSX** Transportation 904-359-3100

#### **ENGINEER:**

McMillen Jacobs Associates Joe Shrank 615-490-9025 shrank@mcmjac.com

# **CONTRACTOR:**

Clark Construction Group, LLC

# **COMPLETION DATE:**

5/19/2018

### **GEOLOGY:**

Very Dense Alluvial Sand & Gravel

### **EXCAVATION METHOD:**

Handmine

# MINING DIMENSIONS:

100' x 48"-66" Ø

### FINAL LINING:

48" Fiber Reinforced Pipe 18" Polyvinyl Chloride Pipe

# FOR MORE INFORMATION:

**Todd Brown** 410-970-8300 tbrown@bradshawcc.com Refer to Project 576