

## Knight Theater Tunnels Charlotte, NC



### PROJECT OVERVIEW AND CHALLENGES

Bradshaw Construction designed and built two 13' tall by 16.5' wide shotcrete horseshoe-shaped tunnels, totaling 160', for the city of Charlotte, NC. The tunnels were designed as initial/final shotcrete linings, with a sprayed water barrier between shotcrete layers. In addition, the mix design was supplemented with a cementitious admixture to develop internal water resistant properties in the shotcrete. The First Street Tunnel was situated primarily in slightly weathered granitic rock, overlaid with moderately weathered rock near the top of the tunnel. Blast vibrations were kept well within the USBM standard and no damage was reported. At the interfaces with the new theater construction, the waterproofing membrane that was placed against the soldier piles and lagging was wrapped into the tunnel over the first layer of shotcrete. It was then sandwiched in with the sprayed-on waterproofing admixture.



### PROJECT INFORMATION - 459

**OWNER:**

Wachovia Bank  
Larry Lindsey, Corporate Division  
Manager  
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**ENGINEER:**

Jenny Engineering Corporation (D/B  
Partner)  
Prakash Donde, Project Engineer  
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**CONTRACTOR:**

Rogers Builders Inc.

**COMPLETION DATE:**

9/30/2008

**GEOLOGY:**

Silty sand, weathered rock, and hard  
rock

**EXCAVATION METHOD:**

SEM  
Drill & Blast

**MINING DIMENSIONS:**

160' x 13' x 16.5'

**FINAL LINING:**

Shotcrete Finish

**FOR MORE INFORMATION:**

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Refer to Project 459