

PROJECT > Liberty Tunnel

QUIKRETE® Shotcrete MS - Fiber Reinforced
Pittsburgh, PA



PROJECT DESCRIPTION:

The Liberty Tunnel provides direct four-lane route from downtown Pittsburgh to the South Hills suburb and after nearly a century in service, the Pennsylvania Department of Transportation had the mile-long, U-shaped tunnel rehabilitated. The demolition and renewal of the arch walls inside the tunnel originally called for cast-in-place concrete using the existing steel framing hangars. However, uncertainty about the structural integrity of the deteriorated hangars led Coastal Gunite and Swank Construction to replace the cast-in place concrete design with a self-bearing arch concept using spray-apply QUIKRETE® Shotcrete MS - Fiber Reinforced.

Traditionally used to extend the underground section of a mined tunnel with a free-standing arch at the portal opening, often called a shotcrete canopy, the self-bearing arch design required the removal of all the hangars and the application of shotcrete 6" thick over embedded lattice girders in the tunnels arch and vertical walls. The arches were further reinforced with two layers of welded wire reinforcement, which also helped control shrinkage cracking. Ultimately, the alternate self-bearing arch design provided greater flexibility, minimized risk, reduced labor costs and limited traffic closure in the tunnel, which was critical. The Liberty Tunnel rehabilitation is a 2014 American Shotcrete Association honorable mention award winner.

QUIKRETE® Shotcrete MS - Fiber Reinforced is a single component Micro Silica enhanced repair material that achieves more than 9,000 PSI at 28 days, and features very low rebound and permeability characteristics.

GENERAL CONTRACTOR:

Swank Construction Company, LLC

SHOTCRETE CONTRACTOR:

Coastal Gunite Construction Company

QUIKRETE® PRODUCTS:

- 3,000 lb Shotcrete MS - Fiber Reinforced: 2,400
- 50 lb Shotcrete MS - Fiber Reinforced: 11,424 bags

PROJECT START DATE:

July 2013

PROJECT COMPLETION DATE:

October 2013

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