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Wet shotcrete process key to Ore. tunnel restoration



After 70 years of continuous vehicle traffic between Portland and the Oregon coast on Highway 26, the 772-ft Dennis Edward Tunnel was in need of a significant structural restoration. However, renovating the tunnel could not interfere with the daily commute of thousands and had to be complete before traffic doubled when the tourist season began. To make the project even more challenging, general contractor, Johnson Western Gunite Co., faced wet weather and unstable ground conditions when the project started. This made the use of a traditional rock bolt and shotcrete application system impossible, so a unique approach was taken to restore the tunnel. Shotcrete MS was applied up to 18 in. thick between existing timbers

sets so lagging could be removed and reinforcement applied a section at a time. This process enabled construction to be performed safely and efficiently throughout the night.

The QUIKRETE Cos. latest innovation, QUIKRETE Wet Process Shotcrete, was critical to the success of the award-winning Oregon Department of Transportation (ODOT) U.S. Highway 26 Dennis L. Edwards Tunnel Project in Portland, Ore. More than 1,200 bags of 3,000-lb QUIKRETE Shotcrete MS – Steel Fiber Reinforced was used in the tunnel renovation, which was named 2011 Outstanding Repair & Rehabilitation Project by the American Shotcrete Association (ASA).

In addition to exceeding project strength specifications by reaching 3,800 psi at one day and more than 9,400 psi at 15 days, the wet process shotcrete limited dust in the application process by batching the shotcrete wet in advance rather than combining the water and shotcrete during the shooting process. As a result, there was little clean-up each morning in preparation for traffic and Johnson Western Gunite Co. completed the project on time.

"A combination of factors including the project schedule and traffic considerations really made this a uniquely challenging renovation," said Don Dodroe, regional sales manager for The QUIKRETE Cos. "However, with the wet mix process, the Johnson Western Gunite team experienced nearly no rebound and was able to methodically rehabilitate the tunnel in a timely manner without creating any traffic disruptions. This award from the Shotcrete Association really validates that the right approach was taken to restoring the tunnel."

SLIDESHOW



Shotcrete was applied up to 18 in. thick between existing timbers sets.

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