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July 2026

Caldecott Tunnel Upgrade: Non-Destructive Testing and Coring Confirms Concrete Strength

When a tunnel that carries 160,000 vehicles a day needs new jet fans, engineers turn into detectives—drilling, scanning, and testing to uncover whether its decades old concrete is still up to the task. As Caltrans designers prepare to upgrade the jet fans in the Caldecott Tunnel bores, they asked Materials Engineering and Testing Services (METS) to confirm tunnel-lining conditions by evaluating concrete compressive strength and overall material quality to verify existing conditions and support the anchorage design for the new fan support system.

The Caldecott Tunnel, located in the San Francisco East Bay, is a four-bore highway tunnel through the Berkeley Hills between Oakland and Orinda on State Route 24. It was originally opened in 1937 with two bores and has since been expanded to four. The focus of this investigation was the three older bores, which were opened in 1937 and 1964.

METS worked with Bridge Design to pinpoint testing locations and with the Division of Maintenance to secure access to the tunnel and have portions cleaned. Over the last two weeks of March 2026, teams from the Office of Quality Assurance and Source Inspection (OQASI), Field and Forensic Services, and METS Safety worked together to conduct non-destructive testing. Non-destructive testing and cores were taken in Bores 1, 2, and 3 using ultrasonic pulse-echo and ground-penetrating radar at each jet-fan mounting location. A total of 29 cores were taken from the tunnel bores, completing the compressive strength testing with results exceeding 5,000 psi. METS plans to complete analysis by mid-July and will deliver a summary report to the Bridge Design team outlining the testing methods, results, and recommendations.

This project stands as a strong example of how Caltrans teams come together to solve complex engineering challenges. From meticulous testing to seamless coordination across offices, the effort highlights the expertise and collaboration that keep California's infrastructure safe and reliable.

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