

A wide-angle, fisheye photograph of a large, circular underground tunnel under construction. The tunnel walls are lined with concrete segments. Several workers in orange safety gear are visible in the distance, and a large stack of pipes is on the left side. The lighting is bright, coming from overhead fixtures.

**Driving safe, reliable operations
with flexible sealing systems**

**PROJECT: REGIONAL CONNECTOR TRANSIT
COMPLETION: 2022**

Trelleborg’s sealing systems are specifically designed to preserve the integrity of critical infrastructures. In the case of Los Angeles Metro’s Regional Connector Transit, these sealing systems play a crucial role in enhancing the overall efficiency and reliability of the rail network.

BACKGROUND

Stretching over 30 kilometers from the bustling city center, the light-rail system in Los Angeles offers a convenient mode of transportation, although considered unconventional by many. While the expanding network of light-rail lines has garnered significant ridership in the city through the years, riders face the challenge of having to endure long commutes.

Moreover, the lack of connectivity between cities and the inconvenience of frequent transfers have been major obstacles to light-rail being recognized as an efficient transportation option.

To address these challenges, the Los Angeles County Metropolitan Transportation Authority opened a 1.9-mile underground light-rail system in downtown Los Angeles in 2022. Besides being an alternative to congested roadways, the newly

introduced link, called the Regional Connector, integrates the L (Gold), A (Blue), and E (Expo) lines along one route underneath downtown Los Angeles. This seamless connection provides more direct access to the city’s center and even eliminates the need to transfer lines in many cases. The service provides a direct connection between Long Beach and Azusa, a trip of nearly 50 miles, or between Santa Monica and East Los Angeles, saving commuters up to 20 minutes of travel time.

The Regional Connector promises to revolutionize transportation with its greener, more efficient, and people-centric approach. With the city’s sights set on expanding its sustainable travel networks in time for the 2028 Olympics, this remarkable project propels the city forward in that direction.

CHALLENGE

With three underground stations, 1.9 miles of cut-and-cover and 21-foot diameter twin bored tunnels, a sequential excavation method cavern (60 feet wide, 38 feet high, and 300 feet long), and U-section guideway, a critical part of the \$1.75 billion design-build Regional Connector project was sealing the seismic movement joints in the tunnels, which are 5,795 feet long and 21 feet wide.

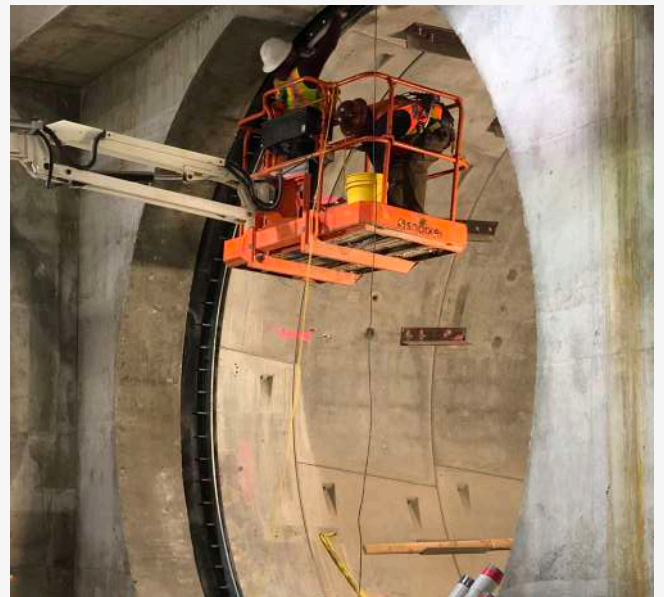
Another major challenge was getting a seamless and watertight connection between different geometries. Keeping the connection secure and reliable while maintaining flexibility for significant movements was crucial.

SOLUTION

Trelleborg's Omega seal was specified as the optimal solution to maintain the integrity of the structure, due to its exceptional ability to withstand high water pressure and allow movement in any direction. These seals were

crucial in connecting the twin bored tunnels, constructed using precast concrete tunnel liners (PCTLs), to the cavern, constructed using the sequential excavation method (SEM). An additional seal was used to connect the cavern seamlessly with the station box, which is made of concrete cast in situ. The Omega seals have been designed to withstand high water pressure and allow movement in any direction, making them the perfect fit for this project. Since each structure was built differently and behaves differently when subject to ground movement, a flexible seal like the Omega seal was essential to keep the joints watertight and enable independent structural movement at the same time.

Drawing on decades of expertise in polymer technology, we pride ourselves on delivering tailor-made engineered solutions built to last in even the most technically complex and challenging environments.



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