MAKING THE CONNECTION

Bridges and tunnels have always been symbols of man's perseverance and quest to discover. Today they also provide solutions to traffic problems and contribute to regional development.

TEXT: DONNA GUINIVAN **ILLUSTRATION:** TUE BEIJER

We tend to take our road systems for granted, expecting to go from A to B by the shortest route possible, whether that be via bridges over seas and rivers or in tunnels that go beneath these or through mountains.

In the developed world, much of the transportation infrastructure is already in place, although major projects do still go on, such as the world's longest tunnel, the 57-kilometer Gotthard Base tunnel in Switzerland.

In developing economies, effective and efficient transportation infrastructure is seen as key to growth. For instance, in Shanghai, China, 16 bridges are planned across the Huangpu River by the end of 2020, roughly one every two kilometers, and that is in addition to nine tunnels. India's road network, at 3.314 million kilometers, is already the longest in the world and considered vital for a rising gross domestic product.

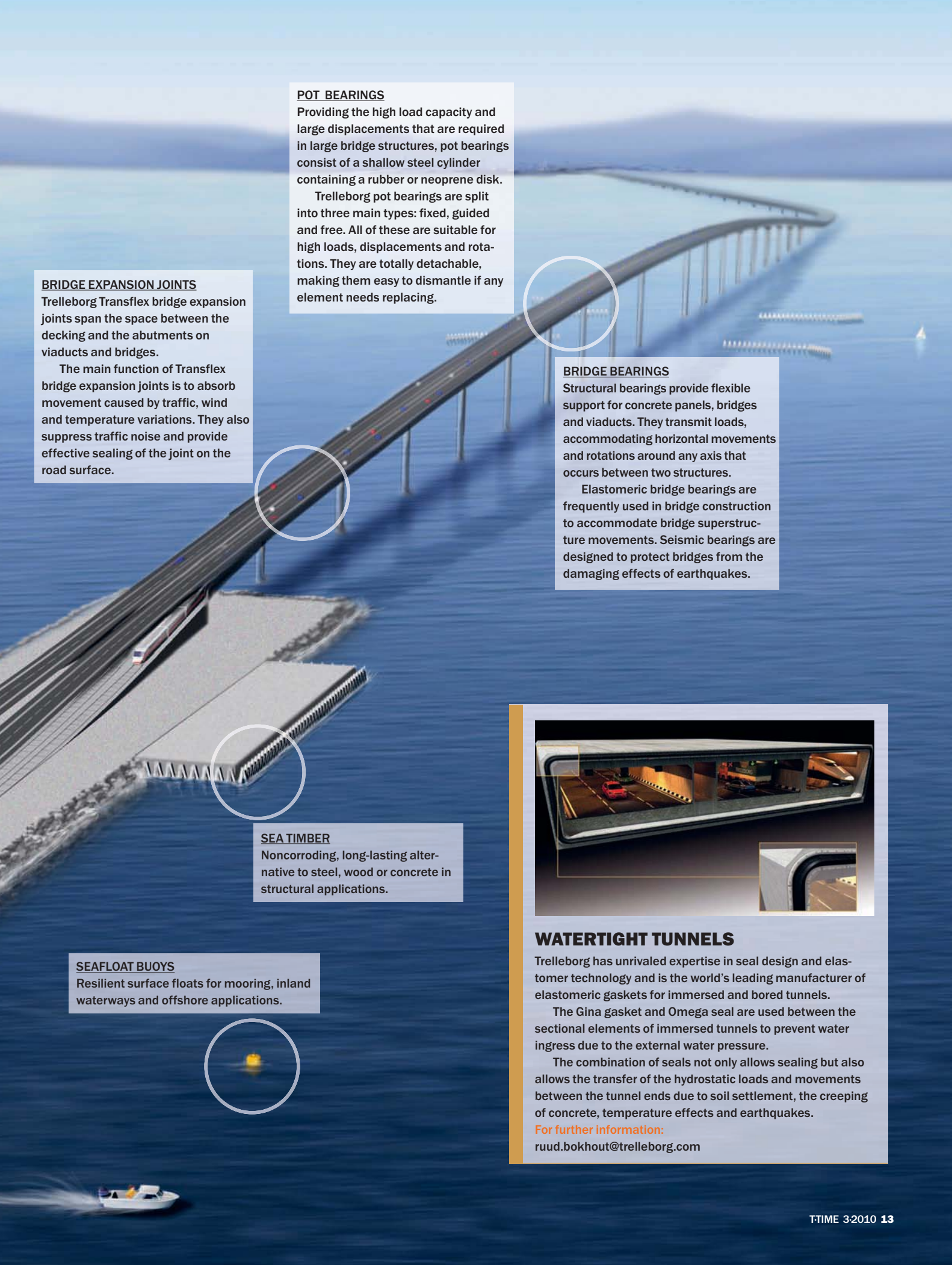
Construction, though, still continues with huge bridges and important tunnels such as the Rohtang, which will run through the mountainous regions of Jammu and Kashmir.

Trelleborg is at the heart of many such infrastructure expansions, supplying essential seals and bearings that protect people using tunnels and bridges, as well as the constructions themselves. ■

TUNNEL SEALS
Trelleborg supplies seals for both bored and immersed tube tunnels, including Gina gaskets and Omega seals. To support its customers in demanding engineering projects, Trelleborg also offers on-site services such as vulcanization of joints and assistance during installation.

WATERSTOPS
At the entrance of an immersed tunnel, the joints between concrete sections are made watertight with waterstops made of rubber and vulcanized steel strips.

If the concrete shows fissures or gravel spots, a sponge rubber profile is applied alongside the waterstop. After injecting a fluid along these sponges, the joint is fully sealed.



POT BEARINGS

Providing the high load capacity and large displacements that are required in large bridge structures, pot bearings consist of a shallow steel cylinder containing a rubber or neoprene disk.

Trelleborg pot bearings are split into three main types: fixed, guided and free. All of these are suitable for high loads, displacements and rotations. They are totally detachable, making them easy to dismantle if any element needs replacing.

BRIDGE EXPANSION JOINTS

Trelleborg Transflex bridge expansion joints span the space between the decking and the abutments on viaducts and bridges.

The main function of Transflex bridge expansion joints is to absorb movement caused by traffic, wind and temperature variations. They also suppress traffic noise and provide effective sealing of the joint on the road surface.

BRIDGE BEARINGS

Structural bearings provide flexible support for concrete panels, bridges and viaducts. They transmit loads, accommodating horizontal movements and rotations around any axis that occurs between two structures.

Elastomeric bridge bearings are frequently used in bridge construction to accommodate bridge superstructure movements. Seismic bearings are designed to protect bridges from the damaging effects of earthquakes.

SEA TIMBER

Noncorroding, long-lasting alternative to steel, wood or concrete in structural applications.

SEAFLOAT BUOYS

Resilient surface floats for mooring, inland waterways and offshore applications.

WATERTIGHT TUNNELS

Trelleborg has unrivaled expertise in seal design and elastomer technology and is the world's leading manufacturer of elastomeric gaskets for immersed and bored tunnels.

The Gina gasket and Omega seal are used between the sectional elements of immersed tunnels to prevent water ingress due to the external water pressure.

The combination of seals not only allows sealing but also allows the transfer of the hydrostatic loads and movements between the tunnel ends due to soil settlement, the creeping of concrete, temperature effects and earthquakes.

For further information:

ruud.bokhout@trelleborg.com