



St. Petersburg is regarded as Russia's cultural capital. To protect its people and cultural treasures from flooding, a 25-kilometer storm flood barrier is being constructed.

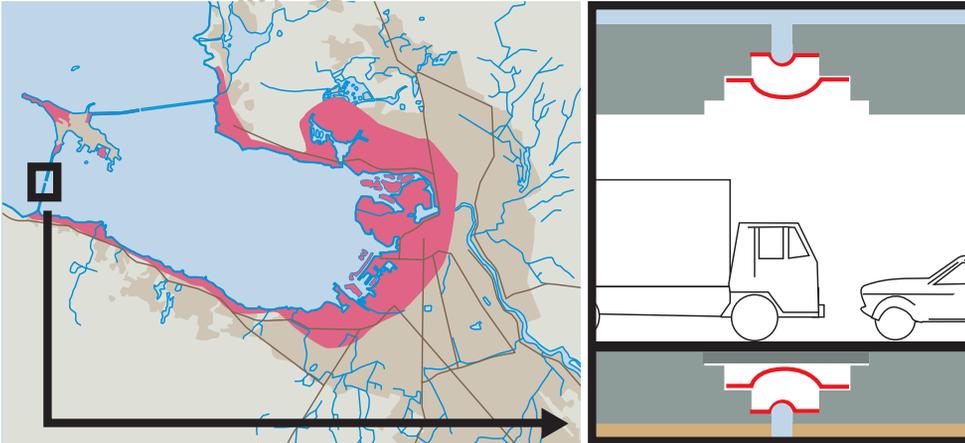
TEXT: Gwladys Fouché ILLUSTRATION: Lönegård PHOTOS: Trelleborg and Masterfile

A first for Omega seals

This is the first time that Omega seals have been used in a tunnel of the type being constructed in St. Petersburg, which is a “cut-and-cover” tunnel, whereby a hole is dug, the tunnel is constructed bit by bit, and then

covered with sand. What is also unique is that the tunnel will be provided with a double sealing system, an outer Omega seal and an inner one, as a back-up. Omega seals can withstand high water pressure in

combination with relatively large displacements in all three directions. They can also withstand temperatures ranging from minus 30 degrees Celsius to plus 70 degrees Celsius.



Some 145 million people were able to watch Vladimir Vasilijev, area sales manager, and Peter Stello, the managing director of Trelleborg Bakker, as they were interviewed by the national television company.

LAST JANUARY, St. Petersburg was flooded for the 302nd time in its 303-year history. The water level rose more than two meters above normal, flooding some of the streets bordering the waterfront.

St. Petersburg is situated at the point where the Neva River flows into the Gulf of Finland, so when strong winds in the gulf blow eastwards, they act as a barrier against the Neva flowing westwards. As a result, the waters can rise in only a few hours, threatening St. Petersburg's 4.6 million people and its priceless historical sites, such as the world-renowned Hermitage Museum.

IN 1979, the Soviets began the construction of a storm flood barrier across the Gulf of Finland, but the project had to be abandoned a few years later for financial reasons as the demise of the Soviet Union began. However in 2003, Russian President Vladimir Putin, a native of St. Petersburg, ordered the project to restart and it is now supported by

the European Bank for Reconstruction and Development.

THE STORM FLOOD barrier consists of a 25-kilometer dam, six discharge sluices and two navigation channels. The main channel is 200 meters wide and will be sealed using two 130-meter curved doors. These amazing structures will normally rest in curved dry-docks on either side of the channel. When needed, the docks will be floated to closure. As the barrier will be part of the ring road around the city, a tunnel, 17 meters under the flood gates, has been designed to pass under the main channel.

IN THE 1980S, all fifteen tunnel sections were constructed without being connected.

“Our contribution is the design of a sealing system that connects the tunnel sections. We are more or less supplying the missing links.

As the storm flood barrier will be part of the ring road around the city, a tunnel has been designed to pass under the main channel.

“The seals are sufficiently resistant that they will protect the tunnel from water gushing in under high pressure. At the same time, they are flexible enough to allow movement by the tunnel sections.

IT WAS ESSENTIAL that the 40 meter-wide, seven meter-high seals, were made to the highest standards of quality. They are called Omega because they are the shape of the Greek letter.

“Once the seals are laid, it is impossible to go in and repair them. These seals are made to provide resistance for the next hundred years.

The seals were manufactured in the Netherlands, at Trelleborg factory in Ridderkerk, out-side Rotterdam. Construction of the St. Petersburg dam is scheduled to finish in 2008. So January's flood may hopefully turn out to be the last in St. Petersburg's history. ☞

FOR MORE INFORMATION
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