

ELIMINATOR[®] bridge deck waterproofing system chosen to protect world's longest combined road and rail bridge



Project	Yavuz Sultan Selim Bridge (Bosphorus 3)
Client	Turkish State General Directorate of Highways (KGM) Main
Contractor	ICA Consortium
Applicator	ERSE Teknolojik Yapılar
GCP Solutions	ELIMINATOR [®] Bridge Deck Waterproofing system

Project

Building major suspension bridge

Built in the north of Istanbul - Turkey, the Yavuz Sultan Selim Bridge, or “Bosphorus 3,” as it is often called, is part of the projected 260km long Northern Marmara Highway. The highway will bypass urban areas of Istanbul in the north connecting Kinalı, Silivri in the west and Paşaköy, Hendek in the east.

This suspension cable bridge is designed for both rail and cars. It is the longest combined motorway / railway bridge in the world and is the eighth longest suspension bridge.

Aside from its sheer length and size, the bridge is equally significant for its powerful logistical positioning. The new rail system running over the bridge will include Marmaray and Istanbul Metro connecting Asia and Europe, Ataturk Airport, Sabiha Gokcen Airport and the third airport set to be opened in 2018. This is important, not only for Turkey, but for the rest of the world, as it will be part of a “New Silk Road” linking China and Europe by rail.

Challenge

Finding a long-lasting waterproofing solution

Over the past fifteen years, the state highways agency KGM has specified the ELIMINATOR[®] bridge deck waterproofing system for several high profile collaborations in Turkey. Such celebrated projects include the Osman Gazi Bridge, Fatih Sultan Mehmet Bridge, Bosphorus Bridge and Haliç Bridges. Based on their positive experiences in the past, KGM turned to the Stirling Lloyd's (now GCP Applied Technologies) ELIMINATOR[®] cold spray applied waterproofing system to provide the long-lasting protection that this high profile structure required.

For work of this scale and size, it was essential that the bridge deck waterproofing would not only provide proven long lasting protection, but also allow quick and easy application. The ELIMINATOR[®] system addressed both of these objectives.

The application process began in March 2016 and was completed the following month, in time for the bridge's inauguration ceremony in August 2016. In total, the ELIMINATOR[®] system covered 37,435m².



Solution



Extending the bridge's service life

There were two elements to the waterproofing process: the preparation of the deck, directly followed by the application of the waterproofing system itself to the main orthotropic steel bridge deck and walkways. The steel bridge deck was prepared by shot blasting using metallic grit. This was followed by the cold, spray application of the ELIMINATOR[®] system, which is based on unique ESSELAC[®] technology.

The authorised contractors, ICA, were able to apply an average of 1500m² of the complete bridge waterproofing system per day, enabling quick contract progression. The ELIMINATOR[®] system cures in under an hour, allowing the next element to be applied immediately afterwards.

The system's ease and speed of application, rapid curing, toughness, durability and ability to withstand difficult site conditions enabled project progression, essential to meet the project's tight deadline. In addition, the waterproofing system will help to minimise long-term maintenance costs and extend the service life of the bridge.

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Last Updated: 2018-08-27

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