

Central Asian bridge adds waterproofing system

BRIDGEMASTER® bridge deck waterproofing system protects longest metal span bridge



Project	Turkmenabat – Farap Bridge, Turkmenistan
Client	State Concern Turkmenavtohowayollary
Authorized Contractor (Waterproofing Applicator)	LLC Road Building "ALTCOM"
GCP Solutions	BRIDGEMASTER® bridge deck waterproofing system

Project

Building a major new bridge

The newly built M37 Turkmenabat–Farap road is located in the capital of Lebap Province in the east of Turkmenistan. For part of its route it is carried by the new 1.6 km Turkmenabat–Farap Bridge, which is now the longest continuous metal span bridge in Central Asia.

The new bridge consists of two continuous beam system decks, each 800m long, carrying four traffic lanes as well as pedestrian footpaths on either side of the bridge. This new route will provide easy access through Turkmenistan to Uzbekistan and onwards to China. Before the new road and bridge was built, it could take up to three days to cross from Turkmenabat to Uzbekistan due to the significant queues that would form at the previously used small pontoon bridge. The construction of the new road bridge now allows this journey over the river Amu Darya and on to the border with Uzbekistan to be completed within two to three hours.



Extreme climatic conditions require waterproofing system up to the challenge

Design and construction of the bridge was a technical challenge that was successfully met by two Ukrainian companies: Altcom Road Construction Ltd and design and engineering company Soyuztransproek Ltd. In addition, companies from more than 15 countries were involved in the project right from the start, offering technical advice on design and product selection.

The bridge's location is characterized by complex geological, hydrological and climatic conditions, including an average seismicity of magnitude 8. In addition, during spring and summer, weather conditions often results in significant rainfall and flooding in the vicinity, so it was important that the selected waterproofing and surfacing solution could withstand these severe conditions.



Applying waterproofing in severe weather conditions

The BRIDGEMASTER[®] system combined waterproofing and wearing course system from Stirling Lloyd (now GCP Applied Technologies) was specified, resulting in an 80% reduction in dead weight when compared to the traditionally used asphalt surfacing layer. In addition, the system provided an extremely high bond to the metal deck, enabling the waterproofing and surfacing to act as a composite with the deck. The system also offers excellent skid resistance properties and is tolerant to difficult climatic conditions during application and severe climatic conditions once in-situ.

Based on proprietary ESSELAC[®] resin technology, the BRIDGEMASTER[®] system was applied to a depth of 12 mm on the roadway and 8 mm on the pedestrian footpath, reducing the seismic loadings on the structures orthotropic steel plate.

The system's ease of application and rapid cure, even at low temperatures, enabled the contractor to apply up to 3,000 m² of the system per day. The Turkmenabat-Farap Bridge now has a durable, lightweight waterproof surfacing that is capable of dealing with extreme climatic conditions and heavy traffic loads.

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