



The Bosphorus Bridge and Fatih Sultan Mehmet Bridge span the Bosphorus strait and are vital to transport between Europe and Asia and to the Turkish economy. Flint & Neill was appointed in 2006 by the Turkish Highways Authority to undertake a structural assessment, including detailed inspection and the development of temporary monitoring system, for both bridges. The bridges carry a very large number of vehicles on a daily basis and are located in a region of high seismic activity. Their operational capacity and reliability are vital to the economy of the Turkish Republic.

The Bosphorus Bridge, constructed in 1973, has a main span of 1074m and is one of only three suspension bridges in the world with inclined hangers, the others being Severn Bridge and Humber Bridge, both in the UK. Heavy vehicles have been restricted from crossing the bridge since 1993, resulting in a reduced traffic loading, but the inclined hanger design results in large variation in hanger tensions, with a significant impact on hanger dynamics.

Following a hanger plate failure in early 2004, a F&N undertook a comprehensive review in order to identify other issues related to the general condition and safety of the bridge. It included a complete structural assessment under general and seismic loading conditions, using a performance based design approach. The firm also conducted a complete structural survey of the bridge, including a detailed inspection of the bridge main cables steel box girder, and made recommendations regarding the planning and implementation of an effective maintenance regime for this life-line structure.

Flint & Neill also supervised the development of a full scale permanent monitoring system on the bridge, assuming responsibility for the successful planning, specification, implementation, testing and commissioning of the system.

**Client:**  
KGM Istanbul

**Location:**  
Bosphorus Strait, Istanbul,  
Turkey

**Service Dates:**  
2006-2009

**Services:**  
Structural Assessment  
Development and  
Implementation of Structural  
Health Monitoring System

