

THE THIRD BOSPORUS BRIDGE -THE AERODYNAMIC STABILITY OF THE STEEL SEGMENTS DURING THE LIFTING

Vincent de VILLE de GOYET

Dr.Ing.- Scientific Director

Engineering Office Greisch

Liege, Belgium

vdeville@greisch.com

ULiege, Prof. 10 years as Research Engineer at ULiege. 30 years, Administrator, R.&D. developments in the field of instability, wind engineering, at Greisch. design of Millau viaduct, 3rd Bosphorus bridge, dynamic behaviour of HSR bridges

Contact: vdeville@greisch.com



Yves DUCHENE

Dr.Ing.-R. & D. Manager

Engineering Office Greisch

Liege, Belgium

yduchene@greisch.com

4 years as Research Engineer at ULiege. 15 years, R. & D., special studies in the field of instability and dynamics at Greisch



1 Abstract

The Third Bosphorus Bridge is a suspension bridge with a main span length of 1 408 m and a total length of 2 408 m located at the north of Istanbul near the Black Sea.

The main span is partially suspended at the pylons by stiffening cables and at the main cables with vertical hangers (Fig.1-2). The deck is 58.8 m wide. But contrary to a classical arrangement, the transversal distance between the vertical hangers, in the suspended zone, is only 13.50 m. Due to this geometrical configuration of the vertical hangers, it was necessary to verify the risk of aeroelastic instabilities of steel segments of the deck during its lifting: risk of a torsional instability around the longitudinal axis but also around the vertical axis. Countermeasures have been proposed and adopted to suppress these risks.

Keywords: suspension bridge, construction, wind, aeroelastic instabilities, test, steel deck.



Figure 1- View of the Third Bosphorus Bridge