Sava Bridge Project – Accelerated Design-Build Realization

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Summary

The paper deals with the accelerated design-build realization of new bridge across Sava River in Belgrade. The total length of the bridge is 967 m. The main bridge part is an asymmetric cable-stayed structure, with a main span of 376 m (steel) and a back span of 200 m (concrete). The bridge deck, having width of 45 m, carries 6 lanes of vehicular traffic, 2 rail tracks of LRT and two lanes span pedestrian/cycleway. The bridge construction is accelerated by modern construction methods based on the original and innovative design. The accelerated construction methods, realized by modern construction equipment, are applied in the following works: foundation of pylon, erection of conical pylon, incremental launchings of 200 m back span & 338 m side spans, as well as one-sided antilever erection of 376 m main span followed by the installation of stays. The Sava Bridge was open for vehicular traffic and one-sided pedestrian/cycle traffic by New Year - on 1st January 2012.

Keywords: bridge design; bridge construction; cable-stayed bridge

1. Introduction

The international competition for concept design proposal was launched in 2004. The design office Ponting Maribor (with DDC Ljubljana & CPV Novi Sad), as it was awarded for concept design proposal, finalized the preliminary design in 2006 [1].

The Louis Berger Group Inc. (with local partner Euro Gardi Group Novi Sad), as the awarded Project Manager – Engineer, started in 2007 [2]. The consortium POOR-SCT-DSD, as the awarded design-build Contractor, started the works by middle 2008 and the final completion of all finishing works will be in June 2012 [3]. The final design is prepared by LAP Stuttgart (with DCF Vienna engaged for foundation design) [4]. The project is co-financed by the EBRD loan and by the City of Belgrade's own funds. The client is the City of Belgrade - Belgrade Development Land and Public Agency.

The construction of Sava Bridge started in 2008 and it was open for vehicular and pedestrian/cycle traffic on 1st January 2012. It is planned that the Sava Bridge will be open for LRT traffic (firstly tramway lines and later Belgrade metro lines) in 2013. The construction of south approach roads (SAR) and north approach roads (NAR) started in 2011 and it is planned to be completed in 2013.

2. Design-Build Realization of Sava Bridge

The Sava Bridge is located in wide center zone of Belgrade, passing over the lower tip of Ada Ciganlija Island – popular recreation area. Thus Sava Bridge is popularly named the Bridge on Ada.

The bridge route from New Belgrade side overpasses the "winter storage" bay (130 m), left bank area (170 m), Sava River (350 m), the lower tip of Ada Ciganlija Island (50 m) and Cukarica Bay (180 m).

The Sava Bridge has a continuous deck over entire length of 967 m, supported by piers 1 to 8 and rigidly connected to the pylon pier 6 (Fig. 1). The main span of 376 m (steel) and back span of 200 m (concrete) are elastically supported, each by 20 pairs of cable stays that are anchored in single pylon (concrete). The cable-stayed bridge (376+200 m) is prolonged in a continuous beam structure by

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