Chapter

7.10

Renovation of a Historic Railway Lift Bridge

Jurgen Voermans, Struc. Eng., Royal Haskoning DHV, Rotterdam, The Netherlands,
Jaco Reusink, Struct. Eng., Engineering Department, Municipality of Rotterdam, Rotterdam, The Netherlands

Introduction

The Koningshaven bridge in Rotterdam is a vertical lift-type, movable railway bridge. The bridge was completed in 1927 and was replaced by a tunnel in 1993. The bridge was designated as a national monument in 2000. To preserve the bridge for future generations, an extensive renovation project is under execution. This paper elaborates on the history, the design, the structural assessment and major challenges of the structural retrofit.

Brief History

The construction of the Koningshaven bridge was part of a major project extending the connection of the Amsterdam–Rotterdam railway line to the Moerdijk–Antwerpen railway line. This part of the project involved the accomplishment of a double-track railway through the densely populated Rotterdam inner city and the crossing of the Nieuwe Maas river. The Koningshaven bridge was completed in 1877 connecting the southern part of the river and canal crossing between the northern shore of the Nieuwe Maas river through Noordereiland and the southern shore of the Koningshaven (*Fig. 1*). The Koningshaven bridge consisted of a steel arch with a span of 80 m on both sides of a symmetrical swing bridge with a total length of 54.5 m. Openings of 20 m allowed vessels to pass on either side of the central pivot pier (*Fig. 2*). As time progressed, the swing bridge could no longer meet the requirements of the busy navigation and railway traffic. The width of the bridge openings was too narrow, and the bridge had to be opened frequently. Both navigation and railway traffic were seriously obstructed. Several collisions occurred as a result. The collision on 2 November 1918 of the German steamship *Kandenfels* was decisive in the discussion to replace the swing bridge with a vertical lift bridge.

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