

PRESS RELEASE

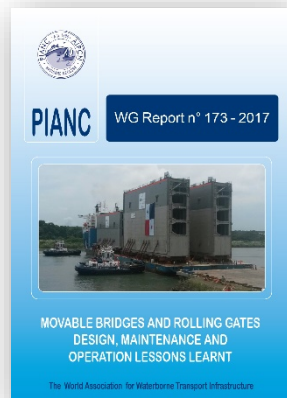


PIANC

The World Association for Waterborne
Transport Infrastructure

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NEW PIANC PUBLICATION AVAILABLE



Title: 'Movable Bridges and Rolling Gates Design, Maintenance and Operation - Lessons Learnt'

Author's: InCom Working Group 173

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Introduction:

The aim and purpose of this Working Group report is to determine technological guidelines for design, fabrication, construction, operation and maintenance of both rolling gates and movable bridges as outlined in the Terms of Reference. The focus of the report is on mechanical and electrical design features of rolling gates and movable bridges rather than structural design. However, structural design features often overlap with mechanical design and are discussed in the report as appropriate. Another primary objective of the Working Group is gathering the experiences of the working group members and providing lessons learnt and best practice in the design and operation and maintenance for both rolling gates and movable bridges. Although rolling gates were briefly discussed in PIANC Report No. 138 - 'Mechanical and Electrical Engineering Lessons Learnt from Navigation Structures [23]', experiences with both subjects are extensive and important enough that a separate report is warranted. While it may seem on the surface that the two subjects are not related, common areas of design or concern may be found between rolling gates and movable bridges. Rolling gates are typically driven by electrical/mechanical winches, and movable bridges of various types use electrical/mechanical hoists or winches of similar design. Therefore, many of the components of drive systems are common to both rolling gates and movable bridges. Also, the massive nature of both rolling gates and movable bridges can lead to similar considerations for dealing with the inherent large inertial loads. This report is an opportunity to more closely examine two areas that have not previously been a subject of a Working Group report and are of significant interest to the inland navigation community. A report conclusion for both rolling gates and movable bridges is provided in Chapter 2. Chapter 3 discusses history and also design similarities and differences of rolling gates and movable bridges. The next chapters (Chapters 4 through 10) discuss specific details of rolling gates followed by similar chapters for movable bridges (Chapters 11 through 18). One of these chapters (Chapter 13) is dedicated to discussing safety issues. Although it is focused on movable bridges, many of the safety topics also directly apply to rolling gates. Rolling gates are located primarily in Europe on large sea locks and are also being used in the new Panama Canal third lane locks opened in 2016 and the Kieldrecht Lock also opened in 2016 (see Chapter 2). Movable bridges have an extensive history and are located throughout the world and are installed in thousands of locations over various waterways. The mechanical and electrical designs and features, however, are similar for these structures, hence the reason for both structures being discussed in this same report. It should be noted that this Working Group report cannot be seen as expert guidance in the field of movable bridges, which is not the field of PIANC expertise. There are other institutions listed in Chapter 19 - 'References' that have issued broader accepted guidelines for movable bridges. This Working Group report should by no means compete with the existing norms and guidelines for movable bridges. This Working Group report does, however, include a comprehensive summary of best practices and lessons learnt that can be incorporated into future mechanical and electrical designs of both rolling gates and movable bridges. The report provides a discussion of the benefits and disadvantages, makes recommendations, and develops practical solutions for mechanical and electrical design of rolling gates and movable bridges. Comprehensive mechanical and electrical design manuals and guidance are limited for rolling gates and to some extent for movable bridges. Lessons learnt from actual installations are even more limited. Problems with mechanical and electrical systems can quickly emerge causing expensive unscheduled closures of these structures. A comprehensive 'lessons learnt' on these systems will help and facilitate the design of new construction or rehabilitation, and in troubleshooting existing operational and maintenance issues. The Working Group visited a number of rolling gate installations and movable bridge installations. Each of the sites visited provided an opportunity to learn and capture mechanical and electrical lessons learnt. This, combined with the members' expertise and experience in various projects, provides a broad and systemised collection of lessons learnt.

NOTE: The objective of this report is to provide information and recommendations on good practice. Conformity is not obligatory and engineering judgement should be used in its application, especially in special circumstances. This report should be seen as an expert guidance and state of the art on this particular subject. PIANC disclaims all responsibility in case this report should be presented as an official standard.

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