

The New IRC Guidelines for Cable Stayed Bridges in India

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Abstract

The Indian Roads Congress (IRC), the official body that is responsible for Roads and Bridges in the country and represents the think tank on the subject, constituted a body of experts to formulate Guidelines for the design and construction of Cable-Stayed Bridges. This paper summarizes the contents of the Guidelines. Currently, there are some 38 Cable-Stayed Bridges existing or under construction in India and most of them feature in one way or the other in the Guidelines. Brief details of these bridges appear in the Appendix of the Guidelines.

Keywords: Cable-Stayed bridges, deck, pylon (tower), stay cables, aerodynamic, seismic, design, construction technology.

1. INTRODUCTION

The Indian Roads Congress (IRC), the official body that is responsible for formulating codes of practice for Roads and Bridges in the country, constituted a team of experts to make new guidelines for Cable-Stayed Bridges. The work covered various aspects of design, construction and maintenance, and was carried out under the overall supervision of the B9 Committee dealing with Special Bridges and is currently in print.

This paper gives an overview of the contents of the Guidelines. As on date, there are some 38 Cable-Stayed Bridges existing or under construction in India and many of them feature in one way or the other in the Guidelines. Brief details of these bridges appear in the Appendix of the Guidelines.

2. SCOPE

The Cable-Stayed Bridges are well suited for span range of 200m to 1200m (main span) from the economical point of view. However, examples of small to medium spans in the range of 27m to 150m also exist ^[1].

The scope of the Guidelines shall be applicable for cable stayed bridges with maximum main

span lengths as follows:

Concrete.....upto 350m
Composite Steel-Concrete and Steel...upto 500m,

The Design Life of the Cable-Stayed Bridges will be taken as 100 years to be in sync with other current IRC codes. However, in case it is desired to have a longer design life, additional considerations come into play, which relate to durability, waterway discharge (and scour), seismic effects, and wind effects.

The structural concepts have been explained through bridges that were constructed in India. For engineers in India, this is important, so that a proper understanding of the bridges within the country can be gained in terms of their structural action.

The Guidelines consist of 15 Chapters and 7 Annexures as indicated in the Acknowledgements at the end of this paper.

3. DESIGN ASPECTS

Figure 1 illustrates the comparative structural arrangements of typical 3-span Girder Bridges, Extradosed Bridges and Cable Stayed Bridges.