# Features of Guidelines for the Design of Cable Supported Bridges to Resist Wind & Seismicity

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## Abstract

IRC Guidelines on planning, design and construction for Extradosed and Cable stayed bridges are highlighted in separate papers entitled, "The New IRC Guidelines for Cable Stayed Bridges in India" by Mahesh Tandon[1] and "A new IRC Guideline for Design, Construction and Maintenance of Extradosed Bridges in India" by Alok Bhowmick[2]. This paper brings out the salient features contained in the chapters related to wind loads and effects as well as seismic forces for the design of these two types of cable supported bridges.

## 1 Introduction

Seismic and wind loads are caused due to natural phenomenon, and can be called occasional loads whose rational assessment is a challenge even for simple structures due to their inherent randomness. Variabilities of the supporting ground condition add to the challenge as far as seismicity is concerned, and likewise the topography and environment in the vicinity of a structure adds to the complexities of wind. Assessment of the response particularly of complex and wind-sensitive structures of the kind being addressed adds to the overall challenge in the design process. Responses of cable bridges to seismic forces are somewhat simpler compared to those caused by wind, and the latter have required some explanation. Furthermore, there are some basics, such as dynamic properties and some of the conceptual design issues which have much similarity.

Wind being a dynamic phenomenon evokes a dynamic response from any structure obstructing its flow. The degree of dynamics however varies. For stocky structures the dynamic component of response is low enough to be neglected and a quasi-static approach can be adopted for their design. However, as structure spans, heights, and thus flexibility increase, in most cases their wind-sensitivity gets enhanced too. The dynamic effects become more important for consideration in design. It follows therefore that as one moves from



https://doi.org/10.2749/newdelhi.2023.1469