

# Construction aspects of cable stayed and extradosed bridges in new Indian guidelines

V N Heggade

DECon Complete Solutions, Mumbai ,India

Contact : [vnheggade@gamil.com](mailto:vnheggade@gamil.com), [vnheggade@yahoo.co.in](mailto:vnheggade@yahoo.co.in)

## Abstract

Indian Roads Congress (IRC) is bringing out two independent guidelines on Cable Stayed and Extradosed Bridges pertaining to 'Design, Construction and Maintenance' aspects. As on date, there are documents on stay cable design and technological aspects like, fib bulletin 89, SETRA and PTI which have been universally followed for the design and construction of cable stayed and extradosed bridges. There is also a state of the art report SED17 on extradosed bridges by IABSE and specifications for design and construction of cable stayed and extradosed bridges by Japan Prestressed Concrete Institute. The Indian independent guidelines on cable stayed and extradosed bridges are unique and complete in all respects as such is expected to improve the quality of design and construction in India to a large extent. This paper deals with the construction aspects as delineated in the guidelines.

**Keywords:** Construction; Staging; Balanced cantilever; Free cantilever; Push launching; Geometric Control.

## 1 Introduction

The cable-stayed and extradosed bridges covered by these guidelines [1] & [2] differ from the girder bridges. There are some commonalities between cable-stayed and extradosed bridges, like use of cables, construction of upper pylon, installation and anchoring of cables. Despite these commonalities, as the size of cable stay bridges (Span, pylon heights etc.) are comparatively larger, stress and deformation produced in the members can be significantly influenced by the construction method and sequence adopted

With regards to construction, it is necessary to satisfy required conditions such as environmental effects, construction safety, cost and period, which are based on its relation to entirety, purpose, type, scale and characteristics of the project.

The construction planning of Cable-Stayed Bridge (CSB) and Extradosed Bridges (EDB) are prepared prior to the commencement of construction by considering the aspects, that are necessary to satisfy the required performance of structure and

requirement of the project. In addition, aspects about the quality and schedule control are also examined while planning construction.











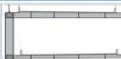







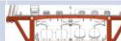
Cable Planes	Single plane (Axial suspension)	Double planes (Lateral suspension)	Multiple planes (Lateral suspension)	
Cable Arrangement				
Types	Integral type	Continuous girder		Floating type
		Pylon & Pier integral	Pylon & Deck integral	
Support Conditions				
Types	Box girders	Wing girders	Edge girders	Trussed girders
Steel deck				
Concrete deck				
Comp deck				

Figure 1. Load Bearing Elements of CSB & EDB

Load bearing elements (Figure.1) in Cable Stayed and Extradosed Bridges are Deck, Pylon & Cables. In comparison to other bridges, for cable stayed bridges, the influence of construction method,