

Atal Bridge: Efficient Delivery of Construction Engineering Services Using Information Communication Technology

Morgan T Trowland, Brook R Robazza

McElhanney Consulting Services Ltd., Vancouver, BC, Canada

Contact: mtrowland@mcelhanney.com

Abstract

India has massively increased investment in transportation infrastructure over the last decade, including the deployment of advanced technologies such as cable-stayed bridges. To relieve a domestic skills shortage, the services of foreign civil engineering consultants are often engaged, especially on technologically advanced projects. This paper presents a case study of the cable-stayed Atal Setu Bridge, a new link to the state of Jammu & Kashmir; recounting the diverse ways that foreign consultants assisted in the construction phase; and how newly available communication technologies made this process more efficient, even in an area with poor communication infrastructure. The geometry control during the complex erection sequence is described, including the methods of communication employed in this process. These communication channels assisted the transfer of both ‘hard’ technical knowledge and ‘soft’ organizational skills which are essential to civil engineering projects.

Keywords: Information communication technology; cable-stayed; erection engineering; construction stage analysis.

1 Introduction

Inadequate supply of infrastructure has been cited as the single most problematic factor for doing business in India (World Economic Forum 2013). To meet this challenge, the annual investment in road infrastructure in India has more than doubled over the last decade (OECD 2017). One project that embodies this endeavour is the cable-stayed Atal Setu Bridge (Figure 1) on the border of the northern state of Punjab, which provides a much needed highway link across the Ravi River and into the mountainous state of Jammu & Kashmir. This bridge, the second longest span in India, was realised through the cooperation of many organisations from across India and the world. The owner, India’s Border Roads Organisation, procured the project through a design-build contract and appointed a regional contractor, SP

Singla Constructions Pvt Ltd, with entirely local staff.



Figure 1. Atal Bridge, 350m cable-stayed span

One of the prime constraints on the Indian road construction industry is the availability of skilled staff (World Bank 2008). This issue is particularly acute at the high end of civil engineering, and this required the contractor to engage a Canadian firm, McElhanney Consulting Services Ltd, to provide the necessary expertise in cable-stayed bridge design. McElhanney was engaged to provide detailed