



Chandigarh-Kharar Elevated Road – A Case Study

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Abstract

This paper highlights the concept adopted in planning, design and construction engineering of 3200m long elevated viaduct, which is a part of Chandigarh Kharar Highway project. The deck width for elevated viaduct is 25.6m, which is supported over single pier of 3.5m width. This system was planned so that both level (surface level and elevated level) of road can be utilized for traffic movement. The highway passes through a congested area with 24x7 moving traffic. In the absence of any alternate route, it was required to allow safe and smooth movement of traffic on existing road during the construction period. In order to work efficiently in restricted area, it was proposed to have maximum offsite activities and minimum on-site activities. This was achieved by proposing maximum bridge components as pre-cast elements. The structural system proposed a good example, where pre-cast technology is used massively for construction of bridge. Integral connection between substructure and superstructure not only makes the construction safe and sustainable, but also makes it aesthetically pleasing.

Keywords: Integral, wide deck, Pre-cast, Post-tensioned, Pre-tensioned girder, Pre-cast deck panels, Pier cap, Segmental pier cap.

1 Introduction

Urbanisation in India neither unique nor exclusive but is similar to a worldwide phenomenon. In 2020, approximately a third of the total population of India lived in cities. The trend shows an increase of urbanisation by 4% in the last decade, clearly showing people have moved away from rural areas to find work and make a living in the cities. This has made cities dense and urban spaces scarce. In developing infrastructure projects in such a dense urban cities, land acquisition is the most challenging aspect. All these problems has compelled engineers to start thinking differently about bridges / viaduct which can create self-contained spaces for unobstructed traffic flow and

decongest roads and inhabitations at ground level, leaving them unhindered. Wide deck structures over a single pier is the need of the time, so the both surface level as well as elevated level space can be utilized fully.

This paper presents the case study of one such viaduct. The project consists of six laning of existing road from Chandigarh sector 39 (Km 0+000) to Kharar of NH-21 (National Highway-21) and NH-95 (Km 10+185) in Punjab (India) in a highly congested area carrying heavy traffic 24x7. The project consists 3200m Long Viaduct, 3 VUPs, Flyover at Ropar Junction and a minor bridge.

The adopted integral system, Wide deck viaduct over single pier, with maximum off-site pre casting