

Mumbai Trans-harbour Link - A leap over Sea

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Abstract

The new Sea link Bridge over Main land Sewri on Mumbai side to Ulwe on Navi Mumbai side is characterized by some aesthetically appealing elevations of the Bridge and large spans. This paper gives a glimpse of the design adopted and focuses on innovative execution ideas developed to overcome challenges faced during construction of the Trans-Harbour Link Package-1 starting from Sewri end. It details out use of lean construction method followed without causing any disturbance to the surrounding environment. Most importantly the port facilities, navigation channel and seabed pipelines in the Mumbai Bay, which posed real risk during execution of the works along with the size, intertidal zone and Marine site conditions developed extreme demanding conditions.

Keywords: Intertidal zone; temporary access bridge; reverse circulation drilling; precast shell; pre-cast segmental; orthotropic steel deck; full span marine erection; strand jack lifting.

1 Introduction

At present the metropolitan City of Mumbai is connected to satellite city of Navi Mumbai by only two major road links viz. one at Northern End at Thane and the other at Central zone at Mankhurd. Rising traffic levels and development demands led to an old idea becoming reality with Mumbai Trans-harbour link. The project has an old history of conceptualizing and multiple attempts for construction. Once fully operational it shall provide faster connectivity to Navi Mumbai International Airport, JNPT Port, Mumbai-Pune expressway and Mumbai-Goa highway. What makes it one of the most interesting technical project in India is the number of structures it needs to cross which demand skill full use of design and modern construction techniques.

2 Overview of the project

The mega bridge is 21.8 km long six lanes wide connecting Sewri (main land) on the west to Chirle (Navi Mumbai side) on the east. About 16.3 km of

the viaduct is over sea and about 0.5 km is land viaduct on Sewri side and 4.9 km is land viaduct on Navi Mumbai side. The project connects the existing eastern freeway and will also connect to the proposed Sewri-Worli connector road from Harbour coast, continuing over mudflats and then crosses Pir Pau Jetty, the Thane creek, the Panvel creek touching Shivaji Nagar on the Navi Mumbai side to meet National Highway (NH4B) near Chirle. The MTHL alignment is divided in three packages as per the contract (Figure 1).

Package I: includes 10.38 km long bridge (CH +000 km to CH 10+380 km) above sea/ creek.

Package II: includes a 7.798 km long bridge (CH10+380 to CH18+187 km) above sea / creek. including Shivaji Nagar interchange on Navi Mumbai side.

Package III: includes 3.613 km long road bridge and earthwork section (CH 18+187 km to CH 21+800) having interchanges at state highway SH54 and the NH 4B.