Planning, Design and Construction of Elevated Guideway of Kelana Jaya (KLJ LRT) Extension Project and Challenges & Lessons Learnt

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Abstract

Building a transportation infrastructure for fast growing city like Petaling Jaya (considered twin city with Kuala Lumpur), Malaysia is always challenging and difficult works. One of the major infrastructure projects, the 17 km long elevated guideway which form the extension of Kelana Jaya Light Rail Transit (KLJ LRT) i.e Putra line is opened for service since 30th June 2016. The elevated viaduct was designed to build extensively using precast technique. The time efficient proven technique of span by span precast segmental construction along with some crossings with precast balanced cantilever construction was implemented for the project. Cast-in-situ box girder and precast U-beams with in-situ deck were also used for bifurcation and pocket track areas. Majority of the stations (9 out of 12) for KLJ LRT Extension are island platform stations and this has major impacts on interface in constructions, time and cost. The requirement of island platform station was one of the main criteria for the operator i.e RapidKL which is part of Prasarana.

Curved and skewed alignment over major 6 lanes highways and commuter lines necessitates a span as large as 100 m with 3 span balanced cantilever structure. Prestressed pier column were introduced due to space constraint. Precast split segments were also introduced to overcome difficulties in handling and delivery of deeper segments.

This paper describes the design scheme and contractual set up of guideway structures and presents an overview of construction and also related issues, incidents etc.

Keywords: Precast, span-by-span, balanced cantilever, post-tensioned, prestressed pier column, split segments, island and side platform, launching gantry

1 Introduction

In year 2010, Syarikat Prasarana Negara Berhad (SPNB) awarded the facilities contracts to two main contractors viz Trans Resources Corporation Berhad and Sunway Construction Sdn Bhd based on conforming design carried out by Minconsult Sdn Bhd as Detailed Design Consultant (DDC). Production and delivery of segments (SBG) were awarded to Nominated Sub- contractors (NSC) under two main facilities contractors. Utilities relocation and other associated works were awarded under separate contract as Advance Works. The actual facilities works at ground started at early 2011.

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Putra Depot at Lembah Subang then pass through Kelana Business Centre through Subang, USJ, Alam Megah and ends at the Hub in Putra Heights. The

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