Semi Integral Structures - Mauritius Light Rail Transit System

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Abstract

Government of Mauritius (GoM) intends to provide a world class, sustainable public transport solution in the form of light rail system and associated works, to serve commuters travelling from the Curepipe to Port Louis. The corridor from Curepipe to Port Louis serves as one of the fastest growing areas in Mauritius and that will be of increasing importance to the country's future economic development strategy and prosperity. To enhance the economic development, urban sustainability, social amenity, and desirability of the area, it is imperial to improve upon the public transportation provision, connectivity, and accessibility, to reduce traffic congestion and to provide a mode shift from private to public transportation use.

Keywords: Precast post tensioned girder, box girder, in-situ, semi integral, flyover, light rail.

1 Introduction

Two significant and landmark structures were designed and constructed as part of Mauritius Metro Light Rail Project. One of them is Curepipe flyover, which is in the Curepipe town also known as La Ville-Lumière (The City of Light) and second one is Caudan flyover, which is gate way to city of Port Louis (Capital of Mauritius). Part of these two flyovers were designed as semi-integral structures considering the curvature, maintenance and sustainability aspects taking 100 years design life and notable wind loads on the structure. Due to 62m curve radius at Curepipe flyover, 2 span continuous box girder spans between piers STP-P1-P2 and P2-PP3-P4 were designed with cast in-situ post-tensioned PSC box girder with S-Shape curve arrangement. Due to 42 & 51 degree skew angle at Caudan flyover pier P10 & P11 three-span semi integral structure (P9-P12) consists of precast post-tensioned PSC I-Girder with curve radius 340m having 4 I-Girder arrangement were designed.

Semi integral structural arrangement added more value in terms of reducing maintenance cost, economical construction, elimination of bearings and expansion joints and increased overall sustainability of the structural arrangement with sharp radius at these locations. Figure 1 and 2 shows the site views of Curepipe and Caudan flyovers respectively prior to start of construction works at site.

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