



A New Pier Head Connection for an Uncommon Bridge

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Abstract

The 12,5 km long New Coastal Road at La Réunion Island is being built at sea. Half part of this project is a precast cantilever viaduct of 5.4 km along the seashore, supporting significant loads during construction and operation such as cyclonic events (wind and swells), seismic event, collision loads... The all weather road is separated into 7 viaducts of equal length to allow the displacements under temperature, creep and shrinkage per viaduct.

As the supports must withstand significant lateral and longitudinal forces, they call for a specific design.

Keywords: bearings, bridge, interfaces, innovation, New Coastal Road, pier head, deck

1 Introduction

The new Coastal Road is a complex bridge subjected to several horizontal forces such as swell, wind, cyclones, braking, impact of boats on piers, temperature changes... All these horizontal forces have to be transmitted between the deck and the piers via the bearings. In the current cases, the transmission is often done with friction. But in the case of the New Coastal Road, the value H/V (H for horizontal force: V for vertical forces) is higher than 0.3 on abutment piers and fixed piers. It means we have to implement on site a specific design to take into account these significant horizontal forces.

The usual system proposed by the suppliers are difficult to implement on site with the high ratio of reinforcement in the concrete structure and the

big size and very high number of recess necessary for these systems. Owing to these principal reasons, a new system of connection between the deck and the pier head was designed and used on the New Coastal Road.

On one hand, this paper present the technology of the designed system with the several parts of the device. On the other hand, it will describe the different benefits of such a system.

2 Description of the device

2.1 Goal of the system

This new system of connection aims to transfer the horizontal forces through the different interfaces. That is, in the upper part of the system between the bridge deck to the bearings and on