The Modular Expansion Joints of the Sheikh Jaber Causeway in Kuwait

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Abstract

When completed in 2018, the Main Link of the Sheikh Jaber Al-Ahmad Al-Sabah Causeway in Kuwait will be one of the longest sea bridges in the world, with a length of 36 km. The project to supply many of the expansion joints required presented significant challenges, including ensuring durability, designing with extra-low height, and supplying – with ex-works lengths of up to 25.4 m – within the limited time period allowed by the bridge construction contract.

Keywords: Expansion joints; modular; design; supply; bridge; causeway.

1 Introduction

The Sheikh Jaber Al-Ahmad Al-Sabah Causeway (Fig.1) is currently being constructed in Kuwait by a Hyundai – Combined Group joint venture, with each company having primary responsibility for part of the project, and in particular for its Main Link (Contract RA/140), which extends 36 kilometres across Kuwait Bay from Kuwait City. This link includes a cable-stayed main bridge of longer spans and greater height above the water than the rest of the causeway, featuring an elegant curved pylon. When completed in 2018, it will be one of the longest sea bridges in the world.

Figure 1. Artist's impression of the Sheikh Jaber Al-Ahmad Al-Sabah Causeway's main link, with length of 36 km, being constructed in Kuwait

A bridge of such extraordinary length requires an enormous number of expansion joints, the selection, design and supply of which are described below.

2 Overview of expansion joints required

The part of the structure for which Combined Group has primary responsibility requires expansion joints at 58 bridge axes, with a total length of over a kilometre. The required longitudinal movement capacities of these joints are summarised in Table 1.

Table 1. Overview of expansion joints required

Movement capacity	Number of joints
401 mm – 480 mm	29
321 mm – 400 mm	6
241 mm – 320 mm	16
161 mm – 240 mm	5
81 mm – 160 mm	2

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