

The immersion details of the Busan-Geoje Immersed Tunnel

Bonghyun CHO

General Manager
Daewoo E&C
Seoul, Korea

bonghyun.cho@daewooenc.com

Bonghyun Cho, born 1966, received his civil engineering degree from the Seoul National University, Korea. He has worked for Daewoo E&C since 1989, mainly in planning & engineering.



Jinwook HEO

Manager
Daewoo E&C
Seoul, Korea

jinwook.heo@daewooenc.com

Jinwook HEO, born 1972, received his civil engineering degree from the Kyungsung University, Korea. He has worked for Daewoo E&C since 2004, Mainly in Hydraulic Engineering.



Summary

GK Immersed Tunnel has its reputation for the successful completion of project in time after overcoming all the difficulties expected during the design stage. Waves are high and fluctuating from time to time and the tunnel elements were to be placed at deep sea, maximum depth of 48m below the sea level. All the necessary activities have to be finished within the time frame allowed in the weather window. This paper presents major studies and methodologies(weather forecasting system, gravel bedding, positioning system) adopted for the immersion operation to overcome these difficulties during execution of GK immersed tunnel.

Keywords: Immersed tunnel; weather forecasting system; gravel bedding; positioning system.

1. Introduction

Busan-Geoje Fixed Link Project, connecting Geoje and Kadeok Island, consists of two major parts, i.e. two cable stayed bridges between Geoje and Jungjuk Island, and the immersed tunnel between Jungjuk and Kadeok Island. GK Immersed Tunnel consists of 18 tunnel elements with total length of 3.24km, 4lane motorway. Each tunnel element has its dimension of 26.5m wide, 10m high and 180m long, weighing around 45,000ton, one of the biggest immersed tunnel elements in the world.



Fig. 1: Location of Busan-Geoje Fixed Link



Fig. 2: Overview of Busan-Geoje Fixed Link

Compared to the normal immersed tunnels constructed at various places around the world, GK immersed tunnel has some of specific natures related to its project location. The project area is facing the open sea directly at the southern side and the waves are high and so fluctuating due to influence of the wave conditions delivered from the southern deep sea. Accordingly, there are limited weather windows for transport & immersion of the tunnel elements. In addition, the immersion operations are to be conducted in deep sea condition, having maximum immersion depth of 48m below sea level.