

 **Marine Structures****Reference Details:**

**Owner** Jeju Regional Maritime Affairs & Fisheries Office, South Korea +++ **Main**

**Contractor** Daelim Industrial Co. Ltd., South Korea +++

**Engineering** Gunil Engineering, South Korea

**DSI Unit** DSI Korea, Seoul, South Korea

**DSI Services** Supply of 49,400 m DYWIDAG Post-Tensioning Bars Ø 36 mm, gr 1080/1230 incl. accessories, 3,984 pcs. 3x0.6" SD Anchorages.



## DYWIDAG Post-Tensioning Bars support Breakwater for the Jeju Port Extension Project

### Port extension on the island of Jeju

Jeju, Korea's largest island is located south of the Korean Peninsula. The volcanic island with its subtropical climate and versatile vegetation is considered as a gem by the Korean people. Therefore, tourism has strongly developed since the 1970s and is increasingly becoming the main source of income. But the island is also plays an essential role in providing Korea with agricultural products. To date the majority of the traffic with the mainland has been airborne.

Due to the increasing economic importance of the island, however, construction work on the extension of the Jeju port began in December 2001. Following completion of the extension work for the outer port, a new pier will offer sufficient space for 1 cruise ship of 80,000 tons alongside 2 ships of 20,000 tons and 1 ship of 10,000 tons, thus providing the opportunity to establish the harbor as a hub for international cruises. Due to the strong winds with high waves in that region, it was decided to build a 1,425 m long breakwater in form of a so-called slit caisson as a protection

for the extended port. Prestressed concrete segments in the form of quarter arches were installed on the caisson by means of unbonded THREADBAR<sup>®</sup> tendons on the side facing the waves.

Several construction companies including Daelim Industry Co. Ltd., Gunil Engineering, Samsung Corporation and Segi Construction were involved in the construction of the breakwater (about 23,471 m<sup>2</sup>, average width 16.5 m, length 1.42 km).

The arched segments were cast in place in prefabricated forms onshore. After curing of the concrete four 3-0.6" DYWIDAG Multistrand Type SD Tendons were prestressed and grouted for each segment. After curing of the grout the segments were lifted onto the caisson and fixed thereto at both ends using four unbonded THREADBAR<sup>®</sup> tendons each. Subsequently, the post-tensioning bars were stressed that had been pregouted onshore before installation and were therefore perfectly corrosion protected. For this purpose, DSI Korea supplied 3,984 pcs. Ø 36 mm, gr 1080/1230 smooth post-tensioning bars and anchorages.

Having successfully used DYWIDAG Post-Tensioning Systems for this project, DSI Korea plans to extend its Division for post-tensioning systems and special solutions for prestressed concrete. DSI Korea will focus on the development of special solutions for particularly challenging structures.