

CIVIL ENGINEERING

Kajima has maintained a leading position in Japan's civil engineering industry for many years. With the comprehensive evaluation bidding format, which emphasizes both price and technologies, gaining popularity, Kajima is giving full play to its unrivaled technological expertise to help build various social infrastructure. In overseas markets, Kajima is strictly selecting projects where it can best leverage its technological prowess.

TOPICS 01

PLACING A NATURAL GAS PIPELINE BELOW THE SEA

In January 2011, we completed a pipeline installation project across Ise Bay in central Japan.

This project was one of our major construction projects completed in the fiscal year ended March 31, 2011. In this project, our task was to construct a 17-kilometer under-sea tunnel, where the pipeline was placed across Ise Bay.

Posing the greatest challenge was the need for "underground docking" of the shield machines that simultaneously excavated the tunnel from each side. A mistake would be fatal because these shields can only move forward. Once the shields were within 50 meters of each other, we elimi-

nated alignment errors by conducting precise measurements and excavation.

This resulted in a successful tunnel breakthrough with an error of only about nine millimeters when the shield machines came together for docking. The tunnel was designed to have the strength to withstand earthquakes in the magnitude 8 range even when they occur simultaneously. With our wide variety of technologies, we overcame various difficulties and completed the tunnel with one of the fastest speeds ever achieved in Japan. As a contractor, we have helped contribute to ensuring the reliability of natural gas supplies in central Japan through this project.



Gas pipeline inside the tunnel

TOPICS 02

RAPID CONSTRUCTION OF THE YUNISHIGAWA DAM

The Yunishigawa Dam is the fourth dam on the Kinugawa River watershed of Tochigi Prefecture, one of the Tokyo metropolitan area's primary sources of water.

In this public bid, the "advanced-technology proposal type" comprehensive evaluation bidding format was introduced. We won the bid with a proposal to shorten the construction period by 96 days through application of our most-advanced construction technologies. Construction is currently underway at an unprecedented speed to complete the placement of one million m³ of concrete in a cumulative 19 months so that the project may be finished on time.

Maintaining a consistent supply of concrete is vital during the placement of concrete used for the main body of a dam. At

this project, a state-of-the-art production facility at the site helped ensure a reliable supply of concrete. Also, a number of measures have been taken to expedite construction. Examples include the installation of two cable cranes and a transport pipe solely for sending concrete to the dam body, and the introduction of a concrete output control system to control concrete production.

Aggregate for the dam's concrete contains earth excavated to build the dam along with sand gravel from nearby rivers. We determined the optimum mixture of these materials to produce the aggregate required.

Also, we introduced the improved Roller Compacted Dam-Concrete (RCD) Method, a new technology for enhancing construction efficiency. By applying this method, we have been able to reduce time for concrete compaction.



View of the entire worksite



Casting the concrete body of the dam

Projects completed during the fiscal year ended March 31, 2011



Jiyoshi Tunnel, National Highway No. 440



D-Runway of the Tokyo International Airport (Haneda)



Fukura Wind Park



Sunakosawa Dam

Projects completed during the fiscal year ended March 31, 2011



Shielded Tunnel for the Gas Pipelines across Ise Bay



Cebu South Coastal Road, Philippines



Tokyo International Airport (Haneda) International Apron

