

On-land Civil Engineering

Having the century-long history as a reputedly reliable contractor in marine construction and engineering, TOA also has accumulated experiences and expertise in on-land civil engineering through completion of various projects. Among them were roads, bridges, railways, tunnels, water dams, river dikes and water gates, water supply and drainage systems, sewage collection and treatment facilities, land developments, and environmental mitigation and rehabilitation programs.

In each and every project, TOA devoted its highest-possible capabilities to faithfully executing contractor's duties and responsibilities, which has heightened TOA's reputation as one of the most trustful contractors in Japan.

Shibakawa Aqua-duct Shield Tunnel

The Shibakawa River flowing through Saitama City, a bed town of the Tokyo Metropolitan Area, suffered from the deteriorating water quality due to increase in the domestic sewage from the growing population in its basin. As the channel slope of the Shibakawa was too gentle for its natural flow to treat the pollutants in the sewage, the Shibakawa Aqua-duct was planned to introduce clean water from the Arakawa River which flows in the west of the Shibakawa basin.

In 1999, TOA was awarded a contract to construct a shield tunnel connecting the two rivers with total length of 2,330m and inner diameter of 1,650mm. One of the key requirements of the contract was to recycle the shield sludge in order to minimize adverse impacts on the environment caused by the construction by-products. TOA's technical team properly answered the requirement by developing an effective and efficient processing plant to process 5,300m³ of soft and clayey shield sludge into a construction material with characteristics suitable as a construction material to construct river embankments.



2nd Magsaysay Bridge and Butuan City By-pass Road in Mindanao, Republic of the Philippines



In the Republic of the Philippines, the road network bore 90% of passenger traffic and 50% of cargo transportation, but many roads in various areas were unpaved or too narrow to keep up with the growing volume of traffic. Funded by an aid-loan from Japan's ODA program, the Philippine Government planned a by-pass road in Buntuan City, which is to improve the road traffic and bolster the economy in the northeastern region of Mindanao Island.

In 2005, the Department of Public Works and Highways of the Philippines awarded a joint venture of TOA and Nippon Steel

Corporation a contract to build the 2nd Magsaysay Bridge, a steel cable stayed bridge with total length of 882m, a two-lane bypass road with total length of 8.1km, and two link roads, with length of 1.33km and 2.9km respectively, connecting the bypass road with the existing main road. In this project, TOA took a part of constructing the single main pylon made of reinforced concrete and the foundations to uphold the bridge superstructures and all civil works for the road section.



Rehabilitation of Sewage Drainage System in Chiyoda-ward, Tokyo

As the sewerage network in downtown Tokyo, of which development dates back to nearly one century ago, has become obsolete both physically and functionally, the Tokyo Metropolitan Government started a project to rehabilitate the sewage drainage network by reconstruction or refurbishment. In 2000, TOA was awarded a contract to reconstruct the drainage for surface runoff in Chiyoda Ward. Although the construction site was along the narrow streets with busy traffic and densely constructed buildings, TOA's qualified engineers dealt with various difficulties in the course of construction and completed the drainage of 2,058m in total length and 2,200mm inner diameter by shield tunneling method on schedule without any accident.



Emergency Restoration Works of Seisho Bypass Toll Road, Kanagawa Prefecture

In September 2007, a typhoon washed away the shoreline retaining walls of the Seisho Bypass, a four-lane toll road running along the coastline of the Sagami Bay in the western region of Kanagawa Prefecture. As its closure caused bad congestions on the local road traffic, its operator, Central Nippon Expressway Co., Ltd., gave TOA an emergency order to restore the damaged structures and reopen the road as soon as possible. TOA devoted its utmost capacities in marine engineering to provisionally reinforce the damaged structures, and tentatively reopened the bypass road after only 20 days. So much appreciated by the project owner and the local communities, TOA was continuously engaged in the restoration work, mostly executing them from the sea-side using various working vessels, and completed them to make all four lanes passable in April 2008.



Denpasar Sewerage Development Project in Indonesia

Denpasar, the provincial capital of Bali and a worldly famed tourist destination, had a serious problem in its sewerage system incapable to treat the growing volume of sewage discharged by local residents and tourists. In order to protect Bali's rich natural environment, the Denpasar Sewerage Development Project was commenced. In 2005, TOA was awarded a contract to construct a sewage treatment plant and lay sewage drainage lines with total length of 47km under the busy streets in Denpasar. Introducing the pipe-jacking method for the first time in Indonesia which thrusts forward reinforced concrete pipes one after another using hydraulic jacks from the tail-end, TOA completed the project in 2007 with minimum inconveniences to the road traffic and the local communities.



Newly Completed Projects

O Mon Thermal Power Plant Project in Vietnam



O Mon Thermal Power Plant with 330MW generation capacity in Can Tho, the biggest city in the Mekong Delta, was planned to solve the growing shortage in electric supply in Vietnam. Under the full turn-key contractor of the project, TOA took charge of all civil and architectural works, and completed them in 2009. TOA's expertise in geotechnical engineering was especially evaluated as the soft alluvial clay layers lying under the plant site had to be improved to construct solid foundations on them.

Project owner: Vietnam Electricity

Turn-key contractor: Mitsubishi Heavy Industries, Co., Ltd.

Construction period: from January 2006 to February 2009

Construction summary: soil improvement works with the Cement Deep Mixing (CDM) method, pile driving works with 6,000 nos. 45m-long piles, concrete works with total volume of 100,000m³, building of a power generation house, an administration building, and a central control building, foundation works for water treatment and other facilities, construction of a 14m-high chimney, 3 units of pier, water-intake facilities, and road