ON-LAND CIVIL ENGINEERING

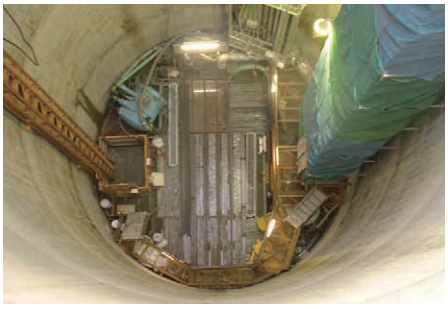
Operations

With a century-long history as a highly-reputed, reliable contractor in marine construction and engineering, TOA also has accumulated experience and expertise in on-land civil engineering through the completion of various projects. Among the projects are roads, bridges, railways, tunnels, water dams, river dikes and water gates, water supply and drainage systems, sewage collection and treatment facilities, land development, and environmental mitigation and rehabilitation programs. In each and every project, TOA has devoted all of its capabilities to faithfully execute its duties and responsibilities as a contractor, enhancing TOA's reputation as one of the most trustworthy contractors in Japan.

Shibakawa Aqua-duct Shield Tunnel

The Shibakawa River suffered from deteriorating water quality due to increases in domestic sewage from the growing population in its basin. As the channel slope of the Shibakawa River was too gentle for its natural flow to cope with the pollutants in the sewage.

TOA was awarded a contract to construct a shield tunnel having a total length of 2,330m and an inner diameter of 1,650mm to connect the two rivers. One of the key requirements of the contract was to recycle the shield sludge in order to minimize the adverse impact on the environment caused by the construction by-products. TOA's technical team properly responded to the requirement by developing plant to process 5,300m^3 of soft and clayey shield sludge into a construction material with characteristics.



2nd Magsaysay Bridge and Butuan City Bypass Road in Mindanao, Republic of the Philippines

In the Republic of the Philippines, the road network bears 90% of the passenger traffic and 50% of the cargo transportation, but many roads in various areas are unpaved or too narrow to keep up with the growing volume of traffic. Funded by an aid-loan from Japan's ODA program, the Government planned a bypass road in Butuan City to improve traffic conditions and bolster the economy in the northeastern region of Mindanao Island. In this connection, the Philippines awarded a contract to a joint venture of TOA and Nippon Steel Corporation to build the 2nd Magsaysay Bridge, a steel cable-stayed bridge with a total length of 882m, a two-lane bypass road with a total length of 8.1km, and two link roads with a length of 1.33km and 2.9km respectively to connect the bypass road with the existing main road.

Rehabilitation of Sewage Drainage System in Chiyoda Ward, Tokyo

The sewerage network in downtown Tokyo, was constructed nearly one century ago. The Tokyo Metropolitan Government started a project to rehabilitate the sewage drainage network through reconstruction and refurbishment. TOA was awarded a contract to reconstruct the drainage system for surface runoff in Chiyoda ward. Against the construction site of narrow streets with heavy traffic and a dense concentration of buildings, TOA's highly-qualified engineers dealt with various difficulties and utilized the shield tunnel method to complete the drainage system, which measured 2,058m in length with an inner diameter of 2,200mm, on schedule without any accidents.

Renovation Work (Phase 7) on National Route 357 Wangan Chiba Area (Chiba Prefecture)

Multi-level work on National Route 357 has been completed in the city of Chiba. Severe traffic congestion and accidents occur frequently on National Route 357. To alleviate these problems, underground multi-level work was carried out near intersections in the central part of the city.

■ Client
Kanto Regional Development Bureau of the Ministry of Land, Infrastructure, Transport and Tourism

■ Construction period
November 2012 to June 2014

■ Project outline
Total length of work.....L=288.4m
Total length of framework.....L=265m
Box culvert.....L=55m
U-shaped retaining wall.....L=180m
L-shaped retaining wall.....L=30m
Excavation..... 37,532m^3
Earthworks, backfilling..... 2,060m^3
Concrete work..... 10,532m^3
Reinforcement work.....855 tons
Temporary works..... 1 set

■ Site of construction
Chiba City, Chiba Prefecture

Construction Work (Phase 2) on Bridge Superstructure for Shozoku Shinko Line of the Harbor Road at Iwakuni Harbor (Yamaguchi Prefecture)

As no harbor road had been built connecting the piers at Iwakuni Harbor, the companies located on the grounds of the port had no choice but to use community roads when transporting cargo. The community roads, however, were chronically congested.
It is expected that with the completion of this harbor road, distribution costs will be reduced, enabling the companies located on the grounds of the port to become more competitive internationally, as well as improve the living environment of the local communities.
Because of the difficulty in carrying out construction work on the bridge superstructure from land, the construction work was undertaken by means of the PC overhanging erection method using offshore work vessels. For this construction work, the Company utilized its specialized expertise in marine civil engineering technology.

■ Client
Chugoku Regional Development Bureau of the Ministry of Land, Infrastructure, Transport and Tourism

■ Construction period
July 2013 to November 2014

■ Project outline
This project calls for carrying out construction work and installation work of RC bridge piers, PC cantilever box girder bridge, appendages of the bridge, bridge lighting fixtures, concrete bridge scaffolding and other structures, and also temporary works for the bridge superstructure on the Shozoku Shinko Line of the Iwakuni Harbor Road.
Work on RC bridge pier: Two bridge pier skeletons (124m^3 of concrete)
Work on PC cantilever box girder bridge (4 spans): PC cantilever box girders (1,973m^3 of concrete); bridge bearings (2sets of displacement limiting structures); bridge fall prevention work.

■ Site of construction
Iwakuni City, Yamaguchi Prefecture