

### *On-land Civil Engineering*

Through its dredging and reclamation business to create industrial zones, TOA has accumulated a lot of technical know-hows and has achieved to take long strides for on-land civil engineering businesses. We have completed many construction projects of roads, water supply and drainage, bridges, railway bridges and land development for plants and housing with its highest level of technology and abundant experiences. All of these are considered to harmonize with the natural environment so that people can enjoy their richness in life as well. Each and every project has different characteristics, such as remarkable contents representing change in time, newly required concepts on new infrastructure, and satisfaction of new functions.

We are expecting that projects for all-round development, which require our integrated power of technology, planning and execution, will be born in both domestic and global markets in the future. Toward these projects in the near future, TOA continues to strive to create an ideal relationship between our corporate companies.

#### **Construction of New Shibakawa Tunnel**

The Shibakawa River suffered from a deteriorating quality of water mainly caused by the waste water from various sources and being unable to clear this due to the lack of headspring. In order to ensure the quality of water in the river, clean water had to be introduced from Ariake River. This could only be achieved by constructing a 2,300m tunnel to connect the two rivers.

The construction work was hampered due to the amount of sludge that was being generated by the river. In order to overcome this problem, TOA utilized its technology, where a specialized equipment to recycle this sludge into suitable material for banking was introduced. The amount of sludge generated and recycled during the construction was 5,300m<sup>3</sup>, but our technology and specialized equipment easily coped with this amount of sludge during construction. Due to the ability to successfully utilize the recycled sludge to form the embankments allowed the reduction of both time and cost for the Client.

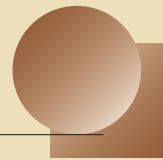


#### **Dangozaka Service Area, Chuo Expressway**

Reconstruction work was undertaken between Uenohara Interchange in Kanagawa prefecture and Otsuki Junction in Yamanashi prefecture in order to ease the congestion caused by ever increasing traffic, and to provide more parking spaces at parking areas.

The works generally consisted of road widening construction over a length of 2,230m, of which 1,334m was the expressway area. In addition to this, the Dangozaka service area was expanded, and with this expansion in conjunction with the widening of the road, the connecting bridge to the service area was removed by TOA after the completion of the necessary strengthening works, repairs and painting.





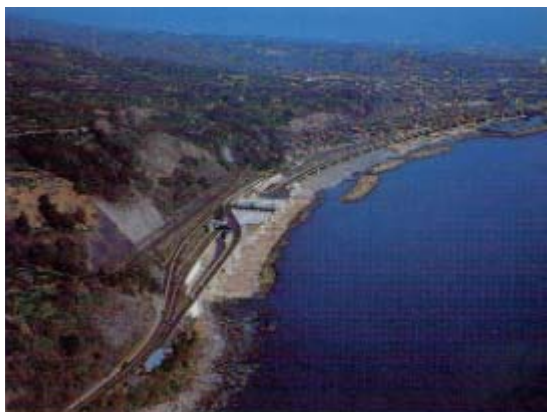
### Kotonoumi Clean Center, Nagasaki

TOA was awarded a contract for the construction of a sewage treatment facility. The new facility provides sewage treatment for the drainage of the farming and fishing communities in the Negoto area of Nagasaki, requiring high levels of engineering in the treatment facilities, sewage and civil engineering.



### Seisho Bypass Improvement Work

The Seisho Bypass Improvement Work, commissioned from Japan Highway Public Corporation, was completed within the scheduled construction period and without accidents. The project was to extend the existing Seisho Bypass along the coastal route in order to alleviate the traffic congestion in Odawara city, Kanagawa prefecture. As for the topography around the site, there is a hill with steep slopes. Along the entire length of 1,900m extension, TOA was in charge of the work area of 366m and the substructure section of the Hayakawa Bridge.



## Newly Completed Projects

### Manyo Tunnel at Masuda Road

Public investment has declined in total amounts and numbers every year. Accompanied by this trend, competition amongst the constructors have intensified and good companies are automatically selected to complete public projects, including construction of roads, tunnels, bridges and environment-oriented civil works.

Amongst various public projects, the Manyo Tunnel was completed during the fiscal year, gaining the highest mark in the official inspection of estimation on advanced technology, construction performance, creativeness, appearance, social emphasis, etc. The tunnel is approximately 500m. Under the precipitous site and severe weather, the Company completed the tunnel by NATM method.



### Kyushu Bullet Railway

TOA has been engaged in constructing railways for many years, accumulating high technologies and know-how in its concerned sites.

During the year under review, the Company has been working on several construction sections for Kyushu Bullet Train, including the project located between Shin-Yashiro station and Shin-Minamata station. The section extends to 1,071m in length, including 256m long bridge and 600m long elevated railroad.

