

### 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.





## Newly Completed Projects

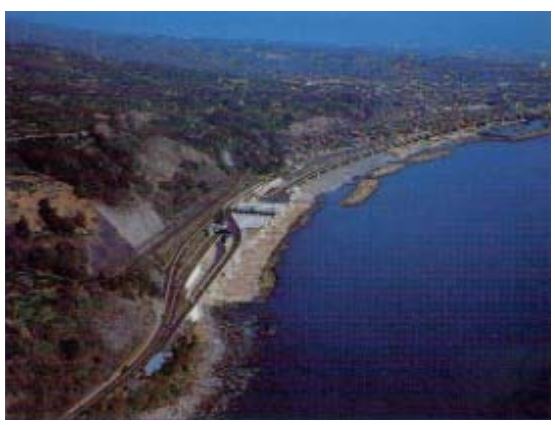
### Kotonoumi Clean Center, Nagasaki

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.



### Drainage Work in Chiyoda ward, Tokyo

Sewerage in Tokyo Metropolitan area has been consolidated since 1884. Ever since then, Tokyo has been urbanized. In other words, the grounds are covered with asphalt and housings have become high-rised, hence the total amount of sewerage increased immensely. In intensive rain, rainwater pours into rivers or waterways at a burst, sometimes resulting in damage by flooding. By the reconstruction of channel facilities for storing rainwater from local areas in Chiyoda ward, the completed project copes with increased rainwater that are poured into sewerage.



### Nabari City Central Purification Center

According to the master plan for the sewerage disposal facilities in Nabari city, there are three facilities located in the North, the Central and the Southern areas. The completed facility called Nabari City Central Purification Center is one of the facilities in the first stage of project to consolidate final purification function of the center. Sewerage treatment capacity of the center is 7500m<sup>3</sup> sewerage per day. Biological Oxygen Demand (BOD), which indicated impurity that generates odor from excretions and living drainage, is controlled to 10mg/liter from 200mg/liter.

