Consultant Engineer in Nhon Trach Water Supply Project in Viet Nam

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1. Introduction

Nhon Trach Water Supply Project (Project) is to develop and improve to meet the growing water demand for ten (10) industrial zones and three (3) residential zones, where is highlighted to be one of the strategic economic development area and a large domestic consumption area along National Highway No.51 located in Dong Nai Province in the southern part of the Socialist Republic of Vietnam. The first phase development is to provide the potable water of 100,000m^3/day to the target area and is under construction at the present day. The consulting engineer plays an active role of the Project Management for successfully implement the Project from the initial stage.

The Government of Vietnam has decided to input loans from the Japan Bank of International Cooperation (JBIC) to realize the potable water supply project. In response to the request made by the Government of Vietnam, the JBIC has decided to conduct the Special Assistance for Project Formulation (SAPROF), which was completed in two (2) phases, the one in 1998 and the other in 1999. The loan agreement of first phase was concluded between the Government of Vietnam and the JBIC in 1998 and the Project commenced.

2. Project Features

The followings show the main features of the first phase development:

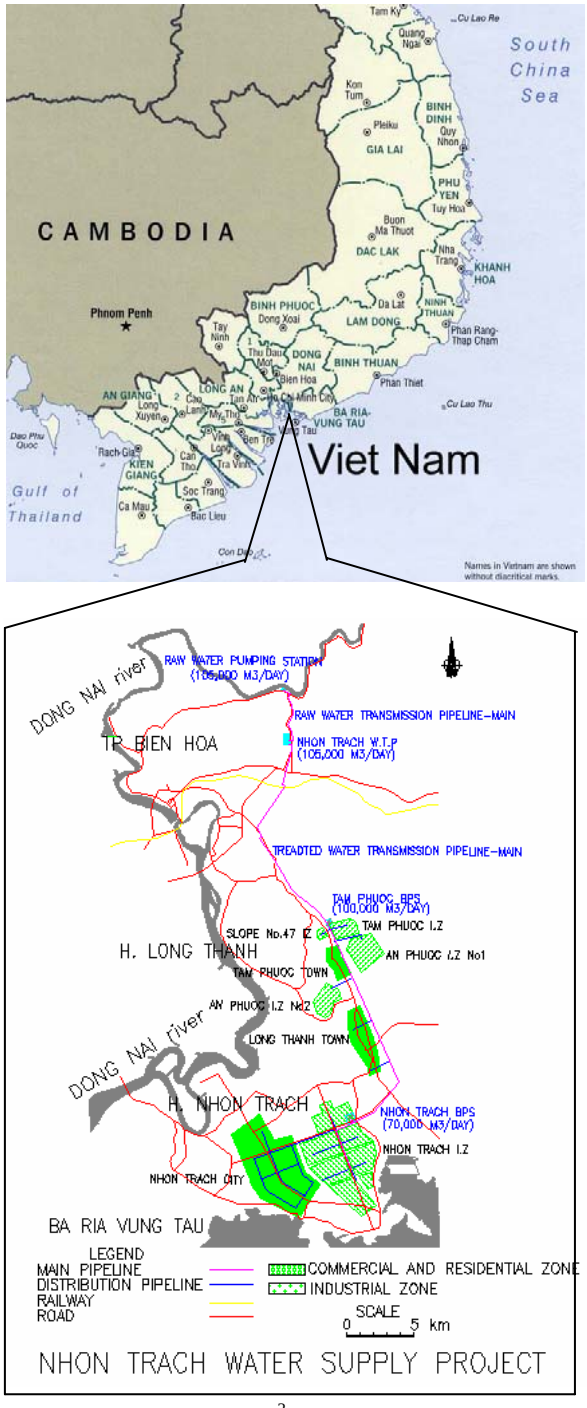
1) Raw Water Pumping Station

- Travel screen with size 2.5 m x 15.0 m
- 2 sets of motor and vertical pump: Q = 4,380 m^3/h, H = 85 m, N = 1,400 kw

2) Raw Water Transmission Main

- DCIP DN1000mm: 5 km

3) Water Treatment Plant (Nhon Trach WTP)



- Capacity: 100,000 m^3/day

4) Treated Water Pumping Station

- 4 sets of motor pump: Q = 1,600 m^3/h, H = 35 m, N = 250 kw

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5) Treated Water Transmission Pipeline

- DCIP DN1000mm: 20 km
- DCIP DN900mm: 7 km
- DCIP DN800mm: 8 km
- DCIP DN700mm: 3 km

6) Booster Pumping Station 1 (Tam Phuoc BPS)

- 4 sets of motor pump: Q = 1,600 m^3/h, H = 60 m, N = 450 kw
- treated water reservoir: capacity = 14,000 m^3

7) Booster Pumping Station 2 (Nhon Trach BPS)

- 4 sets of motor pump: Q = 1,200 m^3/h, H = 85 m, N = 450 kw
- treated water reservoir: capacity = 10,000 m^3

8) Distribution Pipeline

- DCIP DN100-600: 41 km

3. Contract Mode

The Project consists of seven (7) contract packages including three (3) civil works packages. The Contractor of three (3) contract packages was selected by direct appointment and international competitive bidding. Those contracts had to adopt the basis of the FIDIC forth edition as Red Book, conditions for civil engineering construction.

4. Consultant Engineer's Performance

The Project is implemented by the multinational parties among the Employer (Vietnamese), the Engineer (Japanese) and the Contractor (Japanese, Vietnamese, Indian and Malaysian). Therefore, the respect and understanding for their social and cultural conditions each other is very important to carry out the successfully implement of the Project. Also, the consultant engineer takes an active role in transfer of engineering knowledge through the management activities in the Project. The followings show the typical examples for international contribution of the transfer of engineering knowledge from viewpoint of progress, safety and quality managements.

(1) Progress Management

The delay of land acquisition executed by the Employer affects to the construction work progress. The main reason of the delay is inadequate law or regulation and negative effect of bureaucratic sectionalism in the administration. Taking into account the minimizing the delay of work, the consultant engineer clarifies priority area for land acquisition to the Employer and the Contractor and proposes it to accelerate an execution of the work. At the same time, the consultant engineer shows time limit for settlement of land acquisition to the Employer.

(2) Safety Management

Especially, the local contractor has little sense of paying attention to safety in construction work. They are difficult to foresee danger because of poor experience of international projects. Also, they tend to reduce expenses against safety. For instance, the existing pipeline structure was damaged by local workers during the excavation work though the consultant engineer instructed to the Contractor to take a necessary action to protect the existing structures before the works. The consultant engineer repeatedly instructs the Contractor to improve their knowledge on importance for safety significance through the safety patrol and meeting regularly.

(3) Quality Management

The quality of concrete structure is often unsatisfactory because material procurement and concreting do not strictly fulfill the technical specification in the contract causing by the low capability of local workers. In the light of the worker's poor capability, the consultant engineer changes the original design to secure construction schedule keeping function of the structures. To change the installation of pre-cast culvert from the original design of the in-situ box culvert under crossing point of National Highway is one of the typical examples in the Project.

5. Conclusion

The consultant engineer makes effort to find the optimum method for successful completion of the Project at all times. In addition, the transferred technical knowledge is made to the concerned parties as international contribution through daily activities in the Project.