



Jakarta city

JONATHAN GROGAN

INDONESIA is a major ASEAN power consisting of more than 18,000 islands. The population is the largest of ASEAN countries, exceeding 230,000,000, and is on the increase. The capital city of Indonesia, Jakarta, is the ASEAN headquarters and its city center, lined with high-rise buildings, is attracting a lot of foreign industries as one of the world's best mega-cities. Aside from being a good location for factories, Jakarta is gaining attention for its consumer-goods market and is as capital one of the fastest growing countries in Asia. Japanese experience and technology is being used to maximum effect for Jakarta's growth. Japan and Indonesia are also working on projects to strengthen economic ties.

An outstanding example of a joint venture between Japan and Indonesia is the construction of the first Indonesian underground rail system, which is currently underway in Jakarta. The

construction of the underground rail system is the most difficult section of the Jakarta Mass Rapid Transit (MRT) project. The joint venture group lead by Shimizu Corporation (Shimizu-Obayashi-Wijaya Karya-Jaya Konstruksi Consortium) received the order for construction of zone two of the Jakarta MRT Line, and execution is now underway. The project was contracted by the MRT Jakarta Company, owned by the Jakarta Special District with financial support provided by Japan International Cooperation Agency (JICA).

The purpose of this project is to relieve one of the major issues in the Indonesian capital; traffic jams.

The new MRT not only has a sleek and modern design but also Automatic Train Protection (ATP) systems to protect from accidents in events of human failure; also Platform Screen Doors (PSD) to avoid passenger accidentally falling off the platforms; a state-of-the-art operation control center; automatic gates, ticket vending machines and Automatic Fare Collection (AFC); and

mound up entrances to prevent flooding in case of natural disaster. Jakarta is going to receive the best underground railway system that Japanese technology can build.

We talked with Naoki Kita, civil engineer and deputy director of the international division of Shimizu Corporation.

What types of cutting-edge technology are being used in this project?

First we proposed an earth pressure type shield machine, a technology with which Japanese are very well versed, and that is ideal to minimize the effect on the existing surface structures during the tunnel excavation in Jakarta.

Then there is the kind of procedure we are going to use in building the underground stations: we have to dig 20-30m beneath the city because of the structures on the surface. Normally, when digging into the ground, it is necessary to build a wall as a soil retaining system (diaphragm wall), and it is commonplace for this wall to be temporary. However, in this project, this diaphragm wall will also double up as a permanent component of

the station structure. A merit in the facilitation of this project is the fact that no additional wall will be constructed on top of the diaphragm wall, which means reduced construction time and cost.

Another example of the application of technology is found in the way the subsections of the underground station are constructed. Normally, excavation is conducted to the deepest level and then floors are built working upward. In this project, however, the floors are constructed from the top to the bottom, and each floor will support the soil retaining wall as well, before excavating the next level below. This method will also minimize ground settlement and subsequent adverse effect to the existing surface structures during the station construction in urban areas like Jakarta. Careful construction management and data analysis will be needed to control the project. In this way, cutting-edge technology provided by Japan also offers high value in terms of cost and safety.



Simulated appearance of Underground station, MRT line Jakarta

What kind of cooperative organization do you have in place in regard to local people employed on the project?

A condition of the project is that we undertake construction work using local companies. For these companies, this is their first experience of subway construction in Indonesia. Therefore, one of our tasks is to transfer the technology needed to build the underground railway line to them. This project is implemented as a joint venture. Independence of the local companies is the ultimate objective. Thus, we consider all of the companies involved in this joint venture as one big family. An education program aimed at local employees has been put in place with particular emphasis on safety education. With the aim of zero accidents, work processes and procedures have been established that local construction workers and Japanese staff alike are following with careful attention. Furthermore, there are some difficulties of language in communicating with local employees, therefore interpreters have also been brought in to help. There is of course some complexity involved in forwarding the project with Japanese industry contracting local companies. However, in the future, local construction companies will acquire the capability to manage such projects by themselves.



Cross-section of the final appearance of MRT line, Jakarta

What do you find satisfying about your job as a civil engineer?

The current subway construction project is one such example, but I think the role of civil engineers is to facilitate people's lives by providing necessary infrastructures. I feel glad that I chose to be a civil engineer when I achieve this goal. For example, in a remote mountainous area in Laos, that had never seen electricity, we had a project to supply this to the local people under Japanese Official Development Assistance (ODA), and I felt great pleasure and happiness when I saw the local children's happy faces when we completed the project.

Projects such as the Jakarta City MRT line, that strengthen economic ties between Japan and Indonesia, also link with improvement of Indonesia's infrastructure and technology. That is to say, expansion of Japanese business overseas is not only for the benefit of Japan but also those countries that choose to form a partnership with Japan, in pursuit of the growth of a prosperous Asia. 