

Visionaries 2014

An Artery for a Growing City

— Ho Chi Minh City Urban Railway Construction Project —

Rapid economic growth in emerging economies can result in overcrowded cities that become an impediment to healthy development. Ho Chi Minh City in Vietnam, where most residents get around by motorbike, is suffering from worsening traffic congestion and atmospheric pollution. As part of a project to construct an urban railway system that is intended to resolve these problems, Hitachi has won a contract to supply 11 subsystems, including manufacture of the rolling stock, and provide maintenance services for five years after the system commences operation. The project is now underway, taking a long-term perspective to the provision of transportation infrastructure, while considering local circumstances.



Kazuhiko Nagasawa

Complex Road Conditions Due to Use of Motorbikes

The provision of public transportation is currently an issue for countries and regions with ongoing rapid growth. With the Socialist Republic of Viet Nam having enjoyed rapid economic development following the Doi Moi (“reforms” in Vietnamese) policy, Ho Chi Minh City, the nation’s largest city, is among those suffering from this problem. The city is experiencing chronic traffic congestion as a result of its rapid population growth, with other challenges including how to prevent traffic

accidents, reduce atmospheric pollution, and improve access to public and other facilities.

Through the global supply of transportation systems in which railways play a core role, Hitachi is seeking to create societies that provide the people of the world with a better way of life. Hitachi made a study trip to Ho Chi Minh City in April 2006. Local project leader, Kazuhiko Nagasawa (Deputy Project Manager, Ho Chi Minh City Urban Railway Line 1 Project Office, Hitachi, Ltd.), recalls the trip as follows.

“I was struck by the large number of motorbikes



Motorbikes are a vital means of transportation for the residents of Ho Chi Minh City.

The underground section of Ho Chi Minh City Urban Railway Line 1 runs from Ben Thanh to the Opera House and Ba Son stations. The overground section runs through major districts along a main highway, including suburban residential areas, industrial precincts, and a theme park at Suoi Tien, terminating after a total distance of 19.7 km at Suoi Tien.

being ridden around despite the general lack of traffic signals. I felt there was an immediate need to improve traffic safety. Because the number of cars in particular has increased from three or four years ago, the roads of Ho Chi Minh City have become even more crowded.”

For example, all of the people moving about or commuting by bike or car to work or school during the morning and evening rush hours make thoroughfares such as Dong Khoi Road, one of the city’s main streets, seem like a major river in flood. Tourist guides dressed in green uniforms have been stationed at street corners in Ho Chi Minh City since 2006 to provide help in crossing the road to overseas visitors unfamiliar with these traffic conditions. According to a survey by the Japan International Cooperation Agency (JICA), the number of motorbikes in the city had reached about 3.9 million in 2009. If you put this figure against the population of about 7 million, you

get an idea of how important motorbikes are to their way of life. Tran Anh Dung (Administration Manager, Ho Chi Minh City Urban Railway Line 1 Project Office, Hitachi, Ltd.), a local manager working on the Ho Chi Minh City Urban Railway Construction project, made the following point.

“When it rains, people ride around wearing poncho-style raincoats. It is not unusual to see mothers taking their children to or from kindergarten by motorbike, and there are cases when slips or other mishaps result in accidents.”

Railway Project Seeks to Resolve Underlying Problem

The lack of public transportation other than buses and the fact that the people of the city use motorbikes and cars to get around make this severe congestion inevitable. In response, the Vietnamese government identified measures for dealing with traffic congestion as an urgent issue



Toru Komaki

(a) Special Terms for Economic Partnership (STEP)

A program introduced in July 2002 aimed at raising the visibility of aid by utilizing Japanese technology and know-how for technology transfer to developing economies.

(b) Standard Urban Railway System for Asia (STRASYA)

Standards for urban railway systems based on Japanese railway technology and know-how. The standards were initially developed in 2004 and will be applied for the first time on the Ho Chi Minh City Urban Railway Construction project.

in its Ninth Five-year Plan (2011 to 2015), and adopted a policy of building urban railway systems in the capital Hanoi and in Ho Chi Minh City as a way of dealing with the underlying problem. The plan for Ho Chi Minh City involves a total of seven railway lines, with Line 1 to be built first.

The Ho Chi Minh City Urban Railway Construction project will have a total length of 19.7 km, running between Ben Thanh in the city center and Suoi Tien in the city's north-east. It includes the construction of 11 stations for the 17.2-km overground section and a further three for the 2.5-km underground line. The rolling stock will be made up of 17 consists from 51 cars. The service is scheduled to commence operation in 2018.

The project is financed by a Japanese government loan ("yen loan") through the **Special Terms for Economic Partnership (STEP)^(a)** program of Japan International Cooperation Agency (JICA).

A consequence of this is that the project's rolling stock and traffic management system will be the first to adopt the **Standard Urban Railway System for Asia (STRASYA)^(b)** standards developed by Japanese railway industry suppliers and Japan's Ministry of Land, Infrastructure, Transport and Tourism. Toru Komaki (Project Manager, Ho Chi Minh City Urban Railway Line 1 Project Office, Hitachi, Ltd.), who is coordinating the project for Hitachi commented as follows.

"Having agreed on the use of the STRASYA standards for the rolling stock specifications on Line 1, our first priority is to build rolling stock that correctly follow these specifications, and that is what the customers expect."

Utilizing Comprehensive Strength

The tender for the Ho Chi Minh City railway construction project (Ben Thanh to Suoi Tien), Vietnam's first urban railway system, was held in

Thoughts of a Ho Chi Minh City Resident

Tran Anh Dung, Administration Manager of Ho Chi Minh City Urban Railway Line 1 Project Office, is involved with the Ho Chi Minh City Urban Railway Construction project, where he is responsible for administrative tasks such as translation, interpretation, local human resource management, and liaising with relevant agencies in Vietnam. As a long-time resident of Ho Chi Minh City, he is familiar with its traffic conditions. Here, he gives us his thoughts on the project.

"Despite a variety of recent and ongoing measures by the government, public transportation in Ho Chi Minh City remains inadequate, with the result that most residents use motorbikes to get around. Ho Chi Minh City is in urgent need of an urban railway system to provide efficient public transportation.

The Ho Chi Minh City Urban Railway Construction project is about more than just reducing the large number of bikes congesting the roads, and I have two expectations in particular. The first is that the provision of modern and highly convenient transportation, similar to the railway system in Japan, has the potential to enhance people's idea of public transportation. By allowing city residents, who have never seen an underground railway in Ho Chi Minh City before, to be confident about commuting to their places of work or study, Line 1 will introduce people to a new approach, which I call the "urban railway culture," and which is

totally different from our existing "bus culture." My second expectation is that it may provide the impetus, not only for a change in Ho Chi Minh City's public transportation, but also for the people and government to come to an appreciation

of its efficiency and wide effects, and that this will result in their doing their best to contribute to the establishment of the metro network in the city.

Line 1 is a pilot project, and the successes we have had to date are a testimony to the cooperation between many people from Vietnam and Japan. While no doubt there are many more challenges to come, we need to confront these and overcome them head on. As Vietnam has yet to establish its own urban railway standards, one challenge in particular will be how to reconcile these with Japanese standards. Looked at another way, however, Line 1 has the advantage of being built from scratch using the newest technologies.

This project has given the Vietnamese a new view of Hitachi. With the company already well regarded in Vietnam for its home appliances, the people are now looking forward to a Hitachi-built railway line."



Tran Anh Dung



Ho Chi Minh City Urban Railway Line 1 Project Office staff. An organization was put in place from an early stage.

December 2010. Four Japanese groups participated in the tender, with Hitachi forming a consortium that includes the Rail Systems Company of Hitachi, Ltd. and Hitachi Plant Technologies, Ltd. (now the Infrastructure Systems Company of Hitachi, Ltd.).

Mr. Komaki said, “We established a consortium with an organizational structure that allowed us to work together, including renting a dedicated office a year before the tender and staffing it with engineers. Because we were confident with the technical aspects of our bid, the key issue as we saw it was how best to manage costs.”

Thanks to careful preparations and successful negotiations with the relevant parties, the evaluation of the bids found that Hitachi not only had excellent technical capabilities and experience, but was also the favorite in terms of cost. Because the Vietnamese released the bid prices after the tender, everyone involved in the project was aware that Hitachi’s was the leading bid. Nevertheless, subsequent progress was slow.

Akihiro Taruya (Contract Control Manager, Ho Chi Minh City Urban Railway Line 1 Project Office, Hitachi, Ltd.), who has been involved on the commercial side of transportation projects in Southeast Asia and elsewhere since 2004, explained the reasons for this as follows.

“The approval process in Vietnam is complex and time-consuming. The extremely high degree of caution they applied to making decisions meant that progress was slow compared to projects in Japan.”

What followed was a long period of time spent making numerous visits to the offices of his Vietnamese counterparts to resolve the reasons for delay and finalize our preferred bidder status. It seemed that all customs and practices were

different, with one example of the problems they faced being the incremental changes in regulations that occurred at short notice. Nevertheless, Tran Anh Dung and the other local staff were able to keep pace with these changing circumstances and maintain a rapport with the customer.

Meanwhile, because the project was utilizing the JICA’s STEP program, officials from the Japanese government played a supporting role by using their influence on getting work started sooner. Hitachi was finally awarded official preferred bidder status by the Vietnamese government in January 2013. This was followed by approximately three months of contract negotiations before the contract was signed in June of this year.

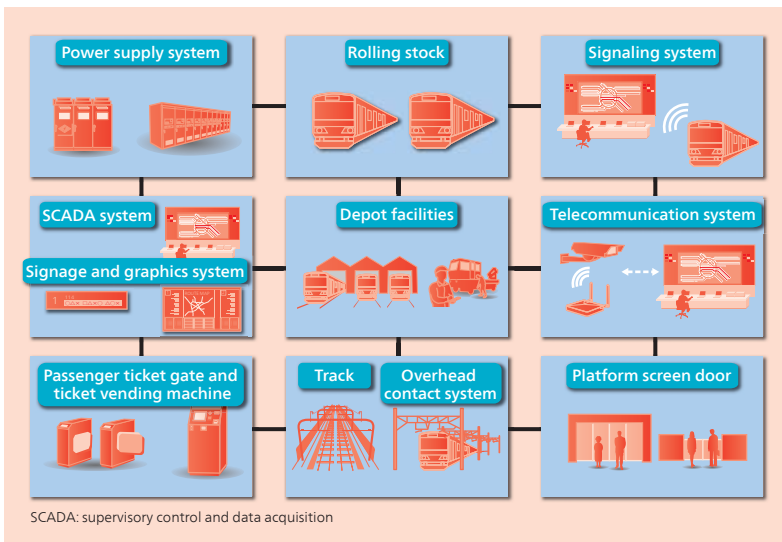
As Mr. Taruya commented, “While I was confident that Hitachi was the only Japanese supplier with the core technologies and the



Akihiro Taruya



After being awarded preferred bidder status in January 2013, Hitachi signed the formal contract in June of that year.



Hitachi has been contracted to supply 11 subsystems in total, including the rolling stock, signaling system, telecommunications system, and depot.



Hiroshi Nakaya

capability to coordinate the overall project, there were many difficulties to overcome during the two and a half years it took us to get to the point of signing the deal. We had organized a large number of engineers to ensure a smooth transition to the contract execution phase, so I was truly relieved when the formal contract was finally signed. Also, thanks to our careful preparations, we were able to get the project underway comparatively quickly.”

Working Closely with Local Partners from Long-term Perspective



Katsunori Kojima

Hitachi’s order for the Line 1 project included not only the rolling stock, but also the supply of 11 subsystem, including signaling system, telecommunication system, and power supply system, passenger ticket gate, ticket vending machine, platform screen door, and depot facilities. Hitachi will also be responsible for maintenance during the first five years of operation. While Hitachi seeks to operate under turnkey contracts in which it handles the overall project, this is the first time it has won such a contract for an overseas urban railway system.

Mr. Komaki said, “Hitachi has experience in

supplying overseas customers with not only rolling stock, but also signaling system, depot facilities, and other supporting products. Our success in reaching a formal contract was a consequence of our overall capabilities for supplying complete railway systems. The true worth of this will be put to the test in the future, I believe.”

Work is currently starting on site preparation for a depot located next to Suoi Tien Station. Hiroshi Nakaya (Chief System Integrator, Ho Chi Minh City Urban Railway Line 1 Project Office, Hitachi, Ltd.), who is responsible for the depot and is managing work on five of the subsystems, makes the point that they are now entering the crucial phase. As already noted, in addition to the equipment at the depot, Hitachi also has a five-year maintenance contract. This is because it would be impractical for the operation and maintenance (O&M) company to be established in Ho Chi Minh City to immediately get up and running on the maintenance of rolling stock, signaling systems, track, overhead contact system, and other subsystems for Vietnam’s first-ever urban railway system. Hitachi also has the important task of training the staff who will do this work.

Mr. Nakaya said, “We already have a year and a half of experience at maintaining the Sentosa Island monorail in Singapore, and I anticipate that we will draw on this know-how. However, because the Ho Chi Minh City Urban Railway Construction project involves not only rolling stock but also track, power supply system, and other subsystems, I am preparing myself for even more of a challenge.”

They will also need to deal with the electric power system in Vietnam. Ho Chi Minh City suffers from frequent power outages, including some that are scheduled. Katsunori Kojima (Chief Manager for Electrical Works, Ho Chi Minh City Urban Railway Line 1 Project Office, Hitachi, Ltd.), who is responsible for power supply system, has the problem of obtaining a reliable supply of electric power from this network. He made the



Planned site for rolling stock depot. In addition to the equipment at the depot, Hitachi also has a five-year maintenance contract.



Ben Thanh, home to the city's largest market, and adjacent bus terminal. The new metro station will be constructed at this site.

following comment.

“To enhance energy efficiency, the regenerative inverters installed at the Line 1 substations convert direct current at 1,500 V to alternating current at 22 kV and supply it to stations for lighting and other use. My first priority is to build a power supply system that will operate reliably.”

Providing Foundation for Further Development

A sign noting the investment by the Japanese government currently stands at the planned site of the station building. Located at Ben Thanh, terminus of Line 1 and home to the city's largest market, the sign is accompanied by images depicting the completed underground station to inspire the expectations of Ho Chi Minh City

residents. Line 1 will be a major commercial route through the city and brings with it the potential for further business expansion. Also, if the project is a success, the know-how gained will be applicable to railway construction projects in other countries or regions.

As Mr. Komaki said, “Our experience here should provide a valuable model for projects in such places as Hanoi or Indonesia.”

Just as the flow of blood supplies animals' bodies with nutrients, the free movement of people brings dynamism to a city. Railways and other transportation systems act as a city's arteries. Clearly, Ho Chi Minh City Line 1 will not only provide residents with a safe and convenient means of transportation, it will also provide the foundations for the city's further development.



Planned site for station construction near Ben Thanh market. The image of the completed underground station is inspiring the expectations of city residents.