

Thailand

Bangkok – Chonburi Highway Construction Project (1)

Report Date: March 2001

Field Survey: September 2000

1. Project Profile and Japan's ODA Loan



Site Map: Bangkok – Chonburi, Kingdom of Thailand



Bangkok – Chonburi Highway

(1) Background

Thailand's Sixth National Five Year Plan for Economic and Social Development made the development of the Eastern Seaboard a priority in order to promote export industries, correct regional disparities and relieve the excessive concentration of economic functions in Bangkok, where infrastructure was saturated. New production centers for domestic industry were constructed in the region (the Map Ta Phut and Laem Chabang Industrial Complex), and new ports at Map Ta Phut and Laem Chabang. This development led to a shortage of roads for freight shipping between Bangkok and the Eastern Seaboard Development Zone. This project aimed to construct roads for that route to support the realization of the effects of the Eastern Seaboard Development Plan, and it was planned as a high-priority project.

(2) Objectives

This project constructed an intercity expressway as a support project for the Eastern Seaboard Development Plan, with the following objectives.

- To alleviate congestion on existing roads between Bangkok and the Eastern Seaboard Development Zone, namely National Route No.3 (Sukumvit Highway) and National Route No. 34 (the バンナ ~ クラト Highway).
- To accommodate increasing traffic volumes generated by the progress of the Eastern Seaboard Development Plan. (The project road connects with the Chonburi ~ Pattaya Highway, which was built using the 14th and 16th ODA loans)

(3) Project Scope

The ODA loan covered the foreign currency portion of the construction of an intercity expressway between

Bangkok and Chonburi (81.8km) with nine interchanges and service roads (approximately 20km). The construction was divided into two phases. This project (phase I) covered the 36.5km of expressway between Bangkok and ๙๙๙๙ and the loan agreement was signed in December 1990.

Phase II covered the construction of 45.3km of expressway between ๙๙๙๙ and Chonburi, nine interchanges along the whole route, and approximately 20km of service roads. The loan agreement for phase II was signed in September 1993. Of the interchanges covered by phase II, all but one ๙๙๙๙ of those linking to the phase I road section have been completed.

(4) Borrower/Executing Agency

Kingdom of Thailand / Department of Highways, Ministry of Transport and Communications: DOH

(5) Outline of Loan Agreement

Loan Amount/Loan Disbursed Amount	¥15,497 million / ¥13,435 million
Exchange of Notes/Loan Agreement	February 1990 / December 1990
Terms and Conditions	Interest rate: 2.7%, Repayment period: 30 years (grace period: 10 years), General Untied (partially untied for consulting services)
Final Disbursement Date	April 1999

(Note) This project is for Phase I. The loan agreement (loan amount of ¥21,627 million) for Phase II was signed in September 1993 and the loan is now being disbursed.

2. Results and Evaluation

(1) Relevance

This is one of the projects supporting the Eastern Seaboard Development Plan, which is a key project of the Fifth and Sixth Five Year Plans. The construction of a new trunk road linking the Eastern Seaboard with Bangkok, the capital, was a high priority project. The Eastern Seaboard region is aiming to develop heavy chemical industry and promote export-oriented light industry. The region was expected to handle a rapidly growing volume of freight traffic with Bangkok, the North and the Northeast. The Sixth Five Year Development Plan (1987 ~ 1991) emphasized, in the roads field, capacity expansion for congested roads and the development of road networks to support the Eastern Seaboard Development Plan. To reduce the burden on the national treasury, the same Plan brought private sector activity into road development projects and expanded the use of toll roads on the principle of placing the burden on the beneficiaries.

The two existing roads, National Routes Nos. 3 and 34, had few lanes and suffered severe congestion, together with high accident incidence due to the mixture of people, light vehicles and automobiles under such conditions. Problems of noise and exhaust gases were also becoming increasingly severe. These factors led to demand for an automobile-only expressway-grade road. This was a high-priority project for Thailand's development, and the plan was relevant.

(2) Efficiency

This project was to build Thailand's first high-grade intercity expressway over 81.8km linking Bangkok with the new industrial cities to the east. Phase I (the road between Bangkok and ปทุมธานี) was initially scheduled for completion in March 1995, but it was completed in May 1998, approximately three years late.

The construction delay was caused by slow land acquisition negotiations over compensation and other issues, which were required because the planned route passed through agricultural land with many rice paddies and fields. Construction was also delayed by changes in the design¹ of phase II, which was implemented in parallel with phase I. The DOH responded by adopting the PVD construction method (one type of compressed subsidence acceleration method) to shorten the implementation schedule.

(3) Effectiveness

[1] Traffic volume

The traffic volume recorded on the portion of road completed in May 1998 greatly exceeded the plan, as shown in Table 1.

Table 1 Recorded Traffic Volumes After Partial Completion of the Road

Units: Vehicles/day

	1998 (year of completion)	1999	2000
Plan predicted values	25,787	27,349	29,006
Actual values	34,047	33,546	33,060

This expressway links to the Bangkok East Outer Ring Road, which was built with a different ODA loan, and the related roads of the Eastern Seaboard Development Plan, giving it a major impact as an industrial road. It can also be used as an approach road to the Second Bangkok International Airport, which is now under construction, which means user numbers can be expected to increase further once the airport is complete.

The Expressway and Rapid Transit Authority of Thailand (ETA) has almost completed an elevated road along National Route 34, which runs parallel to this project's road on the south side. ETA is using its own funds for the construction. The existing National Route 34 is used for the incomplete $\text{ปทุมธานี} \sim \text{Chonburi}$ section. The two expressways linking Bangkok and the Eastern Seaboard run parallel and will be competing against each other.

Both the roads were built to cope with the anticipated major increase in freight shipping volume between Bangkok and the Eastern Seaboard. Both roads are expected to reach high usage rates in future. However, the ETA road now has many short-distance users near Bangkok and little long distance traffic. This project is mainly used to carry long distance traffic as far as the Eastern Seaboard, for which it is cheaper.

¹ The main alterations are as follows:

[1] The plan called for two-lane service roads to be constructed in advance on both sides of the planned site for the main road. The plan was amended to prioritize the construction of the main road, such that construction of service roads was limited to residential and commercial districts only.

[2] The interchange layouts were changed from the cloverleaf form to the trumpet form, which requires less land.

[2] Economic Internal Rate of Return (EIRR)

No comprehensive recorded data on project costs is available from the executing agency, thus the EIRR after completion cannot be recalculated.

(4) Impact

[1] Stimulation of distribution

The development of the Eastern Seaboard is a high-priority development plan due to the saturation of the Bangkok capital region. A heavy chemical industrial estate and an export oriented light industrial estate have been built in the area using ODA loans, and this project is a very important road linking them to Bangkok. This expressway links to the completed Chonburi ~ Pattaya Road, and to the Bangkok East Outer Ring Road, assisting freight shipping between Bangkok and the Eastern Seaboard, and to the North and Northeast without passing through Bangkok. Container freight shipping is increasing rapidly, particularly through Laem Chabang Port, with 60% being transported by truck, meaning that this road is also an element in freight shipping routes.

[2] Access to the Second Bangkok International Airport

Once the Second Bangkok International Airport, now under construction, is completed, there will be a sharp increase in traffic on the road as it becomes an access route to the new airport. The completion of the airport has been delayed, but the road is already making a major economic contribution because it is being used as a construction road.

[3] Impact on the natural environment

In 1993 the DOH set up an environmental office within its Bureau of Planning, but consultants are usually employed to conduct environment-related surveys. Before the construction of this project began, the Royal Department of Forestry commented that no regions for the protection of rare ecosystems of other areas legally requiring the implementation of Environmental Impact Assessment (EIA) or Initial Environmental Examination (IEE) were to be found along the road route. Before construction, consultants prepared an EIA using World Bank funding. The DOH plans to employ consultants soon to conduct a study for environmental evaluation after completion.

[4] Impact on the social environment

A supplementary environmental study found that measures against noise were required in some sections near residential areas (near five schools and three temples), and the DOH responded by erecting sound baffle walls.

Bridges have been built to cross the expressway where it cuts across communities and commercial zones, and two dual carriageway service roads (ordinary roads) have been built alongside the main road on both sides where it runs through residential and commercial areas, out of consideration for residents' convenience.

The acquisition of land for this project was conducted cautiously over a long period of time, with the

emphasis on dialog to reach solutions. As a result, agreements were reached over financial compensation for relocation from residential land (approximately 290 households were relocated), and few problems were encountered. For agricultural land, the land purchases went through relatively smoothly after repeated discussions over compensation methods. The acquisition of land for the interchanges to be constructed under phase II encountered difficulties in negotiations with some landowners over compensation and other issues, but by now the problems have largely been solved.

(5) Sustainability

[1] Organization of DOH

DOH has been building and operating numerous national and district road routes over many years. It has abundant experience in implementation and operation of such roads, but it has little experience of intercity toll expressways as this project was the first in Thailand. By now the DOH is smoothly running toll road operations on this road as well as on the Bangkok West Outer Ring Road, the Bangkok East Outer Ring Road and Bangkok North (Dong Muan International Airport North, one portion).

The current organization of the DOH is clearly subdivided into separate departments for engineering, construction and maintenance. The maintenance of toll roads is supposed to be the responsibility of the Intercity Roads Monitoring and Concessions Office, which belongs to the Engineering Department. However, the current division of responsibilities is unclear in the organizational rules and the office is not provided with adequate staff or funding resources. Therefore maintenance has been taken on temporarily by the Construction Department, or in some cases by the Maintenance Department, which maintains ordinary trunk roads. The DOH plans to make the Concessions Office responsible for maintenance in future.

[2] Maintenance budget

Toll road revenue is the main source of funding for the maintenance budget. The cabinet has already decided to make all intercity expressways into toll roads. That differs from the old method of receiving an annual budget allocation from the Ministry of Finance, making it more important to secure the maintenance budget.

[3] Operation and maintenance methods

Toll collection uses a closed system which consists of issuing tickets at booths and collecting tolls at the exit in line with the distance traveled. A prepaid card system is gradually being introduced. Staff are hired temporarily as required for the toll collection work.

The toll road system is still unclear regarding the laws for toll collection and the applications for the funds after collection, but the cabinet has decided to make all intercity roads into toll roads in future and the specific implementation and operation policies are now being studied by people of experience and academic standing.

Comparison of Original and Actual Scope

This Project (Phase I) only

Item	Plan	Actual
Project Scope -Of the Bangkok ~ Chonburi Road, the construction between Bangkok and ๙๙๙๙	36.5km/4 lanes	Same as left
-Consulting service	159 M/M	213 M/M
Implementation Schedule	Oct. 1990 ~ Mar. 1995 (54 months)	Mar. 1993 ~ May 1998 (63 months)
Project Cost		
Foreign currency	¥15,497 million	¥13,435 million
Local currency	4,503 million Bath	Unknown
Total	¥40,714 million	Unknown
ODA loan portion (foreign currency portion only)	¥15,497 million	¥13,435 million
Exchange rate	1Baht = ¥5.6	

