Thailand Nomination for Outstanding Transportation Award Project

1. Name of The Project

Suvarnabhumi Airport (IATA: **BKK**, ICAO:**VTBS**), also known as **(New)Bangkok International Airport**, is the international airport serving Bangkok, Thailand.

2. Outline of The project

- **Brief History**

The plot of land occupied by the airport with an approximate area of 8,000 acres (32 km²) was purchased in 1973, after numerous delays and decades of planning, the airport opened for limited service on 15 September 2006, and opened for all commercial flights on 28 September 2006. The airport is located in Racha Thewa in Bang Phli district, Samut Prakan Province, about 25 km east of downtown Bangkok. The name *Suvarnabhumi* was chosen by King Bhumibol Adulyadej and refers to the ancient kingdom. Designed by Helmut Jahn of Murphy/Jahn Architects.

- **Construction Cost by Item (us)**

Total Project Cost 155,000 million baht ($ 3.5 bn)

With 125,000 million Baht raised by Suvarnabhumi Airport, New Bangkok International Airport Co., Ltd., (Present day called Airports of Thailand Public Company Limited :AOT), and 30,000 million Baht invested by other financial institutions.

Details of budget used in the construction are shown in Table 1 and 2

Table 1 : Breakdown of Total Budget

Type	Percent
Engineering Cost	63.58
Management Cost	2.35
Financing Cost	2.83
Other Cost	31.24

Table 2 : Breakdown of Engineering Cost

Engineering Budget	Percent
Passenger Terminal	49%
Runways, Taxiways and Bays	24%
Land reclamation	7%
Consultants	4%
General Facilities Construction	3%
Airport Ground Facilities Construction	7%
Utility Construction	6%

3. Impact of the Project

- **Social Impact**

The impact of airport-induced job growth on land use in the vicinity of airports is substantial. Most of the employment is concentrated around the airport or along major connecting highways within 15 to 20 minutes of the airport. The growth of aviation activities significantly changes the land use pattern around the airport by generating real estate development, industrial enterprises, office space, shop, hotel and housing development.

There was some negative impact caused by the noise of aircrafts to the nearby local residents, however, the problem is being resolved.

- **Transportation Impact**

Suvarnabhumi Airport is an important hub in regional and worldwide air transportation. The airport provides advanced information technology and high – speed transportation to help companies source parts globally, minimize inventories cost, and provide fast and flexible responses to unique customers' needs, nationally and worldwide. It is an international partner to companies seeking, just-in-time suppliers and sophisticated distributors and third - party logistics service providers. The airport offers speed and flexibility in the delivery process from the time the finished goods leave the factory until they arrive at the customer's doorstep.

The airport's accessibility is a powerful attraction to information-intensive industries such as consulting, advertising, legal and financial services, data processing, accounting and auditing, which often send out professionals to distant customers' sites or bring in their clients by air. It offers benefits to business in the form of easy access to a hub airport, which offer greater choice of flights and destinations, more frequent services, more flexibility in rescheduling, and generally lower travel-related costs, for instance, Suvarnabhumi airport as a hub airport makes it easier to avoid the time and expense of overnight stays at provincial cities.

4. Method/Technology of Construction

The New Airport operate as many as 76 flights an hour on two simultaneous runways; it have 51 aircraft stands and 69 remote parking bays for wide-bodied aircraft and handle over three million tons of cargo annually. Facilities in the first phase include:

- A 563,000 m^2 passenger terminal
- Two parallel runways, each 60 m wide, one 3,700 m long and the other 4,000 m long with a runway separation distance of 2,200 m
- Two parallel taxiways to facilitate simultaneous departures and arrivals
- 120 parking bays (51 with contact gates and 69 remote gates) and five of these capable of accommodating the Airbus A380
- 132 m air traffic control tower (the tallest in Asia)
- Two five-storey parking garages with a capacity for 5,000 cars
- A 190,000 m^2 cargo terminal
- Aircraft maintenance facilities: four fully equipped aircraft hangars to service up to 12 aircraft simultaneously
- Three separate catering facilities to cater for 65,000 airlines meals per day
- Landside road system: two two-lane roads inside the airport with a total length of 36 km
- Utility system: 40,000 m^3 water tank; water treatment system for 12,000 m^3 of water per day; main transformer station for transforming electricity from 115 kV to 24 kV; eight garbage collection stations; seven telephone exchanges and two main exchanges
- Electrical railway system: a future extension swiftly transport passengers to and from central Bangkok
- First-class hotel with 600 rooms operated by Accor Group under the Novotel brand
- Express freight facilities: one warehouse, one office building and 12 aircraft stands

Passenger Terminal Complex

The passenger terminal complex (comprising the terminal itself as well as the concourse) covers an area of 182,000 m². Seven floors and a basement give the terminal making it the largest in the world. An innovative roof trellis (one of the largest in the world) designed to shade the building against intense tropical sun and reduce the cost of air conditioning, also be the largest of its kind. There are 360 check-in counters on ten check-in islands, all with connected baggage belts, and another 100 check-in counters not connected to the baggage belt system. The domestic and international halls are clearly separated with the second floor as a dedicated arrival hall and the fourth floor as a departure hall. The structure's main materials are steel and glass.

The concourse, with an area of 381,000 m². Its main structure is made of steel. Enclosure materials are locally manufactured glass and Teflon-coated fabric. The airport express, informally known as the Pink Line and operated jointly with SRT's planned Red Line commuter service, connect with the BTS Sukhumvit Line and MRT Blue Line at Phaya Thai and Phetchaburi stations respectively, offering airport-bound passengers a fast 15-minute limited stop journey from the city.

ATC Complex

Suvarnabhumi Airport has one of the tallest control tower complex in the world at 132 m with 2,600 m² of utility space. The ATC tower and complex was constructed by Aeronautical Radio of Thailand Co (Aerothai) who are contracted to provide air traffic control services, aeronautical telecommunication services, and air navigation aids services. The operational centre has been designed to provide excellent visibility for air traffic controllers across the north runway and taxiway, 4 km away.

Air Traffic Control Services

Aerothai centralizes Bangkok approach control at the control tower. Responsibility is divided between the East Sector; responsible for approach control between bearing 031-210 and the West Sector; responsible for approach control between bearing 211-030. Aerodrome control is responsible for air traffic control service within 5 km of the airport including any airside traffic. Communication systems include air / ground radio systems via VHF and UHF and an Aeronautical Information Service (AIS). Navigation and surveillance aids systems include:

- Doppler Very High Frequency Omni Range / Distance Measuring Equipment (DVOR/DME)
- Instrument Landing System / Distance Measuring Equipment (ILS/DME), eight sets at THB40m ($0.9m) each
- Local Area Augmentation System (LAAS)
- ATC radar system
- Airport surface detection equipment
- Automatic dependence surveillance

Security Installations

All 26 of the CTX 9000 explosive detection baggage scanning devices and their accessories were installed at the new airport at the end of 2005.

Subsequent Phase of Construction

Long-term plans for four runways flanking two main terminals and two satellite buildings with a combined capacity capable of handling up to 100 million passengers and 6.4 million tonnes of cargo a year are on the drawing board. The second phase of airport expansion involving the construction of a satellite building south of the main terminal is

expected to begin three to five years from 2006. The third phase of the airport project is placed to take place between 2010 and 2015, when the first passenger terminal will be expanded and a second midfield satellite built, increasing capacity to 73 million passengers annually.

5. Financing and Management

Suvarnabhumi airport, which is managed by New Bangkok International Airport Co., Ltd, has a budget: debt ratio of 40: 60. The budget of about 50,000 million Baht came from a major stakeholder, The Airports of Thailand Public Company Limited (AOT).

A loan 73,000 million Baht or 97.33 % was from Japan Bank for International Cooperation (JBIC) and 2,000 million Baht or 2.67 % was from other financial institutions. In summary:

40 % of investment was from Airports of Thailand Public Company Limited (AOT)
58.4 % of investment was from Japan Bank for International Cooperation (JBIC)
1.6 % of investment was from other financial institution

6. Uniqueness of the Airport

The airport has one of the tallest control tower complexes in the world, at 132 m with 2,600 m^2 of utility space.

Aircraft Maintenance Center: Suvarnabhumi airport has one of the biggest aircraft maintenance center in the world that can maintain 3 A380 at the same time. The building structure which has a height 35 m, width 90 m and length 270 m has no intermediate supporting columns.

It is the world's second largest single building and airport terminal (563,000 m^2), just a little smaller than Hong Kong International Airport (570,000 m^2) but larger than South Korea's Incheon International Airport (496,000 m^2).

It boasts the longest time of airport construction project in the world (45 years) from conception to completion.

7. Picture and Drawing on the Project

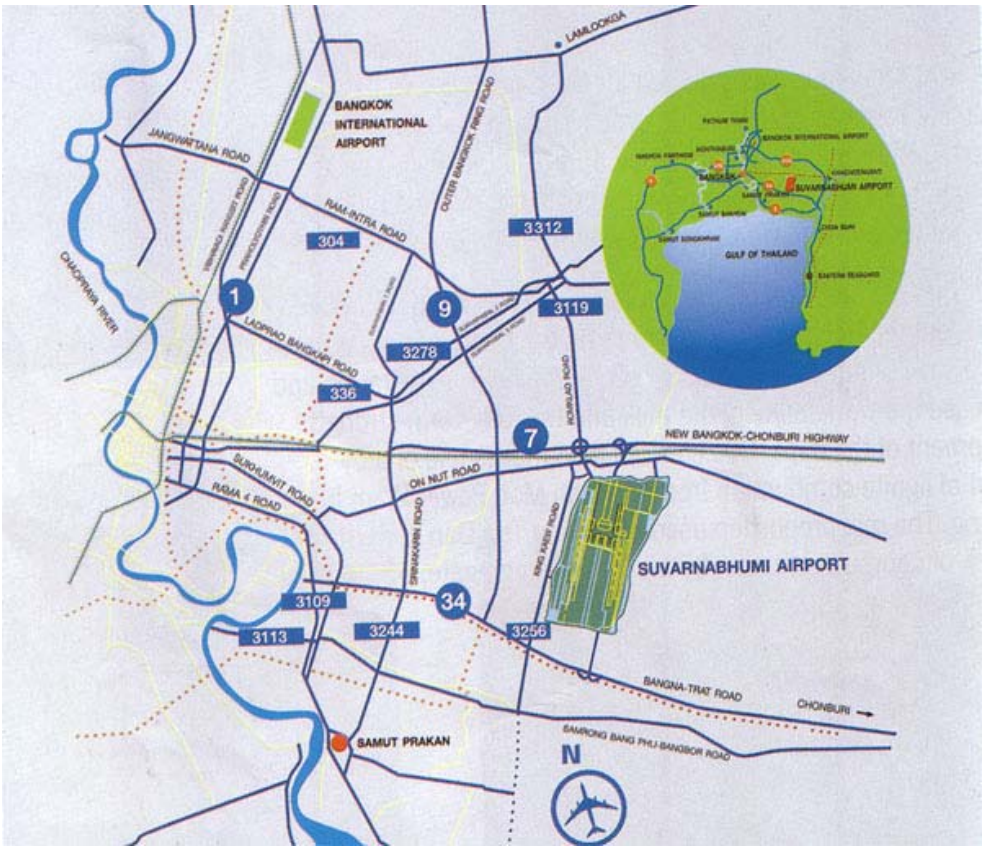

Figure 1 Location of the Suvarnabhumi Airport

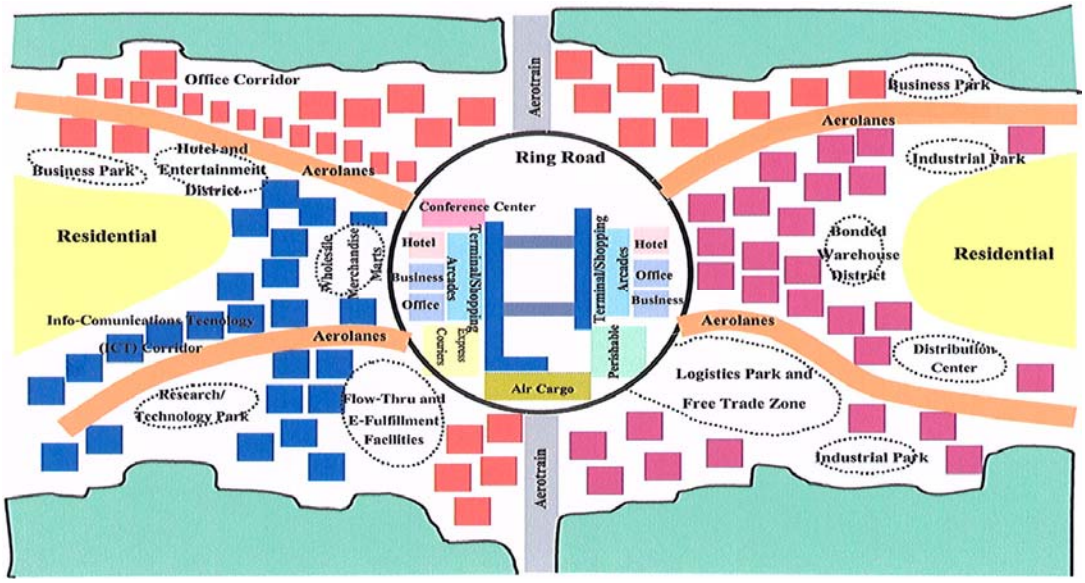

Figure 2 Aerotropolis

Figure 3 Suvarnabhumi airport map

Figure 4 Airport Landscape 1

Figure 5 Airport Landscape 2

Figure 6 Inside of the Passenger Terminal 1

Figure 7 Inside of the Passenger Terminal2

Figure 8 Inside of the Passenger Terminal 3

8. Point of Contact Person, Telephone, Facsimile, E mail

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