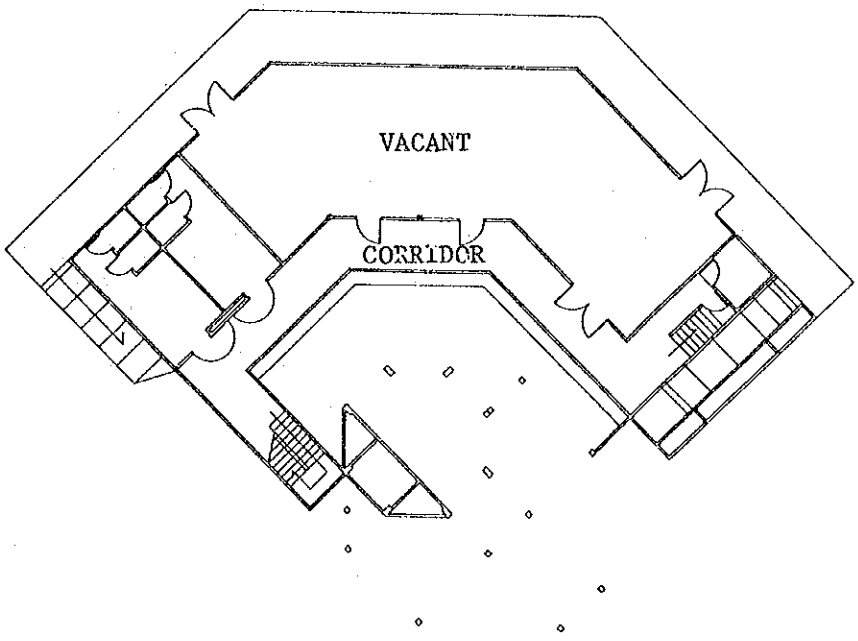
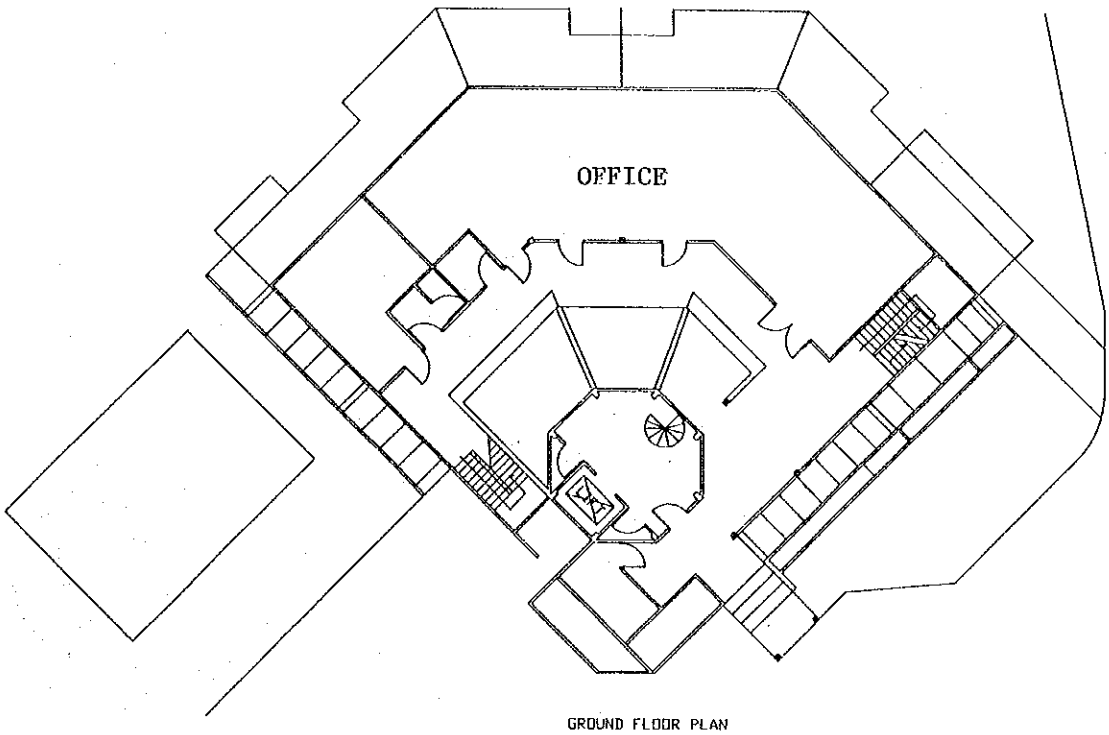
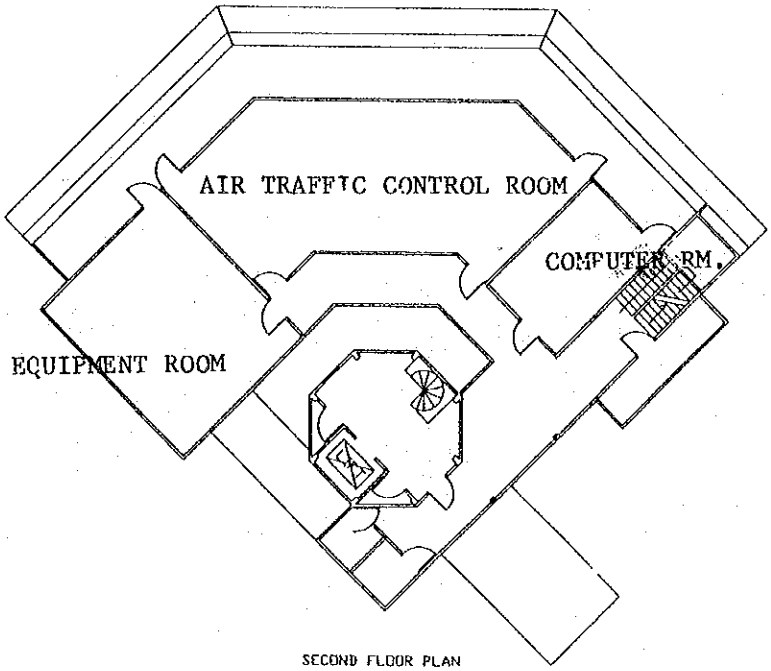


BASEMENT FLOOR PLAN

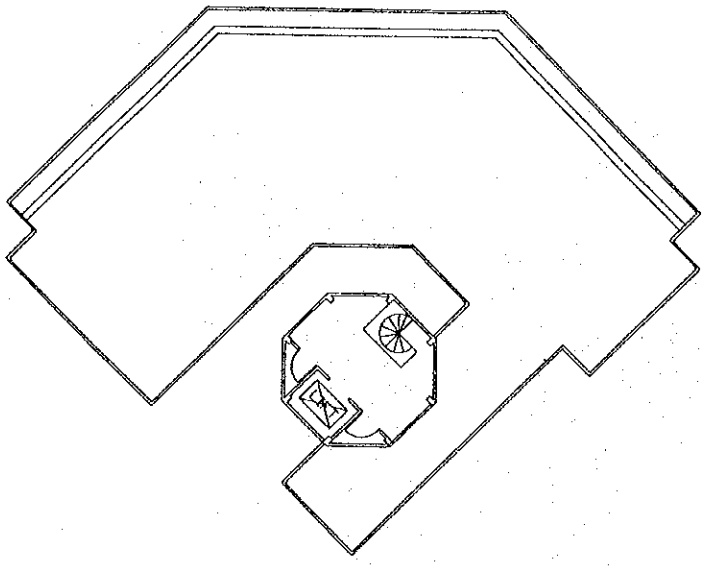


GROUND FLOOR PLAN

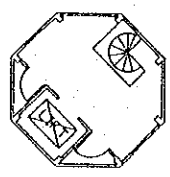
Basement and Ground Floor Plan of Existing Control Tower Building



SECOND FLOOR PLAN

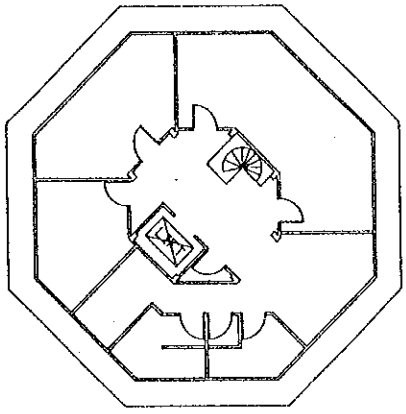


THIRD FLOOR PLAN

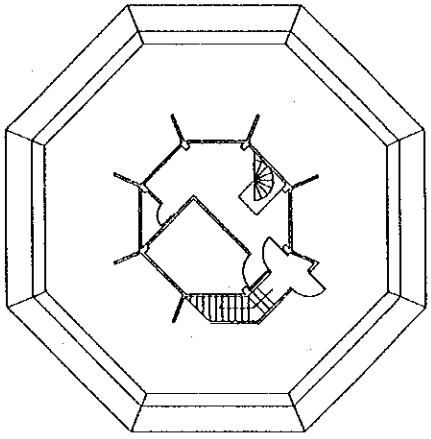


4-6 FLOOR PLAN

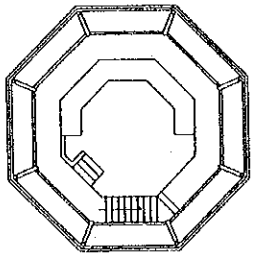
Second, Third and 4 ~ 6th Floor Plan of Existing Control Tower Building



STAFF OFFICE
(7 FLOOR)



LIFT PLAN
(8 FLOOR)



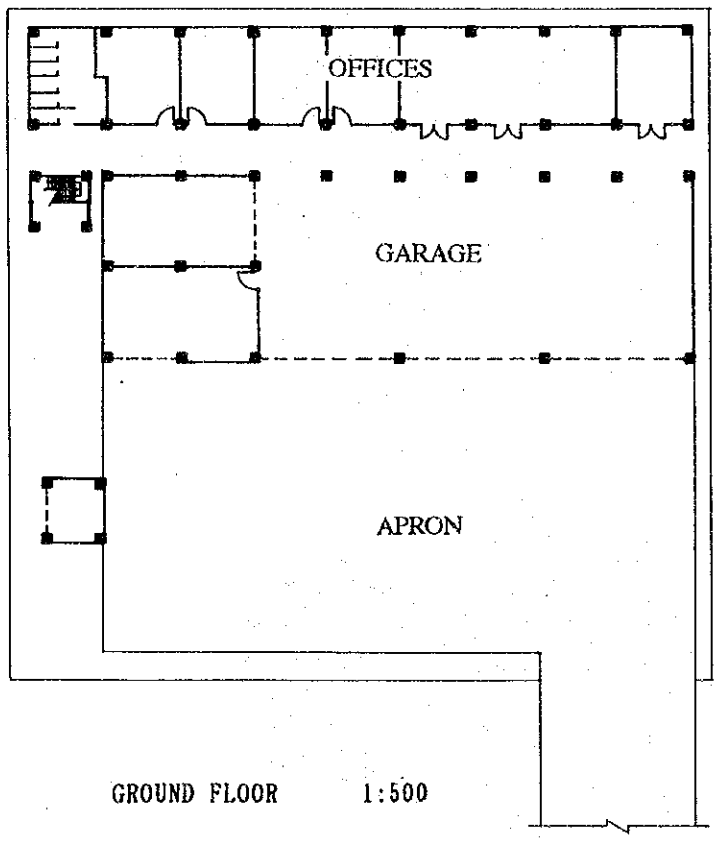
FLIGHT CONTROL ROOM
(9 FLOOR)

7 ~ 9th Floor Plan of Existing Control Tower Building

4TH FLOOR 

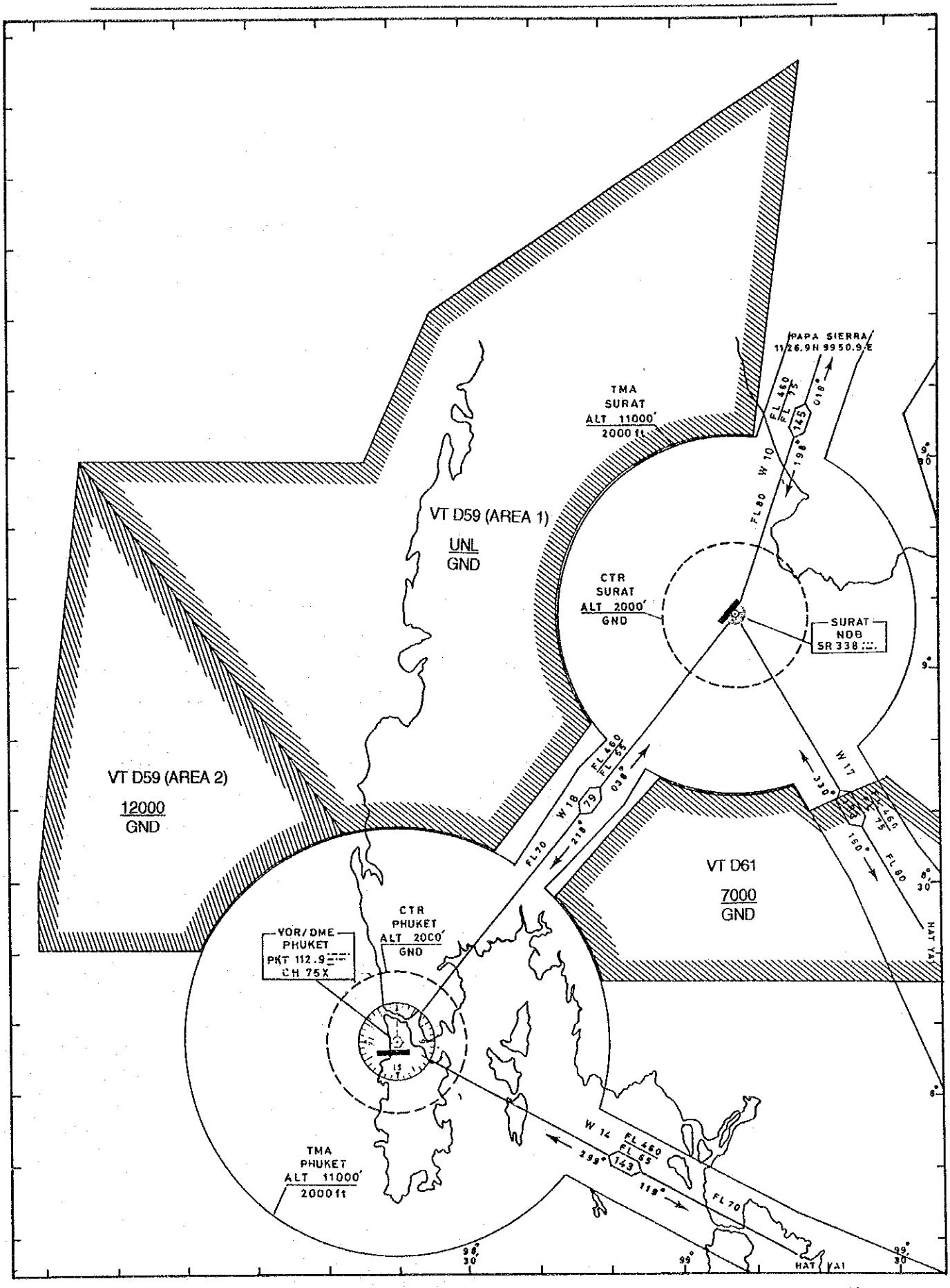
3RD FLOOR 

2ND FLOOR 



GROUND FLOOR 1:500

Floor Plan of Existing Fire Station



DEPARTMENT OF AVIATION 14 AUG 86

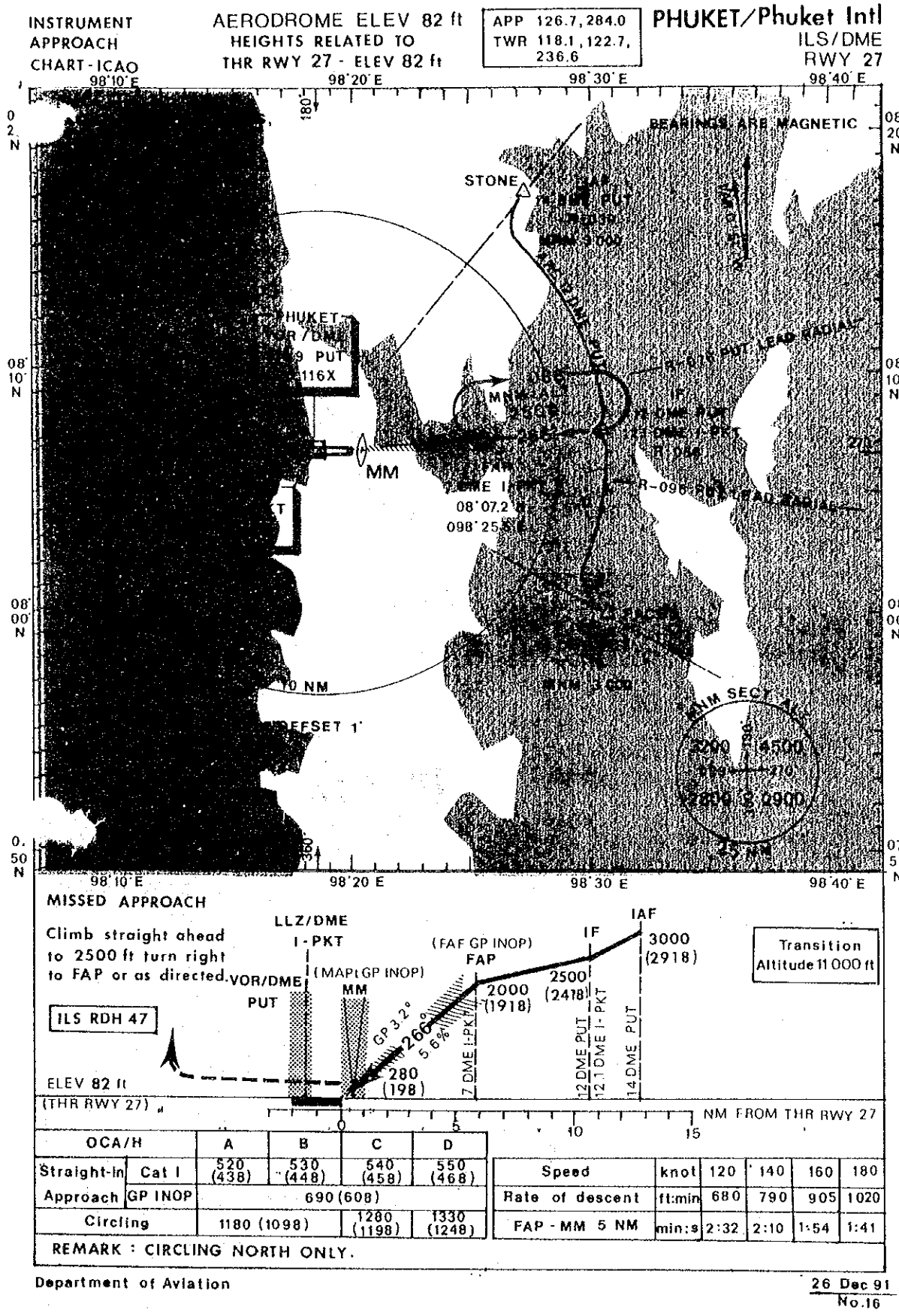
Dimension of Phuket Terminal Control Area

FLIGHT INFORMATION REGIONS AND CONTROL AREAS				
NAME AND LATERAL LIMITS	UPPER LIMIT / LOWER LIMIT	UNIT PROVIDING SERVICE	RADIO CALL SIGN (LANGUAGES)	REMARKS
1	2	3	4	5
13. Phuket Terminal Control Area The airspace within a circle of 30 NM radius centred on Phuket VOR/DME (0806.7N 9818.5E).	ALT 11 000 2 000 ft	APP PHUKET	PHUKET APPROACH (En, Thai)	

Dimension of Phuket Aerodrome Control Zone

TOWER	HOURS (UTC)	LATERAL LIMIT	UPPER LIMIT (ft)	LANGUAGES	REMARKS
1	2	3	4	5	6
PHUKET TOWER	H24	A circle of 10 NM radius centred on PKT VOR/DME (0807.9N 9819.9E)	up to but not including 2 000 ft AGL	En, Thai	Civil Instrument/ Visual

(1) Instrument Approach Procedure ILS/DME RWY 27 at Phuket International Airport



OCA/H		A	B	C	D
Straight-in Approach	Cat I	520 (438)	530 (448)	540 (458)	550 (468)
	GP INOP	690 (608)			
Circling		1180 (1098)		1280 (1198)	1330 (1248)

Speed	knot	120	140	160	180
Rate of descent	ft/min	680	790	905	1020
FAP - MM 5 NM	min:s	2:32	2:10	1:54	1:41

REMARK : CIRCLING NORTH ONLY.

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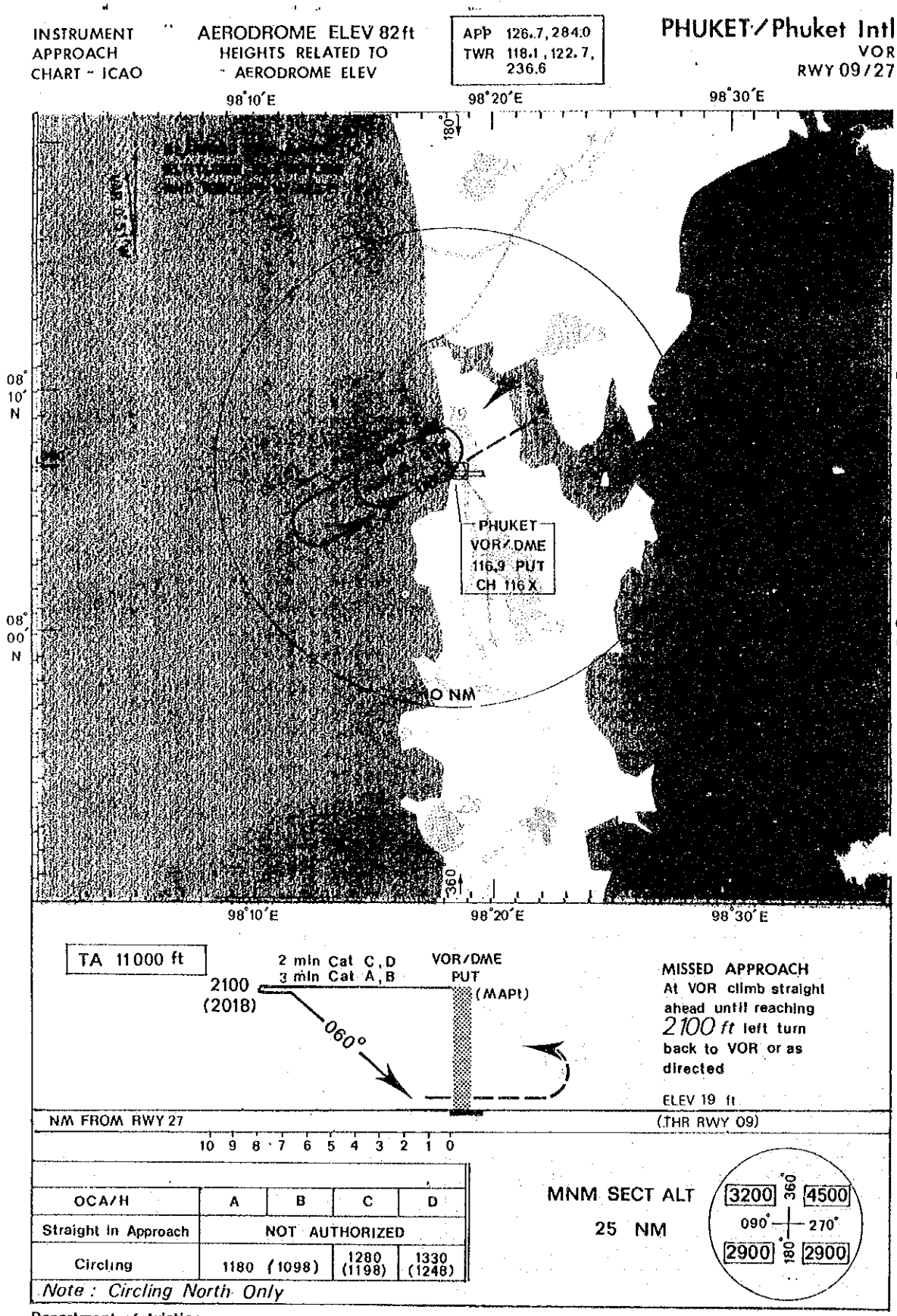
(2) Instrument Approach Procedure VOR RWY 09/27 at Phuket International Airport



OCA/H	A	B	C	D
Straight in Approach	NOT AUTHORIZED			
Circling	1180 (1098)		1280 (1198)	1330 (1248)

Note : Circling North Only

Department of Aviation

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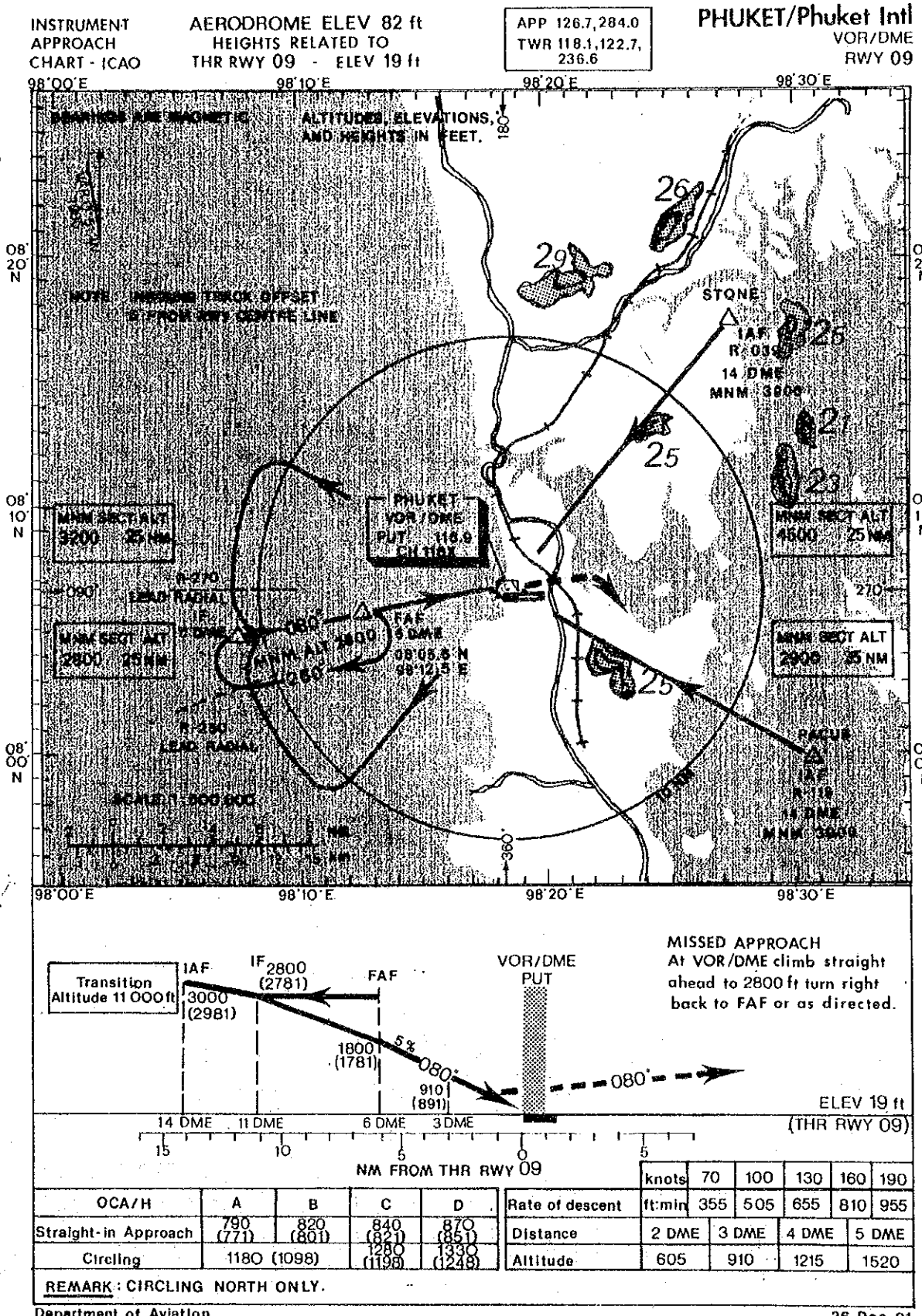
No.16

(3) Instrument Approach Procedure VOR/DME RWY 09 at Phuket International Airport



OCA/H	A	B	C	D
Straight-in Approach	790 (771)	820 (801)	840 (821)	870 (851)
Circling	1180 (1098)		1280 (1198)	1330 (1248)

knots	70	100	130	160	190
Rate of descent ft:min	355	505	655	810	955

Distance	2 DME	3 DME	4 DME	5 DME
Altitude	605	910	1215	1520

REMARK: CIRCLING NORTH ONLY.

Department of Aviation

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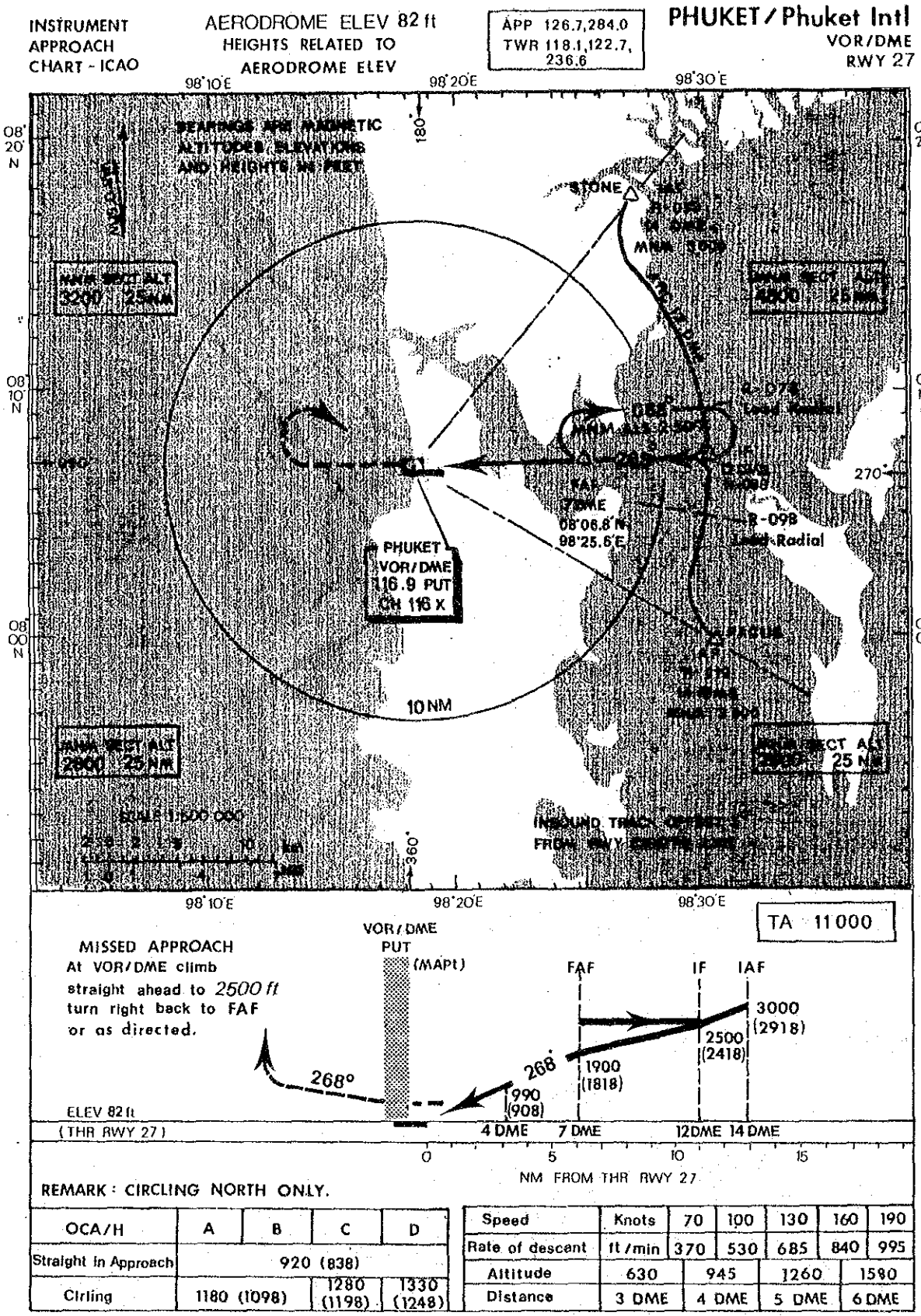
No.16

(4) **Instrument Approach Procedure VOR/DME RWY 27 at Phuket International Airport**



OCA/H	A	B	C	D
Straight In Approach	920 (838)			
Circling	1180 (1098)		1280 (1198)	1330 (1248)

Speed	Knots	70	100	130	160	190
Rate of descent	ft/min	370	530	685	840	995
Altitude		630	945	1260	1580	
Distance		3 DME	4 DME	5 DME	6 DME	

DEPARTMENT OF AVIATION

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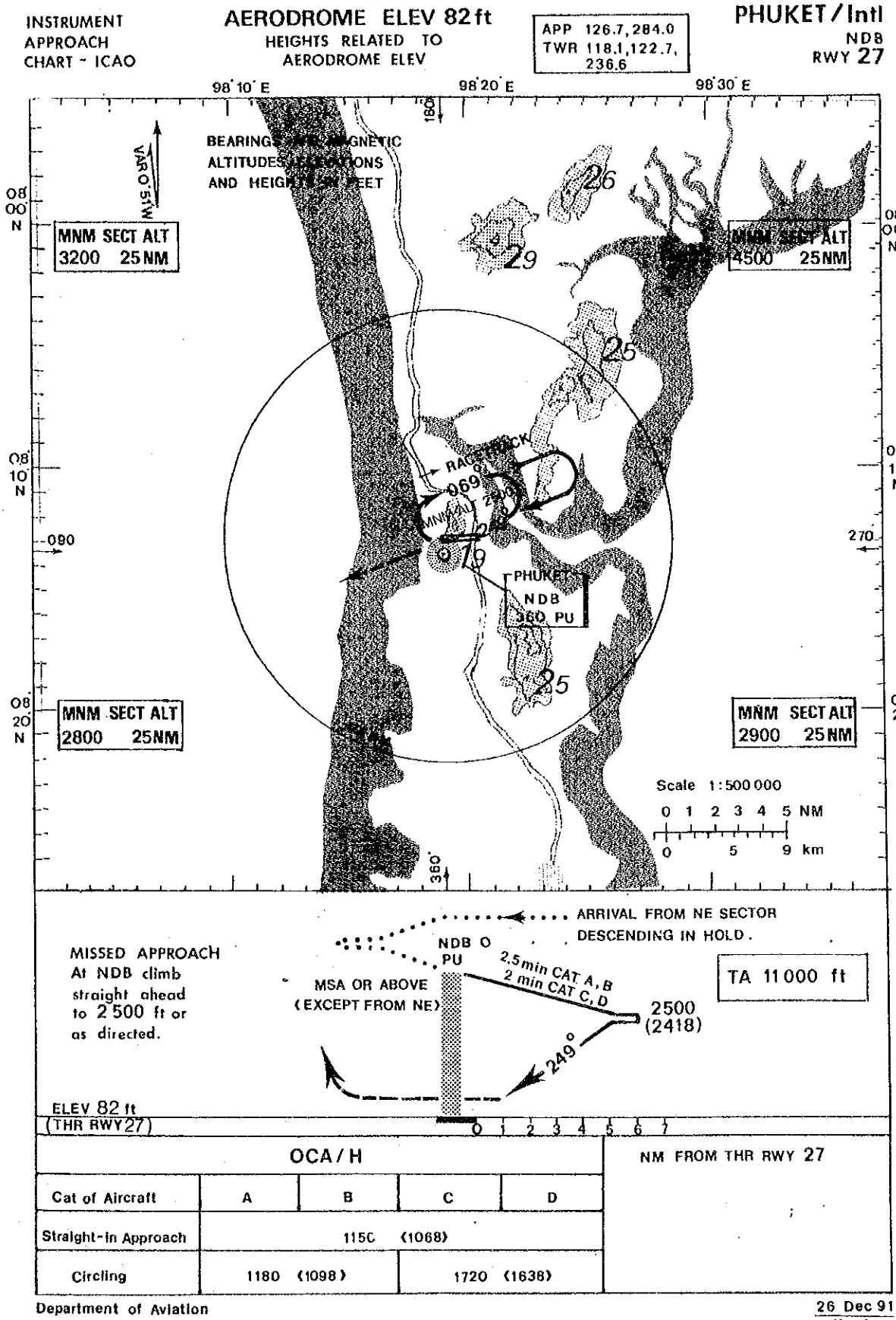
No. 16

(5) **Instrument Approach Procedure NDB**
RWY 27 at Phuket International Airport

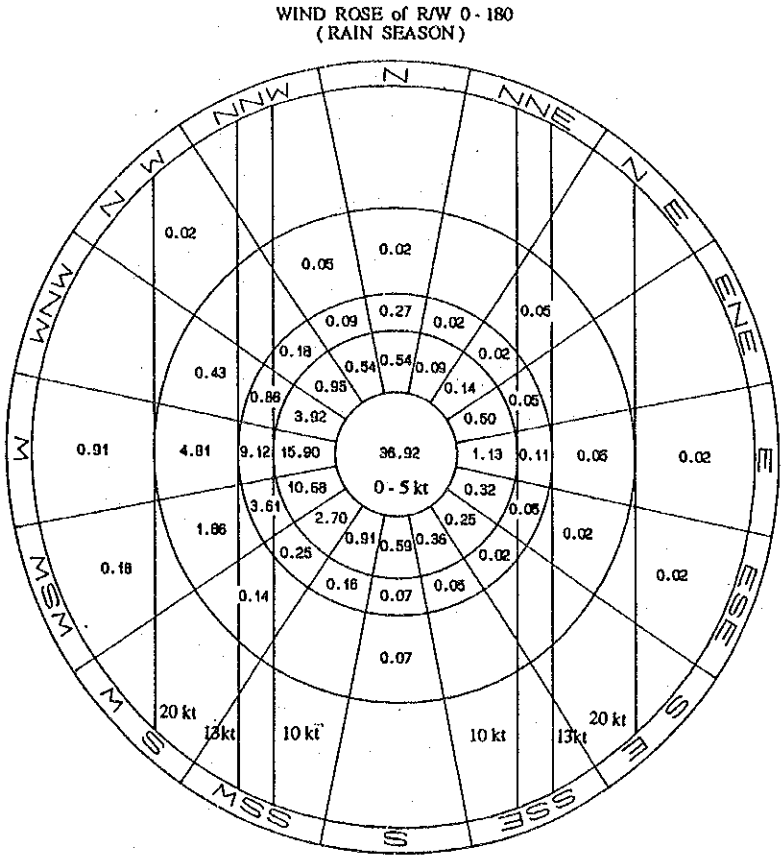


OCA / H				
Cat of Aircraft	A	B	C	D
Straight-in Approach	1150 (1068)			
Circling	1180 (1098)		1720 (1638)	

Department of Aviation

26 Dec 91
No. 16

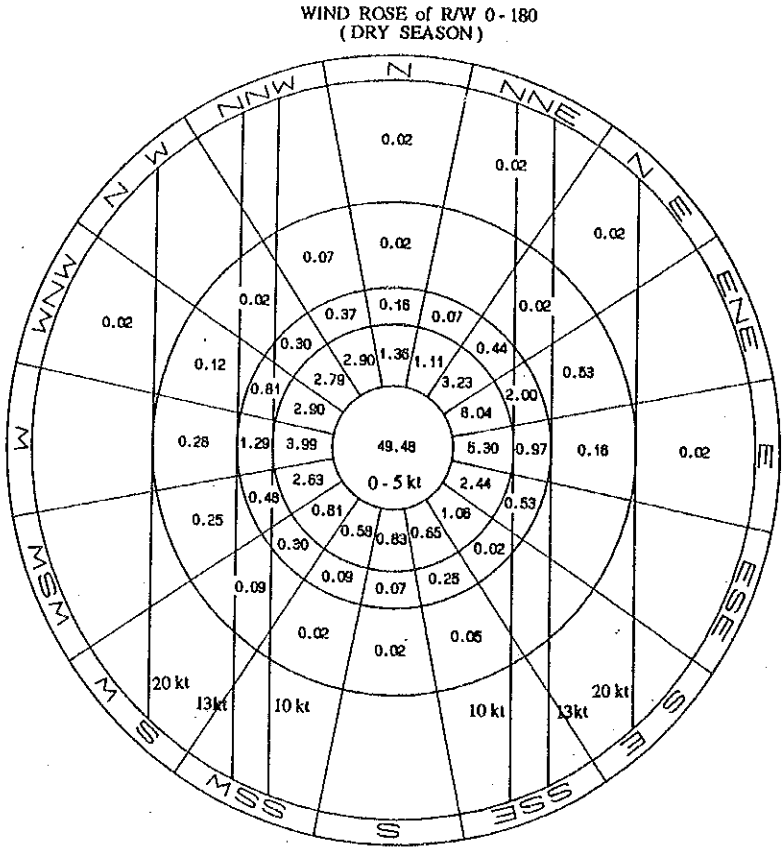
APPENDIX TO CHAPTER 8



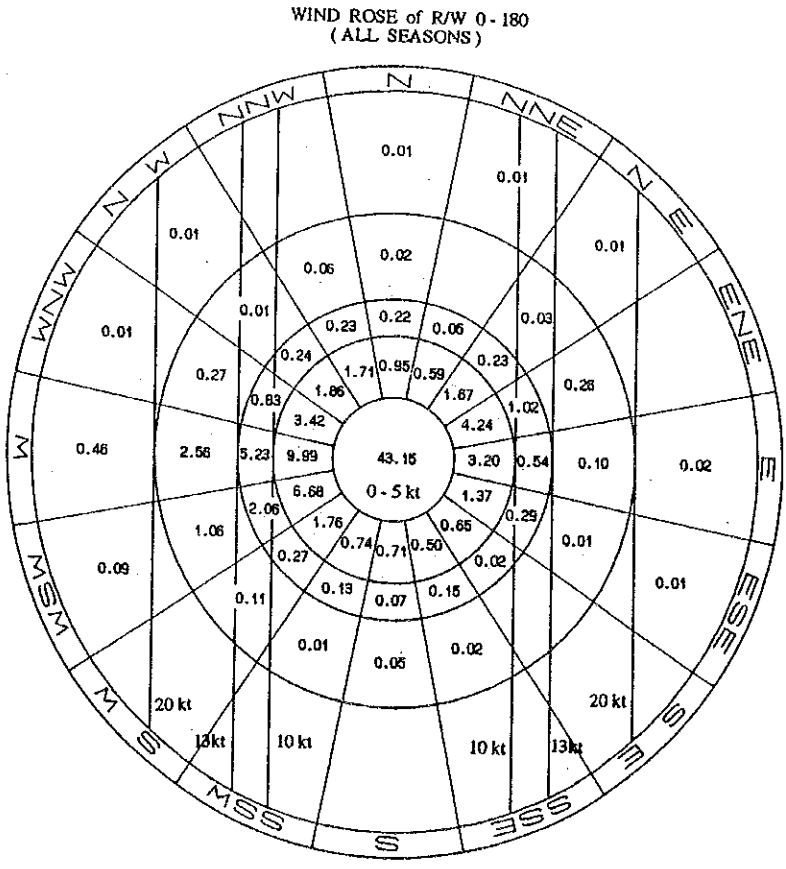
Wind Rose for Possible Site M-1 (1)

TABLE of WIND COVERAGE
(No Tail Wind) Unit : %

SEASON	CROSS WIND (kt)	R/W DIRECTION (deg.)			
		0 - 180	85 - 265	102 - 282	104 - 284
ALL	10	86.26	98.89	98.32	98.18
	13	95.32	99.77	99.63	99.58
	20	99.42	99.97	99.97	99.97
DRY	10	93.46	98.74	98.51	98.44
	13	98.69	98.73	99.69	99.66
	20	99.95	99.96	99.94	99.94
RAIN	10	79.18	99.03	98.13	97.92
	13	92.01	99.81	99.57	99.49
	20	98.90	99.99	99.99	99.99



Wind Rose for Possible Site M-1 (2)



Wind Rose for Possible Site M-1 (3)

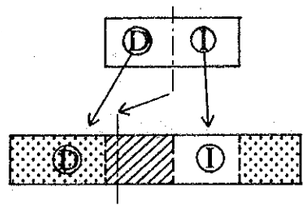
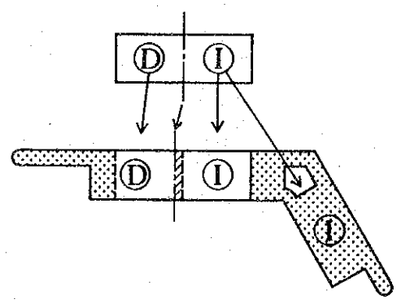
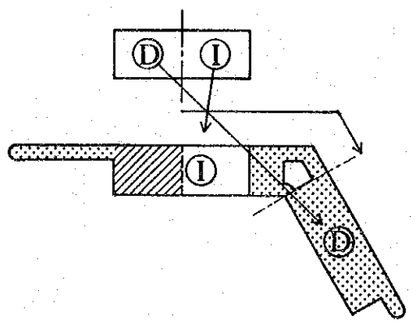
APPENDIX TO CHAPTER 9

Appendix - 9.2.1

Calculation of Runway Length Requirement (Existing Airport)

Runway Length Requirement	(Existing Airport)		
B-747-400			
London	5,313 NM		
Manual	Aircraft Operations Manual B-747-400		
Aircraft Data			
Operating Weight Empty	179.908 ton		
Maximum Payload	62.722 ton		
Fuel Comsumption	12.035 ton/hr		
Ave. Speed	485 Kts		
Passenger Load	0.091 ton/pax	200 LB	
Number of PAX	400		
Maximum Takeoff Weight	394.625 ton		
Runway Condition			
Elevation	26.9 m		
Temperature	33.2 C		
Runway Slope	0.61 %		
Wind	0.0 kt		
Maximum Takeoff Weight	394.625 ton		
Runway Length Requirement	3,577 m	Aircraft Operations Manual B-747-400	
Maximum Payload	62.722 ton		
Cruising Hour	10.955 hr		
Distance to Alt. Airport	199.732 NM	230 sm	Amsterdam
Cruising Hour to Alt. Airport	0.412 hr		
Total Cruising Hour	11.366 hr		
Fuel Comsumption	136.795 ton		
Takeoff Weight	379.425 ton	836,633 LB	
Runway Length Requirement	3,417 m		

Appendix - 9.2.2 Comparison of Existing Terminal Expansion

Alternative	Concept		Method of Development (E : Expansion R : Renovation)		Merit(M) and Demerit(D)	Evaluation
A		E-1	Expansion to both sides of the existing terminal building (23,500sq.m)	M-1	Short distance between aircraft parking stands and terminal building for domestic and international passengers, respectively.	
		R-1	Most of the existing domestic passenger facilities will be converted to the international passenger facilities. (11,500sq,m)	D-1	Large renovation works will be required in the existing terminal building which is in use.	
				D-2	Some constraints by the existing structure and equipment are expected for renovation works.	
				D-3	Difficult to keep unity of the aesthetic design of the whole building.	
B		E-1	Domestic portion will be expanded to the south of the existing building. (8,500sq,m)	M-1	Renovation works in the existing terminal building is much smaller than the other alternatives.	
		E-2	A new international terminal building will be constructed in the north of the existing building along the new apron. (15,000sq.m)	M-2	Few difficulties in operation during construction since major works will be executed outside of the existing building.	
		R-1	A small portion of the existing domestic facilities will be converted to the international facilities. (3,000sq.m)	D-1	Slightly long walking distance and compli cated passenger flow between the terminal building and aircraft in some cases.	
				D-2	Difficult to keep unity of the aesthetic design of the whole building.	
C		E-1	A gate lounge for international passengers will be expanded to the north of the existing building.(6,500sq.m)	M-1	Very easy to operate the existing building during construction since major works will be executed outside of the existing building.	Recommended
		E-2	A new domestic terminal building will be constructed in the south of the existing building along the new apron. (17,000sq.m)	M-2	Easy phased planning.	
		R-1	Facilities for domestic passengers in the existing terminal building will be converted to international use. (11,500sq.m)	M-3	Short distance between aircraft parking stands and terminal building.	

LEGEND Ⓘ : International Passenger Terminal

Ⓓ : Domestic Passenger Terminal

: Extension

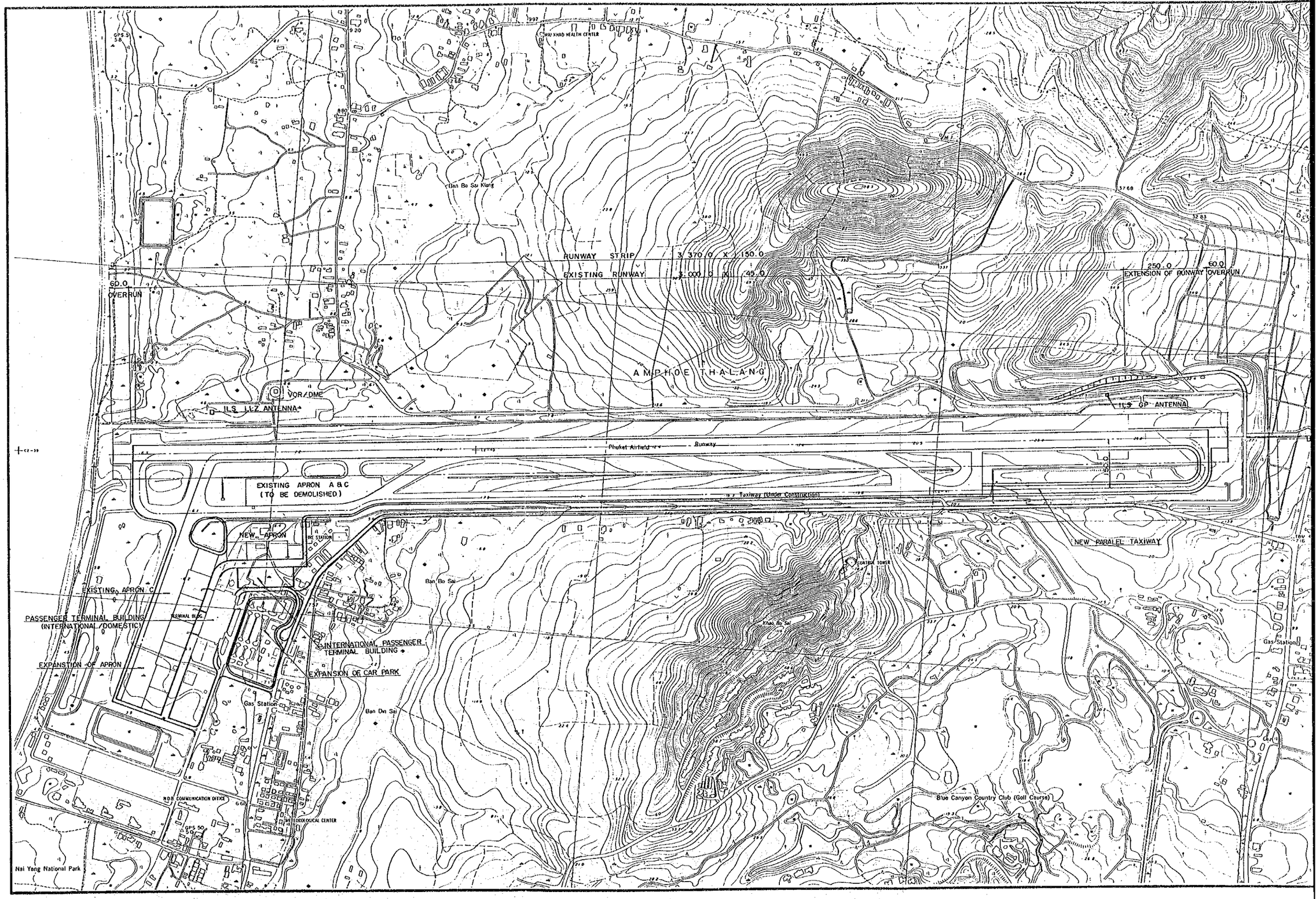
: Renovation

Additional Alternative for Existing Airport Development

Expansion of Existing Airport (Alternative-1')

If land acquisition around the existing airport is difficult, expansion of the facilities will be limited inside the existing airport boundary. The layout plan for this case (Alternative-1') is shown in **Figure 1**. The runway extension is limited only up to 3,250 m. The apron expansion is limited to the south of Apron-C since expansion of the New Apron to the east as planned in Alternative-1 is impossible due to the existing road Route 4026.

Cost Estimate of this Alternative is shown in **Table 1.**


RUNWAY STRIP 3,370.0 X 150.0
EXISTING RUNWAY 3,000.0 X 45.0
60.0 OVERRUN
250.0
60.0 OVERRUN
EXTENSION OF RUNWAY
AMPHOE THALANG
VOR/DME
ILS LLZ ANTENNA
ILS GP ANTENNA
CHAO KHAO HEALTH CENTER
Ban Bo Su Klang
Phuket Airfield
Runway
Taxiway (Under Construction)
EXISTING APRON A & C
(TO BE DEMOLISHED)
NEW APRON
NEW PARALEL TAXIWAY
EXISTING APRON C
PASSENGER TERMINAL BUILDING
(INTERNATIONAL /DOMESTIC)
EXPANSION OF APRON
INTERNATIONAL PASSENGER
TERMINAL BUILDING
EXPANSION OF CAR PARK
CONTROL TOWER
Ban Bo Sai
Khao Bo Sai
Ban Don Sai
Gas Station
Gas Station
NDB COMMUNICATION OFFICE
METEOROLOGICAL CENTER
Blue Canyon Country Club (Golf Course)
Nai Yang National Park

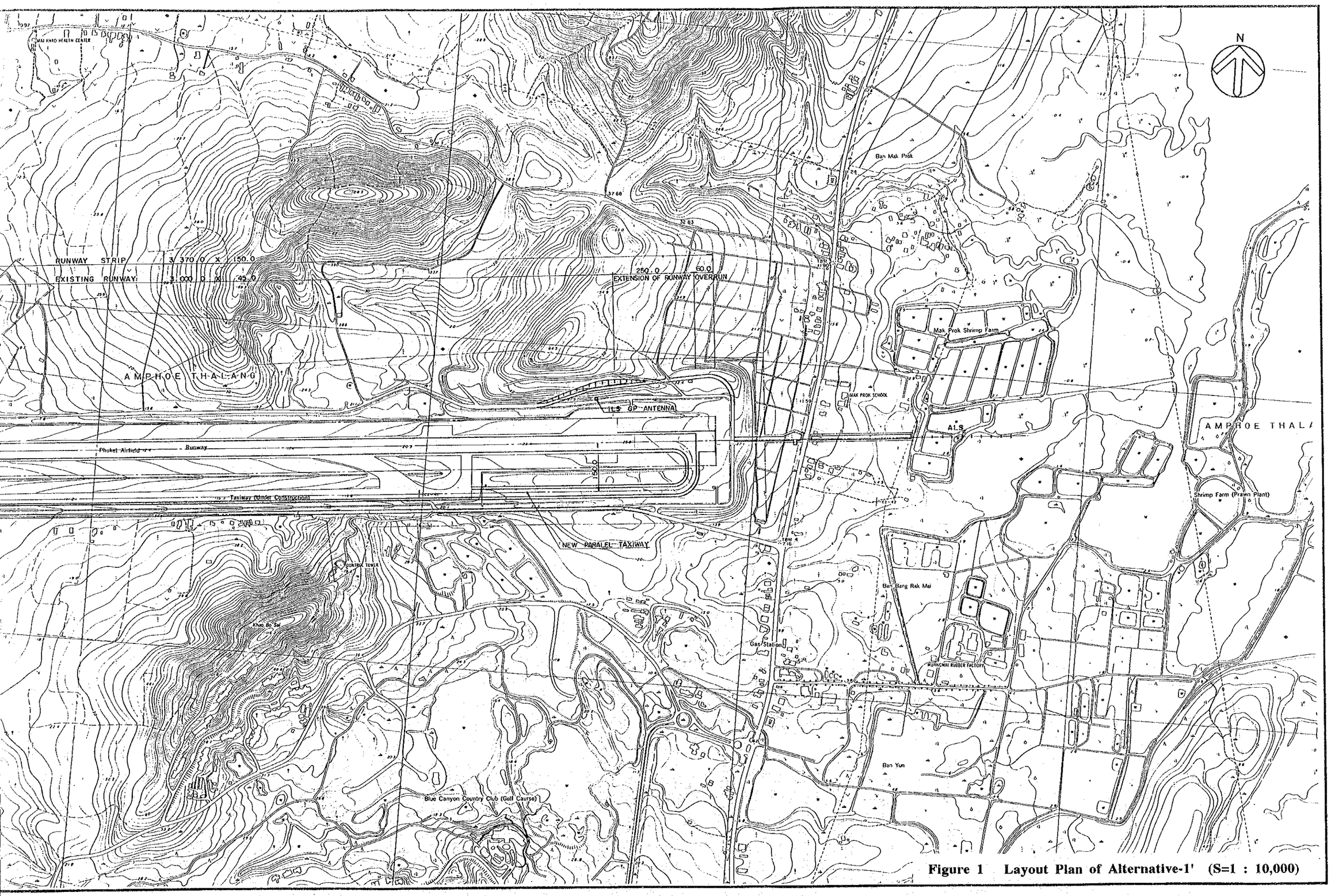


Figure 1 Layout Plan of Alternative-1' (S=1 : 10,000)

Table 1 Cost of Alternative-1'

Item	Alt-1 dash
1. CONSTRUCTION COST	**1,560,000**
1.1 CIVIL WORKS	461,600
Excavation under Approach Surface	5,600
Runway Extension	26,200
Runway Strip	193,800
Parallel Taxiway	33,700
Apron Expansion	46,000
Road and Car Park	14,700
Drainage	9,600
Miscellaneous Work	32,000
ALS Bridge	100,000
Revetment	0
1.2 ARCHITECTURAL WORKS	525,000
Passenger Terminal Building	525,000
Cargo Terminal Building	0
Administrative Building	0
Fire Station	0
1.3 AIR NAVIGATION SYSTEM	119,600
Radio Navigation System	3,900
ATC & Communication System	38,300
Met. Observation System	13,200
Airfield Lighting System	64,200
1.4 FUEL SUPPLY SYSTEM	210,000
1.5 AIRPORT UTILITIES	244,000
Power Supply System	129,000
Telephone	3,000
Water Supply System	21,000
Sewer Piping	7,000
Sewerage Treatment Plant	70,000
Incinerator	14,000
2. LAND ACQUISITION AND COMPENSATION COST	**6,000**
Land Acquisition	3,800
Compensation for Relocation	2,100
3. TOTAL OF 1.+2.	**1,600,000**

Appendix - 9.2.4

Limits of Utilization of Existing Space for Expansion of Facilities

This is a brief study to estimate the maximum extent of the expansion of the facilities within the existing boundary of Phuket International Airport after the year 2010. The future demand after the year 2010 was assumed for two cases of the higher case and the lower case based on the trend until the year 2010.

The results of the study are summarized as follows:

1 Number of Runways

Existing single runway system has a capacity of 31 movements, which will be able to cope with the aircraft movements up to the years between 2030 and 2070.

2 Number of Aircraft Stands

Existing aircraft stands can be expanded to 15 stands within the existing airport boundary. The apron will come to the limit of its expansion before 2020 for the higher case of the demand, and in 2020 for the lower case.

3 Floor Area of Passenger Terminal Building

Existing passenger terminal building can be expanded up to 47,000 sq.m in the vacant space on both sides of the building which will accommodate the demand around the year 2008. If the existing cargo terminal building is relocated to any other place, the passenger terminal building can be further expanded up to 69,000 sq.m of the total floor area which corresponds to the demand of the year 2018 in the higher case, and the year of 2025 in the lower case.

4 Area of Car Park

Existing car park can be expanded up to 78,000 sq.m in the existing airport area which is supposed to accommodate the demand in 2030 in the higher demand case and in 2060 in the lower demand case.

As a result of the above brief study, the apron is expected to reach saturation within the existing space by the year 2018 approximately in the higher case and by 2020 in the lower case, which is earliest among the major facilities, and soon the passenger terminal building will reach saturation.

It should be noted that this study was made only in terms of the total capacity of the above facilities, and the function of each facility such as the layout plan inside the building after expansion has not been studied. Therefore, there is a possibility that the facility may reach the limit of the function before the year forecasted above.

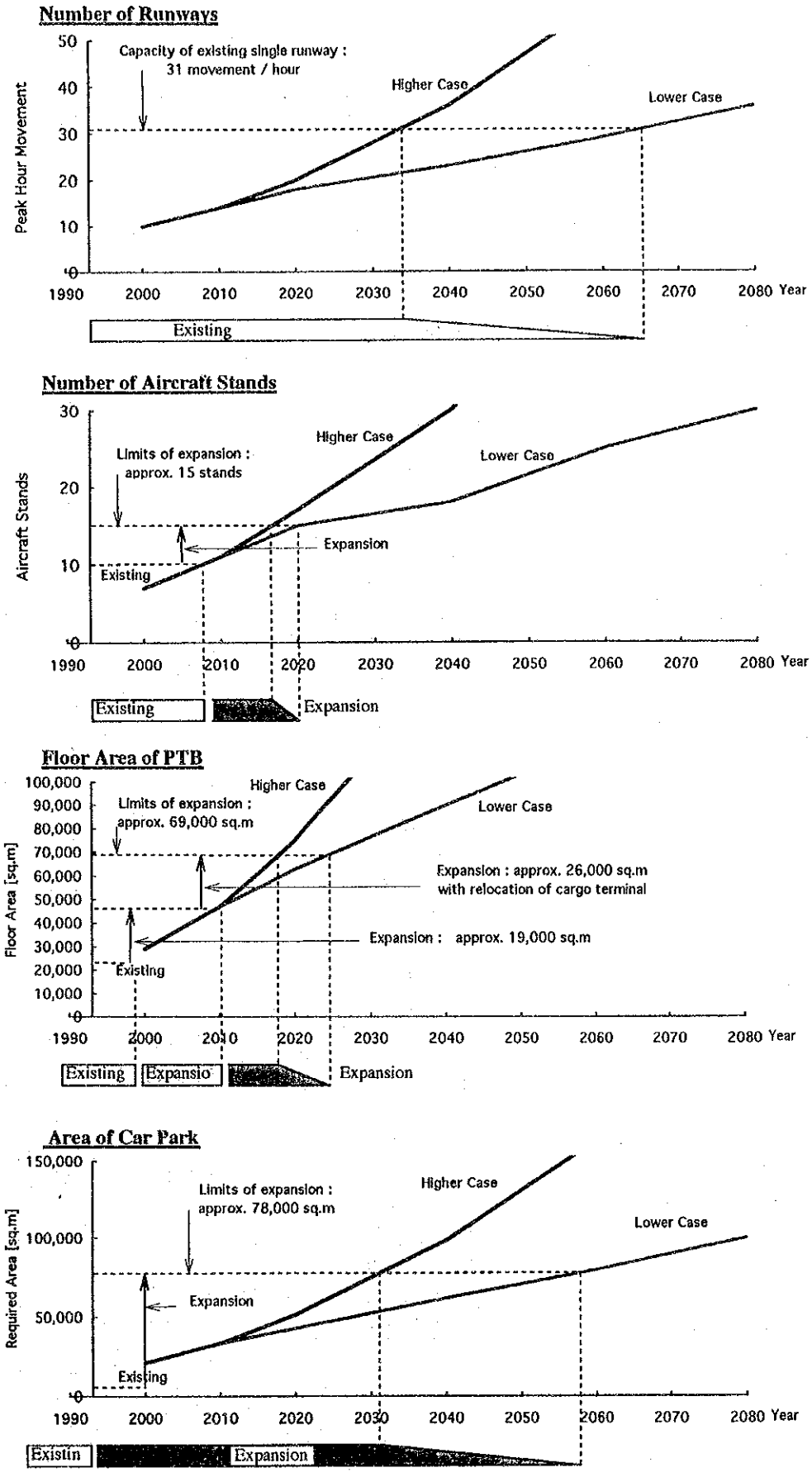


Figure 1 Limit of Utilization of Existing Space for Expansion of Facilities

Calculation of Runway Length Requirement (New Airport)

Runway Length Requirement	(New Airport)		
B-747-400			
London	5,313 NM		
Manual	Aircraft Operations Manual B-747-400		
Aircraft Data			
Operating Weight Empty	179.908 ton		
Maximum Payload	62.722 ton		
Fuel Comsumption	12.035 ton/hr		
Ave. Speed	485 Kts		
Passenger Load	0.091 ton/pax	200 LB	
Number of PAX	400		
Maximum Takeoff Weight	394.625 ton		
Runway Condition			
Elevation	8.8 m		
Temperature	33.2 C		
Runway Slope	0.15 %		
Wind	0.0 kt		
Maximum Takeoff Weight	394.625 ton		
Runway Length Requirement	3,407 m	Aircraft Operations Manual B-747-400	
Maximum Payload	62.722 ton		
Cruising Hour	10.955 hr		
Distance to Alt. Airport	199.732 NM	230 sm	Amsterdam
Cruising Hour to Alt. Airport	0.412 hr		
Total Cruising Hour	11.366 hr		
Fuel Comsumption	136.795 ton		
Takeoff Weight	379.425 ton	836,633 LB	
Runway Length Requirement	3,255 m		

APPENDIX TO CHAPTER 11

(สำเนา)

เล่ม ๘๑ ตอนที่ ๑๑๑ ราชกิจจานุเบกษา ๒๙ พฤศจิกายน ๒๕๐๗

กฎกระทรวง

ฉบับที่ ๑ (พ.ศ. ๒๕๐๗)

ออกตามความในพระราชบัญญัติป่าสงวนแห่งชาติ

พ.ศ. ๒๕๐๗

อาศัยอำนาจตามความในมาตรา ๕ และมาตรา ๖ แห่งพระราชบัญญัติป่าสงวนแห่งชาติ พ.ศ. ๒๕๐๗ รัฐมนตรีว่าการกระทรวงเกษตรออกกฎกระทรวงไว้ ดังต่อไปนี้

กำหนดให้ป่าเลนคลองท่าเรือ ในท้องที่ตำบลป่าคลอก ตำบลเกาะสุนทร อำเภอถลาง และตำบลเกาะแก้ว อำเภอเมืองภูเก็ต จังหวัดภูเก็ต ภายในแนวเขตตามแผนที่ท้ายกฎกระทรวงนี้ เป็นป่าสงวนแห่งชาติ

ให้ไว้ ณ วันที่ ๕ พฤศจิกายน พ.ศ. ๒๕๐๗

พระประกาศสหกรณ์

รัฐมนตรีว่าการกระทรวงเกษตร

หมายเหตุ เหตุผลในการประกาศใช้กฎกระทรวงฉบับนี้คือ เนื่องจากป่าแห่งนี้มีพันธุ์ไม้ชนิดที่มีค่าเป็นปริมาณมาก เช่น ไม้โกงกาง ไม้แสม และไม้ป่าเลนชนิดอื่น ๆ จำเป็นต้องรักษาสภาพป่า ไม้ ของป่า อันเป็นทรัพยากรธรรมชาติไว้ เพื่อให้มีไม้และของป่าไว้และเพื่อประโยชน์ทางอ้อมอีกส่วนหนึ่ง ซึ่งจะเป็นประโยชน์มากกว่าที่จะแผ้วถางลงเป็นที่เพาะปลูกหรือเพื่อกิจการอย่างอื่น จึงสมควรสงวนป่าแห่งนี้ไว้ เพื่อประโยชน์แห่งรัฐและประชาชน

สำเนาถูกต้อง

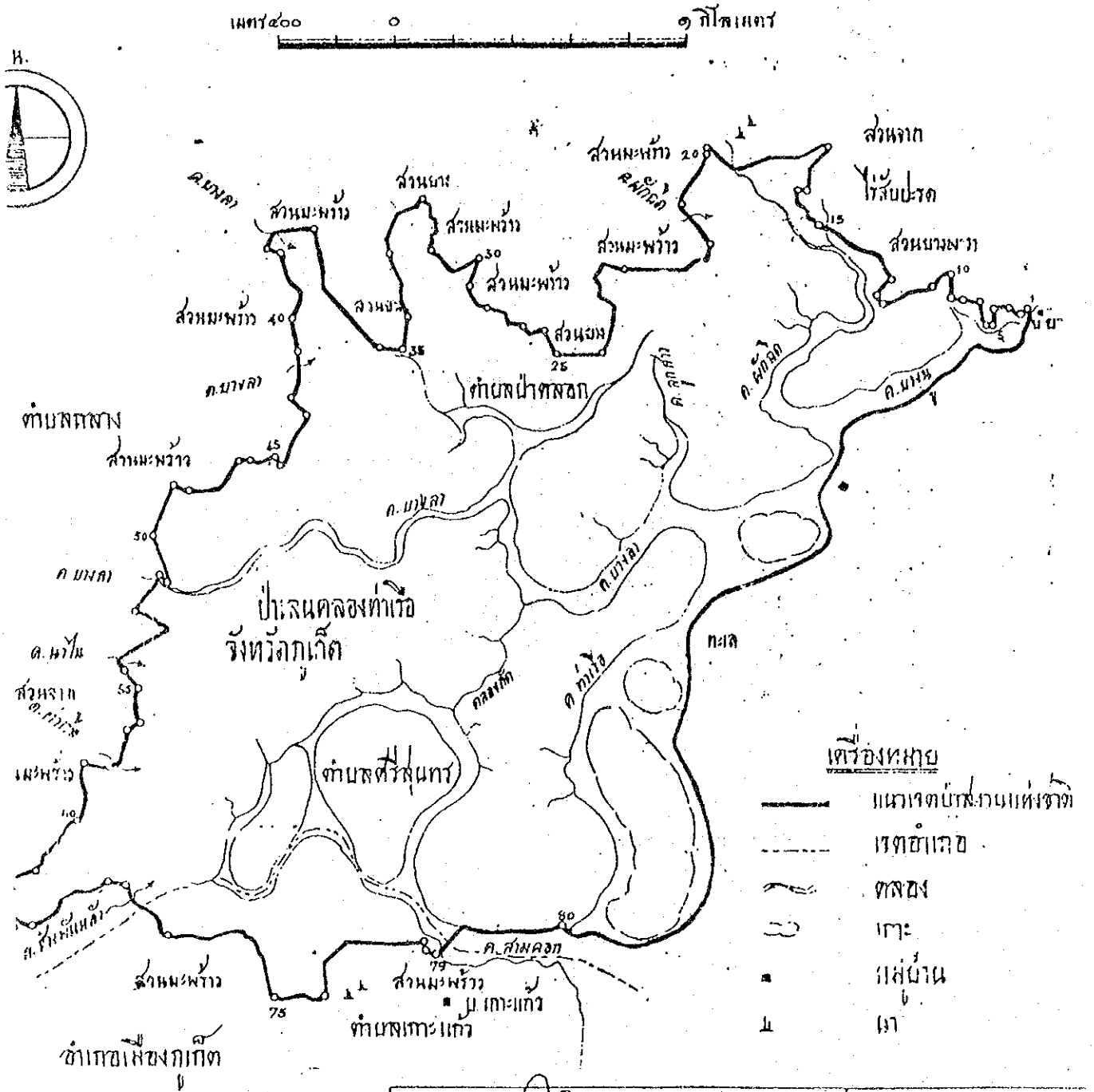
นักวิชาการป่าไม้ตรี กองโครงการ

อุษม รุ่งเรือง /คัด

๒๗ พย.๐๗

๐-๙/ทาม

แผนที่ท้ายกฎกระทรวง
ฉบับที่ ๑ (พ.ศ.๒๕๐๗)
ออกตามความในกระวางกำหนดที่ป่าสงวนแห่งชาติ พ.ศ. ๒๕๐๗
เนื้อที่ประมาณ ๔๐๐๗ ตารางกิโลเมตร หรือ ๓,๑๘๑ ไร่.
มาตราส่วน ๑:๒๐,๐๐๐



ท้ายกองโครงการ 10 / ส.ค. / 07	จำลอง 21 / ส.ค. / 07
อธิบดีกรมป่าไม้ 17 / ส.ค. / 07	ตรวจ 17 / ส.ค. / 07

พิมพ์ที่ :- แผนกรังวัด กองโครงการ กรมป่าไม้

กฎกระทรวง

ฉบับที่ ๑๙๕ (พ.ศ. ๒๕๐๖)

ออกตามความในพระราชบัญญัติคุ้มครองและสงวนป่า

พุทธศักราช ๒๔๘๑

อาศัยอำนาจตามความในมาตรา ๑๐ และมาตรา ๒๖ แห่งพระราชบัญญัติคุ้มครองและสงวนป่า พุทธศักราช ๒๔๘๑ ซึ่งแก้ไขเพิ่มเติมโดยพระราชบัญญัติคุ้มครองและสงวนป่า (ฉบับที่ ๓) พ.ศ. ๒๔๙๗ รัฐมนตรีว่าการกระทรวงเกษตรออกกฎกระทรวงไว้ ดังต่อไปนี้

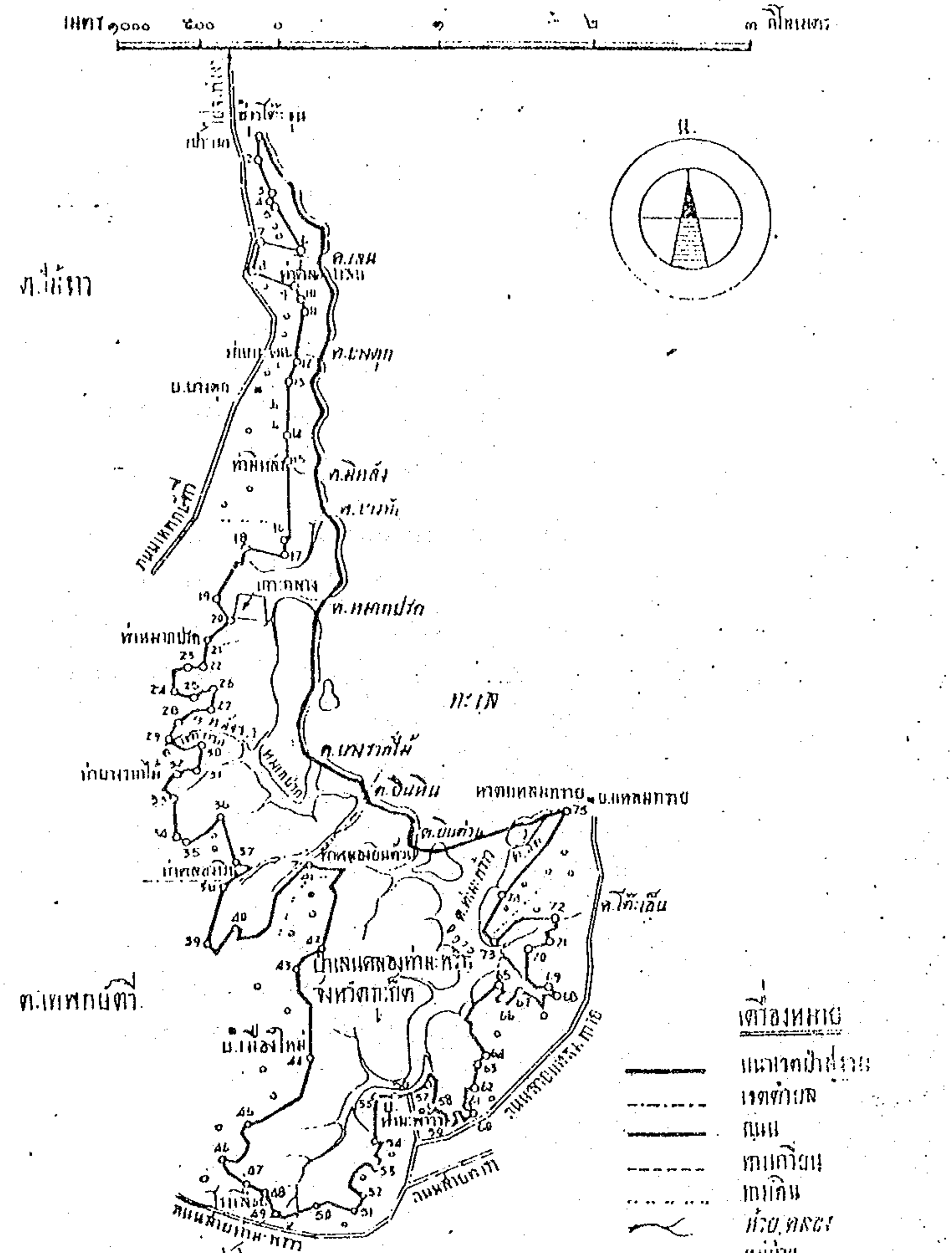
ให้ป่าเฉนคลองท่ามะพร้าว ในท้องที่ตำบลไม้ขาว และตำบลเทพกษัตรีย์ อำเภอถลาง จังหวัดภูเก็ต ภายในแนวเขตตามแผนที่ท้ายกฎกระทรวงนี้ เป็นป่าสงวน

ให้ไว้ ณ วันที่ ๒๖ สิงหาคม พ.ศ. ๒๕๐๖

พลเอก สุรจิต จารุเศรนี

รัฐมนตรีว่าการกระทรวงเกษตร

แผนที่ท้ายกฎกระทรวง
ฉบับที่ ๑๘๕ (พ.ศ. ๒๕๐๖)
ออกตามความในพระราชบัญญัติคุ้มครองและสงวนป่า พุทธศักราช ๒๔๘๑
เนื้อที่ประมาณ ๒.๘๐ กม.² หรือ ๑,๗๕๐.๐๐ ไร่
มาตราส่วน ๑:๕๐,๐๐๐



หัวหน้ากองโครงการ 20 / มิ.ย. / 06	4 / มิ.ย. / 06
รองอธิบดีกรมป่าไม้ 21 / มิ.ย. / 06	5 / มิ.ย. /

Appendix - 11.4.3

Mai Phok and Maikaew Reservation Forest

เล่ม ๑๐๒ ตอนที่ ๕๕ ราชกิจจานุเบกษา วันที่ ๒ พฤษภาคม ๒๕๒๘

กฎกระทรวง

ฉบับที่ ๑,๐๙๗ (พ.ศ. ๒๕๒๘)

ออกตามความในพระราชบัญญัติป่าสงวนแห่งชาติ

พ.ศ. ๒๕๐๗

อาศัยอำนาจตามความในมาตรา ๕ วรรคหนึ่ง แห่งพระราชบัญญัติป่าสงวนแห่งชาติ พ.ศ. ๒๕๐๗ รัฐมนตรีว่าการกระทรวงเกษตรและสหกรณ์ออกกฎกระทรวงไว้ดังต่อไปนี้

ให้ป่าเขาไม้ซอกและป่าไม้แก้ว ในท้องที่ตำบลไม้ขาว อำเภอกะทู้ จังหวัดภูเก็ต ภายในแนวเขตตามแผนที่ท้ายกฎกระทรวงนี้ เป็นป่าสงวนแห่งชาติ

ให้ไว้ ณ วันที่ ๒๘ กุมภาพันธ์ พ.ศ. ๒๕๒๘

ณรงค์ วงศ์วรรณ

(นายณรงค์ วงศ์วรรณ)

รัฐมนตรีว่าการกระทรวงเกษตรและสหกรณ์

หมายเหตุ :- เหตุผลในการประกาศใช้กฎกระทรวงฉบับนี้ คือ เนื่องจากป่าเขาไม้ซอกและป่าไม้แก้ว ในท้องที่ตำบลไม้ขาว อำเภอกะทู้ จังหวัดภูเก็ต เนื้อที่ประมาณ ๔,๘๔๔ ไร่ มีไม้จวง ไม้หัง ไม้กะเบียน ไม้สาน และไม้ชนิดอื่นที่มีค่าจำนวนมาก และมีของป่ากับทรัพยากรธรรมชาติอื่นอีกมาก สมควรกำหนดให้เป็นป่าสงวนแห่งชาติ เพื่อรักษาสภาพป่า ไม้ ของป่า และทรัพยากรธรรมชาติอื่นไว้ จึงจำเป็นต้องออกกฎกระทรวงนี้

สำเนาถูกต้อง

(นายเมธี รุ่งแสง)

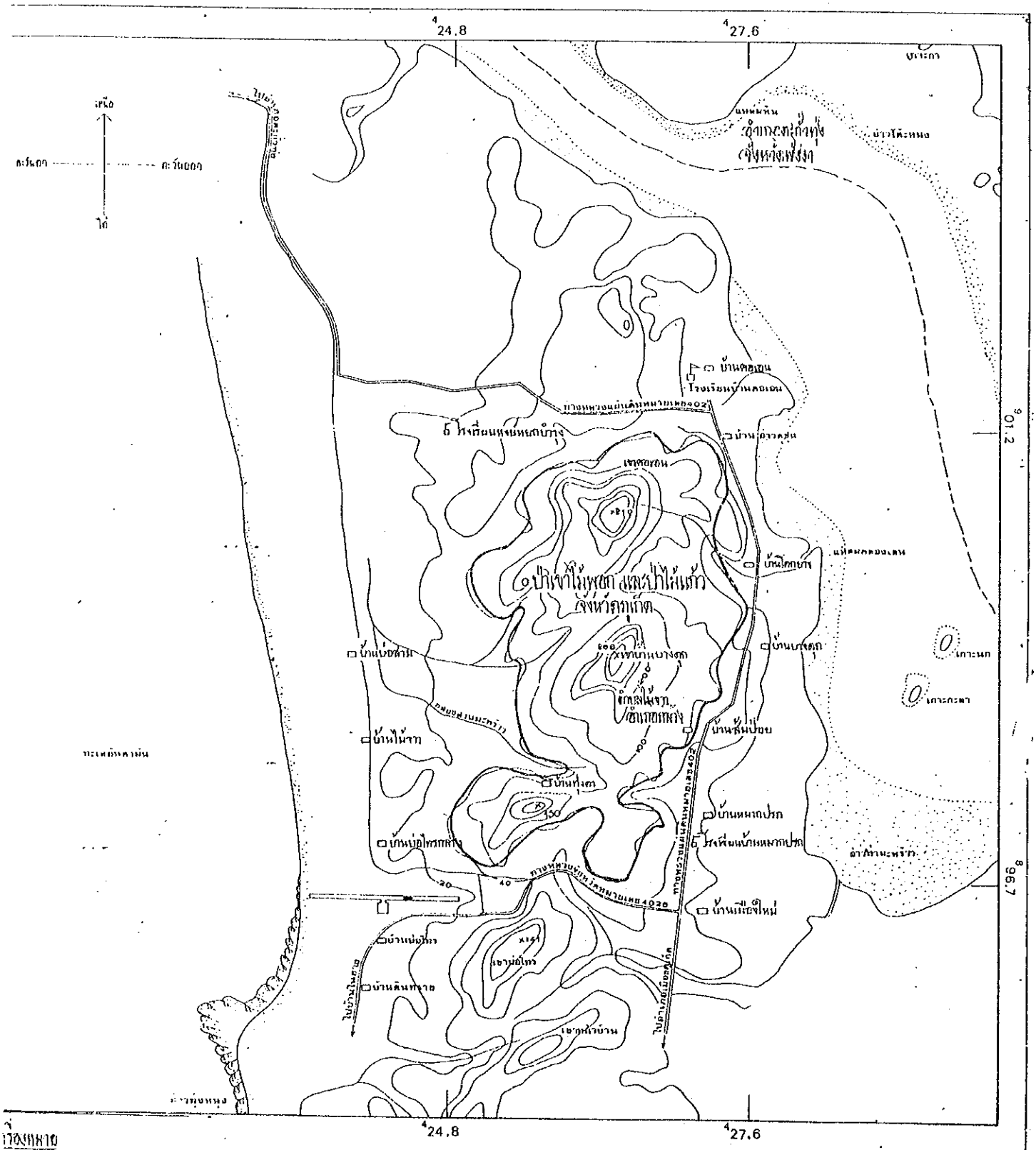
นักวิชาการป่าไม้ ๕

ศุภลักษณ์/คัด

/พาน

๒๙ มีค ๒๘

ฉบับที่ 1,0.7 (ก.ศ. 2528)
ตอกตามความในพระราชบัญญัติป่าสงวนแห่งชาติ ก.ศ.2507
เนื้อที่ประมาณ 4,444 ไร่
มาตราส่วน 1 : 50,000



A11 - 6

APPENDIX TO CHAPTER 15

This is the brief explanation on the study results of the relocation of the existing off-set localizer to the normal position.

This work was considered to be included in the work items of upgrading alternative rather than the expansion alternative since this will not contribute directly to increasing capacity of the existing facilities. However, it was considered that this work might be executed easily with low cost and will be helpful to aircraft operation.

1 PRESENT CONDITION

An ILS localizer is normally installed at the position of about 300 to 600 m from the runway threshold on the extended runway center line. In Phuket Airport, however, there is no a land to install a localizer since the shore is only 150 m away from the existing Runway 09 threshold. Therefore, the existing localizer is an off-set localizer which is installed at a point 245 m inside from Runway 09 threshold and 120 m away from the runway center line.

At the other end of the runway, the embankment of runway strip extends about 350 m to the east from Runway 27 threshold. This embankment can be utilized for runway threshold displacement, therefore additional embankment will not be required.

2 METHOD OF DEVELOPMENT

(1) Localizer

In the above-mentioned conditions, following development work for the localizer is devised: (See Figure 1)

- The runway 09 threshold will be displaced 200 m to the east.
- At the 27 threshold, the runway will be extended 200 m to the east.
- The localizer will be located on the normal point on the extended runway center line at runway 09 as shown in Figure 1.

(2) Middle Marker

Existing middle marker is situated at a distance of 803 m east from the existing Runway 27 threshold, which is shorter than the standard distance. If the runway is shifted 200 m to the east, that distance will further decrease. While, it is very difficult to relocate the middle marker more than 100 m to the east since many fishing ponds and large mangrove forest are extended.

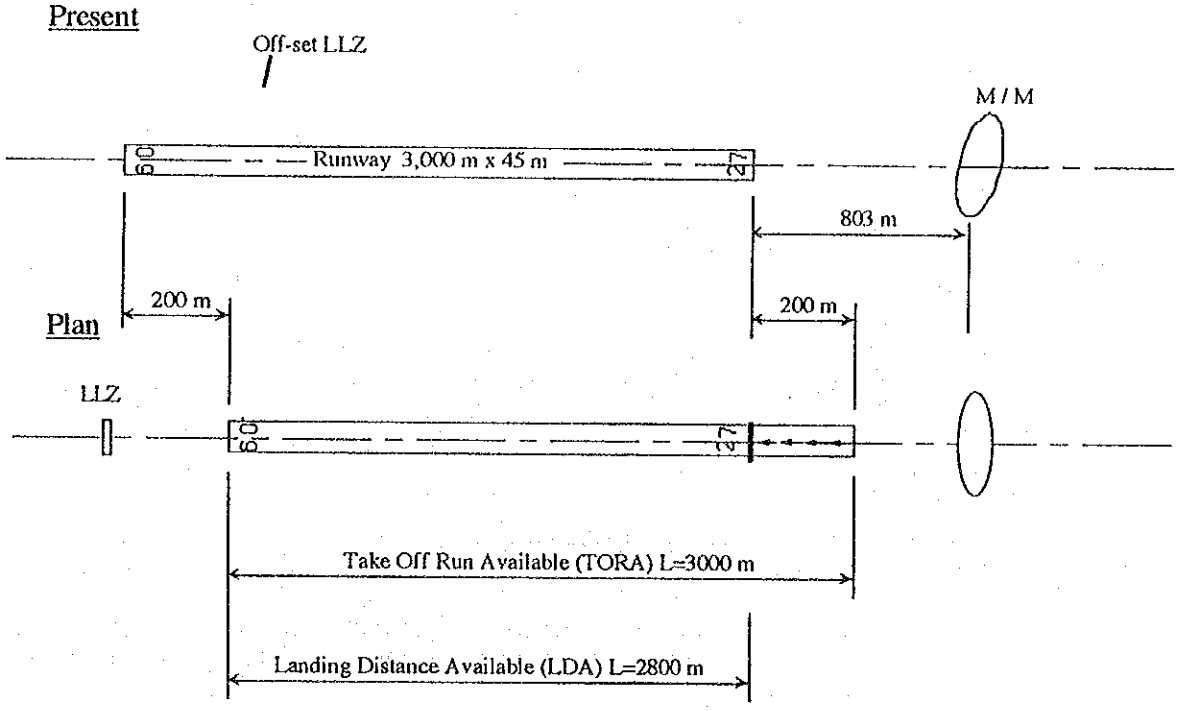


Figure 1 Shifting of Runway and Relocation of Localizer

(3) Runway Usage

In order to maintain the present distance between the middle marker and Runway 27 threshold, the runway threshold for the landing from east (RWY 27 approach) will not be moved from the existing location although the runway pavement will be extended 200 m to the east as shown in Figure.1

As a result, the landing distance available (LDA) for Runway 27 will decrease to 2,800 m. That is still sufficient for the minimum landing distance even for the maximum required runway length of 2,420 m for B747 aircrafts. LDA for Runway 09 and Take Off Run Available (TORA) for both directions are 3,000 m same as the present length.

3 MERIT AND DEMERIT OF THE WORK

Merits of this work are summarized as follows:

(1) In case of off-set localizer, pilots have to adjust the aircraft heading to the runway center line from the localizer course line at the point of 0.4 NM before the runway threshold. That work will become unnecessary by relocation of the localizer to the runway extended center line. That will be effective for reduction of the work load of pilots when landing. That will contribute to the safe operation of the aircraft.

On the other hand, there will be following demerits:

(1) Present weather minima will not be improved by only this work since the runway is still a non-precision approach runway as far as the width of the runway strip is remaining to be 150 m which is below the 300 m of ICAO requirement. Runway usability will not be improved.

(2) The intruding height of the hill upon the taking-off climb and approach surfaces of Runway 27 will increase since the end of runway strip will become slightly close to the hill. This may slightly influence the aircraft taking off especially large aircraft using full length of the runway. This is not desirable as airport development although aircraft operation will be still possible.

(3) Runway length for approach from the east will become shorter than the existing. Although reduced runway length is still longer than the required length for maximum aircraft, it will results in decrease of the safety margin.

4 CONCLUSION

As a whole, relocation of the localizer will not present many merits by itself, and minor demerits will be involved. In order to meet with international standards, relocation of the off-set localizer will be executed at the same time as the relocation of the middle marker and removal of the obstruction intruding upon the approach surface. Otherwise operation condition will be almost the same as at present.

As a result, relocation of the off-set localizer will be eliminated from the work items for short-term development.

1 RUNWAY OVERLAY

1.1 Design Criteria

(1) Design CBR : 10 %

(2) Gross Aircraft Mass : 362,900 kg (B747-400)

(3) Equivalent Annual Departures :

3,900 times/year
(Pavement life:7 years)

Conversion Factor : 0.6 (Dual to Dual Tandem)

Wheel Load of the Design Aircraft :
16,160 kg (B747-400)

Equivalent annual departure is calculated as follows

Aircraft Type		B747 -400	B777	A300 -600	B737 -300	ATR42 -300	Total
Weekly Movement (2000)	Int'l	44	42	80	58	-	224
	Dom	-	132	10	14	34	190
Weekly Movement (2005)	Int'l	98	24	94	78	-	294
	Dom	-	180	12	22	46	260
Forecasted Annual Departure		1,460	5,440	2,640	2,190	1,110	12,840
Landing Gear Type		Double dual tandem	Dual triple	Dual tandem	Dual	Dual	
Dual Tandem Gear Departures		1,460	5,440	2,640	1,310	670	11,520
Maximum Takeoff Weight (kg)		362,900	234,000	170,500	61,275	16,700	
Wheel Load (kg)		16,160	16,160	16,160	14,550	3,970	
Wheel Load of Design Aircraft (kg)		16,160	16,160	16,160	16,160	16,160	
Equivalent Annual departures by Design Aircraft		1,460	5,440	2,640	910	30	10,480

In this calculation, pavement life is assumed to be 20 years. In case of Phuket Airport, however, the runway will be operated for only seven years.

Therefore, annual departures in case of the pavement life of seven years is as follows:

11,000 x 7 / 20 = 3,900

1.2 Required Thickness

Required thickness of flexible pavements on the above criteria is calculated as explained below:

(1) Total Pavement Thickness

The total required thickness of the runway is 79 cm as shown in **Figure 1** relating to the required pavement thickness, weight of design aircraft, frequency of annual departure and design CBR.

(2) Thickness of Bituminous Surface

As indicated in the note of Figure 1, the thickness of bituminous surface for critical area is 13 cm.

(3) Thickness of Subbase Course

The combined thickness of bituminous surface and base course needed over a 20 CBR subbase course is determined at 46 cm in the same manner as the total pavement thickness by using Figure 1. Thus thickness of the subbase course is determined by the following calculation.

79 cm - 46 cm = 33 cm

(4) Thickness of Base Course

The thickness of base course is computed by subtracting the thickness of bituminous surface from the combined thickness of surface and base course determined in (3) above; in this case 46 - 13 = 33 cm of base course.

The thickness of base course calculated above should be compared with the minimum base course thickness required as shown in **Figure 2.** Using this figure, the minimum base course thickness requirements is 40 cm. The extra thickness of base course as opposed to the earlier calculation is taken out of the subbase thickness not added to the total pavement thickness; in this case 33 - 7 = 26 cm.

(5) Summary

Based on the calculation in the above paragraphs, the final design thickness in this case would be as follows:

	Thickness requirements (cm)
Bituminous surface :	13

Base course :	40
Subbase course :	26
Total :	79

1.3 Overlay Thickness

Required overlay thickness is calculated as follows:

(1) Equivalent factors for base course

The equivalency factors of bituminous surface course range from 1.2 to 1.6 based on the Aerodrome Design Manual, Part 3, Pavement, ICAO. In this case, it was determined to be 1.4 for bituminous surface course and 1.0 for crushed aggregate base course.

(2) Calculation of Required Overlay Thickness

The required overlay thickness is computed based on the above conditions.

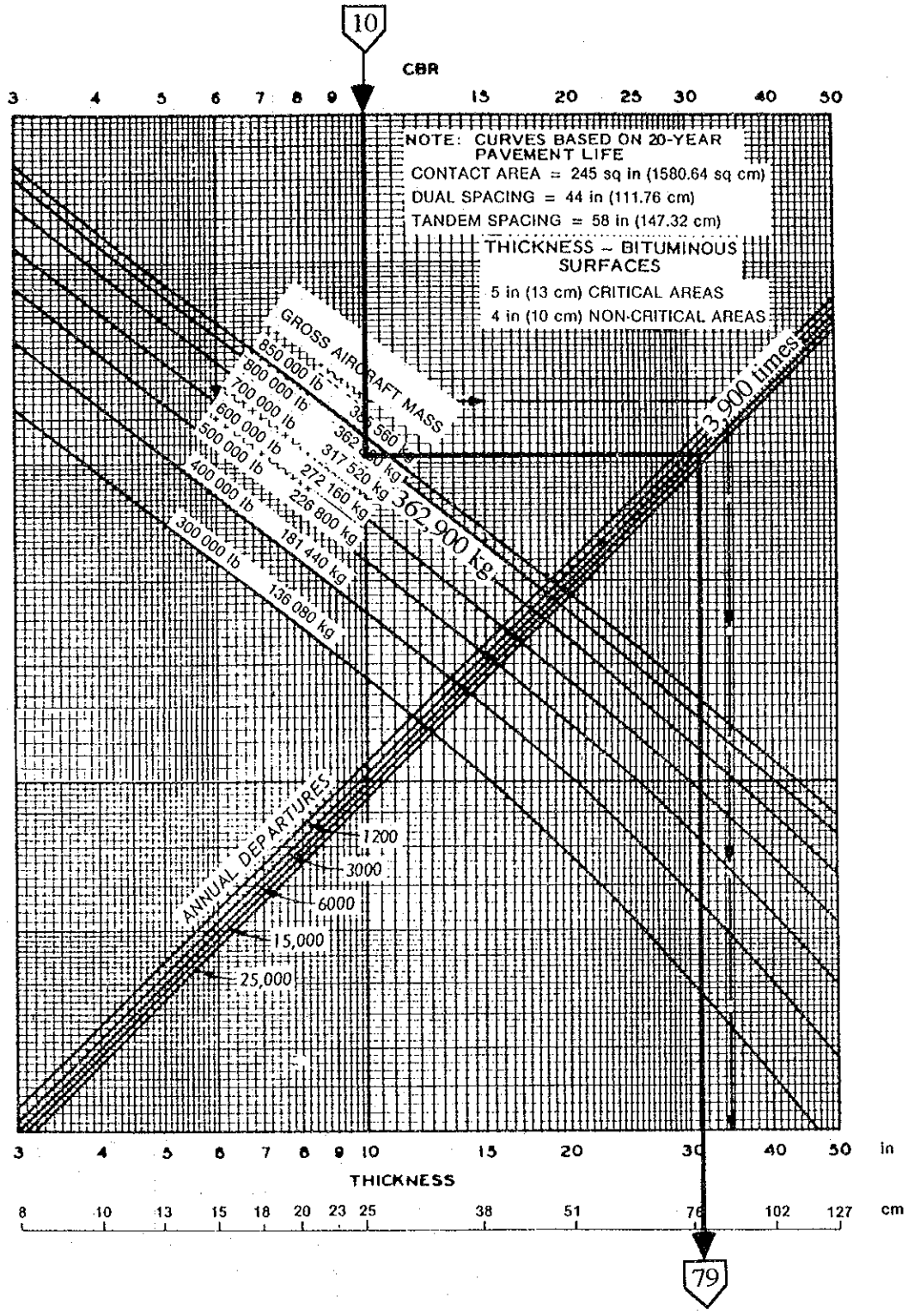


Figure 1 Flexible Pavement Design Curves for Critical Areas, B747-100, SR, 200B, C, F

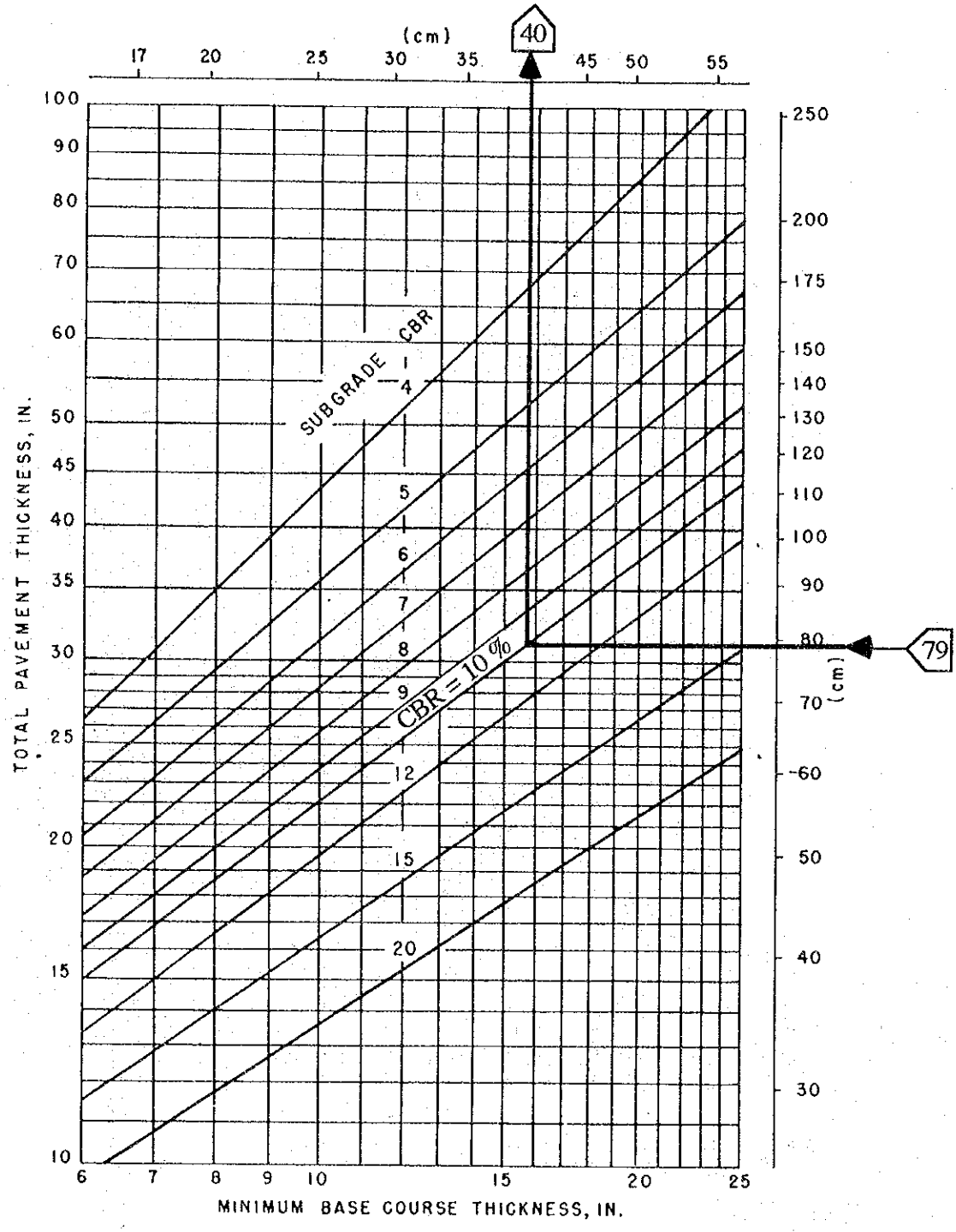


Figure 2 Minimum Base Course Thickness Requirements

Calculation of Required Capacity of Passenger Terminal Building

The capacities of the major components of the passenger terminal building are calculated by using the criteria of IATA (International Air Transportation Association) and the data obtained from the passenger processing at the time of survey. For the number of check-in counter, other criteria was used for this study because of the great difference between IATA criteria and the traffic survey. The requirements are calculated for the following two cases:

International case : Number of peak hour passengers : 900
Domestic case : Number of peak hour passengers : 1,100

1. International Case

1.1 Departure Curb

L = 0.095 ap meters

Where, L = Curb length required (m)
a = No. of peak hour passengers : 900 pax
p = Proportion of passenger using car/taxi : 0.7

L = 0.095 x 900 x 0.7 = 59.9 = 60
L = 60 m Planned curb length = 60 m (Additional plus 20 m)

1.2 Check-in Counter

N = at/60 counter
N = (a/2 x t_1/60) + (a/2 x t_2/60) counter

Where, N = Check-in counters required (counter)
a = No. of peak hour passenger : 900 pax
t_1 = Average processing time per passenger: 2.0 minutes
t_2 = Average processing time per group passenger: 1.0 minute

N = (900/2 x 2/60) + (900/2 x 1/60) = 15 + 7.5 = 22.5 = 23
Planned counter : 18 (Check-in counters are used in common between domestic and international use)

1.3 Queuing Area Check-in

A = 0.25 a sq.m

Where, A = Area required (sq.m)
a = No. of peak hour passengers : 900 pax

Note: 1. Space required per passenger : 1.5 sq.m assumed

A = 0.25 x 900 = 225
A = 225 sq.m Planned queuing area = 740 sq.m

1.4 Security Check before Departure CIQ

N = a/300 Unit

Where, N = X-ray unit required (unit)
a = No. of peak hour passengers : 900 pax

Note : 1. Capacity of X-ray unit : 600 pcs./hour assumed
2. No. of baggage items per pax : 2 pcs. assumed

N = 900/300 = 3
N = 3 unit Planned unit = 3 unit

1.5 Passport Control - Departure

N = at/60 positions

Where, N = Control position required (positions)
a = No. of peak hour passengers : 900 pax
t = Average processing time per passenger : 1 minute

N = 900 x 1/60 = 15
N = 15 position Planned control position = 15 position

1.6 Customs Inspection - Departure

N = at/60 position

Where, N = No. of customs positions required
a = No. of peak hour passengers : 900 pax
t = Average processing time per passenger: 0.75 minutes (45 seconds)

N = 900 x 0.75/60 = 11.25 = 11
N = 11 position Planned Customs = 12 position

1.7 Passport Control - Arrival

N = dt/60 positions

Where, N = Control positions required
d = No. of peak hour passengers : 900 pax
t = Average processing time per passenger : 1 minute (45 seconds)

N = 900 x 1.0/60 = 15
N = 15 positions Planned control position = 16 positions

1.8 Queuing Area - Passport Control - Arrival

The result is the same as No. 1.3

A = 225 sq.m Planned queuing area = 720 sq.m

1.9 Gate Lounge

N = (a/2 x 1.5) + (a/2 x 0.75)

Where, N = Area required (sq.m)
a = No. of peak hour passengers : 900 pax

N = {(900/2 x 1.5) + (900/2 x 0.75)} = 675 + 337.5 = 1012.5 = 1013

A = 1,013 sq.m Planned gate lounge = 1,270 sq.m (includingTransit Lounge)

1.10 Baggage Claim Area (Excluding claim devices)

A = ews/60 sq.m

Where, A = Area required (sq.m)
e = No. of peak hour passengers : 900 pax
w = Average occupancy time per passenger: 30 minutes assumed
s = Space required per passenger : 1.8 sq.m assumed

A = 900 x 30 x 1.8/60 = 810
A = 810 sq.m Planned baggage claim area = 2,150 sq.m

1.11 Number of Baggage Claim Devices

Narrow-body aircraft (Required claim length : 30-40 m)
N = er/300

where, N = Claim devices required
e = No. of peak hour passengers : 900 pax
r = Proportion of passengers arriving by narrow-body aircraft : 1.0

Note : 1. Average claim device occupancy time per narrow-body aircraft : 20 minutes assumed

N = 900 x 1/300 = 3.0
N = 3 device Planned baggage devices = 3 {circumference of carousal
2 : 41m
1 : 26m

1.12 Customs Inspection - Arrival

N = eft/60 position

Where, N = No. of customs positions required
e = No. of peak hour passengers : 900 pax
f = Proportion of passengers to be customs inspected: 0.80
t = Average processing time per passenger : 1.5 minutes

N = 900 x 0.8 x 1.5/60 = 18
N = 18 position Planned customs = 18 positions

1.13 Queuing Area - Arrival Customs

$A = 0.25\ ef$ (sq.m)

Where, A = Area required (sq.m)
e = No. of peak hour passengers : 900 pax
f = Proportion of passengers to be inspected : 0.80

Note : 1. Space required per passengers : 1.5 sq.m assumed

$A = 0.25 \times 900 \times 0.8 = 180$
A = 180 sq.m Planned queuing area = 350 sq.m

1.14 Arrivals Concourse

$A = 0.25\ (d + 2\ d0)$ sq.m

Where, A = Area required (sq.m)
d = No. of peak hour passengers : 900 pax
0 = No. of visitors per passenger : 0.6 assumed

Note : 1. Average occupancy time per passenger : 15 minutes assumed
2. Average occupancy time per visitor : 30 minutes assumed

$A = 0.25 \times (900 + 2 \times 900 \times 0.6) = 495$
A = 495 sq.m Planned arrival concourse = 975 sq.m

1.15 Arrivals Curb

The result is the same as No. 1.1
L = 60 m Planned curb length = 60

2. Domestic Case

2.1 Departure Curb

$L = 0.095\ ap$ meters

Where, L = Curb length required (m)
a = No. of peak hour passengers : 676 pax
p = Proportion of passenger using car/taxi : 0.7

$L = 0.095 \times 1{,}100 \times 0.7 = 73.15 = 73$
L = 73 m Existing curb length = 70 m (common use with international partially)

2.2 Check-in Counter

$N = (a/2 \times t_1/60 + a/2 \times t_2/60)$ counters

Where, N = Check-in counters required (counters)
a = No. of peak hour passengers : 1,100
t_1 = Average processing time per passenger: 0.75 minutes
t_2 = Average processing time per group passenger: 0.38 minutes

N = (550 x 0.75/60) + (550 x 0.38/60) = 6.88 + 3.44 = 10.3 = 10
N = 10 counters Planned counter = 8 (check-in counters are used in common between international and domestic use)

2.3 Queuing Area - Check-in

A = 0.25 a sq.m

Where, A = Area required (sq.m)
a = No. of peak hour passengers : 1,100 pax

Note : 1. Space required per passenger : 1.5 sq.m assumed

A = 0.25 x = 275
A = 275 sq.m Planned queuing area = 340 sq.m

2.4 Security Check-in before Gate Lounge

N = a/300 unit

Where, N = X-ray unit required (unit)
a = No. of peak hour passengers : 1,100 pax.

Note : 1. Capacity of X-ray unit : 600 pcs/hour assumed
2. No. of baggage items per passenger : 2 pcs assumed

N = 1,100/300 = 3.7 = 4
N = 4 unit Planned unit = 3 unit

2.5 Gate Lounge

N = (a/2 x 1.5) + (a/2 x 0.75)

Where, N = Area required (sq.m)
a = No. of peak hour passengers : 1,100 pax

N = (1,100/2 x 1.5) + (1,100/2 x 0.75) = 1237.5 = 1,238

A = 1,238 sq.m Planned gate lounge = 1,300 sq.m (including Transit Lounge)

2.6 Baggage Claim Area (Excluding claim devices)

A = ews/60 sq.m

Where, A = Area required (sq.m)
e = No. of peak hour passengers : 1,100 pax
w = Average occupancy time per passenger : 30 minutes assumed
s = Space required per passenger : 1.8 sq.m assumed

A = 1100 x 30 x 1.8/60 = 990
A = 990 sq.m Planned baggage claim area = 1,860 sq.m

2.7 Number of Baggage Claim Devices

Narrow-body aircraft (Required claim length : 30-40 m)
N = er/300

where, N = Claim devices required
e = No. of peak hour passengers : 1,100 pax
r = Proportion of passengers arriving by narrow-body aircraft : 1.0

Note : 1. Average claim device occupancy time per narrow-body aircraft : 20 minutes assumed

N = 1,100 x 1.0/300 = 3.7 = 4
N = 4 devices Planned baggage devices = 3 {circumference of carousal
2: 41m
1: 26m

2.8 Arrivals

A = 0.25 (d + 2 do) sq.m

Where, A = Area required (sq.m)
d = No. of peak hour passengers : 1,100 pax
o = No. of visitors per passenger : 0.6 assumed

Note : 1. Average occupancy time per passenger : 15 minutes assumed
2. Average occupancy time per visitor : 30 minutes assumed
3. Space required per person : 1.5 sq.m assumed

A = 0.25 x (1,100 + 2 x 1,100 x 0.6) = 605
A = 605 sq.m Planned arrival concourse area = 815 sq.m

2.9 Arrivals Curb

The result is the same as 2.1
L = 73 m Planned curb length = 70 m

Comparison of Layout Plan for Passenger Terminal Building

1 Conditions for Layout Planning

In studying the expansion plan, there are some limitations on planning in order to keep the existing building operable during the renovation works.

Some existing rooms or facilities are almost impossible or difficult to be shifted.

(a) Following rooms of facilities are almost impossible or very difficult to be shifted.

Air Handling Unit Room
Electric Transformer
Electric Power and Distribution Room
Generator Room
Telephone Exchange and Paging Room
Departure/Arrival Conveyor and Carrousel
Toilet and Kitchen

(b) Following facilities are difficult to be shifted as follows:

Stairs
Lift
Escalators

2 Alternatives for Expansion

Based on the principles and conditions mentioned above, two alternative expansion plans were established as shown in **Figures 1 and 2**. In both alternatives, international area will be expanded to the north and small area to the south for domestic use.

a) Alternative-A

In Alternative-A, 5-span and 2-story portion of the building will be expanded to the north while existing area will be utilized as it is as much as possible.

The expanded areas mainly consists of the area or facilities which were insufficient in the existing building for increase of passenger demand just like the second international terminal building block.

On arrival floor, passport control gates are relocated so as to lead passengers easily to both baggage claim devices. The number of control gates increase.

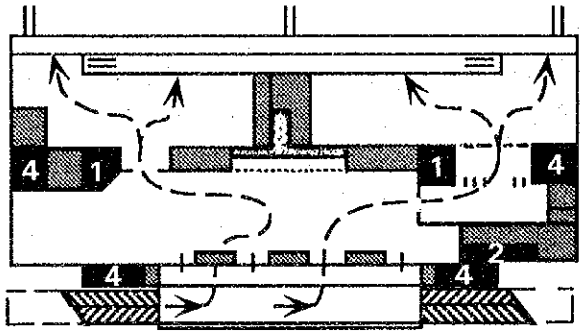
For the border between passport control queing area and baggage claim area, it is recommended to use see-through screen to show the information of each carrousel to passengers.

Floor plans for Alternative-A are shown in Figures 1 and 2.

Figure 1 Alternatives for Expansion of Terminal Building (1)

Second Floor (Departure)

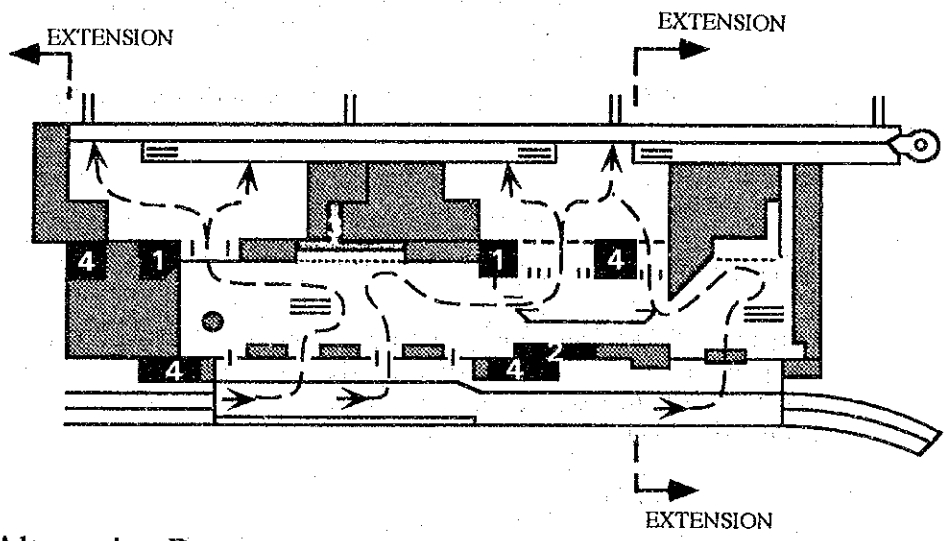
Existing



Areas, very difficult to be shifted.

1. Air Handling Unit Room
2. Telephone Exchange and Paging Room
3. Departure Conveyor
4. Toilet

Alternative-A



Alternative-B

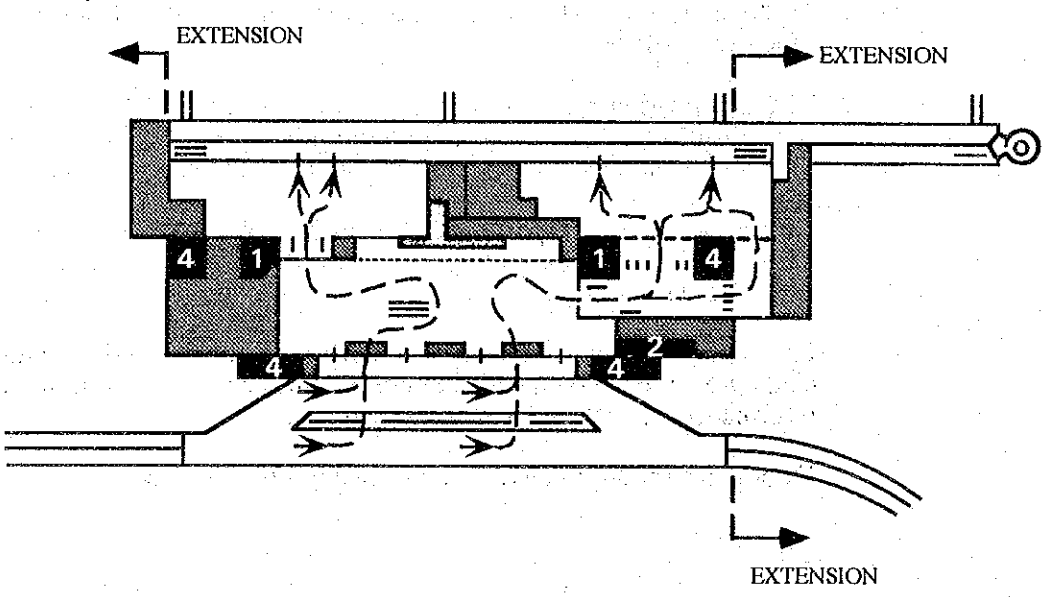
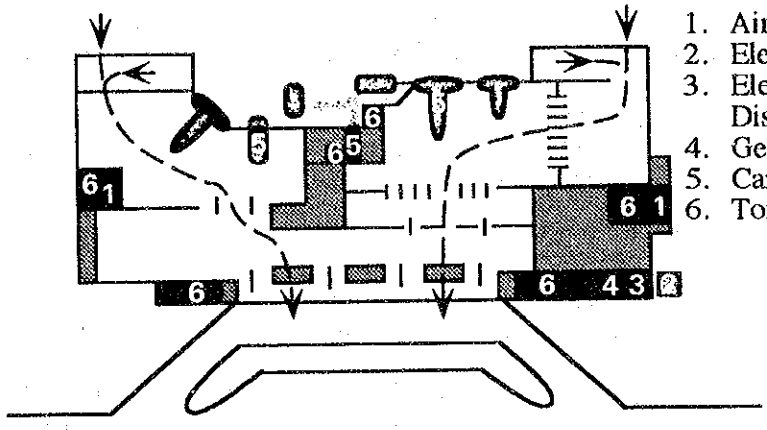


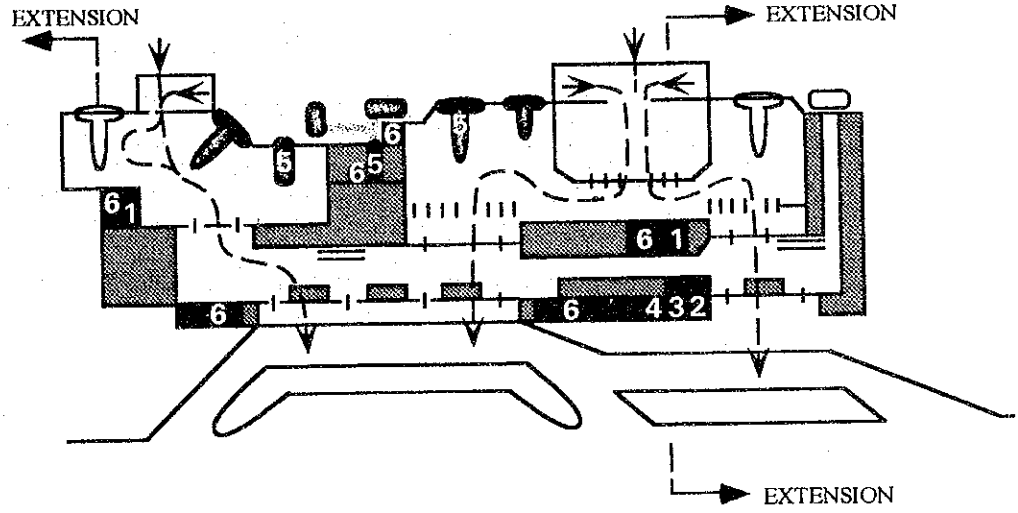
Figure 2 Alternatives for Expansion of Terminal Building (2)

Ground Floor (Arrival)

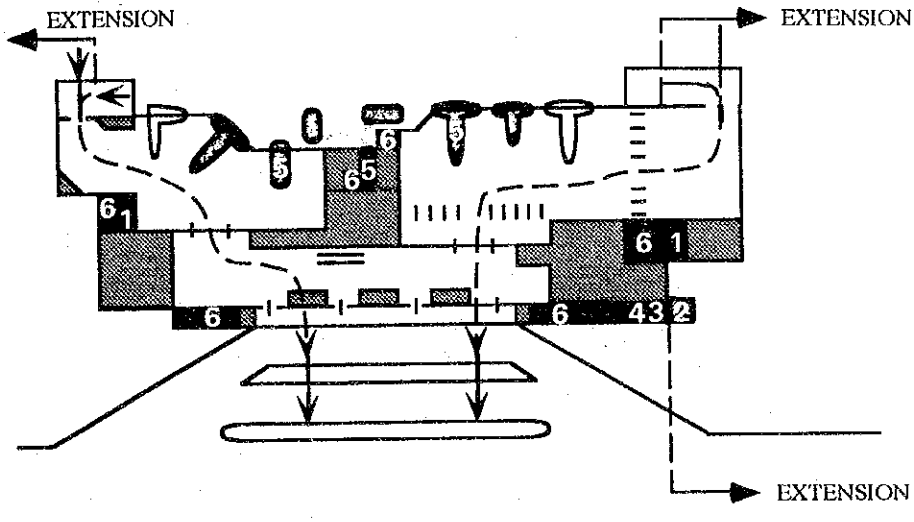
Existing



Alternative-A



Alternative-B



b) Alternative-B

Alternative-B, 2-span and 2-story portion of the building will be expanded to the north so as to keep away existing electric transformers outside.

In this alternative, many existing areas and facilities are shifted and expanded so as to achieve continuous unification except the spaces which are impossible to be shifted.

The floor plans for this Alternative are shown in **Figures 1 and 2**. The third floor plan is the same as Alternative-A.

c) Expansion of Domestic Area

The total floor area of the existing area is 11,494 sq.m. It has much more handling capacity than the demand of the year 2000.

Expansion seems not necessary in total, but on each facility some units or devices are insufficient as shown in Appendix 15.3.1 (A).

3 Comparison of Alternatives

The comparison of Alternatives A and B are shown in **Table 1**.

There are more advantages in Alternative-A except the area of expansion. Although the expansion area of Alternative-A is nearly two times of Alternative-B, internal works for conversion of layout in the existing building are required under utilization of building while operating. Therefore, it is considered that construction cost of Alternative-A will be less than two times of Alternative-B.

As the result of the comparison study, Alternative-A is selected for suitable layout concept.

Table 1 Comparison of Alternatives

	Item	Alternative-A	Alternative-B
1	Utilization of existing facilities	A (Much)	B (Less than Alt-A)
2	Unification of existing and expanded portions in the external appearance	B (Large expansion)	A (Small expansion)
3	Conversion of usage of existing facilities	A (Small)	C (Large)
4	Effect on operation during construction	A (Small)	C (Large)
5	Area of expansion	B (Fair)	A (Small)
		Int'l 6,380 sq.m Dom 600 sq.m	Int'l 3,120 sq.m Dom 600 sq.m
		Total 6,980 sq.m	Total 3,720 sq.m
6	Construction period	A (Short)	C (Long)
7	Construction of elevated road	A (Extension to one direction)	C (Shifting of whole portion)

Note: A : Good
B : Fair
C : Poor

APPENDIX TO CHAPTER 19

Appendix - 19.3

Cost Estimates for the Short-term Development Project (Detailed)

COST ESTIMATES

ITEM	Local Portion Amount (x1,000 Baht)	Foreign Portion Amount (x1,000 Baht)	Total Amount (x1,000 Baht)
A. Construction Cost			
1. CIVIL WORKS			
1.1 Runway Overlay			
1) Pavement Works	28,990	43,500	72,490
– Runway Pavement Overlay			
Wearing Course	6,280	9,420	15,700
Binder Course 1	5,990	8,990	14,980
Binder Course 2	5,350	8,010	13,360
Binder Course 3	2,200	3,310	5,510
Binder Course 4	520	790	1,310
Binder Course 5	200	290	490
Binder Course 6	60	80	140
– Shoulder Pavement Overlay			
Wearing Course	2,300	3,450	5,750
Binder Course 1	2,360	3,550	5,910
Binder Course 2	880	1,320	2,200
Binder Course 3	60	100	160
– Tack Coat	1,720	2,580	4,300
– Prime Coat	1,070	1,610	2,680
2) Pavement Marking	480	1,430	1,910
– Paint	480	1,430	1,910
Sub Total	**29,470**	**44,930**	**74,400**
1.2 Expansion of Car Park			
1) Demolition	30	180	210
– Demolition of Existing Houses	30	180	210
2) Earthwork	530	2,820	3,350
– Clearing & Grubbing	80	310	390
– Top Soil Stripping	120	670	790
– Embankment	330	1,840	2,170
3) Pavement Works	11,860	17,800	29,660
– Car Park Pavement	11,840	17,750	29,590
– Marking	20	50	70
4) Drainage	150	250	400
– PU	80	180	260
– ø0.8	60	60	120
– Trapezoidal	10	10	20
5) Landscaping	2,010	740	2,750
– Sodding	280	120	400
– Tree Planting	260	0	260
– Spreading & Grating Topsoil	1,470	620	2,090
6) Lighting & Signboards	50	290	340
– Road Lighting	20	100	120
– Underground Cable	20	100	120
– Signboard	10	90	100
7) Elevated Curb Road	6,000	9,000	15,000
– RC Bridge	6,000	9,000	15,000
– Post	0	0	0
Sub Total	**20,630**	**31,080**	**51,710**

COST ESTIMATES

ITEM	Local Portion Amount (x1,000 Baht)	Foreign Portion Amount (x1,000 Baht)	Total Amount (x1,000 Baht)
1.3 Miscellaneous Works			
1) Fence and Gate	420	1,270	1,690
– Fence	400	1,200	1,600
– Gate	20	70	90
Sub Total	**420**	**1,270**	**1,690**
Total of 1.	50,520	77,280	127,800
2. ARCHITECTURAL WORKS			
2.1 Passenger Terminal Building	70,000	105,000	175,000
– Expansion of Building	70,000	105,000	175,000
2.2 Passenger Boarding Bridge	8,000	12,000	20,000
2.3 Other Special Equipment	3,100	27,900	31,000
Total of 2.	81,100	144,900	226,000
3. AIRPORT UTILITIES			
3.1 Power Supply System	5,640	13,160	18,800
3.2 Water Supply System	6,370	11,830	18,200
3.3 Incinerator	11,200	2,800	14,000
3.4 Telephone	1,260	5,040	6,300
Total of 3.	24,470	32,830	57,300
Total of Construction Cost	**156,090**	**255,010**	**411,100**
B. Physical Contingncy (10 % of construction cost)	15,609	25,501	41,110
C. Engineering Services (10 % of A. + B.)	4,522	40,699	45,221
Total of Project Cost	**176,221**	**321,210**	**497,431**

Exchange Rate : 1 Baht = 4.4 JP¥
1 US$ = 110 JP¥

APPENDIX TO CHAPTER 20

As per IATA guidelines for airport capacity and demand management, six (6) standard categories are summarized as follows.

LEVEL OF SERVICE FRAMEWORK

A Excellent level of service; condition of free flow, no delays, excellent level of comfort

B High level of service; condition of stable flow, very few delays, high level of comfort

C Good level of service; Condition of stable flow, acceptable delays, good level of comfort

D Adequate level of service; condition of unstable flow, acceptable delays for short periods of time, adequate level of comfort

E Inadequate level of service; condition of unstable flow, unacceptable delays, inadequate level of comfort

F Unacceptable level of service; condition of cross-flows, system breakdown and unacceptable delays, unacceptable level of comfort

Level of service "C" is recommended as the minimum design objectives, and level of service "D" is tolerable for rush periods.

IATA SPACE STANDARD (sq. m)

Level of Service	Wait Circulate	Check-in Bag Claim	Holdroom Inspection
A	2.7	1.6	1.4
B	2.3	1.4	1.2
C	1.9	1.2	1.0
D	1.5	1.0	0.8
E	1.0	0.8	0.6

The facilities and those service levels are shown in the following table. In 2005 the service levels for passport control, departure lounge and custom inspect at the passenger terminal building are estimated to indicate the "Level D" of IATA standard which is adequate level of services. Other services except the aboves remain within "Level C", good service level.

Facility	Area (sq.m)	1991	1995	2000	2005	2010	Capacity (pax)	
							Level C	Level D
PHP (one way)	1	200	360	540	660	900		
Dep. concourse	1350	.....	.....	.....	.....	.....	710	900
Check-in counter	800	.....	.....	.....	.....	.....	670	800
Passport Control (Dep)	550	.....	.....	.....	.....	.....	550	690
Dep. lounge	1200	.....	.....	.....	.....	.....	630	800
Passport control (Arr)	550	.....	.....	.....	.....	.....	550	690
Bag. claim area	1000	.....	.....	.....	.....	.....	830	1000
Custom Inspect	600	.....	.....	.....	.....	.....	600	750

..... ; Level C

===== ; Level D

Appendix - 20.2.2

Profit and Loss Statements (Pro-Forma)
1 October 1992 - 30 September 1993

Unit: million Baht

	Bangkok		Chiang Mai		Hat Yai		Phuket		Total	
A. OPERATING REVENUES										
Landing and parking charges	1,135.091	27%	29.825	41%	13.034	24%	70.104	33%	1,248.054	28%
Passenger survice charges	1,037.196	25%	23.879	33%	22.710	42%	90.047	42%	1,173.832	26%
Aviation bridge charges	102.879	2%	0.000	0%	3.551	7%	9.720	5%	116.150	3%
Rent for offices and real properties	333.196	8%	3.787	5%	4.014	8%	4.785	2%	345.782	8%
Survice revenues	381.993	9%	4.535	6%	2.099	4%	7.686	4%	396.313	9%
Concession revenues	1,185.168	28%	10.635	15%	8.076	15%	30.806	14%	1,234.685	27%
Total operating revenues	4,175.523	100%	72.661	100%	53.484	100%	213.148	100%	4,514.816	100%
B. OPERATING EXPENSES										
Personnel expenses	629.659		19.656		17.289		19.180		685.784	
Operating expenses	492.560		20.121		16.653		25.227		554.561	
Repair and maintenance	161.070		14.841		5.173		14.850		195.934	
Government land rental expenses	84.590		1.453		1.070		4.263		91.376	
Depreciation	559.399		15.817		19.046		25.917		620.179	
Total operating expenses	1,927.278		71.888		59.231		89.437		2,147.834	
C. TOTAL OPERATING INCOME	2,248.245		0.773		-5.747		123.711		2,366.982	
Operating Income Ratio (C/A)	54%		1%		-11%		58%		52%	
D. OTHER INCOME										
Interest income	290.000		0.500		0.200		1.000		291.700	
Other inome	16.525		0.000		0.000		0.000		16.525	
Total other income	306.525		0.500		0.200		1.000		308.225	
E. OTHER EXPENSES										
Interest expenses	170.504		0.000		0.000		0.000		170.504	
Loss on disposal of property	107.412		0.000		0.000		0.000		107.412	
Loss on foreign excharge	0.000		0.000		0.000		0.000		0.000	
Other expenses	0.000		0.000		0.000		0.000		0.000	
Total other expenses	277.916		0.000		0.000		0.000		277.916	
F. NET INCOME FOR THE YEAR	2,276.854		1.273		-5.547		124.711		2,397.291	
Net Income Ratio (F/A)	55%		2%		-10%		59%		53%	

NUMBER OF PASSENGERS IN 1992 EXCLUDING TRANSIT (thousand persons)					
	14,573	1,256	514	1,884	18,227
Operating Revenues per Passenger (Baht	287	58	104	113	248
Operating Expenses per Passenger (Baht	132	57	115	47	118
(Personnel Expenses)	(43)	(16)	(34)	(10)	(38)
Operating Income per Passenger (Baht)	154	1	-11	66	130

Appendix - 20.3.1

Maximum Take-off Weight and Landing Fee

Aircraft Type	Weekly Movement 1992	Max. T/O Weight (kg)	Landing Fee (Baht)	Remarks
International				
B-747 Class		362,900	**36,605**	B-747-400
B777/A-330 class		234,000	**23,070**	B-777
B-767-300	5	152,000		
B-767-200	4	136,100		
A-300-600	8	170,500		
A-300-others	37	157,500		B4-100
A-310	1	138,600		-200
B-757	2	108,900		-200
B-767/A-300 class total	57	155,304	**14,807**	Weightened average
B-737-400	24	62,800		
B-737-others	11	61,275		
B737 class total	35	62,321	**5,420**	Weightened average
International total	92			
Domestic				
B777/A-330 class		234,000	**11,535**	B-777
A-300-others	32	157,500		B4-100
A-310	14	138,600		-200
B-767/A-300 class total	46	151,748	**7,217**	Weightened average
B-737-400	14	62,800		
B-737-others	4	61,275		-300
B737 class total	18	62,461	**2,717**	Weightened average
ATR-42	16	16,700		-300
DHC-8	14	15,650		3100
ATR-42 class total	30	16,210	**689**	Weightened average
Domestic total	94			

Appendix - 20.3.2

List of Rates of Charges for the Use of Properties, Services and Other Facilities at AAT Regional Airports, 1992

Item		Rate (Baht)	Note
1.	Fees for:		
1.1	Contract preparation	5,000/contract	For three-year duration, contract amendment during the life of contract is free of charge
1.2	Change of name of business	25,000	Changing name of the company
1.3	Change of business operator	50,000	
1.4	Use of check-in counter	200/flight	For every flight
2.	Rent in the terminal building for:		
2.1	Office room	200/m^2/month	
2.2	Reception room	200/m^2/month	
2.3	Space for counter	200/m^2/month	
2.4	Space for Thai Hotels Association and Association of Thai Travel Agent	200/m^2/month	
2.5	Room or Space for Communications Authority of Thailand, Tourism Authority of Thailand and Aeronautical Radio of Thailand Ltd.	100/m^2/month	
2.6	Room or Space for selling various goods	300/m^2/month	
2.7	Room or Space for Currency and Foreign Exchange	300/m^2/month	
2.8	Space for operating restaurant	50/m^2/month	
2.9	Room or Space for operating flight kitchen service	100/m^2/month	
3.	Rent in other buildings for:		
	Store or warehouses or room or space for supplies or goods storage	100/m^2/month	
4.	Rent of space outside the building:		
4.1	In apron area	40/m^2/month	
4.2	Outside apron area	20/m^2/month	
5	Rent of land for:		
5.1	Aircraft maintenance business or construction of aircraft hangar or aircraft maintenance equipment store	4.0/m^2/month	
5.2	Other business		
	5.2.1 Warehouse	4.0/m^2/month	
	5.2.2 Car parking business	1.0/m^2/month	

6. Electricity service:		as levied by the Provincial Electricity Authority
7. Water supply service:		as levied by the Provincial Water Authority
8. Other services:		
8.1 Passenger boarding bridge		
8.1.1	B707, B727, B737 B757, DC8, DC9, IL62, A320 and Concord	1,400
8.1.2	B767, L1011, A300, A310, A330, A340, DC10, MD11 and IL86	1,700
8.1.3	B747	2,000
8.2 Picture taking with moving camera		500 - 2,000
8.3 Picture taking with still camera		300
8.4 Car parking		
	1 hour	10
	2 hours	20
	3 hours	40
	4 hours	60
	5 hours	80
	over 5 hours but not exceeding 24 hours	100
8.5 Personal permanent security pass		100 - 200/pass/year
8.6 New personal permanent security pass for government agencies for replacing the lost one or damaged one		20/pass
8.7 Permanent vehicle pass and wheeled vehicle pass		
8.7.1	Fees for permanent vehicle pass	1 pass/year equivalent to the rate of vehicle tax per year
8.7.2	Permanent vehicle pass for replacing the lost one	200/pass
8.7.3	Permanent vehicle pass for replacing the damaged one	100/pass
8.7.4	Fees for wheeled vehicles	300/vehicle/year

9 Concession revenue (for Phuket International Airport)

9.1	Goods and souvenirs	647,350/month
9.2	Snacks and drink service	354,000/month
9.3	Car rent service	120,000/month
9.4	Car parking service	143,000/month
9.5	Limousine service	15,000/month
9.6	Airport clock installation	20,000/month
9.7	Florists and fruits shop	40,684/month
9.8	Left baggage	2,420/month
9.9	Advertising board	110,800/month
9.10	Duty free goods	1,139,104/month
9.11	Banking and currency exchange services	30,800/month

Incremental Revenues of the Project

1. Passenger Service Charges

1.1 Rate of Fee (Baht per Passenger)

	Baht per passenger	
International Passengers	200	passengers leaving for foreign countries
Domestic Passengers	20	passengers leaving for local destinations

1.2 Demand (1,000 passengers)

1.2.1 With Project

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
International Passengers	654.1	784.0	929.6	1,093.3	1,206.9	1,329.3	1,460.1	1,599.6	1,748.8	1,861.4	1,978.8	2,100.8	2,227.6
Domestic Passengers	1,261.9	1,343.1	1,419.3	1,491.7	1,595.3	1,702.6	1,812.3	1,924.4	2,039.2	2,175.6	2,318.0	2,466.6	2,621.7
Total	1,916.0	2,127.1	2,348.9	2,585.0	2,802.2	3,031.9	3,272.4	3,524.0	3,788.0	4,037.0	4,296.8	4,567.4	4,849.3

1.2.2 Without Project

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
International Passengers	654.1	784.0	929.6	1,093.3	1,093.3	1,093.3	1,093.3	1,093.3	1,093.3	1,093.3	1,093.3	1,093.3	1,093.3
Domestic Passengers	1,261.9	1,343.1	1,419.3	1,491.7	1,595.3	1,702.6	1,812.3	1,924.4	2,039.2	2,175.6	2,318.0	2,466.6	2,621.7
Total	1,916.0	2,127.1	2,348.9	2,585.0	2,688.6	2,795.9	2,905.6	3,017.7	3,132.5	3,268.9	3,411.3	3,559.9	3,715.0

1.2.3 Incremental Demand with Project

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
International Passengers	-	-	-	-	-	-	366.8	506.3	655.5	768.1	885.5	1,007.5	1,134.3
Domestic Passengers	-	-	-	-	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	-	-	-	-	-	-	366.8	506.3	655.5	768.1	885.5	1,007.5	1,134.3

1.3 Incremental Revenue with Project (1,000,000 Baht): 200 Baht x "Increamental International Passengers" x 0.5

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
International Passengers							36.68	50.63	65.55	76.81	88.55	100.75	113.43
Domestic Passengers							0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total							36.68	50.63	65.55	76.81	88.55	100.75	113.43

Areas of Terminal Building

	Exsisting (capacity)	Short-term development	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	
International (M2)	12,213	18,000	12,000	12,000	12,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	
Passenger	(1,186.6)	(1,748.8)	**1,093.3**	1,206.9	1,329.3	**1,460.1**	**1,599.6**	**1,748.8**	1,861.4	1,978.8	2,100.8	2,227.6	**79%**
Domestic (M2)	11,494	-	11,494	11,494	11,494	11,494	11,494	11,494	11,494	11,494	11,494	11,494	
Passenger	(2,130.8)	-	**1,491.7**	**1,595.3**	**1,702.6**	**1,812.3**	**1,924.4**	**2,039.2**	2,175.6	2,318.0	2,466.6	2,621.7	**81%**

2. Landing and Parking Fee

2.1 Rate of Fee (Baht per Aircraft)

Aircraft type	Baht per aircraft (Int'l)	Baht per aircraft (Dom.)	
Landing Fee			
B747 class	36,605 / 1 Landing	– / 1 Landing	Maximum take-off weight: 362.9 tons
B777/A330 class	23,070 / 1 Landing	11,535 / 1 Landing	Maximum take-off weight: 234.0 tons
B767/A300 class	14,807 / 1 Landing	7,217 / 1 Landing	Maximum take-off weight: 108.9~17(tons
B737 class	5,420 / 1 Landing	2,717 / 1 Landing	Maximum take-off weight: 61.3~62.8 tons
ATR42 class	– / 1 Landing	689 / 1 Landing	Maximum take-off weight: 15.7~16.7 tons
Parking Fee			
B767/A300 class	1,121 / 1 Landing	553 / 1 Landing	Maximum take-off weight: 108.9~17(tons
ATR42 class	– / 1 Landing	162 / 1 Landing	Maximum take-off weight: 15.7~16.7 tons

2.2 Demand (movements)

2.2.1 Movements with Project

Aircraft type	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
International													
B747 class	0	350	700	1,050	1,195	1,340	1,486	1,631	1,776	2,212	2,648	3,084	3,520
B777/A330 class	0	0	0	0	339	678	1,017	1,356	1,695	1,550	1,405	1,259	1,114
B767/A300 class	2,301	2,826	3,350	3,875	3,746	3,617	3,488	3,359	3,229	3,342	3,455	3,568	3,681
B737 class	1,413	1,399	1,386	1,372	1,566	1,760	1,954	2,148	2,341	2,503	2,664	2,826	2,987
Domestic													
B777/A330 class	0	1,425	2,850	4,275	4,596	4,917	5,237	5,558	5,879	6,306	6,734	7,161	7,589
B767/A300 class	2,049	1,455	861	267	303	338	374	410	445	463	481	499	517
B737 class	802	683	564	445	481	517	552	588	623	695	766	837	909
ATR42 class	1,336	1,277	1,217	1,158	1,229	1,300	1,372	1,443	1,514	1,621	1,728	1,835	1,942
Total	7,901	9,415	10,928	12,442	13,455	14,467	15,480	16,493	17,502	18,692	19,881	21,069	22,259

Storage with Project

Aircraft type	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
International													
B767/A300 class	0	0	0	0	0	0	122	243	365	365	365	365	365
Domestic													
B767/A300 class	0	0	0	0	0	0	122	243	365	365	365	365	365
ATR42 class	365	365	365	365	365	365	487	608	730	730	730	730	730
Total	365	365	365	365	365	365	730	1,095	1,460	1,460	1,460	1,460	1,460

2.2.2 Movements without Project

Aircraft type	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
International													
B747 class	0	350	700	1,050	1,050	1,050	1,050	1,050	1,050	1,050	1,050	1,050	1,050
B777/A330 class	0	0	0	0	0	0	0	0	0	0	0	0	0
B767/A300 class	2,301	2,826	3,350	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875	3,875
B737 class	1,413	1,399	1,386	1,372	1,372	1,372	1,372	1,372	1,372	1,372	1,372	1,372	1,372
Domestic	0	0	0	0	0	0	0	0	0	0	0	0	0
B777/A330 class	0	1,425	2,850	4,275	4,596	4,917	5,237	5,558	5,879	6,306	6,734	7,161	7,589
B767/A300 class	2,049	1,455	861	267	303	338	374	410	445	463	481	499	517
B737 class	802	683	564	445	481	517	552	588	623	695	766	837	909
ATR42 class	1,336	1,277	1,217	1,158	1,229	1,300	1,372	1,443	1,514	1,621	1,728	1,835	1,942
Total	7,901	9,415	10,928	12,442	12,906	13,369	13,832	14,296	14,758	15,382	16,006	16,629	17,254

Storage without Project

Aircraft type	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
International													
B767/A300 class	0	0	0	0	0	0	0	0	0	0	0	0	0
Domestic													
B767/A300 class	0	0	0	0	0	0	122	243	365	365	365	365	365
ATR42 class	365	365	365	365	365	365	487	608	730	730	730	730	730
Total	365	365	365	365	365	365	608	852	1,095	1,095	1,095	1,095	1,095

2.2.3 Incremental Movements with Project

Aircraft type	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
International													
B747 class	-	-	-	-	-	-	436	581	726	1,162	1,598	2,034	2,470
B777/A330 class	-	-	-	-	-	-	1,017	1,356	1,695	1,550	1,405	1,259	1,114
B767/A300 class	-	-	-	-	-	-	-387	-516	-646	-533	-420	-307	-194
B737 class	-	-	-	-	-	-	582	776	969	1,131	1,292	1,454	1,615
Domestic							0	0	0	0	0	0	0
B777/A330 class	-	-	-	-	-	-	0	0	0	0	0	0	0
B767/A300 class	-	-	-	-	-	-	0	0	0	0	0	0	0
B737 class	-	-	-	-	-	-	0	0	0	0	0	0	0
ATR42 class	-	-	-	-	-	-	0	0	0	0	0	0	0
Total	-	-	-	-	-	-	1,648	2,197	2,744	3,310	3,875	4,440	5,005

Incremental Storage with Project

Aircraft type	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
International													
B767/A300 class	-	-	-	-	-	-	122	243	365	365	365	365	365
Domestic													
B767/A300 class	-	-	-	-	-	-	0	0	0	0	0	0	0
ATR42 class	-	-	-	-	-	-	0	0	0	0	0	0	0
Total	-	-	-	-	-	-	122	243	365	365	365	365	365

2.3 Incremental Revenue with Project (1,000,000 Baht): "Landing & Storage Fee" x "Increamental Aircraft Movements" x 0.5

Aircraft type	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Landing Fee													
International													
B747 class	-	-	-	-	-	-	7.98	10.63	13.29	21.27	29.25	37.23	45.21
B777/A330 class	-	-	-	-	-	-	11.73	15.64	19.55	17.88	16.21	14.52	12.85
B767/A300 class	-	-	-	-	-	-	-2.87	-3.82	-4.78	-3.95	-3.11	-2.27	-1.44
B737 class	-	-	-	-	-	-	1.58	2.10	2.63	3.07	3.50	3.94	4.38
Domestic													
B777/A330 class	-	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B767/A300 class	-	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B737 class	-	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ATR42 class	-	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sub-total	-	-	-	-	-	-	18.42	24.56	30.68	38.27	45.85	53.42	61.00
Storage Fee	-	-	-	-	-	-							
International													
B767/A300 class	-	-	-	-	-	-	0.14	0.27	0.41	0.41	0.41	0.41	0.41
Domestic													
B767/A300 class	-	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ATR42 class	-	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sub-total	-	-	-	-	-	-	0.14	0.27	0.41	0.41	0.41	0.41	0.41
Total	-	-	-	-	-	-	18.56	24.83	31.09	38.67	46.26	53.83	61.41

3. Aviation Bridge Charges

3.1 Rate of Fee (Baht per Aircraft)

Aircraft type	Baht per aircraft (Int'l)	Baht per aircraft (Dom.)	
B747 class	2,000 / 1 Landing	– / 1 Landing	
B777/A330 class	2,000 / 1 Landing	2,000 / 1 Landing	
B767/A300 class	1,700 / 1 Landing	1,700 / 1 Landing	
B737 class	1,400 / 1 Landing	1,400 / 1 Landing	
ATR42 class	0 / 1 Landing	0 / 1 Landing	

3.2 Demand (movements)

Incremental Movement with Project

Aircraft type	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
International													
B747 class	-	-	-	-	-	-	436	581	726	1,162	1,598	2,034	2,470
B777/A330 class	-	-	-	-	-	-	1,017	1,356	1,695	1,550	1,405	1,259	1,114
B767/A300 class	-	-	-	-	-	-	-387	-516	-646	-533	-420	-307	-194
B737 class	-	-	-	-	-	-	582	776	969	1,131	1,292	1,454	1,615
Domestic													
B777/A330 class	-	-	-	-	-	-	0	0	0	0	0	0	0
B767/A300 class	-	-	-	-	-	-	0	0	0	0	0	0	0
B737 class	-	-	-	-	-	-	0	0	0	0	0	0	0
ATR42 class	-	-	-	-	-	-	0	0	0	0	0	0	0
Total	-	-	-	-	-	-	1,648	2,197	2,744	3,310	3,875	4,440	5,005

3.3 Incremental Revenue with Project (1,000,000 Baht): "Aviation Fee" x "Increamental Aircraft Movements" x 0.5

Aircraft type	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
International													
B747 class	-	-	-	-	-	-	0.44	0.58	0.73	1.16	1.60	2.03	2.47
B777/A330 class	-	-	-	-	-	-	1.02	1.36	1.70	1.55	1.41	1.26	1.11
B767/A300 class	-	-	-	-	-	-	-0.33	-0.44	-0.55	-0.45	-0.36	-0.26	-0.16
B737 class	-	-	-	-	-	-	0.41	0.54	0.68	0.79	0.90	1.02	1.13
Domestic													
B777/A330 class	-	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B767/A300 class	-	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00
B737 class	-	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ATR42 class	-	-	-	-	-	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	-	-	-	-	-	-	1.53	2.04	2.55	3.05	3.55	4.05	4.55