The International Journal of Engineering and Science (IJES)
|| Volume || 6 || Issue || 9 || Pages || PP 13-25 || 2017 ||
ISSN (e): 2319 – 1813 ISSN (p): 2319 – 1805

Sultan Mahmud Badaruddin II Palembang - Indonesia Airport Preparation In Facing ASIAN GAMES 2018

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ABSTRACT: *Palembang City selected as a co-host of Asian Games 2018 besides Jakarta City. There are 45 participants from foreign countries with 37 sports competing will be held in Palembang City. By using descriptive analysis method of estimation at the time of Asian Games 2018 implementation there will be an increase airplane movements about 37,206 airplanes, 5,321,488 passengers, 23,822,946 kg baggage and 44,351,358 Kg cargo. Result calculation airport facilities on the basic SKEP. 77/VI/2005 indicate the side of the land and the side of the air is still a small compared facilities airport available. Capacity and facilities owned by Sultan Mahmud Badaruddin II Palembang Airport for runway dimensions 3,000 x 60 m, 7 taxiway dimensions 2.500m x 30 m and 2 apron areas 97.200 m^2, with 5 (five) garbarata (aviobridge) for domestic and international terminals. In anticipating Asian Games implementation in 2018, Sultan Mahmud Badaruddin II Palembang Airport officer has been carried out capacity development and airport facilities development at the 3rd phase according to mandate of KP. 37 of 2010 about development planning and development of airport facilities with airport capacity being bigger, The terminal area of 34,000 m^2 will be expanded to 115,000 m^2 and targeted terminal capacity from 3.2 million passengers to 9 million passengers per year. The current number of aircraft apron airport can accommodate 13 units of plan into 19 units of aircraft with the largest aircraft can for B-747. All airport development plans can be completed until the end of 2017. Besides airport facilities development, the airport also performs a flow management strategy such as scenarios service of arrival and departure of Asian Games participants to create a fast, safe and convenient service.*

Keywords:*ASIAN GAMES 2018, SM. Badaruddin II. Airport*

Date of Submission: 15-09-2017 Date of Publication: 28-09-2017

I. INTRODUCTION

At this time Sultan Mahmud Badaruddin II Airport Palembang officer has done airport development in 3 (three) stages based on the policy of the minister of transportation 37 of 2016 about the plan for construction and development of facilities. Where there are 60 domestic and international flights operated by Silk Air, AirAsia, Garuda Indonesia, Citilink, Batik Air, Lion Air, Sriwijaya Air, Indonesia AirAsia, NAM Air, Xpress Air.

The number of domestic airplane movement in 2012 about 19,629 furthermore in 2016 increased to 32,745 airplane movements, while international airplane movement in 2012 about 909 and in 2016 increased to 1,107 airplane movement. Whereas the number of domestic passenger transport in 2012 about 2,786,411 peoples increased in 2016 about 3,769,136 peoples and international passengers in 2012 about 99,972 people's, increased in 2016 about 124,721 peoples.

The Sultan Mahmud Badaruddin II Airport Palembang condition has wide characteristics environmental with a three-story construction of passenger terminal building of 13,000 square meters which can accommodate 1,250 passengers and be equipped with garbarata cargo terminal building and other supporting buildings covering an area of 1,900 square meters and a parking space of 20,000 meters accommodating 1,000 vehicles.

In addition, Palembang City as host implementation of Asian Games 2018 beside DKI Jakarta which would be followed by participants 45 foreign countries. In anticipating it, it is necessary to conduct the Airport Readiness Research of Sultan Mahmud Badaruddin II Palembang in Facing the Asian Games of 2018. The purpose is to evaluate Sultan Mahmud Badaruddin II Palembang Airport operation facilities related to the planning and development of airport facilities to expect the increasing number of passenger movement at Asian Games 2018.

II. METHODOLOGY

The methodology used in the research according to (Sugiono, 2008) regression analysis is an analysis based on the equation on the functional or causal relationship of one independent variable with one dependent variable with a general equation of linear regression. According to (Sugiono, 2008), qualitative research is a research that

produces descriptive data containing information, writes data and changes in data studied the subject of research.

Assessment of the suitability between demand calculation results for passenger services and the availability of capacity and facilities of existing passenger terminals at airports. The next step is the conformity between the number of passengers of Sultan Mahmud Badaruddin II Airport Palembang projection to Asian Games activities implementation in 2018 with the program of developing the capacity needs of the airport passenger terminal by the airport management, among others through time series calculation and SKEP / 347 / XII / 995 Standard Design and / or engineering of facilities and equipment of the airport and SKEP / 77 / VI / 2005 Concerning Technical Requirements for Operation of Airport Technical Facilities Directorate General of Civil Aviation 2005. The technique of collecting data for this assessment through primary data and field observation, And literature study. The technique of collecting data for this assessment through primary data and field observation, and literature study. Secondary data obtained from airport operator statistics and direct observation to the passenger terminal. While the literature study does to find information related to passenger service and theories about calculating passenger terminal capacity of an airport. This research conducted for 3 (three) months. Research location at Sultan Mahmud Badaruddin II Palembang Airport.

III. RESULT AND DISCUSSION

Data and information of basic facilities owned by Sultan Mahmud Badaruddin II International Airport, located ± 12 km northwest of Palembang City, with position 02.45.01.LS - 104.42.00 BT. Operating Hours 06.00 am - 21.00 pm.

Capacity and facilities of land side

Table 1. Data of Capacity and Facility Land and Air Side

No.	Information Description (Unit)	Information
1.	Total area of the airport building (m^2)	5.000
	• Total area of 1st floor (m^2)	3.000
	• Total area of 2nd floor (m^2)	1.500
	• Total area of 3th floor (m^2)	500
2.	Total area of terminal (m^2)	34.000
3.	Total area of commerce (m^2)	3.980
4.	Total area of office (m^2)	1.683
5.	Public concourse (curbside) (m^2)	6.100
6.	Domestic departure hall (m^2)	1.583
7.	International departure hall (m^2)	1.319
8.	Check-in area (m^2)	1.460
9.	Domestic boarding lounge (m^2)	1.650
10.	International boarding lounge (m^2)	800
11.	Departure corridor (m^2)	120
12.	Domestic baggage claim (m^2)	872
13.	International baggage claim (m^2)	434
14.	Average number of passengers departing during busy times (person)	680
15.	Average number of passengers arriving during busy times (person)	680
16.	The average number of aircraft arrives at peak times (unit)	6
17.	Number of security check door (piece)	2
18.	Number of check-in counter (piece)	24
19.	Number of baggage scale (piece)	6
20.	Number of seats in the waiting area (piece)	627
21	Garbarata/Aviobridge (unit)	5
22.	Capacity Passengers per year (pax)	4.170
23.	Capacity Cargo per year (tons)	8,100
24.	Total of Cargo area (m^2)	1.900
25.	Total of Parking area (m^2)	20.786
26.	Total of toilet (piece)	8

Source: S.M.Badaruddin II Airport

Passenger terminal facility (on land): domestic and international check-in counters 1,460 m^2 with 24 units, number of passengers departing and arriving on busy time year 2016 of 680 people, boarding gate, immigration counter, waiting room (domestic and international), handicapped elevator, escalator, baggage conveyor, trolleys, restaurant, coffee shop, bookshop, souvenir shop and communication stall, public toilets and special toilets for the disabled are 57 units (men's toilets 22 units, women's toilets 22 units and 13 for defects units), Islamic prayer room in domestic and international as much as 5 units, 1,650m^2 domestic boarding lounge

with 688 capacity seats while international boarding lounge 800 m^2 with capacity 359 seats, nursery room are 5 units, smoking room in domestic terminal 1 unit, Waving Gallery. Public parking area with an area of 20.786m^2 about 545 unit cars as well as, taxi 60 units, the car 475 units, the bus 10 units and 210 unit motorcycles, while the 2,355m^2 parking lot for staying about 120 unit cars. Other facilities: incinerator sewage treatment system, DPPU (aircraft refueling depot), power supply (PLN), backup generator set, telephone (SST and PABX System) Airport transportation facilities: taxi (with Meter system), and DAMRI bus.

Capacity and facility of air side,

- Runway

Specification: Runway number 11-29, dimension 3.000 x 60 m, surface flexible rigid, Strength PCN 73 F/C/W/T. Centre Line 0,45 m x 30 x 49 unit, Threshold 30 m x 1.8 m x 12 unit x 2, Designation R/W 11 (15,2 m2), R/W 29 (31,7m2), Touchdown 22,5 m x 3 m x 40 unit, Side strip 0,9 m x 3000m x 2 side, Aiming Point 60 m x 10 m x 4 unit End Marking (0,9n x 60m) + (0,9m x 45m)

- Pave Shoulder

Runway : Dimension 6.000 m x 7.5 m , Surface flexible rigid
Taxi : Dimension 7.065m x 7,5 m, Surface flexible rigid

- Apron

Main Apron : And wide area of (460 x 120) m^2 = 55.200 m^2, Surface Rigid, Strength PCN 88 R/C/W/T
Apron A : An wide area of (180 x 120) m^2 = 21.600 m^2, Surface Rigid, Strength PCN 39 R/C/W/T
Apron B : An wide area of (170 x 120) m^2 = 20.400 m^2, Surface Rigid, Strength PCN 39 R/C/W/T

- Taxiway

Taxiway A : Dimension 192 m x 30m, Surface Rigid, Strength PCN 68 R/C/W/T
Taxiway B : Dimension 145 m x 30m, Surface Rigid, Strength PCN 68 R/C/W/T
Taxiway C : Dimension 145 m x 30m, Surface Rigid, Strength PCN 68 R/C/W/T
Taxiway D : Dimension 105 m x 30m, Surface Rigid, Strength PCN 68 R/C/W/T
Taxiway E : Dimension 250 m x 30m, Surface Rigid, Strength PCN 68 R/C/W/T
Taxiway F :Dimension 195 m x 30m, Surface Rigid, Strength PCN 68 R/C/W/T
Taxiway G : Dimension 172 m x 30m, Surface Rigid, Strength PCN 68 R/C/W/T
Taxiway Parallel : Dimension 2.500m x 30m, Surface Rigid, Strength PCN 60 R/C/W/T

Sultan Mahmud Badaruddin II Palembang International Airport Air Transportation Company

The Airline Company and aircraft type are operating at Sultan Mahmud Badaruddin II Palembang International Airport in year 2016are as shown in Table 2.

Table 2. The Airline Company operates at SM Badaruddin II Palembang Airport

No	Airline Company	Aircraft Type
1.	Citilink (QG)	A320
2.	Air Asia (QZ)	A320
3.	Silk Air (MI)	A320
4.	Nam Air (IN)	B735
5.	Express Air (XN)	D.328-100
6.	Batik air (ID)	B738/9/A320
7.	Garuda Indonesia	B737,A320
8.	Lion Air (JT)	B739
9.	Sriwijaya Air (SJ)	B735
10	Wings Air	B735
11	Express	B735

Source:P.T. AngkasaPura II Statistics

Production aerodrome at Sultan Mahmud Badaruddin II Palembang International Airport concerned, aircraft, passenger, baggage and cargo. Number of aircraft departing and arriving on busy time year 2016 of 5 movement. Number of passengers departing on busy time year 2016 of 680 people, can be seen on the table 3.

Table 3. Air Traffic Statistics of SM Badaruddin II Palembang Year 2005 - 2016

Year	Aircraft	Passenger	Baggage	Cargo
2005	13.820	1.308.442	11.872.538	5.290.462
2006	14.957	1.408.484	5.941.089	12.453.023
2007	16.205	1.556.253	7.726.361	15.694.020
2008	15.804	1.619.979	16.237.378	8.739.203
2009	15.330	1.810.686	14.265.335	12.263.449
2010	16.650	2.108.413	17.666.746	9.808.850
2011	21.977	2.510.633	18.411.846	10.169.806
2012	23.464	2.885.738	21.483.383	14.037.333

2013	22.745	2.689.456	21.739.355	11.373.084
2014	23.279	3.245.347	15.060.766	33.452.420
2015	24.487	3.386.203	20.463.872	12.091.468
2016	33.852	3.893.857	24.078.228	15.014.703

Source: AngkasaPura II Statistics

Number of Aircraft, Passengers, Baggage and Cargo at Asian Games Activity in Palembang

18th Asian Games will be held in Palembang City for 15 days will include and involve more than 45 foreign countries and estimated every country sending participant about 250 peoples. So the number of participants for 45 countries about 11,250 people who play in 37 sports.Palembang was chosen as co-host of the Asian Games in 2018 besides Jakarta City. The number of participants/athletes and official that involved in Asean Games from 45 participating countries. Each participant will carry baggage about 15 kg, and 20 kg of cargo. So, the baggage and cargo estimates for 45 countries and average of the participant about 250 participants, so the total of participant/athlete's baggage and cargo from 45 countries are about 168,750 kg of baggage and 225,000 kg of cargo.

Sports activities to be held/completed in Palembang City about 15 sports. Every sport will be followed by at least 30 countries. The number of participants/sports and official athletes from each country are involved about 10 people, so the number of participants per one sport is 300 athletes/participants. So that the number of participants/athletes and officials involved in the 10 activities of Asian Games sports branch in Palembang about 3,000 participants with the total of baggage about 45,000 kg and 60,000 kg of cargo.

Forecasting Progress Result of Airplane, Passenger, Baggage and Cargo, using model (Regression)

Forecasting calculations result using regression modeling airplane, passengers, cargo and baggage progress from 2016 to 2018. Aircraft progress from 2016 about 33.852 aircraft and in 2018 about 37.206 aircraft, Passengers progress from 2016 about 3.893.857 peoples and in 2018 about 5.321.488 peoples, for baggage progress in 2016 about 24.078.228 kg in 2018 about 23,822,946 kg. and for cargo progress in 2016 about 15.014.703 kg and in 2018 about 44.351.358 Kg, Table 4 shows forecasting production result of air transport from 2016 to 2020.

Table 4. Forecasting Result of A/C, Pax, Baggage, Cargo

Year	Aircraft	Passenger	Baggage	Cargo
2017	35.632	5.056.811	23.278.845	41.616.094
2018	37.206	5.321.488	23.822.946	44.351.358
2019	38.779	5.586.166	24.367.047	47.086.622
2020	40.353	5.850.843	24.911.149	49.821.887

Source: Data Tabulation 2016

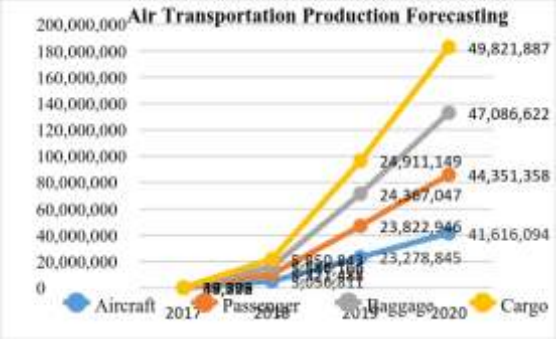


Figure 1. Forecasting Result Diagram of Airplane,

Requirement Analysis Airport facilities

The analysis of airport facility requirement refers to the regulatory standard of the Director General of Civil Aviation Number SKEP.77 / VI / 2005 concerning technical requirements of the operation of airport engineering facilities, number of passengers departing and arriving on busy time year 2016 of 680 people, 2018 of 929 people and 2020 of 1022 people, are as follows.

a. Terminal Departure.

Analysis of space capacity of departure

A = 0,75 { a (1 + f) + b } + 10% ..... (1)

Where:

A = Area of departure hall (m2)

a = number of passengers departing at busy time = 680 people

b = number of transfer passengers (20%) = 0.2 x 680 = 136 people

f = number of introducers / passengers = 2 persons

so that obtained the capacity of the departure hall is

A = 0.75 x (680 x (1 + 2) +136) + 10% A = 1.795 m2

b. Departure lounge

The capacity of the departure lounge is

$$A = C - \left(\frac{u.i + v.k}{30}\right) m^2 + 10\% \quad \text{..... (2)}$$

Where:
A = area of departure lounge (m2)
C = number of passengers arriving at busy time = 680 people
u = average waiting time length = 60 minutes
i = proportion of passengers waiting the longest = 0.6
v = fastest waiting time = 20 minutes
k = the fastest waiting passenger proportion = 0.4
so that the capacity of the waiting room is available
A = 680 - (((60 x 0.6) + (20 x 0.4)) / 30) + 0.1 A = 747 m2.

c.Check-in area

Estimated extensive check-in is:

A = 0.25 (a + b) m2 + 10% ..... (3)

Where:
A = area of check-in (m2)
a = number of passengers leaving at busy time = 680 people
b = the number of passengers transfer =136 people
so the capacity to accommodate the check-in area is
A = 0.25 x (680 +136) + 0.1 A = 225 m2.

d.Number of desks Check-in area

$$N = \frac{(a + b)}{60} \text{ x t1 counter + (10\%)} \quad \text{..... (4)}$$

N = number of seats required
a = number of passengers busy time = 680 people
b = the number of passengers transfer = 136 people
t1 = check-in processing time per passenger (2 minutes / passenger)
so obtained the number of check-in counter is
N = (13,6 x 0.31)x 2+(10%) = 10 pieces

e. Seat

Estimated number of waiting room seats

Where: **N = □ x 680 ..... (5)**

N = number of seats required
a = number of passengers busy time = 680 people
so obtained the amount of seating the waiting room is
N = ⅓ x 680 = 226,67 ≈ 227 pieces

f. Baggage claim area

Estimated area of this area

A = 0.9 c + 10% ..... (6)

Where:
A = total baggage claim area (m2)
c = the number of passengers coming busy time = 680 people
so that the obtained baggage claim area is
A = (0.9 x 680) + 10% A = 612 m2

g. Hall Arrival

Estimated area of this arrival hall

A = 0.375 (b + c + 2.c.f) + 10% ..... (7)

Where:
A = area of arrival hall (m2)
c = number of passengers arriving at busy time = 680 people

b = the number of passengers transfer = 136 people
f = number of pickups per passenger = 2 people
so that the acquired spacious hall of arrival is
A = 0.375 (136 + 680 + (2 x 680 x 2)) + (10%) = 1459 m2

Analysis of Airside Facility

The calculation results using existing data owned by SM Badaruddin II Palembang Airport South Sumatera Indonesia compared with the results of calculations with reference to the applicable standards. Thus the condition of SM Badaruddin II Palembang Airport currently serves the largest aircraft type B.737-800NG which has the capacity of runway, taxiway and aircraft parking (Apron).seen in table

Runway Needs Analysis

a. Runway length

Characteristics of the aircraft used in the calculation of the runway requirement analysis of the existing condition is B 737-800 NG

The steps in calculating the runway length requirement are 3/4 The airplane weight condition at Maximum Takeoff Weight is in the condition of payload and maximum fuel.

From the flight manual obtained MTOW = 70535 lbs.

3/4 Airport Elevation + 15 m (+50 feet)

3/4 From the above data is interpolated with graph 1

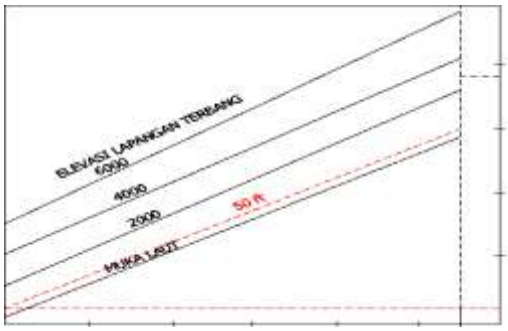


Figure 2: Graph. Weight Landing Max (1000) Lbs

From the graph above, we need the runway length at Maximum Takeoff Weight is 5125 feet (1565 m), while from Planning & Design of Airport (Horonjeff, 1975), the runway length based on plane types can be seen in table 5, table 6..

Table 5. Aerodrome Reference Codes

Element Code 1		Element Code 2		
Number Code	Long Reference Field Aircraft	Letters Code	Extension Wing	Wheel Landing Main Outside
1	L < 800 m	A	B < 15 m	B < 4,5 m
2	800 < L < 1200 m	B	15 < B 24 m	4,5 < B < 6 m
3	1200 < L < 1800 m	C	24 < B <36 m	6 < B < 9 m
4	L > 1800 m	D	36 < B <52 m	9 < B < 14 m

Source: Annex 14 Aerodrome ICAO

Table 6. Characteristics of Main Transport Aircraft

Aircraft Model	Code	Airplane Reference Field Length (m)	Wing Span (m)	Outer Main Gear Wheel Span (m)
1	2	3	4	5
ATR 72-600	3C	1220	27,0	4,1
CRJ 1000 NG	4C	1996	26,2	4,6
B737-500	4C	1830	28,9	5,2
A 320-200	4C	2220	32,2	5,6
B737-800 NG	4C	2256	34,3	6,4

Source: Annex 14 Aerodrome ICAO

Based on the above table the runway length for aircraft type B 737-800 NG is 2256 m. While the calculation of runway length with correction factor is:

1. **Effect of altitude from sea level (Fe)**

$$Fe = \left(L \times 0.07 \times \frac{h}{300} \right) + L$$

$$\frac{15}{}$$

= (2256x0,07x -----) + 2256 . = 2263,865 m
300

Description: L = Runway length; h = High elevation.

2. Effect of air temperature (Ft)

Ft = [Lx (t-15)) x0,01] + L

= (2256 x (30 - 15) x 0,0 1] + 2256 = 2603.4 m ~ rounded 2700 m

Description: t = temperature

The need for upcoming runway facilities is 2645 m. The runway length with the aircraft operating B 737-800 NG at the existing condition (3000 m x 60 m) does not need to be extended for the runway of Badaruddin II Airport because it has complied with the regulatory requirements

b. Runway width

The need for runway width is based on the assumption that the runway width should be able to accommodate the entire wing span of the aircraft plus the freedom of the wing tip clearance.

Table 7. Freedom of Wingspan (Wingtip Clearance)

Code Letter	*Aircraft wing span*	*Wing tip clearance*
A	≤ 15 m	3,0 m
B	15 - < 24 m	3,0 m
C	24 -<36 m	4,5 m
D	36 - <52 m	7,5 m
E	52 - < 60 m	7,5 m

Source: Designing and Planning a Flyway, Ir. HeruBasuki, 1985

The width of the wing tip clearance taken for the 34.3 m wing span width is 4.5 m.
Calculation of the required runway width is:
Runway width = wing span + wing tip clearance
= 34.3 + 4.5 = 38.8 m ~ 39 m
The runway width for the existing condition is 60 m, meaning that the runway width is sufficient and there is no need for widening.

Taxiway Needs Analysis

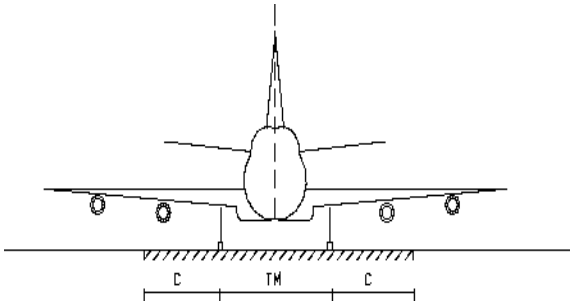
a. Taxiway length

One aircraft operating at Badaruddin II Airport is B 737-800 NG which is included in the Airport Reference Code 4C.
Determination of the code of numbers and letters can be seen in Table 4.2. Aerodrome Reference Codes.
The approach of the formula used for the calculation of taxiway length is:
T = (R + L) - (x +22,5)
= (90 + 50) - (28,15 + 22,5) = 89.35 ~ 90 m
Information :
Q: Taxiway length
R: Runway strip width is 90 m
L: The distance from the runway edge of the strip to the tail of the plane is 50 m
x: The free space width behind the tail of the plane, which is the total of:
a. Width of clearance taken = 11 m
b. The width of 0.5 x wing span (34.3) = 17.15 m
Then x = 11 + 17.15 = 28.15 m
From the above calculation is obtained the length of taxiway (T) = 90 m
So the length of the existing taxiway (110 m), still able to serve up to the age of the plan.

b. Taxiway width

The width of the existing taxiway is 22.5 m, basically the taxiway width should be able to accommodate the total wheel base (the outer distance of the main landing gear) plus the side wheel freedom
Standard for minimum taxiway width, can be seen in table 8.

Table 8. Planning Criteria For Taxiway



Source: Annex 14 Aerodrome ICAO
Figure 3. outer distance of the main landing gear

Physical Characteristics		Code Letter				
		A	B	C	D	E
Minimum Width of:	Taxiway Pavement	7,5 m	10,5m	18 m[a] 15 m[b]	23 m[c] 18 md	23 m
	Taxiway Pavement and Shoulder	-	-	25 m	38m	44 m
	Taxiway Strip	27 m	39 m	57 m	85 m	93 m
	Graded Portion of Taxiway Strip	22 m	25 m	25 m	38 m	44 m

Source: Annex 14 Aerodrome ICAO

Wt - TM + 2C
Information :
Wt = Taxiway width
TM = Distance between wheels
C = Freedom side wheel
then the required taxiway width is:
Wt = 11.29 + (2 x 4.5) = 20.19 m
Information :
a. For Planes with Wheel Base? 18 m (60 ft)
b. For Aircraft with Wheel Base <18 m (60 ft)
c. For Aircraft with Boundary outer side of the main wheel? 9 m (30 ft)
d. For Aircraft with Boundary of the outer side of the main wheel <9 m (30 ft).
The width of the existing taxiway (23 m) is sufficient because the minimum taxiway width as calculated above is 20.18 m. So the width of the existing taxiway is still sufficient

Apron Needs Analysis
The physical data of Main Apron, Apron A and Apron B SM Badaruddin II Palembang Airport are as follows:
Main Apron : (460 x 120)m2 = 55.200 m^2
1.A. P xL: (180 x 120) m2 = 21600 m2 PCN 30 F / C / X / T
2.B. P xL: (170 x 120) m2 = 20400 m2 PCN 66 F / C / X / T
3. Area of Apron A + Apron B = 42000 m2.
Surface Construction: Asphalt / Hotmix

a. **Apron Length**
The determination of the apron length is influenced by the clearance dimension (the closest distance between the plane to the nearest object) and the wing span (the width of the wing span of the plane). Clearance requirement can be seen in table 4 based on standard table in Aerodrome Design Manual Part 2, Taxiway, Apron and Holding Bay, ICAO, 1995.
The amount of clearance and wingspan from parking type of aircraft
Table 9 Clearance and wing span of parking of aircraft

No.	Type of Aircraft	Minimum of clearance	Wing Span
1.	ATR 72	45 m	27 m
2	CRJ-1000	45 m	26,2 m
3.	B 737- 300	45 m	28,9 m
4.	A 320-200	45 m	32,2 m
5.	B 737- 800 NG	45 m	34 m

Source: Designing and Planning a Flyway IrHeru Basuki.1985

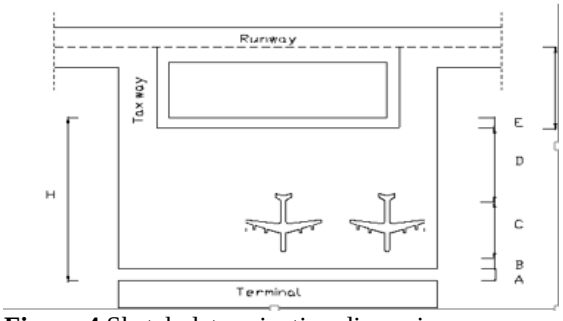


Figure 4. Sketch determination dimension apron

b. Apron Width
The Apron width (H) is the sum of:
A Width of service road, directly adjacent to apron, different pavement construction with apron, taken service road width = 10 m
B: The apron portion for GSE movement serving the parking plane and is clearance between the aircraft's nose

with GSE / fixed object in the service road; width = 4.5 m
C: The length of the aircraft (B737-800 NG) = 39.5 m
D: Minimum clearance between the tail of the parking plane with the apron taxiway centerline; D = (0.5 x wing span) + 10,5 = (0,5x34,3) +10,5 = 27,65 m
E: The distance between the apex taxiway centerline and the apron edge = 11 m
F: Minimum distance between runway centerline with taxiway (apron taxiway) centerline = 93 m
Then the apron width (H) = 10 + 4.5 + 39.5 + 27.65 + 11 = 92.65 m ~ 93 m. So the width of the existing apron (240 m) is still sufficient for aircraft type B737-800NG

The recapitulation of SM.Badaruddin airport facility calculation according to SKEP.77 / VI / 2005 concerning the technical requirements for the operation of airport engineering facilities shows that land and airside facilities 2016, phase II (2018) and phase III (2020) existing facilities available at the airport, for more details see the following table 10,

Table 10. . Recapitulation estimates of the needs of the facilities landside and airside

No	The needs of the facilities landside	Existing	Phase I (2016)	Phase II(2018)	Phase III(2020)
	Peak Hour Passenger terminal	680 People	680 People	929 People	1022 People
A	Zona Public				
1	Terminal Departure	2902 m^2	1795 m^2	2453 m^2	2698 m^2
2	Departure Lounge	2450 m^2	747 m^2	1021 m^2	1123 m^2
3	Check–in Area	1110 m^2	679 m^2	928 m^2	1021 m^2
4	Number of Check-in Counter	24 unit	10 unit	13 unit	15 unit
5	Seat	688 unit	227 unit	310 unit	341 unit
6	Baggage Claim Area	1305 m^2	612 m^2	836 m^2	920 m^2
7	Hall Arrival	2902 m^2	1459 m^2	1993m^2	2192 m^2
B	The needs of the facilities airside				
1	Aircraft Greatest	B.737-800	B.737- 800	B.737- 800	B.737- 800
2	Aerodrome Reference Code	4 C	4 C	4 C	4 C
3	Category Operation Runway	Instrument Precision	Instrument Precision	Instrument Precision	Instrument Precision
4	Runway Dimension	3000x60 m^2	2700x45 m^2	3000x45 m^2	3000x45 m^2
5	Runway Strip	3300x300 m^2	2520x65 m^2	2520x65 m^2	2520x65 m^2
6	*Overrun/Stopway R*/W 11 - 29	60x60 m^2	60x45 m^2	60x45 m^2	60x45 m^2
7	*Runway End Safety Area* (RESA)	190x150 m^2	190x150 m^2	190x150 m^2	190x150 m^2
8	Taxiway Dimension	250x30 m^2	90 x 23 m^2	159x23 m^2	172x23 m^2
9	Apron Dimension	405x240 m^2	285x120 m^2	372x120 m^2	372x120 m^2

Source : Analysis results

Plan to increase the capacity of domestic and international terminal of SM. Badaruddin II Palembang Airport preparation for the upcoming 2018 Asian Games related to domestic terminal capacity from 1,200 to 1,600 passengers and international terminal capacity from 400 to 600 passengers. The terminal area of 34,000 square meters will be expanded to 115,000 square meters and targeted terminal capacity from 3.2 million passengers to 9 million passengers per year. The current number of aircraft apron airport can accommodate 13 units of plan into 19 units of aircraft with the largest aircraft can for B-747. Sky Bridge built to connectivity between the passenger terminal with the station LRT. All airport development plans can be completed until the end of 2017.

SM. Badaruddin II Palembang Airport Efforts Facing the Asian Games in 2018
Asian Games in 2018 is the biggest sports event of Asian countries. Airport organizer gives fast, secure, comfort service for airport service user especially to participant/athlete official and Asian Games 2018 support through the following efforts:

a. Flow Design of Arriving and Departing

- 1st Phase

Designing arrival and departure setting
Designing arrival and departure process

- 2nd Phase

Testing arrival and departure during the test event

- 3rd Phase

Achieving and processing all arrival and departure registration
Giving guidelines about transportation during games

b. Arrival and Departure Officer for Asian Games Contingent

The duty of arrival and departure officer:

- Welcoming/removing contingent team with hospitality and Courtesy
- Logistic serving for all goods that taken as well as game support equipment like barbell, gun etc.
- Helping on baggage process, all athlete, and contingent goods and tools

c. Officer Placement

- Greeting about 30 persons
- Frontliner 8 persons
- Accreditation 4 persons
- Airport Guide 13 persons
- Catering 10 persons at Rodgers (shelter)

d. Run Down Arrival & Departure Size Activity

- When contingent athletes arrived is greeted by greeting officers in the air bridge
- Then they are directed to the front liner accreditation officer
- On the accreditation desk, the officer will match the ID Card using the barcode scanner
- After accreditation is valid, officer directly attached hologram on ID Card. The process at least 1 minute for 1 person
- But if there is a problem then person is directly taken to the accreditation help desk for processing until that person is declared valid or not
- After accreditation, participants are directed to the Immigration desk
- After that, the participants take luggage/baggage assisted by special porter for Asian Recruitment
- Then The participants go through the X- Ray Custom process
- The process completes, the participants out the international terminal towards the shelter Asian Games
- At the terminal door, the participants are welcomed by the welcoming and arriving team give flower and so on
- LO officers are also ready to welcome the participants and serve the participants while the airport guide officers are also ready to help
- While waiting for the procession of other participants in the shelter, the participants can enjoy welcome drinks and snacks that have been prepared by the field of consumption
- Shelters are made as comfortable as possible. In room extends 600m^2 are equipped with air conditioning, portable toilets, TV
- To anticipate the complaints from participants, committee also prepare helpdesk who served by LO officer and airport guide
- LO officer in the shelter hands over the responsibility of the participant to the Transport Sector
- The transport sector has set up voorijders to escort the bus that takes the contingent participants to the accommodation.

e. 3 Scenario Of Arrangement Plan When Continent Asian Games Arrived

1st Scenario of Contingent Asian Games Arrival Flow

- The Contingent exit from the plane through the garbarata..
- Upon arrival of the contingent, athletes are welcoming from officers greeting in garbarata. Then they are directed to the front liner accreditation officer.
- On the accreditation desk, the officer will match the ID Card using the barcode scanner
- The contingents going down through escalators to immigration checks
- After passing the immigration checks, the contingent goes to the inspection of baggage by Customs and Excise.
- The Contingent comes out of the international arrival room through a special line of athletes that have been restricted to the queline to the prepared shelter tent.
- The contingent waits for the bus to be dispatched to the athlete's home.

2nd Scenario of Contingent Asian Games Arrival Flow

- The Contingent exit from the plane through the garbarata.
- Upon arrival of the contingent, the athletes are welcoming from officers greeting in garbarata. Then they are directed to the front liner accreditation officer.
- If there is still accreditation stack process and immigration check, then the contingent waiting while in the international departure lounge (if there is no international departure at least 2 hours ahead).
- If there is no accreditation stack, then the contingents are directed to front liner accreditation officer.
- On the accreditation desk, the officer will match the ID Card using the barcode scanner
- The contingents going down through escalators to immigration checks
- After passing the immigration checks, the contingent goes to the inspection of baggage by Customs and Excise.

- The Contingent comes out of the international arrival room through a special line of athletes that have been restricted to the quelling to the prepared shelter tent.
- The contingent waits for the bus to be dispatched to the athlete's home.

3rd Scenario of Contingent Asian Games Arrival Flow

- The Contingent exit from the plane through the garbarata.
- Upon arrival of the contingent, the athletes are welcoming from officers greeting in garbarata. Then they are directed to the front liner accreditation officer.
- If there is still accreditation stack process and immigration check, Then the contingents are directed by officers to the SBY room for the accreditation process and wait a while until the previous contingent immigration inspection is completed (if scenario II can not be implemented).
- On the accreditation desk, the officer will match the ID Card using the barcode scanner
- If there is no stack, then The contingents are directed toward the manual door beside the international breakdown for the immigration process.
- After passing the immigration checks, the contingent goes to the inspection of baggage by Customs and Excise.
- The Contingent comes out of the international arrival room through a special line of athletes that have been restricted to the quelling to the prepared shelter tent.
- The contingent waits for the bus to be dispatched to the athlete's home.

f. Flow Vehicle Existing in Normal Condition:

- Line I is Motorcycle line
- Line II is Carline I
- Line III is Carline II
- After the contingent boarded the Bus from the shelter, the SEA Games contingent bus is free to choose line II or II
- Exit the airport to the athlete's house.

g. Alternative Flow Conditions During the Asian Games:

- Line I is Motorcycle line
- Line II is Carline I
- Line III is Carline II
- After the contingent boarded the Bus from the shelter, Vehicle contingent through line III and public transportation through line II
- If there are long traffic jams, public transport will be diverted through the In Line.

h. Readiness of Operational Facility

- PKP-PK vehicles for Cat VIII are sufficient;
- Runway and Taxiway for airplane on level Airbus 330;
- Radar Aviation Navigation Facility, DVOR, NDB, ILS in good condition;
- Security Facilities of X-Ray Airport, HMD, Walkthrough, Mirror Detector in sufficient condition;

i. Follow Up Air Operational Setup.

- Asian Games airplane setting;
- Measurement and Setup of Parking Stand / Parking Management;
- Request Assessment / verification to the regulator (Dir airport);
- Slot Time and schedule setting (coordination with Dir Air Transport);
- Flight Data, SOP, Document;
- Publish NOTAM related to the changes;
- Human Resources and Facilities Readiness;

IV. CONCLUSION

The result of analysis and evaluation about the number of passengers, baggage, cargo, and participants of ASIAN GAMES contingent in 2018 using linear regression obtained some conclusion like airplane movement prediction about 37,206 airplanes, passengers 5,321,488 people, Baggage about 23,822,946 kg and cargo about 44,351,358 Kg. Result calculation airport facilities on the basic SKEP. 77/VI/2005 indicate the side of the land and the side of the air is still a small compared facilities airport available.

Airport facility condition with runway dimension 3,000 x 60 m, 7 taxiway dimensions 2,500m x 30m and apron areas 97.200 m2. Where is the passenger terminal area 34,000 m^2will be expanded to 115,000 m^2 and targeted terminal capacity from 3.2 million passengers to 9 million passengers per year. The current number of aircraft apron airport can accommodate 13 units of plan into 19 units of aircraft with the largest aircraft can for B-747. Sky Bridge built to connectivity between the passenger terminal with the station LRT. All airport development plans can be completed until the end of 2017 with 5 (five) garbarata (aviobridge) for the domestic and international terminals. The SM Badaruddin II Palembang airport officer has prepared and designed 3 flow

arrangement scenario for arrival Asian Games 2018 contingent with greatest service scenario based on total contingent and field condition at Asian Games 2018.

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