

# NO FULLSTOPS FOR AAI

## ENHANCING AVIATION INFRASTRUCTURE ACROSS INDIA

THE AIRPORTS AUTHORITY OF INDIA MANAGES A MIND-BOGGLING NUMBER OF 125 AIRPORTS THAT INCLUDE 11 INTERNATIONAL AIRPORTS, 8 CUSTOMS AIRPORTS, 81 DOMESTIC AIRPORTS AND 25 CIVIL ENCLAVES AT DEFENCE AIRFIELDS – INDEED, A GIGANTIC TASK THAT AAI PERFORMS WITH FINESSE. IN ADDITION, AAI HAS UNDERTAKEN A MASSIVE MODERNISATION PROJECT TO UPGRADE A NUMBER OF AIRPORTS THAT WILL PROVIDE WORLD-CLASS SERVICES TO FLYERS. A LOOK AT WHAT AAI IS DOING IN THE FOUR CORNERS OF THE COUNTRY.

The Airports Authority of India (AAI) is the largest airport operator and manages a total of 125 airports, which include 11 international airports, eight Customs airports, 81 domestic airports and 25 civil enclaves at defence airfields. AAI also provides Air Traffic Management Services (ATMS) over the entire Indian airspace and adjoining oceanic areas with ground installations at all airports and 25 other locations to ensure safety of aircraft operations.

As part of the modernisation programme and to provide world-class standards to travellers, AAI has entered into a collaboration with all major metro airports in the country, including those in the PPP mode to upgrade the CNS ATM services at these airports to provide them better connectivity and a smoother flow of air traffic 24 x 7. It is in keeping with AAI's commitment to provide cutting-edge CNS ATM services to cope with the increase traffic loads at these airports. All the major air-routes over Indian landmass are radar covered with distance measuring equipment. Most of the airports are also provided with night-landing facilities. Besides, 52 runways are provided with ILS installations.

With AAI's successful implementation of Automatic Dependence Surveillance System (ADSS), using indigenous technology at Kolkata and Chennai Air Traffic Control Centres, India gets the distinction of being the first country to use this advanced technology in the South-East Asian region thus enabling effective Air Traffic Control over oceanic areas using satellite mode of communication. Performance-Based Navigation (PBN) procedures have already been implemented at major airports and are likely to be implemented at other airports in a phased manner.

AAI has also undertaken GAGAN project in technological collaboration with the Indian Space and Research Organisation (ISRO), where the satellite-based system will be used for navigation.

AAI has also planned to provide Ground-Based Augmentation System (GBAS) at Delhi and Mumbai airports. This GBAS equipment will be capable of providing Category-II (curved approach) landing signals to aircraft, thus replacing the existing instrument landing system in the long run, which is required at each end of the runway.

### WESTERN REGION

|             |                 |                    |
|-------------|-----------------|--------------------|
| Ahmedabad * | Indore          | Mumbai (Juhu)      |
| Akola       | Jabalpur        | Nagpur* /Sonegaon  |
| Aurangabad  | Jamnagar (CE)   | Nanded             |
| Bhavnagar   | Kandla          | Porbandar          |
| Bhopal      | Keshod/Junagarh | Pune (CE)/Lohegaon |
| Bhuj (CE)   | Kolhapur        | Rajkot             |
| Diu         | Latur           | Sholapur           |
| Goa (CE)    | Mumbai*         | Surat/Dumas        |
| Gondia      | (Santacruz)     | Vadodara/Baroda    |

### SOUTHERN REGION

|                                       |                                   |
|---------------------------------------|-----------------------------------|
| Agatti Airport                        | Mangalore Customs Airport**       |
| Bengaluru Int'l Airport (BIAL)*       | Pondicherry / Puducherry Airport* |
| Bengaluru (CE)                        | Rajahmundry Airport               |
| Calicut/Kozhikode*                    | Salem Airport                     |
| Chennai Int'l Airport                 | Trivandrum Int'l Airport*         |
| Cochin Int'l Airport*                 | Thiruchirapalli Customs Airport** |
| Coimbatore Airport**                  | Tirupati Airport                  |
| Hubli Airport                         | Tuticorin Airport                 |
| Hyderabad (Begumpet) Airport          | Vijayawada Airport                |
| Hyderabad / Shamshabad Int'l Airport* | Vishakapatnam Airport (CE)        |
| Madurai Airport                       |                                   |



### NORTHERN REGION

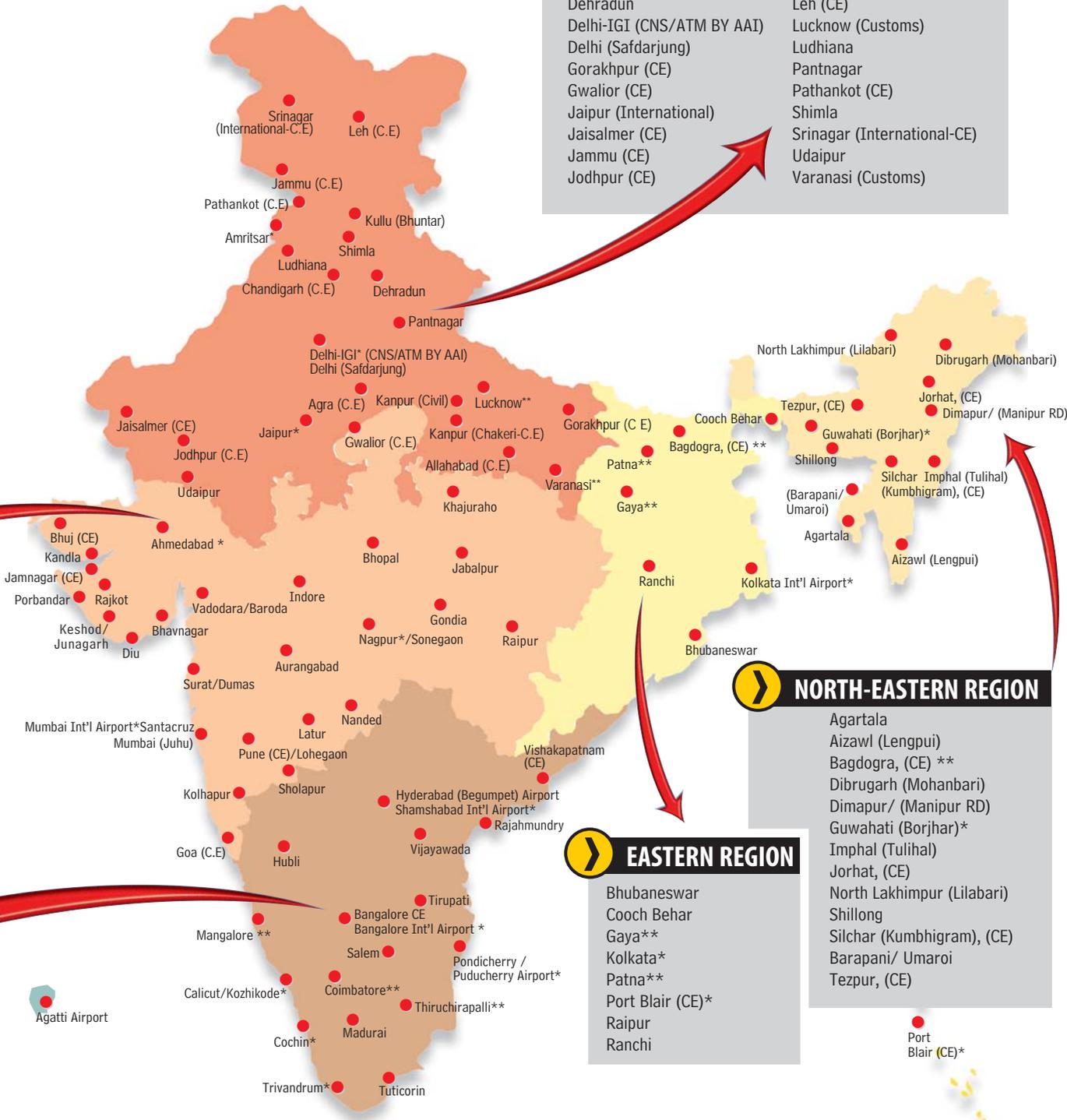
- Agra (CE)
- Allahabad (CE)
- Amritsar (International)
- Chandigarh (CE)
- Dehradun
- Delhi-IGI (CNS/ATM BY AAI)
- Delhi (Safdarjung)
- Gorakhpur (CE)
- Gwalior (CE)
- Jaipur (International)
- Jaisalmer (CE)
- Jammu (CE)
- Jodhpur (CE)
- Kanpur (Civil)
- Kanpur (Chakeri-CE)
- Khajuraho
- Kullu (Bhuntar)
- Leh (C.E)
- Lucknow (Customs)
- Ludhiana
- Pantnagar
- Pathankot (CE)
- Shimla
- Srinagar (International-CE)
- Udaipur
- Varanasi (Customs)

### NORTH-EASTERN REGION

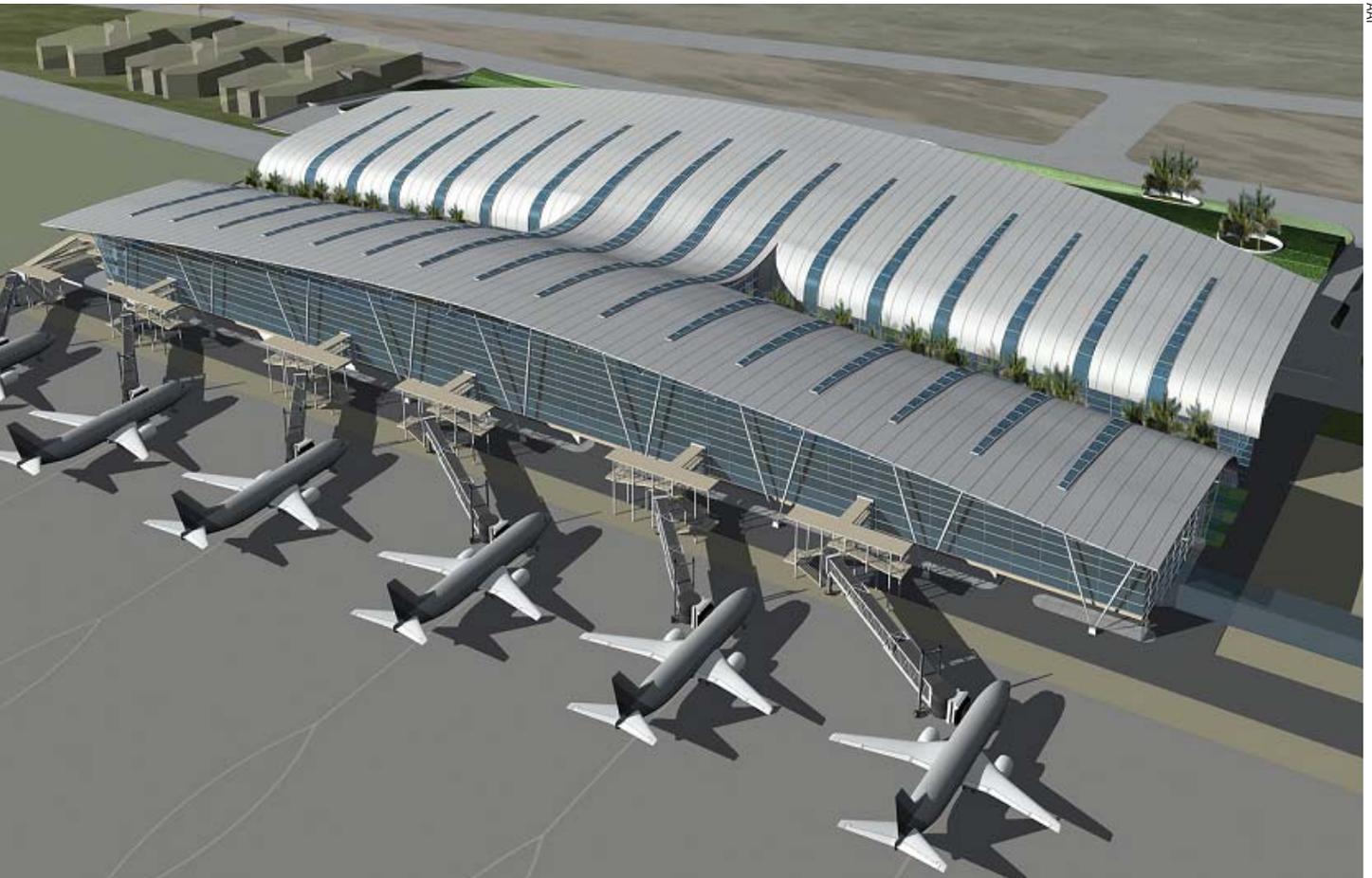
- Agartala
- Aizawl (Lengpui)
- Bagdogra, (CE) \*\*
- Dibrugarh (Mohanbari)
- Dimapur/ (Manipur RD)
- Guwahati (Borjhar)\*
- Imphal (Tulihal)
- Jorhat, (CE)
- North Lakhimpur (Lilabari)
- Shillong
- Silchar (Kumbhigram), (CE)
- Barapani/ Umaroi
- Tezpur, (CE)

### EASTERN REGION

- Bhubaneswar
- Cooch Behar
- Gaya\*\*
- Kolkata\*
- Patna\*\*
- Port Blair (CE)\*
- Raipur
- Ranchi



● Map not to scale  
 \* International Airport  
 \*\* Customs airports are airports with international flights usually operated by the country's national carrier.



AAI

STEPS TO THE FUTURE : An artist's impression of Chennai airport.

# CHENNAI READIES FOR A DATE IN 2012

AAI'S SHOWPIECE AIRPORT IN THE SOUTH IS NEARING COMPLETION AND ONCE READY WILL BE ABLE TO HANDLE AROUND 30 MILLION PASSENGERS.

The revamped, modernised and expanded Chennai airport will throw open its doors for commercial traffic sometime in the first quarter of 2012. Till then, the existing facilities both in terms of airside and non-aeronautical side including the existing terminals — domestic and international — will continue to operate.

As per the status of Chennai airport on date, it has a total land area of 1298.01 acres with length of perimeter wall running 15 kilometers and the perimeter road meandering 14 kilometres. Its main runway 07/25 is 3658 metres long or over 12000 feet which is enough for a Jumbo to operate. The secondary



**Chennai airport has 17 taxiways and 81 parking stands. It has five aerobridges**

runway 12/30 which was 2085 metres or 6765 feet has been extended by way of a stilted bridge on the Adayar river by another 1032 metres or nearly 3400 feet to take the total length to just about 10,000 feet. The length and width of the RCC/pre-stressed concrete bridge is 200 metres by 447.50 metres to accommodate secondary runway and parallel taxi track. The bridge will be able to take an A 380 super-jumbo landing.

Chennai airport has 17 taxiways and 81 parking stands. It has five aerobridges to cater to international passengers and three for domestic. Chennai airport falling under the 4E category is undergoing a massive renovation



that will see a completely brand new all steel and glass front when the passengers and airlines get to use it in early 2012. The domestic terminal which was commissioned in April 1985 went through periodic upgrades and today is spread over 19,250 square metres. Against an annual passenger handling capacity of six million, in fiscal 2010-11, the airport handled 7.80 million domestic passengers. The peak-hour handling capacity in the departure hall is 800 while in the arrival hall it is 1200. There are only four baggage conveyor belts in the domestic arrival hall. The domestic terminal has 48 check-in counters.

The international terminal, which was twice commissioned — once in April 1989 and later upgraded in May 2003 — is spread over 42,870 square metres with an annual passenger handling capacity of three million. The airport, however, handled 4.25 million passengers in 2010-11. During peak hours, it has a handling capacity of 1200 in the departure hall and 750 in the arrival hall and another 350 in the transit hall. It has four-baggage conveyor belts and 44 check-in counters besides nine arrival counters for customs and 22 arrival immigration counters as against two departure Customs and 16 departure immigration counters.

The proposed domestic integrated terminal building with its three-level structure under construction will have an area of 72,614 square metres. It has a provision for seven gates and two hardstand hold rooms and 52 check-in counters excluding eight e-ticketing counters. The international terminal building



**In the revamped Chennai airport, the new international and domestic terminals will be connected with an elevated road (flyover) of a kilometre.**

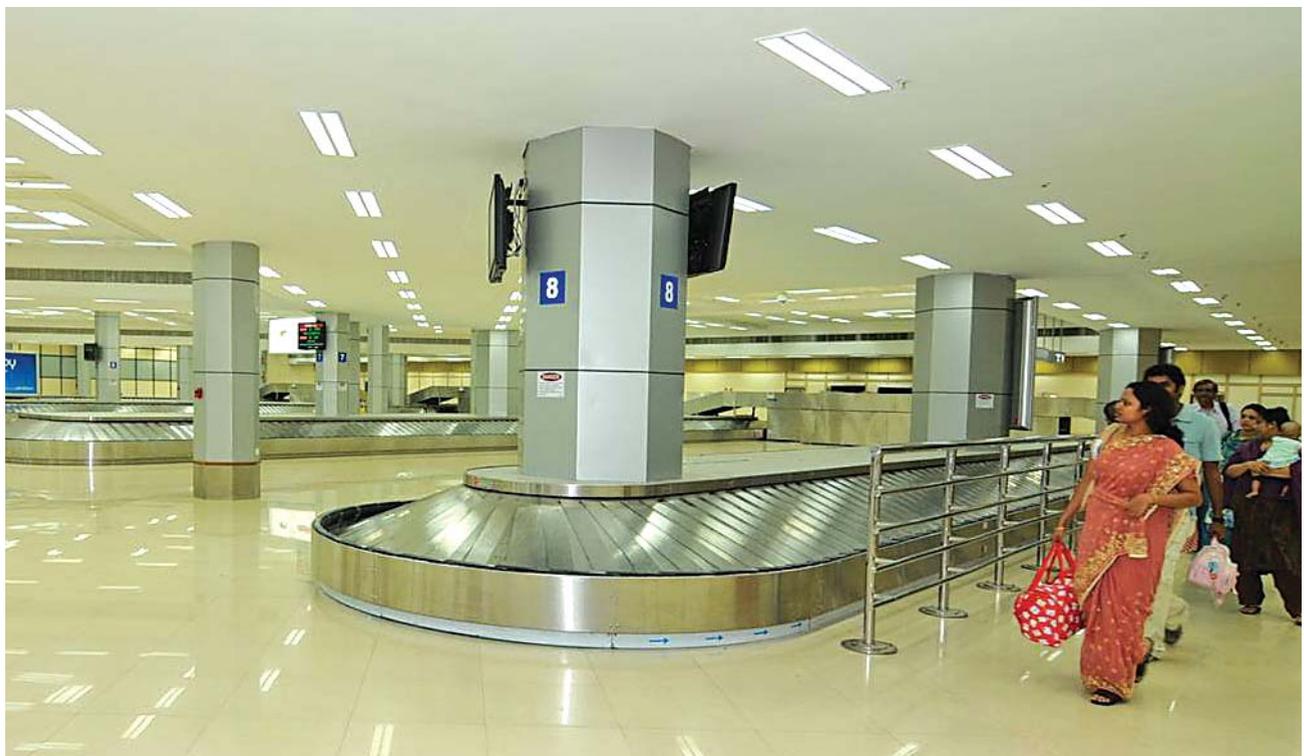
**BUSY AREA:**

Passengers wait for baggage in the airport.

with also a three-level structure under construction shall be of 60,528 square metres and have a provision for two gates with multiple hardstand hold rooms, 52 check-in counters excluding eight counters for e-ticketing. Besides, the international terminal will have 18 immigration and four Customs counters for departure passengers.

While the capacity of the new domestic terminal building will be for 10 million passengers per annum, the new international terminal building will cater to four million passengers per annum. After completion of the two new terminal buildings, the capacity of Chennai airport will be 23 million passengers per annum against the 2010-11 handled 12.05 million (the designated capacity of both the terminals is nine million only). In that sense, once the expanded and upgraded Chennai airport formally opens all its wings, Chennai would be able to handle nearly 30 million passengers though the actual handling capacity will be 16 million in domestic and seven million in the international terminal with peak-hour passenger-handling capacity of 3300 for domestic and 2300 for the international terminal.

In the revamped Chennai airport, the new international and domestic terminals will be connected with an elevated road (flyover) of a kilometre. With construction on in full swing, the massive steel and glass structure will be defined by dramatic, twin wing-like hovering roofs providing a 300 metre-long column-free space. The straightforward planning and super-efficient organisation of the





AAI

programme, security and circulation, as per an AAI official at the site, formed the basis of an innovative design that incorporates vibrant sustainable gardens. Unlike any other airport in the world, Chennai airport will have lush green gardens on view throughout the terminal creating a unique dialogue between engineering and nature.

The building volume will be clearly divided into the landside and airside and the spaces connected with a central security checkpoint for departure as well as two glass bridges on either side for arriving passengers. The circulation will be so organised that departing and arriving passengers will never mingle at any point in the terminal. Special energy-efficient technologies have been incorporated in the design besides various water management techniques such as water-efficient landscaping, rain water harvesting, water-efficient fixtures, use of treated grey water for airconditioning cooling system and innovative effluent treatment plant. These will help in re-using waste water.

Both the terminals will be equipped with a sophisticated in-line baggage handling system which will be capable of Level-4 security screening system. This system consists of five departure conveyors including rejected baggage conveyor. There will be four arrival carousels in domestic and three in the international terminal. The total length of the conveyor will be 3500 metres which can handle 1250

**FLYING HIGH:**  
Construction work in progress at Chennai.



**The cargo complex proposed in Chennai will be much bigger than what is available in Hyderabad or Bengaluru**

pieces of baggage per hour.

A glass tube connecting both international and domestic terminal at the mezzanine level for length of 600 metres has been proposed on the city side. This will facilitate the passengers to move from the domestic terminal to the international terminal and vice-versa. There will be two walkalators each of one meter width. It is also proposed to connect a metro station by a link tube to the main glass tube. In due course, the job for constructing the two multi-level car parking will also be undertaken. Work will be initiated on the proposed metro rail station inside the airport premises with total area of 20,000 square metres with four-level terminal having concourse, platform, two-wheeler parking for metro users and car park for airport users. AAI will execute the work of the metro station within the airport premises.

In terms of passenger traffic, Chennai airport is the third busiest in the country. The airport is also undertaking a major revamp of its cargo facilities at a cost of ₹145 crore which may be increased later. An automatic storage and retrieval system is also being planned to be installed at this cargo complex which will improve efficiency of cargo handling substantially. The cargo complex proposed in Chennai will be much bigger than what is available in Hyderabad or Bengaluru. Already 75 per cent of the construction is over and once complete, this will be the most modern airport cargo complex in India. ■



**TOUCHING THE SKIES** : An artist's impression of Kolkata airport's terminal after it is completed.

## KOLKATA WILL BE GATEWAY TO APAC

COME JUNE THIS YEAR, THE NETAJI SUBHASH CHANDRA BOSE INTERNATIONAL AIRPORT WILL BE READY WITH ITS SPANKING NEW TERMINAL. PART OF A TWO PHASE MASSIVE MODERNISATION-CUM-EXPANSION PROJECT BY THE AIRPORTS AUTHORITY OF INDIA, KOLKATA AIRPORT WILL BE AT PAR WITH THE BEST AROUND THE WORLD. **R KRISHNAN** RECENTLY WENT TO CHECK OUT THE PROGRESS OF WORK AND CAME BACK IMPRESSED.

**K**olkata airport, widely known as Netaji Subhash Chandra Bose International Airport, is located in Dum Dum area, approximately five kilometres from the newly-developing IT hub and 17 kilometres from Kolkata city centre. The fifth-busiest airport after Mumbai, Delhi, Bengaluru and Chennai, Kolkata handles over nine million passengers yearly against its designed total capacity of five million split between the international and domestic terminals. Since the present terminal is more than saturated, the government decided in 2008 to undertake massive modernisation-cum-expansion of Kolkata airport. The job of executing the expansion projection was given to the state-owned Airports Authority of India (AAI) which is literally racing against time to complete it. Once the work is completed by June 2012, the brand-new steel and glass terminal will literally be the pride of East. It will be able to handle 20 million passengers per annum with a floor carpet area of more than 2,33,000 sq mt.

The current expansion project is actually the Phase I of Kolkata airport modernisation and the second phase is slated to begin in 2015-16. Since the city is the gateway to East (India) as also to the rest of South-East Asia and Asia-Pacific, it is expected that Kolkata will become an ideal stopover for many flights originating from Europe or the US bound for the Far East. Not only will it become an important destination

point but also a transit point. Keeping all this in mind the Airports Authority of India has already begun planning for the second phase that will see the construction of a brand new third runway.

Phase-I envisages a project cost of `2350 crore of which the work cost of Italian-Thai company ITD has been estimated at `1602.60 crore. While 90 per cent of the project work has been completed, in financial terms nearly `1700 crore has already been spent.

The six-level integrated passenger terminal building will be spread over 2,33,000 sq mt. It will have a two-level car parking to accommodate 1,250 cars. The service yard will have 24 transformers and 13 DG sets to beat any power shut-off. Besides the new airport terminal is designed to have six chillers and 12-set cooling tower with a capacity of 42,000 gallons per minute. For fliers, the new terminal will have 18 aerobridges, 60,000 sq mt of neatly laid landscape, more than half-a-kilometre long or to be precise 515 mt of a flyover and 2.7-km-long dedicated drainage system.

The annual traffic anticipated -once fully operational at its rated capacity -is 20 million of which the international terminal will be saturated by 2023-24 and domestic passenger traffic in 2019-20. But considering the present passenger traffic handled of nine million against the designed capacity of five million, it looks like Kolkata airport will be able to handle much more than the 20 million capacity as the existing



domestic terminal will remain functional for some more time in addition to the new one.

On the departure side of the new terminal, there will be 128 check-in-counters based on the concept of CUTE or Common User Terminal Equipment covering both domestic and international terminals, respectively. There will be 28 immigration counters in the international terminal besides 21 security gates with frisking booths and 33 such security gates with frisking booths in the domestic terminal. On the arrival side, there will be 40 immigration counters. Further, there will be three conveyor belts and six conveyor belts respectively on the international departure and arrival side, respectively. On the domestic side, there will be five conveyor belts on the departure side and 10 on the arrival side. In addition to the 18 aerobridges, on the international side, there will be 13 elevators, eight escalators and six travelators. On the domestic side there will be 14 elevators, eight escalators and seven travelators.

The new terminal is a five-tier building with the bottom floor being the arrivals and upper-arrival area and the top being a departure and upper departure areas with basement for MEP (mechanical, electrical and plumbing) services. The environmentally responsive canopy design consists of the setback of the double-wall system of the canopy which is an effective measurement for controlling the solar heat gained. The results of the thermal dynamics studies showing the combination of the natural buoyancy driven and mechanically driven ventilation cavities are an effective strategy for energy efficiency design. The north-facing roof lights and a central courtyard flood the interior with natural light.

The passenger terminal will have an apron for parking aircraft on its northern and north-eastern sides. Eighteen aircraft are proposed to be parked in in-contact configuration. These stands will supplement to other 53 aircraft parking bays. Passengers will be able to embark or disembark from any aircraft stand and be able to proceed to either domestic or international sides.

Airport Director Dr B P Sharma pointed out that the Kolkata airport modernisation project and the associated runway extension was a prestigious job for the AAI. Speaking about the runways, Dr Sharma said that the international airport had two runways of which the main runway was 3627 metres long and the secondary runway had been extended by 440 metres to 3270 metres. The other three metro airports -Delhi, Mumbai and Chennai -have two runways each but they are not parallel as they almost converge or cross each other. Delhi has now got a third runway over 4,000-metre-long runway, which is parallel to the main runway. Kolkata is perhaps unique with two parallel runways from day one with one that has undergone modernisation while the secondary runway has been extended. The main runway is 45 metres wide with a shoulder width of 15 metres which is also a feature of the sec-



**TOWARDS DEVELOPMENT:** Work in progress at Kolkata airport; a view from the air-side.

ondary runway. The two runways can allow operation of Airbus A380 and Boeing 747. However, it must be stated that two runways are separated by 260 metres and hence can allow only simultaneous operation but not parallel operation. This means while one runway can be used for landing the other can be used for take-off. However, there cannot be parallel landing and take-off on each runway.

It is proposed to create three more taxiways. When the second phase of modernisation-cum-expansion is taken up, AAI will consider constructing another parallel taxiway. This will free up the runways and, therefore, allow greater aircraft movement. AAI has identified 1,200 acres of land near and adjacent to the present airport and would soon request the state government for this land. When the land is allotted, it will be possible to build a parallel runway which will truly allow simultaneous operation. Of the 1,200 acres, 500 acres belong to the Government of West Bengal and the balance land will have to be acquired. In any case, Kolkata airport will reach saturation by 2020.

M L Lehkra, Regional Executive Director, Kolkata Airport, mentioned the expansion and modernisation of the Air Traffic Control (ATC) at the airport. There was a proposed that the ATC at Kolkata needed to be upgraded along with the airport modernisation project. But for various reasons it did not happen as the size and scale of the ATC modernisation entailed high investment. It was decided to postpone the plans. Now, an upgrade of a few crucial elements of ATC has been planned.

The new automation of ATC at Kolkata will enable the airport to handle more than 40 aircraft movements an hour. The system once operational from August-September 2012 will be even newer than what is available in Delhi. There are nearly 700 aircraft overflying Kolkata and the airport handles 300 aircraft movements per day which besides scheduled carriers also include defence and general aviation. As per International Civil Aviation Organisation (ICAO), Kolkata, in terms of airspace management is among the first five busiest sectors globally. ■



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