

# Cost Effective Planning and FAARFIELD Design of Coimbatore Airport Runway Extension

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**Abstract**— The focus of the study is to provide an effective planning and compact design of the existing Coimbatore Airport with new amenities such as Extra Hangars, Parking bays, Taxiways, Refueling area, and to extend the available runway which is located in peelamedu, Coimbatore, Tamil Nadu. The Coimbatore Airport extension is done to increase the flight take off rates and landing rates so that the people flow through the means of airways will increase without any congestion and to increase the load carrying capacity of the runway pavement so that the flights with larger capacity and high load can have a smooth and safe landing. The plan of the airport was drawn using AUTOCADD and the pavement design and analysis was done using FARRFIELD software.

**Index Terms**— Airport Planning, Extension, Runway, Boeing, Airbus, Coimbatore

## I. INTRODUCTION

Airport is one the essential mode of transport where luxury people offer and prefer to choose. Airport plays an important role in the state's income and development of the state. Being one of the developing smart city, Coimbatore contributes much in state's development. Having one of the best climates in India, Coimbatore attracts tourisms, where people from abroad fly to locality. So, airport is much important in a place like Coimbatore.

### 1.1 EXISTING AIRPORT

Being one of the important airports of India, Coimbatore airport has minimalistic design features and small compatible pavements and hangars. Coimbatore airport has a runway length and width of 2990 X 45m which could bear up to flights like Airbus A321 and Boeing B737-900 which don't have the ability to hold high quantity of people.

### 1.2 EXTENSION PLAN OF THE AIRPORT

The extended plan which has been done in this project has multiple specialities and facilities like an extended Runway, Hangars, Refuelling area, Aprons, etc.

## II. PLANNING

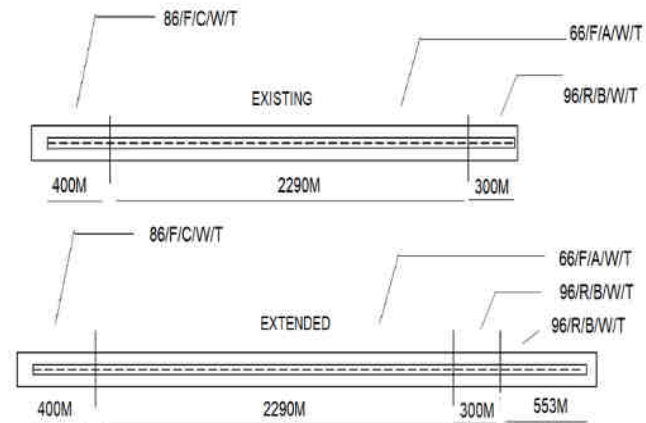
Plan of the airport extension has been drawn using AUTOCADD 2016. The existing runway dimension of 2990 x 45m has been extended to 3543 x 45m. New airplane parking area of 142100sq.m has been planned with an extended new terminal of dimension 300 x 100m.

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**Table -1:** Comparison of Previously available vs extended airport.

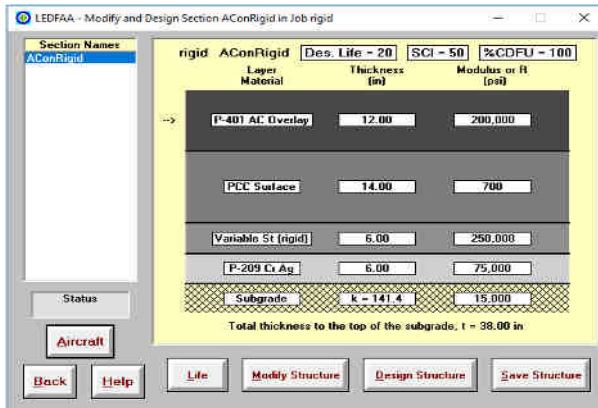
NAME	OLD AIRPORT DIMENSIONS	EXTENDED AIRPORT DIMENSIONS
RUNWAY	2990 M X 45 M	3543M X 45M
RUNWAY STRIP	3110 M x 150M	3710M X 150M
TERMINAL	12619.92 sq. m	300M X 100M
APRON	423M X 125M	500M X 200M
AIRPLANE PARKING	-	700M X 203M
REFUELING AREA	-	70M X 90 M
HANGARS	2100 sq. m	75M X 90M
LABOURS PARKING	-	60M X 90M
ISOLATION BAY	91M X 76M	100M X 110M
CONTROL TOWER	-	60M RADIUS
GENERATOR ROOM	-	75M X 50M
USER'S PARKING	-	1250M X 200M
MANDATORY BUFFER ZONE	-	1290M X 60M

The above mentioned table shows the difference between the existing airport amenities and dimensions vs newly extended amenities and dimensions.

## III. DESIGN

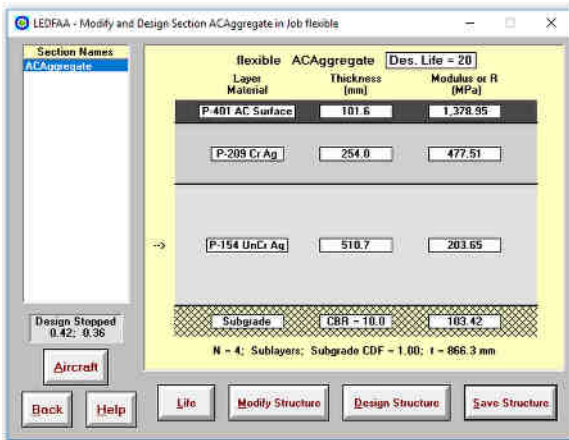
The design of runway pavements was done using FAARFIELD software. The pavement has been designed such a way that the aircrafts such as Aircraft A340-500/600 and Boeing-B747-400ER could land and takeoff with complete security and safety. The passengers could feel the comfortability and safety while takeoff and landing. The pavement has been designed in such a way that the above mentioned aircrafts could land safely. The design of pavement has been made with both rigid and flexible pavement.

PICTURE 1: DESIGN STANDARDS FOR PAVEMENT AS RIGID TYPE



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PICTURE 2: DESIGN STANDARDS FOR PAVEMENT AS FLEXIBLE TYPE



#### IV. CONCLUSION

The extended airport is highly utilizable and has a large area for parking airplanes, a newly planned up apron, a new hangar, a larger terminal building, passenger parking, and a new refueling area. The newly planned and designed pavement can bear the load of Airbus A340-500/600 and Boeing B-747-400ER.

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