

Bandar Udara Internasional Hang Nadim terletak di Kota Batam, Provinsi Kepulauan Riau, Indonesia. Saat ini, sedang dilaksanakan Proyek Pengembangan Bandar Udara Internasional Hang Nadim yang mencakupi renovasi Terminal I, pembangunan Terminal II, perluasan *apron*, serta pengembangan berbagai fasilitas di sisi udara dan darat. Oleh karena itu, penelitian Tugas Akhir ini bertujuan untuk melakukan sebuah perancangan alternatif desain perkerasan kaku *apron* Bandar Udara Internasional Hang Nadim dengan mempertimbangkan menahan beban pesawat yang beroperasi di bandar udara tersebut. Perancangan perkerasan kaku pada *apron* bandar udara juga dilakukan secara detail dan matang agar mampu bertahan dalam jangka waktu yang panjang selama 20 tahun ke depan.

Dalam penelitian ini, analisis perancangan tebal perkerasan kaku yang dilakukan menggunakan dua metode yaitu metode empiris *Federal Aviation Administration* (FAA) dan dengan menggunakan *software Federal Aviation Administration Rigid and Flexible Iterative Layered Designed* (FAARFIELD). Selain itu, penelitian ini juga melakukan analisis perhitungan nilai *Aircraft Classification Rating* (ACR) – *Pavement Classification Rating* (PCR) dari hasil perancangan tebal perkerasan dengan menggunakan *software* FAARFIELD.

Berdasarkan hasil analisis yang telah dilakukan untuk merancang tebal perkerasan kaku apron, didapatkan bahwa dengan hasil metode empiris FAA total tebal perkerasan sebesar 740 mm dengan tebal lapisan *surface course* sebesar 440 mm. Sedangkan dengan *software* FAARFIELD didapatkan total tebal perkerasan sebesar 720 mm dengan tebal lapisan *surface course* sebesar 420 mm. Dan hasil analisis perhitungan nilai ACR – PCR untuk hasil rancangan tebal perkerasan metode empiris FAA dan *software* FAARFIELD didapatkan nilai PCR = 1.170/R/C/W/T.

Kata kunci: Bandar udara, Perkerasan Kaku, FAA, FAARFIELD, ACR – PCR

Hang Nadim International Airport is located in Batam City, Riau Islands Province, Indonesia. Currently, the Hang Nadim International Airport Development Project is being carried out, which includes the revitalization of Terminal I, the construction of Terminal II, the expansion of the apron, and the development of various airside and landside facilities. Therefore, this thesis research aims to design an alternative rigid pavement for the apron of Hang Nadim International Airport, which can be used as a consideration or comparison with the existing design results. The design is carried out in detail and meticulously, taking into account the aircraft loads operating at the airport, to ensure durability for the next 20 years.

In this research, the design thickness of the rigid pavement was analyzed using two methods: the empirical method of the Federal Aviation Administration (FAA) and the Federal Aviation Administration Rigid and Flexible Iterative Layered Design (FAARFIELD) software. Additionally, this research also conducted an analysis of the Aircraft Classification Rating (ACR) – Pavement Classification Rating (PCR) values from the pavement thickness design using the FAARFIELD software.

Based on the analysis results, the designed thickness of the rigid pavement for the apron, using the FAA empirical method, was found to be 740 mm in total thickness with a surface course layer thickness of 440 mm. Meanwhile, using the FAARFIELD software, the total pavement thickness was found to be 720 mm with a surface course layer thickness of 420 mm. The ACR – PCR value analysis for the designed pavement thickness using both the FAA empirical method and FAARFIELD software resulted in a PCR value of 1.170/R/C/W/T.

Keywords: Airport, Rigid Pavement, FAA, FAARFIELD, ACR – PCR