

ABSTRAK

Ruas Jalan Otto Iskandardinata di Kabupaten Jember merupakan salah satu jalur strategis yang melayani mobilitas masyarakat dan distribusi barang dengan intensitas lalu lintas yang tinggi, termasuk kendaraan berat. Kondisi tersebut menyebabkan struktur perkerasan menerima beban berulang yang berpotensi mempercepat terjadinya kerusakan apabila desain perkerasan tidak direncanakan secara tepat. Penelitian ini bertujuan mengevaluasi dan membandingkan alternatif desain struktur perkerasan berdasarkan Manual Desain Perkerasan Jalan (MDPJ) 2024, sekaligus menganalisis aspek finansial untuk menentukan alternatif yang paling efisien. Penelitian menggunakan pendekatan kuantitatif deskriptif melalui analisis data lalu lintas harian rata-rata (LHR), nilai *California Bearing Ratio* (CBR) tanah dasar, perhitungan *Cumulative Equivalent Standard Axle* (CESA), evaluasi struktur perkerasan, serta penyusunan Rencana Anggaran Biaya (RAB). Hasil analisis menunjukkan nilai CESA sebesar 18.478.380,29 ESA dengan nilai CBR tanah dasar sebesar 13,706%, sehingga diperoleh tiga alternatif desain, yaitu perkerasan lentur AC dengan *Cement Treated Base* (CTB), perkerasan lentur AC dengan lapis fondasi agregat, dan perkerasan kaku untuk lalu lintas berat. Evaluasi terhadap perkerasan kaku menghasilkan nilai fatigue sebesar 8,05% dan erosi sebesar 5,43%, sehingga masih memenuhi persyaratan desain MDPJ 2024. Berdasarkan analisis finansial, alternatif perkerasan kaku memberikan biaya konstruksi paling rendah, yaitu sekitar Rp8,49 miliar, lebih ekonomis dibandingkan kedua alternatif perkerasan lentur. Hasil penelitian menunjukkan bahwa pemilihan struktur perkerasan tidak hanya mempertimbangkan aspek teknis, tetapi juga efisiensi biaya, sehingga dapat menjadi referensi dalam perencanaan infrastruktur jalan yang berkelanjutan dan ekonomis.

Kata Kunci: Analisis Finansial, Jalan Otto Iskandardinata, Manual Desain Perkerasan Jalan 2024, Perkerasan Kaku, Perkerasan Lentur.

ABSTRACT

The Otto Iskandardinata Road section in Jember Regency is one of the strategic transportation corridors that supports community mobility and goods distribution with a high volume of traffic, including heavy vehicles. These conditions expose the pavement structure to repetitive traffic loading, potentially accelerating pavement deterioration if the pavement design is not appropriately planned. This study aims to evaluate and compare pavement structure alternatives based on the 2024 Road Pavement Design Manual (MDPJ 2024) while conducting a financial analysis to determine the most cost-effective alternative. A descriptive quantitative approach was employed using average daily traffic (ADT) data, subgrade California Bearing Ratio (CBR) values, Cumulative Equivalent Standard Axle (CESA) calculations, pavement structural evaluation, and construction cost estimation (RAB). The analysis produced a CESA5 value of 18,478,380.29 ESA and a subgrade CBR value of 13.706%, resulting in three feasible pavement alternatives: asphalt concrete pavement with Cement Treated Base (CTB), asphalt concrete pavement with an aggregate base course, and rigid pavement for heavy traffic. Structural evaluation of the rigid pavement indicated a fatigue value of 8.05% and an erosion value of 5.43%, both of which satisfy the design requirements specified in MDPJ 2024. The financial analysis revealed that rigid pavement is the most economical alternative, with an estimated construction cost of approximately IDR 8.49 billion, which is significantly lower than the two flexible pavement alternatives. These findings demonstrate that pavement selection should consider not only structural performance but also construction cost efficiency, providing valuable guidance for sustainable and economically efficient road infrastructure planning.

Keywords: *Financial Analysis, Otto Iskandardinata Road, MDPJ 2024, Rigid Pavement, Flexible Pavement.*