

## INTISARI

Preservasi jalan merupakan elemen penting dalam mempertahankan mobilitas orang dan barang. Campuran beraspal dituntut tidak hanya ekonomis, tetapi juga memiliki kinerja tinggi untuk menahan beban kendaraan. Dengan keterbatasan dana preservasi, penggunaan *Reclaimed Asphalt Pavement* (RAP) dalam campuran aspal dapat menjadi solusi karena sejalan dengan prinsip pembangunan berkelanjutan dengan mengurangi limbah konstruksi serta penggunaan sumber daya alam baru. Kombinasi antara RAP dan aspal *Performance Grade* (PG) yang dirancang khusus untuk menghadapi kondisi iklim ekstrem dan memiliki ketahanan deformasi dapat menjadi pilihan tepat untuk meningkatkan ketahanan dan umur layan jalan.

Kadar RAP yang digunakan pada penelitian terdiri atas variasi 0%, 20%, 30%, dan 40%. Penelitian diawali dengan pengujian material agregat, *filler*, aspal PG 70, dan RAP. Selanjutnya dilakukan uji saringan, perhitungan perkiraan kadar aspal, dan uji berat jenis maksimum (GMM). Pengujian dilakukan terhadap benda uji kombinasi campuran bertujuan untuk mengevaluasi karakteristik mekanik, fisik, dan performa dari campuran aspal dengan berbagai komposisi material, seperti agregat, aspal, *filler*, dan bahan tambahan RAP dengan *Marshall test*, stabilitas Marshall sisa, *indirect tensile strength*, dan *wheel tracking test*.

Hasil pengujian stabilitas Marshall dari variasi campuran aspal RAP 0%, 20%, 30%, dan 40% masing-masing memiliki hasil 1.478 kg, 1.711 kg, 1.795 kg, dan 2.006 kg. Hasil pengujian stabilitas Marshall sisa dari variasi campuran aspal RAP 0%, 20%, 30%, dan 40% masing-masing memiliki hasil 91,43%; 91,36%; 94,12%; dan 96,84%. Hasil pengujian dari variasi campuran aspal RAP 0%, 20%, 30%, dan 40% masing-masing memiliki nilai stabilitas dinamis *wheel tracking test* 3.316 lintasan/mm, 12.600 lintasan/mm, 15.750 lintasan/mm, dan 21.000 lintasan/mm. Hasil pengujian *indirect tensile strength ratio* dari variasi campuran aspal RAP 0%, 20%, 30%, dan 40% masing-masing memiliki hasil 86,88%; 79,09%; 88,83%; dan 86,65%. Variasi RAP 0%, 30%, dan 40% menunjukkan karakteristik mampu menahan deformasi plastis, kinerja baik pada masa layan, tahan terhadap *rutting*, dan tahan kerusakan akibat air.

**Kata kunci:** *Reclaimed Asphalt Pavement* (RAP), Aspal PG 70, Stabilitas Marshall, Stabilitas Dinamis, *Indirect Tensile Strength Ratio*

## ABSTRACT

*Road preservation is a vital element in maintaining people and goods' mobility. Asphalt mixtures are required to be not only economical, but also high-performing to withstand vehicle loads. Given the limitations of preservation funding, the use of Reclaimed Asphalt Pavement (RAP) in asphalt mixtures can be a viable solution, as it aligns with the principles of sustainable development by reducing construction waste and the use of new natural resources. The combination of RAP and Performance Grade (PG) asphalt, specifically designed to withstand extreme climatic conditions and provide deformation resistance, can be an effective option to enhance road durability and service life.*

*RAP content used in this study consisted of 0%, 20%, 30%, and 40%. The research started with materials testing, including aggregate, filler, PG 70 asphalt, and RAP. This was followed by sieve analysis, asphalt content estimation, and maximum specific gravity (GMM) testing. The testing of the asphalt mixture specimens aimed to evaluate the mechanical, physical, and performance characteristics of the mixtures with various material compositions, using Marshall test, retained Marshall stability, indirect tensile strength, and wheel tracking test.*

*The results of the Marshall stability tests for the RAP asphalt mixture variations of 0%, 20%, 30%, and 40% were 1,478 kg, 1,711 kg, 1,795 kg, and 2,006 kg respectively. The retained Marshall stability results for the same RAP mixture variations were 91.43%, 91.36%, 94.12%, and 96.84%. The wheel tracking test results for the RAP variations of 0%, 20%, 30%, and 40% yielded dynamic stability values of 3,316 passes/mm, 12,600 passes/mm, 15,750 passes/mm, and 21,000 passes/mm respectively. The indirect tensile strength ratio results for RAP content variations of 0%, 20%, 30%, and 40% were 86.88%, 79.09%, 88.83%, and 86.65% respectively. The RAP variations of 0%, 30%, and 40% demonstrated characteristics of resistance to plastic deformation, resistance to rutting, and resistance to moisture damage.*

**Keywords:** *Reclaimed Asphalt Pavement (RAP), PG 70 Asphalt, Marshall Stability, Dynamic Stability, Indirect Tensile Strength Ratio*