ABSTRAK

KARAKTERISTIK CAMPURAN PERKERASAN TIPE *BINDER-COURSE* MENGGUNAKAN BAHAN PENGIKAT SERBUK KARET BAN BEKAS

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Peningkatan volume lalu lintas kendaraan berat memicu kerusakan dini pada struktur jalan, seperti deformasi permanen (*rutting*) dan retak lelah. Salah satu upaya meningkatkan mutu perkerasan adalah dengan memodifikasi aspal menggunakan material polimer elastomer, seperti serbuk karet ban bekas (*Crumb Rubber*). Metode penelitian dilakukan secara eksperimental di laboratorium dengan membuat benda uji menggunakan variasi kadar serbuk karet sebesar (12,5%, 13%, 13,5%, 14%, dan 14,5%). Penentuan kadar optimum awal dilakukan berdasarkan spesifikasi Bina Marga 2018. Pengujian karakteristik campuran dilakukan menggunakan metode *Marshall* untuk mengevaluasi parameter stabilitas, *flow* (kelelehan), *Marshall Quotient* (MQ), dan *Voids in Mix* (VIM). Hasil penelitian menunjukkan bahwa penggunaan serbuk karet ban bekas secara signifikan memengaruhi karakteristik campuran. Penambahan serbuk karet pada kadar optimum sebesar 12,5% mampu meningkatkan nilai stabilitas *Marshall*. Namun, peningkatan kadar serbuk karet yang terlalu tinggi cenderung menurunkan nilai stabilitas dan meningkatkan rongga dalam campuran (VIM).

Kata kunci*: Binder Course*, Serbuk Karet Ban Bekas, Karakteristik *Marshall*

ABSTRACT

CHARACTERISTICS OF BINDER-COURSE PAVEMENT MIXTURE USING CRUMB RUBBER BINDER FROM WASTE TIRES

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The increasing volume of heavy vehicle traffic triggers premature damage to road structures, such as permanent deformation (rutting) and fatigue cracking. One effort to improve pavement quality is by modifying asphalt using elastomeric polymer materials, such as crumb rubber from waste tires. The research method was conducted experimentally in the laboratory by fabricating specimens using crumb rubber content variations of (12.5%, 13%, 13.5%, 14%, and 14.5%). The determination of the initial optimum content was based on the 2018 Bina Marga specifications. Testing of the mixture characteristics was conducted using the Marshall method to evaluate parameters of stability, flow, Marshall Quotient (MQ), and Voids in Mix (VIM). The results showed that the use of waste tire crumb rubber significantly affected the mixture characteristics. The addition of crumb rubber at an optimum content of 12.5% was able to increase the Marshall stability value. However, an excessively high increase in crumb rubber content tended to decrease the stability value and increase the voids in the mix (VIM).

Keywords: Binder Course, Waste Tire Crumb Rubber, Marshall Characteristics