

PERANCANGAN LABORATORIUM CAMPURAN HRS-WC DENGAN PENGUNAAN *BUTON GRANULAR ASPHALT* (BGA) SEBAGAI BAHAN *ADDITIVE*

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INTISARI

Kebutuhan aspal dalam negeri yang semakin meningkat sehingga kita harus mengimpor sampai 650.000 ton per tahun. Terjadinya kerusakan dini pada pekerjaan pengaspalan akibat dari beban lalu lintas yang semakin berat dan temperatur perkerasan yang tinggi. Disisi lain masih belum dimanfaatkannya secara optimal aspal alam yang terdapat di pulau Buton Sulawesi Tenggara yang mana merupakan daerah deposit aspal alam terbesar di dunia yaitu sekitar 677 juta ton. Oleh karena itu, penelitian yang akan dilakukan bertujuan untuk merancang campuran HRS-WC dengan menggunakan aspal dari pulau Buton ini yang berbentuk *Buton Granular Asphalt* (BGA) sebagai bahan tambah (*additive*).

Pengujian yang dilakukan untuk mengetahui karakteristik campuran dengan tinjauan terhadap karakteristik Marshall. Campuran dirancang dengan prosedur Marshall standar dan perendaman 24 jam pada kadar pengikat optimum yang sesuai dengan kriteria Bina Marga untuk *Hot Rolled Sheet – Wearing Course* (HRS-WC). Rancangan campuran akan dibuat dengan berbagai variasi penambahan BGA (*Buton Granular Asphalt*) yang digunakan 0%, 2%, 4% , 6%, 8% dan 10% terhadap total campuran aspal.

Hasil penelitian menunjukkan kadar aspal optimum benda uji variasi *Buton Granular Asphalt* (BGA) 0%, 2%, 4%, 6%, 8%, dan 10% adalah 8,3%, 7,7%, 7,2%, 6,7%, 6,4%, dan 6,3%. Nilai stabilitas yang dicapai campuran adalah 1373,8 kg, 1554,9 kg, 1493,1 kg, 1419,3 kg, 1230,0 kg, dan 1429,3 kg. Indeks kekuatan sisa yang diperoleh adalah 98,1%, 75,4%, 87,9%, 93,0%, 98,6%, dan 80,5%. Komposisi yang cocok untuk penambahan *Buton Granular Asphalt* (BGA) pada campuran HRS-WC adalah kadar BGA 2% dan 4%. Nilai *density* campuran 2,266 gr/cm³ dan 2,218 gr/cm³. Nilai VMA campuran 19,9% dan 18,9%. Nilai VFWA campuran 74,7% dan 71,4%. Nilai VITM campuran 5,0% dan 5,4%. Nilai stabilitas campuran 1554,9 kg dan 1493,1 kg. Nilai *flow* campuran keduanya sama 3,0 mm. Nilai MQ campuran 524,1 kg/mm dan 493,1 kg/mm. Indeks kekuatan sisa campuran adalah 75,4% dan 87,9%.

Kata kunci : HRS-WC, *Buton Granular Asphalt*, BGA, *additive*

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LABORATORY DESIGN OF HRS-WC MIXTURE UTILIZING BUTON GRANULAR ASPHALT (BGA) AS AN ADDITIVE

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ABSTRACT

Requirement of asphalt in country is increasing, that affecting in 650,000 tons of imported asphalt per year. The early damage of asphalt pavement because of increasingly heavy axle loads and high temperature climates. On the other side, it have not been exploited optimally of the natural asphalt in Buton island of Sulawesi Tenggara which is the biggest natural asphalt deposit district in world, of around 677 million tons. Therefore, this research will be conducted to design HRS-WC mixture utilizing Buton Granular Asphalt (BGA), one of the Buton asphalt form, as an additive on the binder.

The purpose this research is to know mixture characteristic with review to characteristic Marshall. Mixture is designed with procedure Marshall Standard and Marshall Immersion of 24 hours at optimum binder content according with Indonesian specification (Bina Marga, 2005) for Hot Rolled Sheet-Wearing Course (HRS-WC). Mixture design will be made with variation of additive BGA (Buton Granular Asphalt) what applied of 0%, 2%, 4% , 6%, 8% and 10% to the total mixture.

The results of the research showed optimum asphalt content of specimen Buton Granular Asphalt (BGA) various of 0%, 2%, 4%, 6%, 8%, and 10% were 8.3%, 7.7%, 7.2%, 6.7%, 6.4%, and 6.3% respectively. Stability values reached by mixture were 1373.8 kgs, 1554.9 kgs, 1493.1 kgs, 1419.3 kgs, 1230.0 kgs, and 1429.3 kgs. Index of retained strength obtained were 98.1%, 75.4%, 87.9%, 93.0%, 98.6%, and 80.5%. Composition which suited for addition Buton Granular Asphalt (BGA) at HRS-WC mixture were 2% and 4% BGA, with density values of mixture were 2.266 gr/cm³ and 2.218 gr/cm³, VMA values mixture were 19.9% and 18.9%, VFWA values of mixture were 74.7% and 71.4%, VITM values of mixture were 5.0% and 5.4%, Stability values of mixture were 1554,9 kgs and 1493,1 kgs, flow value of mixture both same was 3,0 mm, MQ values of mixture were 524.1 kg/mm and 493.1 kg/mm, Index of retained strength of mixtures were 75.4% and 87.9%.

Keywords : HRS-WC, Buton Granular Asphalt, BGA, additive