ABSTRAK

Terjadinya kerusakan pada perkerasan jalan tentu tidak dapat dihindari. Dan yang paling dominan adalah kerusakan akibat deformasi permanen akibat jejak alur (*rutting). Rutting* / Jejak Alur) berasal dari deformasi permanen pada lapis perkerasan atau tanah dasar, yang biasanya disebabkan konsolidasi atau pergerakan lateral bahan perkerasan akibat beban kendaraan.(Penentuan Indeks Kondisi Perkerasan (IKP), 2016). Pada umumnya, campuran beraspal yang sering dijumpai adalah campuran aspal panas (*Hotmix*). Namun *Hotmix* dianggap kurang baik terhadap lingkungan.

Maksud dari penelitian ini adalah melakukan analisis stabilitas dinamis pada campuran beraspal AC-WC dengan metode *warm mix* sedangkan tujuan dari penelitian ini adalah : Menentukan karakteristik campuran beraspal ACWC berdasarkan hasil *Marshall* Test standar, menentukan nilai IKS pada nilai KAO dan menentukan nilai stabilitas dinamis dari hasil pengujian *Wheel Tracking* untuk campuran ACWC pada nilai KAO dengan penambahan kadar zeolite 0,5%; 1%; dan 1,5%.

Berdasarkan hasil pengujian *marshal test* pada benda uji campuran beraspal ACWC *dengan metode hotmix* tanpa penambahan zeolite (Kadar Zeolite 0%) diperoleh nilai Stabilitas sebesar 1029,77 Kg, nilai flow sebesar 3,57 mm, nilai VIM sebesar 3,53%, nilai VFA sebesar 77,36% dan nilai VMA sebesar 15,57%. Dan berdasarkan hasil penelitian pengujian *marshal test* pada benda uji campuran beraspal ACWC *dengan metode warm mix*, diperoleh nilai: Kadar Zeolite 0%, diperoleh nilai Stabilitas sebesar 1029,77 Kg, nilai flow sebesar 3,57 mm, nilai VIM sebesar 3,53%, nilai VFA sebesar 77,36% dan nilai VMA sebesar 15,57%. Kadar Zeolite 0,5%, nilai Stabilitas sebesar 1337,88 Kg, nilai flow sebesar 3,22 mm, nilai VIM sebesar 3,03%, nilai VFA sebesar 80,01% dan nilai VMA sebesar 15,13%. Kadar Zeolite 1%, nilai Stabilitas sebesar 1393,86 Kg, nilai flow sebesar 3,13 mm, nilai VIM sebesar 3,01%, nilai VFA sebesar 80,13% dan nilai VMA sebesar 15,12%. Kadar Zeolite 1,5%, nilai Stabilitas sebesar 1444,24 Kg, nilai flow sebesar 3,02 mm, nilai VIM sebesar 3,11%, nilai VFA sebesar 79,54% dan nilai VMA sebesar 15,21%. Semua variasi kadar zeolite mendapatkan nilai yang memenuhi persyaratan Spesifikasi Umum Bina Marga Tahun 2018. Nilai IKS berdasarkan hasil pengujian *marshal test* pada benda uji campuran beraspal ACWC *dengan metode warm mix*, diperoleh nilai: Kadar Zeolite 0,5%, nilai IKS sebesar 92,05%. Kadar Zeolite 1%, nilai IKS sebesar 91,16%. Kadar Zeolite 1,5%, nilai IKS sebesar 90,31%. Semua variasi kadar zeolite mendapatkan nilai yang memenuhi persyaratan (minimal 90). Nilai Stabilitas Dinamis berdasarkan hasil pengujian Wheel Tracking Machine pada benda uji campuran beraspal ACWC *dengan metode warm mix*, diperoleh nilai: Kadar Zeolite 0,5%, nilai Stabilitas Dinamis sebesar 2172,4 lintasan/menit. Kadar Zeolite 1%, nilai Stabilitas Dinamis sebesar 2426,65 lintasan/menit. Kadar Zeolite 1,5%, nilai Stabilitas Dinamis sebesar 2744,3 lintasan/menit. Nilai minimal yang dipersyaratkan minimal 2500 lintasan/menit, maka nilai yang memenuhi persyaratan didapat pada kadar zeolite 1,5%.

Kata Kunci: jejak alur (*rutting),* warm mix, zeolite, stabilitas dinamis

ABSTRACT

The occurrence of damage to road pavement is certainly unavoidable. The most dominant is damage due to permanent deformation due to rutting/Rutting originates from permanent deformation in the pavement layer or subgrade, which is usually caused by consolidation or lateral movement of the pavement material due to vehicle loads. (Determination of the Pavement Condition Index (IKP), 2016). In general, the asphalt mixture that is often found is hotmix. However, Hotmix is considered not good for the environment.

The meaning of this research is to carry out a dynamic stability analysis of the AC-WC asphalt mixture using the warm mix method while the objectives of this research are to determine the characteristics of the ACWC asphalt mixture based on the results of the standard Marshall Test, determine the IKS value on the KAO value and determine the dynamic stability value from the results Wheel Tracking test for ACWC mixture at KAO value with the addition of 0.5% zeolite content; 1%; and 1.5%.

Based on the results of the marshal test on ACWC asphalt mixture test objects using the hot mix method without the addition of zeolite (0% Zeolite content), the Stability value was 1029.77 Kg, the flow value was

3.57 mm, the VIM value was 3.53%, the VFA value amounted to 77.36% and the VMA value was 15.57%. Zeolite content is 0.5%, Stability value is 1337.88 Kg, flow value is 3.22 mm, VIM value is 3.03%, VFA value is 80.01% and VMA value is 15.13%. Zeolite content is 1%, Stability value is 1393.86 Kg, flow value is 3.13 mm, VIM value is 3.01%, VFA value is 80.13% and VMA value is 15.12%. Zeolite content is 1.5%, Stability value is

1444.24 Kg, flow value is 3.02 mm, VIM value is 3.11%, VFA value is 79.54% and VMA value is 15.21%. All variations in zeolite content received a value that meets the requirements of the 2018 General Specifications for Highways. The IKS value is based on the results of the marshal test on ACWC asphalt mixture test objects using the warm mix method, the values obtained: Zeolite content 0.5%, IKS value 92.05 %. Zeolite content is 1%, IKS value is 91.16%. Zeolite content is 1.5%, IKS value is 90.31%. All variations in zeolite levels get a value that meets the requirements (minimum 90). Dynamic Stability Value Based on the results of Wheel Tracking Machine testing on ACWC asphalt mixture test objects using the warm mix method, the values obtained were: Zeolite content 0.5%, Dynamic Stability value of 2172.4 passes/minute. Zeolite content 1%, Dynamic Stability value of 2426.65 passes/minute. Zeolite content 1.5%, Dynamic Stability value of 2744.3 passes/minute. The minimum value required is at least 2500 passes/minute, so a value that meets the requirements is obtained at a zeolite content of 1.5%.

Keywords: rutting, warm mix, zeolite, dynamic stability