ABSTRAK

Di Indonesia terdapat beberapa permukaan jalan yang rusak akibat genangan air yang menyebabkan kerusakan pada struktur perkerasan aspal. Salah satu campuran perkerasan aspal yang memiliki peran penting yaitu agregat halus pasir namun semakin lama pasir akan menipis dan tidak dapat diperbaharui. Alternatif pengganti pasir adalah limbah marmer karena memiliki sifat CaO yang dapat menambah distribusi pengikat pada campuran aspal. Tujuan dari penelitian ini untuk mengetahui karakteristik *Marshall* dan nilai *IRS* pada campuran LASTON *AC-WC* menggunakan variasi limbah marmer sebagai bahan pengganti agregat halus dengan durasi rendaman 0 jam, 48 jam, 96 jam.

Penelitian dimulai dengan pemeriksaan sifat fisik agregat, aspal, dan menentukan nilai perkiraan kadar aspal optimum. Kemudian membuat benda uji untuk menentukan KAO. Setelah mendapatnya nilai KAO, selanjutnya membuat benda uji tiap variasi 0%, 25%, 50%, 75% dan 100% lalu dilanjutkan merendam dengan durasi perendaman 0 jam, 48 jam, dan 96 jam, kemudian melakukan uji *Marshall* dan *Immersion*. Pemeriksaan sifat fisik agregat dan aspal mengacu pada spesifikasi Bina Marga 2010 Revisi 3.

Hasil pengujian menunjukkan ada peningkatan nilai stabilitas, *flow*, *MQ*, dan *VFWA*. Peningkatan stabilitas terjadi pada kadar marmer 50% kemudian menurun pada kadar 75% sebesar 26,50% pada rendaman 0 jam, 18,46% pada rendaman 48 jam, dan 23,31% pada rendaman 96 jam. Nilai flow mengalami peningkatan sebesar 7,19% pada rendaman 0 jam, 9,35% pada rendaman 48 jam, dan 5,96% pada rendaman 96 jam. Nilai *MQ* mengalami peningkatan hingga kadar marmer 50% dan terjadi penurunan pada kadar marmer 75% sebesar 34,32% pada rendaman 0 jam, 28,82%% pada rendaman 48 jam, dan 29,68% pada rendaman 96 jam. Nilai *IRS* limbah marmer dengan durasi perendaman yang memenuhi spek. Bina Marga 2010 Rev. 3 yaitu >90% adalah kadar marmer 0% sampai 100% pada rendaman 0 jam, kadar marmer 0% sampai 50% pada rendaman 48 jam, kadar marmer 0% sampai 25% pada rendaman 96 jam.

Kata-kata Kunci : LASTON *AC-WC*, Limbah Marmer, Rendaman, *Marshall*, *Immersion*.

ABSTRACT

There were some damage of road surface in Indonesia that caused of the puddle and lead to a damage structure of the asphalt pavement. One mixture of asphalt pavement which had an important role was the fine aggregate or sand, but in long term period the sand would be thinned and not renewable. Alternative substitute for sand was marble waste because it had CaO content which could increase the binder distribution in asphalt mixture. The purpose of this study was to determine the characteristics of Marshall and IRS values in AC-WC LASTON mixture by using marble waste as the alternative of fine aggregate material with soak duration of 0 hours, 48 hours, 96 hours.

The research began with the examination of aggregate physical properties, asphalt and estimated the KAO's value, then made the sample to determine KAO. After that, made the sample in each variant 0%, 25%, 50%, 75% and 100%, then soaked in 0 hours, 48 hours, 96 hours, last Marshall and Immersion testing. Aggregate and asphalt physical properties referred to Bina Marga specifications 2010 3rd revision 3.

The result of that test showed there was an increase value of the stability, flow, MQ, and VFWA. Increase of stability occurred 50 % to marble's content and decreased 75% to the content in the amount of 26,50% after 0 hours soaking, 18,46% after 48 hours soaking, and 23,31% after 96 hours soaking. Flow's value had increased in the amount of 7,19% after 0 hours soaking, 9,35% after 48 hours soaking, and 5,96% after 98 hours soaking. MQ's value had the increase up to 50% marble's content and had the decrease of 75% marble's content in the amount of 34,32% after 0 hours soaking, 28,82% after 48 hours soaking, and 29,68% after 96 hours soaking. Waste marble IRS's value in the duration of soaking that fulfilled Bina Marga 2010 3rd revision specification was >90% is 0% until 100% marble's content after 0 hours soaking, 0% until 50% marble's content after 48 hours soaking, 0% until 25% marble's content after 96 hours soaking.

Keywords : *Mix Asphalt Concrete, Marble Waste, Soaked, Marshall, Immersion.*