ABSTRACT

Global warming is a warming of the earth's temperature which raises the phenomenon of rising sea levels which threatens the sustainability of coastal areas. Sea water enters the land area when the sea level experiences a tide called the rob tidal flood. Rob floods damage facilities and infrastructure, as well as public infrastructure such as roads. Road pavement has decreased performance, so it is easily deformed due to traffic loads. Besides that the sea water has a high acidity level and can form a hole that will get bigger if it is not immediately handled. Therefore, it is necessary to do research on new alternative pavement mixtures that can overcome the problem of tidal flooding in coastal areas. The purpose of this study was to determine the performance of 12.5 mm Stone Matrix Asphalt using rice husk ash filler, if submerged in sea water for 48 hours and 96 hours.

The stages of the research were the examination of the physical properties of the material (asphalt, coarse aggregate, fine aggregate, filler and sea water), determination of optimum asphalt content, manufacture of specimens, immersion of specimens with seawater, Marshall, Immersion, Indirect Tensile Strength, Cantabro, and Permeability. The next stage makes analysis and discussion. The standard in the examination of material physical properties refers to Bina Marga 2010 and mixed standards refer to AASHTO M325.

The results showed that the addition of rice husk ash increased the stability value and the maximum MQ value at 50% filler content, then decreased to 75% and 100% filler levels. Flow values tend to increase but decrease at 50% filler levels. When submerged in sea water, the value of stability, flow, and MQ has decreased. The biggest stability decrease was 100% filler content of 25.82% 48 hours immersion and 75% filler level of 30.49% 96 hours immersion. The largest decrease in flow value at 50% filler content is equal to 6.06% 48 hour immersion and 11.11% 96 hour immersion. The biggest decrease in MQ value at 100% filler content was 21.82% 48 hour immersion and 26.05% 96 hour immersion. The value of VITM decreases at 25% filler levels and increases at 50% filler levels. The value of VMA increases at 50% filler levels and the value of density decrease with increasing levels of filler of rice husk ash. The IRS value increases until the filler level is 50%, then decreases with the addition of the filler content. At 48 hours sea water immersion duration and 96 hours IRS value does not meet the 2010 Bina Marga specifications which is> 90%. However, for the IRS value for all filler levels in the 48 hour immersion and 50% filler content in the 96 hour bath, it still met the minimum requirements of the Asphalt Institute requirement of> 75%. The value of ITS continued to decline along with the increase in the content of rice husk ash filler, the largest decrease in the filler level of 0% was 12.96% 48 hours soaking and at 50% filler content of 31.86% 96 hours soaking. Cantabro Loss values continue to increase on the addition of rice husk ash content. The biggest weight loss at 50% filler content was 58.42% 48 hour immersion and 75.53% 96 hour immersion. Cantabro Loss value for 48 hours and 96 hours soaking duration does not meet the 2010 Bina Marga specifications, which is a maximum of 20%. The permeability coefficient shows an "bad drainage" indicator for all levels of rice husk ash filler. After seeing from all aspects of testing, it can be concluded that the mixture of SMA 12.5 mm at 50% rice husk ash filler showed good performance when receiving loads under conditions of submerged sea water.

***Keywords**: Seawater, Rice Husk Ash, Stone Matrix Asphalt, Filler*