

ABSTRAK

Saat ini pembangunan jalan Trans Papua (ruas Jayapura menuju Elelim) belum 100 % selesai, sehingga belum layak untuk dilewati. Pemkab Yalimo mengeluarkan surat larangan untuk melewati ruas tersebut, namun tidak diindahkan oleh sebagian penduduk. Oleh karena itu, Kementerian PUPR melakukan beberapa survei jalan, guna mengetahui kondisi jalan. Sehingga, Kementerian tersebut dapat merencanakan program rehabilitasi secara tepat dan benar. Penelitian ini membahas mengenai evaluasi kondisi jalan dan perencanaan rehabilitasi berdasarkan alat Light Weight Deflectometer (LWD), yang bertujuan untuk mengetahui pemanfaatan alat LWD (berupa nilai lendutan, dan nilai modulus elastisitas), faktor – faktor penyebab kerusakan jalan, langkah penanganan kerusakan, dan merencanakan tebal lapis ulang (berdasarkan metode Bina Marga 2017 dan metode AASHTO 1993).

Hasil output alat LWD berupa nilai lendutan (d_0) dan modulus elastisitas alat (E_{LWD} alat). Nilai modulus elastisitas dapat juga diperoleh dengan menggunakan metode LWD Boussinesq (E_{LWD} analisis) berdasarkan nilai d_0 . Hasil output alat LWD berdampingan dengan data nilai IRI dapat menentukan langkah rehabilitasi berupa penanganan overlay. Sehingga untuk merencanakan tebal overlay berdasarkan metode Bina Marga 2017 dibutuhkan data berupa nilai lendutan (d_0), nilai curvature function (CF), faktor koreksi temperatur (f_r), nilai d_0 terkoreksi, nilai penyesuaian LWD ke BB, d_0 rata – rata, $d_0 - d_{200}$ rata - rata, standar deviasi, d_0 wakil, dan lengkung lendutan wakil. Sedangkan untuk metode AASHTO 1993 dibutuhkan data berupa nilai M_R , nilai a_e , nilai SN_{eff} , nilai SN_f , M_R desain, dan nilai H_{OL} .

Pada penelitian ini diperoleh nilai d_0 rata – rata 867 μm , nilai E_{LWD} alat 279, 67 MPa, nilai E_{LWD} analisis 279,99 MPa, nilai rata – rata $D_0 - D_{200}$ 252 μm , D_0 ke BB 867 μm , standar deviasi D_0 ke BB 46,2 μm , koefisien variasi 0,55, dan lendutan D_{0wakil} 1,8 mm, nilai M_R 37.536,6325 Psi, nilai a_e 31,7713 inci, nilai SN_{eff} 4.703, nilai M_R desain 12.387,089 Psi, dan nilai H_{OL} 5,013. Sehingga untuk tebal overlay rata – rata menggunakan metode Bina Marga 2017 dan AASHTO 1993 masing – masing sebesar 6 cm dan 11,1 cm.

Keywords: 1993 AASHTO, 2017 Bina Marga, Light Weight Deflectometer (LWD), overlay

ABSTRACT

Currently the construction of the Trans Papua road (Jayapura to Elelim section) is not yet 100% complete, so it is not feasible to pass. The Yalimo regency issued a prohibition letter to pass through the section, but was ignored by some residents. Therefore, the Ministry of Public Works and Housing conducted several road surveys to determine road conditions. Thus, the Ministry can plan rehabilitation programs appropriately and correctly. This study discusses the evaluation of road conditions and rehabilitation planning based on the Light Weight Deflectometer (LWD) tool, which aims to determine the use of LWD tools (in the form of deflection values and elastic modulus), factors that cause damage to roads, handling damage steps, and planning thicker layer (based on the method of Bina Marga 2017 and the AASHTO 1993 method).

The output of the LWD tool is deflection value (d_0) and the modulus of elasticity of the tool (ELWD tool). The modulus of elasticity can also be obtained using the Boussinesq LWD method (ELWD analysis) based on the value d_0 . The output of the LWD tool next to the IRI value data can determine the rehabilitation steps in the form of handling overlays. So to plan overlay thickness based on the Bina Marga method 2017 data is needed in the form of deflection value (d_0), curvature function value (CF), temperature correction factor (f_r), corrected d_0 value, LWD adjustment to BB, d_0 on average, d_0 - d_{200} average, standard deviation, d_0 deputy, and arch deflection. Whereas for the 1993 AASHTO method data is needed in the form of MR values, a_e values, S_{Neff} values, S_{Nf} values, MR designs, and HOL values.

In this study the d_0 value averaged 867 μm , the ELWD value was 279, 67 MPa, the ELWD value was 279.99 MPa, the average value was D_0 - D_{200} 252 μm , D_0 to BB 867 μm , standard deviation D_0 to BB 46, 2 μm , variation coefficient of 0.55, and deflection of represented 1.8 mm, MR value 37,536.6325 Psi, value of a_e 31,7713 inches, value of S_{Neff} 4,703, design value of MR 12,387,089 Psi, and value of HOL 5,013. So that for the overlay thickness the average uses the method of Bina Marga 2017 and AASHTO 1993 of 6 cm and 11.1 cm, respectively.

Keywords: 1993 AASHTO, 2017 Highways, Light Weight Deflectometer (LWD), overlay