

INTISARI

Pengembangan jalur pejalan kaki diperlukan untuk mendukung konektivitas antara lokasi asal dan tujuan transportasi jalan raya. Peraturan operasional jalur lalu lintas Indonesia diatur oleh Manual Kapasitas Jalan Indonesia (MKJI 1997). Kapasitas dasar merupakan representasi arus dasar maksimum yang mampu dicapai oleh jalur pejalan kaki. Aturan ini belum mengakomodasi kebutuhan jalur pejalan kaki. Oleh karena itu, penelitian ini bertujuan untuk menentukan prediksi arus maksimum yang dicapai pada jalur pejalan kaki.

Adapun penelitian ini dilakukan melalui pendekatan mikroskopik dengan alat bantu PTV Viswalk. Karakteristik pergerakan pejalan kaki lapangan dilakukan pendekatan melalui koefisien *walking behaviour* di dalam alat bantu PTV Viswalk. Penelitian ini menggunakan pendekatan teori *Social Force Model* yang diaplikasikan melalui simulasi PTV Viswalk. Penelitian ini berlokasi pada jalur pejalan kaki berupa trotoar di area publik di Yogyakarta, diantaranya trotoar pada Jalan Sardjito, Jalan Solo, Jalan Panembahan Senopati, dan Jalan Malioboro.

Hasil penelitian menunjukkan bahwa besaran nilai *walking behaviour* yang telah disediakan oleh PTV Viswalk perlu dilakukan modifikasi supaya sesuai dengan kondisi aktual di lapangan. Hasil penyesuaian nilai *walking behaviour* berupa perubahan nilai pada komponen parameter tersebut, antara lain τ , VD, *noise*, *asoc*, *bsoc*, *asoc_mean*, *bsoc_mean*, dan *obstacle distance*. Selanjutnya, dianalisis hubungan antara arus (Q) dan kecepatan (V) sebagai bentuk pergerakan arus pejalan kaki pada kondisi standar mendekati model parabolik dengan persamaan $Q = 12,90V \times [1 - (\frac{V}{79,44})^{\frac{1}{3,26}}]$. Selanjutnya, hubungan antara arus (Q) dan kerapatan (D) juga diusulkan mendekati model parabolik dengan persamaan $= 79,44k \times [1 - (\frac{k}{12,90})^{1,43}]^{2,28}$. Hasil analisis akhir menunjukkan bahwa prediksi kapasitas dasar dilakukan melalui desain standar menghasilkan besaran kapasitas dasar adalah 65 orang/m/menit. Keseluruhan hasil penelitian ini telah disesuaikan dengan proses kalibrasi dan kesesuaian model dan lapangan. Oleh karena itu, hasil penelitian dapat direkomendasikan lebih lanjut untuk acuan kapasitas dasar jalur pejalan kaki pada MKJI 1997 terutama pada wilayah kota Yogyakarta. Adapun penelitian ini juga bisa direkomendasikan untuk acuan besaran kapasitas jalur pejalan kaki di lokasi *atau* kota lainnya untuk meningkatkan validitas besaran nilai kapasitas dasar dalam penggunaannya di wilayah lainnya.

Kata kunci : Pejalan kaki, Kapasitas dasar, Viswalk, Indonesia, Simulasi

ABSTRACT

The existence of pedestrian paths in a part of the road hierarchy is one of the important components in achieving a sustainable transportation system. Pedestrian path capacity building is necessary to support planning to pedestrian evaluation. The Indonesian Road Capacity Manual (MKJI 1997) is a standard rule in evaluating traffic lanes in Indonesia. The development of pedestrian path services begins with the determination of the basic capacity of pedestrian paths. The existence of the PTV Viswalk pedestrian simulation tool is very helpful to find out the prediction of the capacity that the path design can achieve. Pedestrians who move on a path are then modeled through parameters of volume, speed and characteristics of pedestrian movement called walking behaviour. This study aims to determine the prediction of pedestrian path capacity through a microscopic approach with pvt Viswalk tools and proposals that can be included in the 1997 MKJI as a form of standard rules in the movement of pedestrian flows. In detail, this study produced the magnitude of *walking behaviour*, the influence of path geometry and the basic capacity of pedestrian paths. This research was located on pedestrian path facilities located in four locations, namely Jalan Sardjito, Jalan Solo, Jalan Panembahan Senopati, and Jalan Malioboro in Yogyakarta. The results showed that the value of *walking behaviour* provided through simulation tools needs to be adjusted to determine the results of speed and pedestrian flow in accordance with field data. The adjustment of *the walking behaviour* value is analyzed through the process of achieving a simulation speed that is close to the field speed for each change in *the walking behaviour* value. The determination of basic capacity is carried out through the design of standards in accordance with the rules of line planning in Indonesia, namely the rules issued by the Ministry of Public Works (PU) Number 3 of 2014. The standard path design of the pedestrian path results in an equation of the relationship of speed and density in the form of a Linear model predicting the basic capacity achieved is 65 people/m/min. In addition, the relationship between current (Q) and velocity (V) as a form of movement of the proposed pedestrian current approaches the parabolic model with the equation $Q = 12,90V \times [1 - (\frac{V}{79,44})^{\frac{1}{3,26}}]$. Furthermore, the relationship between current and density is also proposed approaching the parabolic model with the equation $Q = 79,44k \times [1 - (\frac{k}{12,90})^{1,43}]^{2,28}$. The results of this study have been adapted to the calibration process and the suitability of the model and the field.

Kata kunci : Pejalan kaki, Kapasitas, Viswalk, Indonesia, Simulasi