

**DEVELOPMENT OF AN EVALUATION CRITERION
TO ASSESS PEDESTRIAN FACILITIES IN URBAN
ENVIRONMENT USING WALKABILITY MEASURES**

T.W.K.I.M. DIAS



(10/8016 T)
University of Moratuwa, Sri Lanka.
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Degree of Master of Science

Department of Civil Engineering

University of Moratuwa
Sri Lanka

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Science

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Sri Lanka

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DECLARATION

I, T.W.K.I.M. Dias hereby declare that this is my own work carried out over 18 months at the Department of Civil Engineering, University of Moratuwa, Sri Lanka and this thesis does not incorporate without acknowledging any material previously submitted for a Degree or Diploma in any other University or institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text.

..... Date:

 **T.W.K.I.M. Dias**
Department of Civil Engineering
University of Moratuwa
Sri Lanka

University of Moratuwa, Sri Lanka.
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..... Date:

Prof. J.M.S.J. Bandara
Research Supervisor
Department of Civil Engineering
University of Moratuwa
Sri Lanka

ABSTRACT

Development of an evaluation criterion to assess pedestrian facilities in urban environment using walkability measures

Utility-related walking includes household, transportation, or occupation purpose walking and that has now become a solution in sustainable transport systems. Presence of facilities for pedestrians is at vital importance in both utility-related walking and recreational walking. Walkability is an idea of quantifying the safety and desirability of walking routes. It is defined in many ways under different disciplines. The most commonly used definition is: the extent to which the built environment is friendly to the presence of people living, shopping, visiting, enjoying or spending time in an area. This research discusses the major pedestrian facilities involved in utility-related walking and proposes a scoring model to evaluate the pedestrian facilities in urban environment using “walkability” measures. The proposed model can be used to evaluate pedestrian facilities in road links to compare different road links and to identify deficiencies in a given road.

At present walkability is evaluated using qualitative measures that are very subjective. Existing methods of evaluating walkability were carefully studied and the limitations and weaknesses were identified. In the proposed model, a score as a percentage is finally obtained from the evaluation where 100% means a perfect road to walk and 0 means the worst condition for walking. This could be used in detail to compare two or more roads. The facilities evaluated in the proposed model are: sidewalks, crosswalks, pedestrian amenities and aesthetics, disability infrastructure, and security from crimes. Methods to evaluate as many features of pedestrian facilities were proposed and validated. The features of sidewalks are: presence & continuity of raised sidewalks, obstructions, effective width of sidewalks, modal conflict, surface condition of sidewalks, and Albedo of the paving material. The features of crosswalks are: availability of crosswalks, and delay at signalized crossings and un-signalized crossings. Availability of pedestrian facilities including, benches, shades, bus halts with seats, pedestrian information boards, proper street lighting add scores to a road link. Aesthetics is assessed as a qualitative factor. Tactile paving, uniformity of the paved sidewalks, cross slopes, curb ramps, drainage, and overhead obstructions are the features under infrastructure for the disabled people.

Key Words: Walkability, Pedestrian, Safety, Evaluation



DEDICATION

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I would like to dedicate this to my loving parents and my sister who always encouraged me towards success.

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