

**IMPROVING PEDESTRIAN MOVEMENTS AT  
CONGESTED URBAN AREA: CASE STUDY  
RATHNAPURA TOWN**

Chamitha Samantha Punchihewa

179276K

Degree of Master of Engineering

Department of Civil Engineering

University of Moratuwa

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Thesis submitted in partial fulfilment of the requirements for the Master of  
Engineering in Highway and Traffic

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## **Declaration of the Candidate and Supervisor**

I declare that this is my own work, and this dissertation does not incorporate without acknowledgement 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.

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Punchihewa C.S.

179276 K

University of Moratuwa

# IMPROVING PEDESTRIAN MOVEMENTS AT CONGESTED URBAN AREA: CASE STUDY RATHNAPURA TOWN

C.S. Punchihewa<sup>1</sup>, J.M.S.J. Bandara<sup>2</sup>

**Abstract:** Pedestrians are one of the main components of urban traffic environment. Improved corridor for vehicle movements, but lack of pedestrian facilities are indifferent identifications of conventional urban environment. Now transport planners considered about pedestrian friendly city environment to achieve sustainable development and encourage green patronage.

Unplanned and uncontrolled pedestrian movements result in delays and safety risk at town center. Individual facility development without proper traffic impact study may cause delays to pedestrians and motor vehicles and increase in safety risks. Often, there are lots of public requests for proper network of pedestrian pathways including amenity development. However, it is very difficult to plan and design an efficient pedestrian network without understanding pedestrian movement behavior at such vicinity. This study is focused on developing a methodology to identify pedestrian movement behavior, critical areas and make necessary adoptions to develop such facilities to encourage walkable city environment.

Rathnapura town is the capital city of Sabaragamuwa Province, where having different terrain condition throughout the city area. One of the main arterials of the country connecting southeastern parts with the capital, induce a lot of vehicular movements in the city. Less the development of pedestrian amenities is reflected heavy complexity in the behavior of pedestrian movements, and it guided to a congested city environment.

Pedestrian movement has a high degree of freedom in selecting origin - destination pair than any mode of transportation. Household or occupational purpose utility related trips are commonly identified in such urban environment and it directly relates with land use pattern of a town area. This study identifies specific land use that are trip generators or attractors, generated pedestrian trips and possible pedestrian paths within the urban territory. Collecting vehicle speed data using Google maps to identify the congested crosswalks, data verification using field survey and development of a GIS based land use model with pedestrian paths is also under the framework of study.

Shortest path origin destination matrix development for pedestrian network is one objective of this study. According to the OD matrix, frequency of sidewalk or crosswalk usage in each OD pair is counted and ranked. Prioritized list is pre-pared according to the Rank and level of interacting traffic.

**Keywords:** Pedestrian trips, connectivity, land use, prioritization of pedestrian amenity

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## **List of Abbreviations**

**OD** Origin – Destination

**GIS** Geographical Information System

**ADB** Asian Development Bank