

Analysis on Design Standards of Bus Terminals in Sri Lanka

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Abstract

Transportation has become a major component in a countries' development. Improvement of public transportation along with their infrastructure is a timely need to address its demand. The comfort, safety, and attractiveness of a public transport mode should be ensured in order to promote it among citizens. Buses are one of the main public transport modes in Sri Lanka, which has accessibility to a wider area of the country. In order to attract more people to utilize buses, passengers should be offered with necessary services. Bus terminal is a main component of bus transport network, where bus trips are generated or halted. These bus terminals are utilized by a massive number of passengers daily. Therefore, infrastructure should be developed at these stations under proper standards in order to ensure the quality of service provided. However, the existing terminals are unable to fulfill the basic amenities required by passengers and are not sufficiently designed to ensure comfortable movements inside the terminal. Many passenger-bus conflicts, bus-bus conflicts are commonly experienced in terminals. Entry and exit points creates negative traffic impacts at terminal locations. The main reason for this is the absence of a proper set of guidelines that can be referred to, when constructing bus terminal structures and infrastructure. Currently a set of design standards to be referred for a bus terminal design within the Sri Lankan context does not exist. The main objective of this study is to introduce systematic bus terminal design guidelines ensuring the supply of complete infrastructure facilities needed for bus passengers. Western Province has been selected as the study area for this research. Western province bus route data is obtained from National Transport Commission (NTC), Western Province Passenger Transport Authority (WPPTA), and Sri Lanka Transport Board (SLTB). The origins and destinations of the bus route data were used to identify the bus terminals within the study area due to the absence of a centralized database. The basic features of these identified bus terminals such as total number of bus routes generated, number of long-distance and short-distance bus routes, number of A/C and non-A/C bus routes generated, and the availability of multimodal facility was obtained by classifying the collected data. A total of 44 bus terminals were recognized within Western Province, disregarding the terminals which generate less than 5 bus routes. A terminal classification was developed considering the nature of the identified bus terminals. The terminals were categorized into four main categories namely Category A, B, C and D. Along with the above classification, a terminal ID was developed considering the basic features identified for terminal classification along with its location details. A questionnaire survey was carried out with a total sample size of 300 respondents distributed among bus passengers and bus terminal staff covering 3 bus terminals from each category (12 bus terminals). The objective of the questionnaire survey was to identify the passenger requirements and the standards of the existing terminal facilities. The passengers' tendency to use these facilities while traveling and additional facility requirements apart from the available were taken into consideration. Literature related to existing bus terminal guidelines in other countries and the design standards currently used by architects for terminal construction in Sri Lanka were referred. The features of the Sri Lankan bus transport network, such as types of

buses and passenger behaviors were taken into consideration. Based on the research finding a guide book was developed to be used in Sri Lankan bus designs. It includes a set of design guidelines are submitted for the drafting of bus terminal designs under several sections. Basic building construction guidelines, layout factors such as bus bays, turning radii, parking requirements, pedestrian space requirements, passenger amenities such as seating requirements, queue lines, terminal staff requirements, information, signages, demand of differently-abled passengers and safety standards were taken into consideration. This code of guidelines would be beneficial as there are no proper designing instructions for bus terminals available for the Sri Lankan context at present. Other than that, certain functional requirements for bus terminals are separately identified as mandatory and optional requirements according to the terminal categories. It would prevent the over-allocation of resources in construction of terminals based on the terminal category. This study recommends to follow the guidelines presented in constructing new terminals considering the features of the terminal facilities. It can also be referred to prioritize the facilities to be addressed in the refurbishment of existing terminals.

Keywords: *bus terminal design, design guidelines, terminal operations, transport infrastructure*

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