UPGRADING OF EXISTING PEDESTRIAN SUSPENSION BRIDGES FOR LIGHT VEHICULAR TRAFFIC

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Submitted by

D.K.Rohitha Swarna

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Supervised by

Dr. M. T. R. Jayasinghe

Senior Lecturer

Department of Civil Engineering

University of Moratuwa

Abstract

For the rapid economic development of rural villages in Sri Lanka, the transportation facilities should be upgraded to motorable level. In this context, one of the bottlenecks is the need of large number of bridges, which is a costly item. Therefore, the solution adopted by the relevant authorities to this problem is the construction of pedestrian suspension bridges at these locations. Suspension bridges that can allow light vehicular traffic could be much more beneficial than pedestrian suspension bridges, since those will allow more economic benefits by facilitating the transport of goods. However such bridges are still not available in Sri Lanka. Therefore, it is useful to develop suspension bridges for light vehicular traffic that could be constructed with locally available expertise in modular fashion.

When suspension bridges are designed for light vehicular traffic, it is necessary to ensure that an accurate analysis and design techniques are used. In this study, it is shown that two dimensional and three dimensional computer modelling could be utilized to accurately determine various possible load conditions. The results of such analysis would facilitate the structural design engineer to perform the design with a lot of confidence. This is a much better situation than performing the design on the basis of approximate analysis.

In order to show the possibility of using the above techniques, three case studies were conducted for 42 m, 60 m and 78 m long bridges. The structural concepts were developed with the aim of allowing unobstructed traffic foe single lane of light vehicles. The techniques for constructing the bridges with local expertise are also investigated.

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D. K. Rohitha Swarna
Road Development Authority.

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