APPLICABILITY OF SUSPENSION BRIDGES FOR TRANSPORTATION IN RURAL AREAS IN SRI LANKA.

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Thesis submitted to the in partial fulfillment of the requirements for the Degree of Master of Engineering in Structural Engineering Design.

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September 2009

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ABSTRACT

For the rapid economic development of rural villages in Sri Lanka the transportation facilities should be upgraded. In this context, one of the bottlenecks is the need of large number of bridges which is a costly item. Therefore the solution given at the moment is the provision of pedestrian suspension bridges, which can be used only for passengers. Almost all the suspension foot bridges available might not withstand dynamic forces such as wind induced dynamic forces and human induced dynamic forces. The biggest issue on these bridges is the safety. For these locations the development of a suspension bridge that can handle both human and cycles loads safely, will be a great advantage. These structures however are always lively with low stiffness, low mass, low damping and low natural frequencies.

A conceptual study has been carried out to investigate the dynamic characteristics of slender suspension foot bridges under human induced dynamic loads. As the first step, some places where suspension foot bridges are located were visited. While crossing the bridge, during the site visit it was felt that those existing bridges are not comfortable and identified as low safety. Different types of suspension bridges and different structural models were observed. Then existing suspension foot bridges were modeled using both software PROKON (V-2.1) and SAP 2000 (V9.3). Under the first step it was tried to introduce different modifications to existing bridges to satisfy comfort and more structural stability with safety. Since these bridges are having low structural factor of safeties, no modifications are allowed.

ACKNOWLEDGEMENT

I am extremely grateful and deeply indebted to my principal supervisor Prof. M.T.R.Jayasinghe for his enthusiastic and expertise guidance, constructive suggestions, encouragements throughout the course of study and valuable assistance in many ways. His immense patience and availability for comments whenever approached even amidst his heavy pressure of work throughout the entire period of study deserve grateful appreciation. I would like to express my sincere gratitude to all other lecturers who taught me during the period of study.

Also the guidance and the help given by the Principal Structural Engineer- Mott MacDonals, UAE, Abdul Wahab shall be highly appreciated. I must thank to all of my friends who helped me in different ways and means to bring this study success.

Finally I wish to express my appreciation to my family for their support encouragement and patience.

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