

**EVALUATION OF PRESENT SAFETY LIMITS OF  
STEEL LATTICE TYPE TELECOMMUNICATION  
ANTENNA TOWERS  
IN SRI LANKA.**

THIS THESIS IS SUBMITTED TO THE DEPARTMENT OF CIVIL  
ENGINEERING IN PARTIAL FULFILMENT OF THE REQUIREMENT  
FOR THE DEGREE OF MASTER OF ENGINEERING IN STRUCTURAL  
ENGINEERING DESIGN

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SRI LANKA

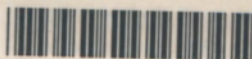
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By Eng. G.R.V. PERERA

This thesis is submitted to the department of Civil engineering of the University of Moratuwa in partial fulfillment of the requirements for the Degree of M.Eng in Structural Engineering Design.



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Department of Civil Engineering  
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May 2011

## DECLARATION

I hereby declare that the work included in the thesis, in part or whole, has not been submitted for any other academic qualification at any institution.

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## ABSTRACT

Sri Lanka has made a significant development in the telecommunications sector since the inception of sector reforms in 1991, resulting in a competitive market environment. The results of liberalization have been impressive, with the telecommunications sector growing at one of the fastest paces in Asia. Along with above rapid growth of telecommunication industry, the numbers of antenna towers also have been increased from about 400 (in 1990) up to nearly 5100 towers during the last two decades.

During the above boom period of development, some aspects of safety and reliability seem to have been overlooked. This report provides detailed discussion on the technical aspects of steel lattice antenna tower designs, codes of practice and different factors of safety. Post-collapse assessments of four incidences of recently collapsed tall antenna towers in Sri Lanka are also included in this report.

Several shortcomings existing in currently available technical specifications, tender bidding processes and construction were also highlighted. The possible solutions and methods for eliminating above mentioned shortcomings are also discussed in detail.

The void that exists in telecommunication industry due to the absence of properly qualified structural engineering experts are also highlighted. Further to that, the resulting negative effects such as neglecting public safety, lower reliability of telecommunication network, high possibility of accidents occurring, etc. are discussed in detail.

The cost of construction vs safety of antenna towers is discussed with a desk study. Effectiveness of some common practices and beliefs which are influencing current antenna tower constructions are also discussed.

Concluding remarks along with several basic recommendations are supplied for correcting the present mistakes while making more reliable telecommunication networks as well as ensuring public safety.



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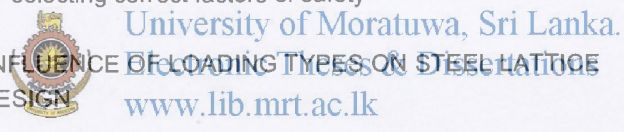
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