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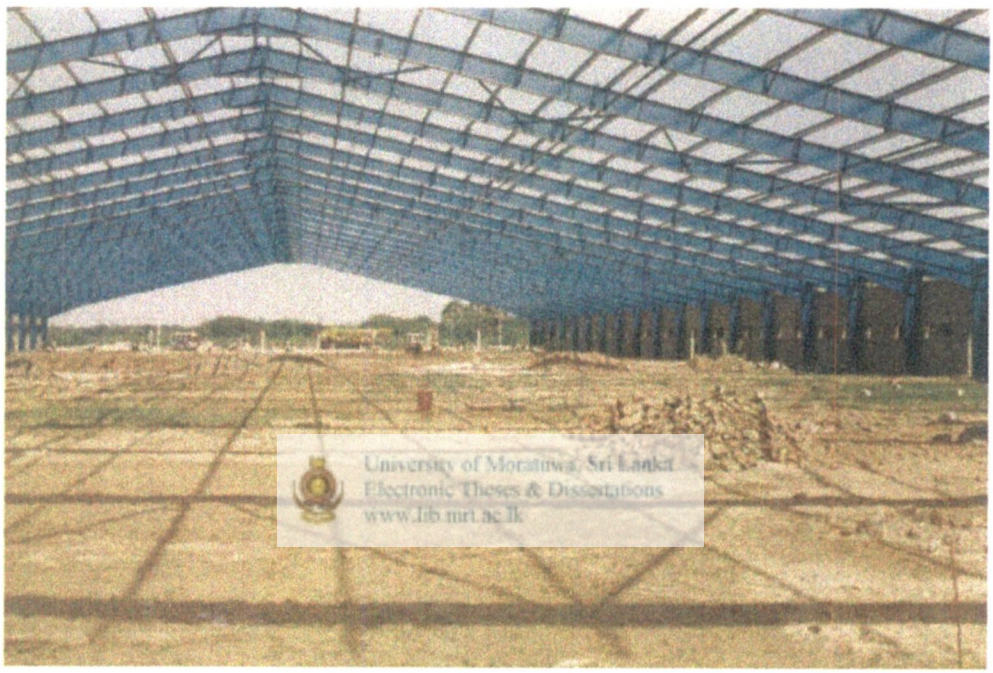
OPTIMUM DESIGN OF STEEL PORTAL FRAME STRUCTURES...



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M.Eng. Structural Engineering Design.

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Thesis

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Abstract

With the rapid development in industrial sector in Sri Lanka, there is a high demand for clear span buildings to cater for the factories with advance technology production lines as well as for the warehouses. Structural steel buildings are the best economical solution among different types of construction materials for such buildings. Portal frame is the best solution for large clear spans and is the most popular structural form used in the construction industry. It offers an economical solution to medium to large spans and the most important feature is the saving on construction time which is a main concerns of most the clients. However, to get the optimum solution in steel portal frames there are several key factors to consider during the design stage.

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Main frame spacing, roof slope and type of roof covering material are some of the key parameters which will have an effect on the optimum frame design. In order to show the effect of the above parameters in steel portal frame designs a series of frame analysis was carried out in this study and several conclusions were made to assist steel designers. It is assumed that the reader has some basic knowledge of steel portal frame design and these results will provide further useful guidelines for design of an optimum steel portal frame for a given span within a shorter period.

A Thesis submitted for the partial fulfillment
Of the Degree of Master of Engineering in
Structural Engineering Design.
Year 2002

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K.L.P.D.Perera.

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