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A STUDY OF BUILT – UP TIMBER STRUCTURAL ELEMENTS

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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A STUDY OF BUILT-UP TIMBER STRUCTURAL ELEMENTS

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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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April 2003.

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

Code on timber design (BS 5268 Part 2, 1991) gives no provisions for the design of layered braced and box timber columns except spaced timber columns. Very little information is available about these in the literature on timber structures.

This paper provides procedure for determining the axial load capacity of mechanically connected built-up columns, such as layered columns, spaced columns, braced columns and box columns. In addition to that, it gives information about nail connection details and arrangement.

Mainly concentrated on built-up timber columns made up with mechanical connection as it could be done locally. The theoretical development takes into account the effect of columns stability and effectiveness of the shear transfer.

The experimental results obtained by under graduate students are compared with theoretical predictions.

Conclusions are drawn with regards to the suitability of the design methods for built-up timber columns made by nailed connections.

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