

FOREWORD

$$S \leq R$$

The requirement that the design action effects, S , must not exceed the design resistance, R , is a fundamental tenet of structural engineering. It is little surprising that most of the research in structural engineering has in the past been mostly concentrated on the right hand side of this equation, given the equally significant effects on design outcomes which the left hand side can have. This collection of papers goes some of the way to redress this imbalance.

It establishes the framework for structural design which is provided by the Limit State Design method and explains the reasons for the use of the concept of “structural reliability”, with the adoption of probability based estimates of events as the rational tool for risk management in the design of new systems and for the assessment of existing structures.

These papers provide a comprehensive and well argued review of the current state of development for the loadings of major current concern and show a healthy respect for the need to understand the inherent variability of natural events. They also provide sound practical advice on when advanced analytical techniques may, or may not, be used to advantage.

A clear understanding of the principles upon which loadings are established and applied is essential for design practitioners, policy makers, code writers, educators and students. The contributions in this collection provide such a basis and I commend them as an outstanding contribution which I hope will stimulate increased interest, discussion and particularly, further research into the left hand side of the basic equation, $S \leq R$, through the electronic windows of this exciting new venture; the Electronic Journal of structural Engineering.

Len Stevens

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