Preface

The general objective of this publication is to assist building structures engineers to develop as much confidence with the design of composite, steel-framed, multi-storey buildings, as they are likely to have with more traditional reinforced concrete multi-storey buildings. The text consists primarily of a set of design calculations covering most aspects of the design and detailing of a steel framed, composite floored, multistorey building. The appendices to the text provide necessary background to some of the unique aspects of composite design and to interpretation of the Australian Composite Structures Code, AS2327.1, 2003.

The design calculations have been structured in the following fashion that is intended to optimise the learning process rather than being strictly representative of "real" design practice.

Section A - Input information:
- Client requirements
- Site characteristics
- Statutory Requirements
- Serviceability requirements
- Loading information
- Materials and systems to used in the design
- Design aids and codes forming the basis of the design

Section B - Conceptual and preliminary design:
- Alternative floor framing systems
- Alternative systems for carrying horizontal load
- Preliminary slab design
- Decisions relating to alternative concepts
- Consideration of construction sequence
- Preliminary design of floor slab, beams, columns, and core

Section C - Detailed design :
- Erection columns
- Composite floor beams
- Columns
- Slab
- Core modelling analysis and design
- Connection detailing and design

Appendices:
- Theory and discussion – composite slabs
- Theory and discussion - detailed composite beam design
- Theory and discussion – Design for dynamic serviceability
- Theory and discussion – Connection design
- Corrosion and fire protection

In reality the design process is likely to be structured differently for a variety of reasons. In general there may be less strict differentiation between the three major sections of Input Information, Preliminary Design and Detailed Design as used in the text. In addition there is likely to be considerable iteration involved in design, where a scheme may be partly developed, then coordinated with other members of the design team who may suggest changes that then require reworking of certain parts of the design calculations.

If you are not familiar with composite construction systems then you should visit the Stramit, Fielders and Bluescope web sites to access basic information on general composite decking systems and composite construction processes.

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