



# LiteSteel beam General Information

## Residential Construction Manual For LiteSteel® beam

### LiteSteel Technologies

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#### RESIDENTIAL CONSTRUCTION MANUAL FOR LITESTEEL® BEAM

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#### Relevance of Information Contained in this Publication

##### Material Standards and product qualities:

**USERS OF THIS PUBLICATION SHOULD NOTE THAT THE SPANS, DESIGN CAPACITIES, CALCULATIONS, TABULATIONS AND OTHER INFORMATION PRESENT IN THIS PUBLICATION ARE SPECIFICALLY RELEVANT TO LITESTEEL BEAM SECTIONS SUPPLIED BY LITESTEEL TECHNOLOGIES.**

Consequently, the information contained in this publication cannot be readily used for fabricated sections, as those sections may vary significantly in grade, thickness, size, material Standard compliance (including chemical composition, mechanical properties, tolerances) and quality when compared to LiteSteel beam sections supplied from LiteSteel Technologies (LST).

##### Structural steelwork/engineering Standards:

The span tables, maximum design loads and connection capacities listed in this publication are based on the limit states design method and the factored limit states design loads and combinations considered in the following standards:

- ➔ AS/NZS 1170: Structural design actions
- ➔ AS 1684: Residential timber-framed construction
- ➔ AS 3623: Domestic metal framing
- ➔ AS 4055: Wind loads for housing
- ➔ AS/NZS 4600: Cold-formed steel structures

Hence the use of this publication will only be of use to persons familiar with these Standards and the design of structural members in residential construction using the limit states design method.

Always ensure that you are using current information on the LST product range. This can be verified by comparing the **document version date** (noted at the bottom of the page) with the **current version date** of each publication. The **current version date** of all LST publications can be obtained by referring to [www.littesteelbeam.com.au](http://www.littesteelbeam.com.au) or by contacting LST.



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## Foreword

LiteSteel Technologies proudly releases its innovative new product: LSB® (LiteSteel® beam). This significant advancement in patented steel technology is made possible through the pioneering application of the new Simultaneous Dual Electric Resistance Welding process (DERW). This process delivers a unique dimensional shape that provides maximum structural performance in bearing, bending moment, and deflection from the amount of steel employed.

The added benefits in weight, strength and on site flexibility give the structural engineer and builder new levels of versatility when specifying structural beams.

All LSB products feature DuoSteel™ (380/450 grade) material giving strength where it is needed. LSB AZ+ sections are supplied with an Aluminium-Zinc alloy protective coating. AZ+ provides significantly greater protection compared to plain galvanised coatings of the same mass.

LSB structural beams have applications in residential and commercial industrial construction. On average, the LSB is 40% lighter than a universal beam with equivalent bending strength. This makes handling LSB easy: in most cases, beams can be manually lifted into position without the need of a crane or other mechanical lifting device. This places LSB into the same weight category as manufactured structural lumber. The in-use characteristics of LSB take steel to a new level. Builders can use their existing power tools to cut, screw or nail LSB or join it with an alternate building material such as timber or fibre cement flooring. Existing screws and brackets support the easy use of LSB in beam and joist applications.

This Residential Construction Manual provides span tables for a range of applications for LSB in residential housing construction. Applications included are bearers, joists, lintels, rafters, roof beams, hanging / strutting beams and veranda beams. Extensive details of typical connections are also included.

These tables should enable architects, engineers, builders and draftsmen to easily determine the size of LSB required for any of these applications.

## Acknowledgements

LiteSteel Technologies wishes to acknowledge with grateful thanks the contributions of Mr. Ross Dempsey, Mr. Lenard Yet and Mr. Russell Watkins in the development and compilation of this manual. Their advice, together with technical and editorial content has been significant.

In addition, particular thanks is extended to all those who gave constructive comment and support in the preparation of this document.

## Preface

The LiteSteel beam (LSB) is the result of extensive research and development in response to demand for a high performance beam with superior connectivity in general domestic and commercial structural applications.

This Residential Construction Manual has been produced to support architects, engineers, builders and draftsmen with the design and specification of LSB in various applications. They are the result of an extensive and continuing program of analysis and testing to establish the performance of the product in most general applications as steel beams. The School of Civil Engineering, Queensland University of Technology and the Centre for Advanced Structural Engineering, Department of Civil Engineering, The University of Sydney have made valuable contributions to research, thereby enabling the extensive range of design aids to be presented in this manual.

Companion publications which are also available are the Design Capacity Tables for LiteSteel® beam, Connection Design Manual for LiteSteel® beam, and Industrial & Commercial Floors using LiteSteel® beam.

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## Engineer Certification



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1 November 2007

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(Our Ref. 9057-07ST\_RCM 2007\_certification)

Dear Sir,

**Re: Engineering Certification of "Residential Construction Manual for LiteSteel® beam" 2007 Edition**

I hereby certify that the design manual "Residential Construction Manual for LiteSteel® beam", 2007 edition, produced by LiteSteel Technologies Pty Ltd has been written to conform with the requirements of the Building Code of Australia 2007, and the following Australian Standards:

- AS/NZS 1170.0: 2002 Structural design actions Part 0: General principles and other actions
- AS/NZS 1170.1: 2002 Structural design actions Part 1: Permanent, imposed and other actions
- AS 1684.1- 1999 Residential timber-framed construction Part 1 Design criteria
- AS 4055 - Wind loads for housing
- AS/NZS 4600: 1996 Cold-formed steel structures

The serviceability criteria used to develop the span tables are in accordance with AS 1684.1-1999.

These tables, when used within the parameters and limitations presented in this document, will provide structural solutions which satisfy the requirements of the referenced standards.

Yours faithfully,

Greg Anderson, FIEAust CPEng RPEQ 1359  
Director  
Strucrerre Consulting Engineers

