Design Guide 7

Pinned base plate connections for columns

by

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Design of structural connections
First edition 1978
Second edition 1981
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Also in this series:
Design capacity tables for structural steel. Volume 3: Simple connections—Open sections
Handbook 1: Design of structural steel connections
Design Guide 1: Bolting in structural steel connections
Design Guide 2: Welding in structural steel connections
Design Guide 3: Web side plate connections
Design Guide 4: Flexible end plate connections
Design Guide 5: Angle cleat connections
Design Guide 6: Seated connections
Design Guide 10: Bolted moment end plate beam splice connections
Design Guide 11: Welded beam to column moment connections
Design Guide 12: Bolted end plate beam to column moment connections
Design Guide 13: Splice connections
Design capacity tables for structural steel. Volume 4: Rigid connections—Open sections

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PREFACE

Design Guide 7 forms part of a series of connection publications by the Australian Steel Institute (ASI) covering capacity tables, theory and design of individual simple connections, known as the Structural Steel Connections Series, Part 1, Simple Connections: 1st ed. 2007 ('Simple Connection Series'). This series details the method of design and provides capacity tables and detailing parameters for a range of simple connections commonly used for structural steel in Australia. Connections have a major engineering and economic importance in steel structures influencing design, detailing, fabricating and erection costs. Standardisation of design approach integrated with industry detailing is the key to minimum costs at each stage. The Simple Connections Series, in conjunction with the Structural Steel Connection Series, Part 2, Rigid Connections (collectively the Structural Steel Connections Series or 'Connection Series'), replaces and enhances an ASI flagship publication first released in 1978 at which time connection design theories were developed for the purpose of generating and releasing connection capacity tables. The first three editions were released in permissible stress format. The fourth edition Design of Structural Connections (often referred to as the Green Book) was released in 1994 in limit state format but there was no subsequent release of a limit state companion document containing connection design capacity tables.

The current Connections Series format with separate design guides for individual connection types is intended to facilitate addition to or revision of connection model theory using relevant new local or international research as deemed appropriate by the ASI. Connection models developed using the Handbook 1 theory follow a stylised page format with a numbered DESIGN CHECK procedure to simplify connection capacity assessment.

DESIGN GUIDE 7 covers the pinned column base plate connection. The recommended design model draws extensively on the American Institute of Steel Construction Steel Design Guide 1 '*Base plate and anchor rod design*' Second Edition and on the Australian Steel Institute publication Steel Construction Vol. 36 No. 2, September 2002, '*Design of pinned column base plates*'.

It is to be emphasised that the recommended design model is considered the most representative of the behaviour of the connection in the opinion of ASI. It is not intended to suggest that other design models may not result in adequate connection capacity.

Engineering Systems has worked closely with the Australian Steel Institute to further develop Limcon as the companion program for this new Connection Design Guide Series. The latest version of Limcon fully implements the new connection design models. The Limcon output for one or more of the worked examples is included in an appendix to each Design Guide. The program is an efficient tool covering the full range of structural connections, including those beyond the scope of the Design Guide capacity tables.

An appendix to each Design Guide also contains an ASI comment form. Users of this publication are encouraged to photocopy this one page form and forward any suggested improvements which may be incorporated into future editions.

T.J. Hogan

ABOUT THE AUTHOR

Tim Hogan is Consultant to and retired Director of SCP Consulting Pty Ltd. His academic achievements include a Bachelor of Engineering from the University of NSW with 1st Class Honours and the University Medal. Post graduate qualifications include a Master of Engineering Science and a Master of Business Administration. Tim is a Member of the Institution of Engineers Australia with CPEng (Ret.) and FIEAust status.

His early experience was on bridge design and construction with the NSW Public Works Department and subsequently as Development Engineer and then Engineering Manager with the Australian Institute of Steel Construction until 1980. Consulting experience with SCP Consulting since 1980 included design and supervision of large steel framed buildings, industrial buildings, mill buildings, retail developments, defense infrastructure and composite steel-concrete buildings. His published works deal primarily with the areas of composite construction, steel connections, fabrication and erection of steel structures and he was a major contributor and editor of the Commentary to AS 4100. He is a member of a number of Standards Australia Committees dealing with steel and composite structures and is currently Chairman of Committee BD-001 Steel Structures and BD-032 Composite Construction. He received an award from Standards Australia for his contributions to writing of Australian Standards.