

Design capacity tables for structural steel
Volume 4: Rigid connections—Open sections

by

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CONTENTS

	<i>Page</i>		<i>Page</i>
List of figures	iv	5.5 Design capacity tables	50
List of tables	v	5.6 Four bolt unstiffened end plate— Design capacity tables	51
Preface	vii	5.7 Four bolt stiffened end plate— Design capacity tables	53
About the author	viii	5.8 Six bolt unstiffened end plate— Design capacity tables	55
About the contributing author	viii	5.9 Eight bolt stiffened end plate— Design capacity tables	57
Acknowledgements	ix		
1 CONCEPT OF DESIGN GUIDES.....	1	6 BOLTED END PLATE TO COLUMN MOMENT CONNECTION	58
1.1 Background	1	6.1 Description of connection	58
1.2 Preliminary considerations	2	6.2 Typical detailing of connection	61
1.3 Included connections	3	6.3 Calculation of design actions	66
2 GEOMETRICAL DETAILS.....	9	6.4 Recommended design model— Summary of design checks	67
2.1 Standard parameters	9	6.5 Design capacity tables	68
2.2 Connection components— Bolted moment end plate	10	6.6 Four bolt unstiffened end plate	69
2.3 Connection components— Column stiffeners	12	6.7 Four bolt stiffened end plate	73
2.4 Bolt gauges to columns for bolted moment end plate connection	15	6.8 Six bolt unstiffened end plate	75
2.5 Flange cover plates for splices	16	6.9 Eight bolt stiffened end plate	77
2.6 Bolting layout to webs for bolted web splices	20	7 BOLTED COVER PLATE SPLICE	78
2.7 Web cover plate components for bolted splices	22	7.1 Description of connection	78
3 DESIGN BASIS	23	7.2 Typical detailing of connection	79
3.1 Design models	23	7.3 Calculation of design actions	82
3.2 Minimum design actions on connections	24	7.4 Recommended design model— Summary of design checks	83
4 WELDED BEAM TO COLUMN MOMENT CONNECTION	28	7.5 Design capacity tables	84
4.1 Description of connection	28	8 BOLTED/WELDED COVER PLATE SPLICE	90
4.2 Typical detailing of connection	31	8.1 Description of connection	90
4.3 Calculation of design actions	33	8.2 Typical detailing of connection	91
4.4 Recommended Design Model— Summary of design checks	34	8.3 Calculation of design actions	94
4.5 Design capacity tables	35	8.4 Recommended design model— Summary of design checks	95
4.6 Configuration A—Full penetration butt welds to flanges and webs	36	8.5 Design capacity tables	96
4.7 Configuration B—Fillet welds required to develop section moment capacity	38	9 FULLY WELDED SPLICE	102
4.8 Configuration C—Fillet welds to flanges and web	40	9.1 Description of connection	102
5 BOLTED MOMENT END PLATE BEAM SPLICE CONNECTION.....	42	9.2 Typical detailing of connection	103
5.1 Description of connection	42	9.3 Calculation of design actions	105
5.2 Typical detailing of connection	44	9.4 Recommended design model— Summary of design checks	106
5.3 Calculation of design actions	48	9.5 Design capacity tables	107
5.4 Recommended design model— Summary of design checks	49	10 REFERENCES.....	110
		APPENDIX	
		A Rigid connections DCTs, V4 comment form	111



LIST OF FIGURES

	<i>Page</i>		<i>Page</i>
Figure 1	Typical detailing for unstiffened variations of extended bolted moment end plate..... 4	Figure 25	Shims used between end plates....46
Figure 2	Typical welded beam to column moment connection 4	Figure 26	Clearance required for tensioning bolts47
Figure 3	Typical detailing for 4 bolt unstiffened bolted end plate to column connection..... 5	Figure 27	Design actions at connection.....48
Figure 4	Typical detailing of bolted cover plate splice..... 6	Figure 28	Bolted end plate to column moment connections58
Figure 5	Typical detailing of bolted/welded cover plate splice..... 7	Figure 29	Forms of extended end plate connection.....59
Figure 6	Typical detailing of welded splice ... 8	Figure 30	Possible configurations of the bolted moment end plate beam to column connection.....60
Figure 7	Bolting layouts for M24 bolts in bolted moment endplate 11	Figure 31	Typical detailing for 4 bolt unstiffened bolted end plate to column connection61
Figure 8	Bolting layouts for M20 bolts in bolted moment endplate 11	Figure 32	Typical detailing for haunched rafter to column bolted end plate connection62
Figure 9	Transverse stiffener arrangement 12	Figure 33	Removal of column flange with thicker plate inserted62
Figure 10	Geometry of flange splice plates .. 16	Figure 34	Column doubler plate types.....63
Figure 11	Web splice bolting layout M20 bolts..... 20	Figure 35	Shims used between end plate and column flange64
Figure 12	Web splice bolting layout M24 bolts..... 21	Figure 36	Clearance required for tensioning bolts65
Figure 13	Web cover plate components 22	Figure 37	Design actions on beam at column.....66
Figure 14	Typical welded beam to column moment connection 28	Figure 38	Bolted cover plate splice78
Figure 15	Alternative arrangements for welded beam to column connections 29	Figure 39	Typical detailing in flexural member79
Figure 16	Arrangement with shop welded beams and column splices 29	Figure 40	Typical detailing in column/beam-column.....80
Figure 17	Possible configurations of the welded moment beam to column connection..... 30	Figure 41	Typical detailing in tension member80
Figure 18	Stub girder connection, fully shop welded beam stub, beam spliced on site..... 31	Figure 42	Design actions at splice.....82
Figure 19	Field welded moment connection—including erection cleat..... 31	Figure 43	Bolted/welded cover plate splice.....90
Figure 20	Design actions on beam at column..... 33	Figure 44	Typical detailing in flexural member91
Figure 21	Bolted moment end plate beam splice connection 42	Figure 45	Typical detailing in column/beam column.....92
Figure 22	Forms of extended bolted end plate connection 43	Figure 46	Typical detailing in tension member92
Figure 23	Typical detailing for unstiffened variations of extended bolted moment end plate..... 44	Figure 47	Design actions at splice.....94
Figure 24	Typical detailing for stiffened variations of extended bolted moment end plate..... 45	Figure 48	Fully welded splice102
		Figure 49	Typical detailing of welded splice..... 103
		Figure 50	Use of backing strips104
		Figure 51	Preferred splice location in column.....104
		Figure 52	Design actions at splice.....105



LIST OF TABLES

		<i>Page</i>			<i>Page</i>
Table 1	Connection components bolted moment end plate	10	Table 20	Universal beams grade 300 design moment capacity of welded connection with flange welds and web welds.....	41
Table 2	Stiffener material design strengths.....	12	Table 21	Design moment capacity of connection ϕM_{conn} four bolt unstiffened end plate M24 bolts welded beam/universal beam sections > 300 mm deep	51
Table 3	Flat bar components as stiffeners.....	13	Table 22	Design moment capacity of connection ϕM_{conn} four bolt unstiffened end plate M20 bolts universal beam sections > 200 mm deep	52
Table 4	Flat bar width/column combinations suited to stiffening...	14	Table 23	Design moment capacity of connection ϕM_{conn} four bolt stiffened end plate M24 bolts welded beam/universal beam sections > 300 mm deep	53
Table 5	Plate width/column combinations suited to stiffening	14	Table 24	Design moment capacity of connection ϕM_{conn} four bolt stiffened end plate M20 bolts universal beam sections > 200 mm deep	54
Table 6	Suitable bolt gauges for column section flanges	15	Table 25	Design moment capacity of connection ϕM_{conn} six bolt unstiffened end plate M24 bolts welded beam/universal beam sections > 450 mm deep	55
Table 7	Flange cover plate width/thickness combinations for one plate bolted cover plate splice	17	Table 26	Design moment capacity of connection ϕM_{conn} six bolt unstiffened end plate M20 bolts universal beam sections > 350 mm deep	56
Table 8	Flange cover plate width/thickness combinations for one plate bolted/welded cover plate splice.....	17	Table 27	Design moment capacity of connection ϕM_{conn} eight bolt stiffened end plate M24 bolts 8.8/TB category threads excluded from shear plane welded beam and universal beam sections > 520 mm deep	57
Table 9	Flange cover plate width/thickness combinations for three plate bolted cover plate splice	18	Table 28	Design moment capacity of connection ϕM_{conn} four bolt unstiffened end plate M24 bolts unhaunched welded beam/universal beam sections > 300 mm deep	69
Table 10	Flange cover plate width/thickness combinations for three plate bolted/welded cover plate splice.....	19	Table 29	Design moment capacity of connection ϕM_{conn} four bolt unstiffened end plate M20 bolts unhaunched universal beam sections > 200 mm deep	70
Table 11	Values of n_{max} in web splice	20			
Table 12	Values of n_{max} in web splice.....	21			
Table 13	Universal beams, Grade 300 design section moment and web capacities	26			
Table 14	Welded beams, Grade 300 design section moment and web capacities	27			
Table 15	Universal beams Grade 300 design section moment and web capacities.....	36			
Table 16	Welded beams Grade 300 design section moment and web capacities.....	37			
Table 17	Universal beams Grade 300 weld configurations to achieve design section moment capacity ϕM_s	38			
Table 18	Welded beams Grade 300 weld configurations to achieve design section moment capacity ϕM_s	39			
Table 19	Universal beams Grade 300 design moment capacity of welded connection with flange welds and web welds.....	40			



	<i>Page</i>		<i>Page</i>		
Table 30	Design moment capacity of connection ϕM_{conn} four bolt unstiffened end plate M24 bolts haunched universal beam sections > 300 mm deep	71	Table 40	Design moment capacity of bolted three cover plate splice 700WB/800WB welded beam sections M24 bolts.....	88
Table 31	Design moment capacity of connection ϕM_{conn} four bolt unstiffened end plate M20 bolts haunched universal beam sections > 200 mm deep	72	Table 41	Design moment capacity of bolted three cover plate splice 900WB/1000WB welded beam sections M24 bolts.....	89
Table 32	Design moment capacity of connection ϕM_{conn} four bolt stiffened end plate M24 bolts unhaunched welded beam/universal beam sections > 300 mm deep.....	73	Table 42	Design moment capacity of bolted/welded single cover plate splice universal beam sections < 400 deep M20 bolts, 6 fillets to flange plates, 5 fillets to web plates.....	97
Table 33	Design moment capacity of connection ϕM_{conn} four bolt stiffened end plate M20 bolts unhaunched universal beam sections > 200 mm deep	74	Table 43	Design moment capacity of bolted/welded single cover plate splice universal beam sections > 400 deep M24 bolts, 8 or 6 fillets to flange plates, 5 fillets to web plates	98
Table 34	Design moment capacity of connection ϕM_{conn} six bolt unstiffened end plate M24 bolts unhaunched welded beam/universal beam sections > 450 mm deep	75	Table 44	Design moment capacity of bolted/welded three cover plate splice universal column sections M24 bolts, 6/8 fillets to flange plates and web plates and 6 fillets to web plates	99
Table 35	Design moment capacity of connection ϕM_{conn} six bolt unstiffened end plate M20 bolts unhaunched universal beam sections > 350 mm deep	76	Table 45	Design moment capacity of bolted three cover plate splice 700WB/800WB welded beam sections M24 bolts, 6/8 fillets to flange plates and 5 fillets to web plates	100
Table 36	Design moment capacity of connection ϕM_{conn} eight bolt stiffened end plate M24 bolts unhaunched welded beam and universal beam sections > 520 mm deep	77	Table 46	Design moment capacity of bolted/welded three cover plate splice 900WB/1000WB welded beam sections M24 bolts, 8 or 6 fillets to flange plates and 6 fillets to web plates..	101
Table 37	Design moment capacity of bolted single cover plate splice universal beam sections < 400 deep M20 bolts	85	Table 47	Universal beams Grade 300 design section moment and shear capacities	107
Table 38	Design moment capacity of bolted single cover plate splice universal beam sections > 400 deep M24 bolts	86	Table 48	Welded beams Grade 300 design section moment and shear capacities	108
Table 39	Design moment capacity of bolted three cover plate splice universal column sections > 240 deep M24 bolts	87	Table 49	Universal columns/welded columns grade 300 design section moment and shear capacities	109



PREFACE

This new series of connection publications by the Australian Steel Institute (ASI) covering capacity tables, theory and design of individual rigid connections will be known as the Structural Steel Connections Series, Part 2: 1st ed. 2009 (*Connection Series, Part 2*). This Connection Series, Part 2 details the method of design and provides capacity tables and detailing parameters for a range of rigid connections commonly used for structural steel in Australia. Connections have a major engineering and economic importance in steel structures influencing design, detailing, fabrication and erection costs. Standardisation of design approach integrated with industry detailing is the key to minimum costs at each stage. This Connections Series, Part 2 in conjunction with the Connection Series, Part 1 for simple 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.

This new Connections Series, Part 2 in limit state format to the Australian Standard for Steel Structures AS 4100—1998 (Ref. 1) separates the Design Capacity Tables from the Connection Theory Handbook 1 and Design Guides for connection parts and has a separate Design Guide for each individual rigid connection type. Connection model elemental theory is referenced back to Handbook 1 in each type of connection formulated. Revision of the ASI connection theory and models included surveys of best practice in the Australian steel industry.

The new Connections Series format with separate design guides for individual connection types is intended to facilitate addition to or revision of connection model theory using any 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. This Connection Series, Part 2 contains both design capacity tables and design guides for individual rigid connections. *Design Capacity Tables V4: Rigid Connections—Open sections* consolidates design capacity tables contained in the individual design guides, (specifically Design Guide 10: *Bolted moment end plate to beam splice connections*; Design Guide 11: *Welded beam to column moment connections*; Design Guide 12: *Bolted end plate to column moment connection*; Design Guide 13: *Splice connections*) and is collectively known as the *Rigid connection design capacity tables V4 ('Rigid connection DCT's V4)*.

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

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

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