

GENERAL

- 1 Where flange cover plates are used, assemble joints with nuts to outside of cover plate. This arrangement is recommended for ease of bolt tensioning, since in universal sections sufficient clearance is not always available between flanges for a standard air wrench (see DESIGN GUIDE 1 for information on wrench dimensions—Reference 16).
- 2 Where packers are required, these can be conveniently provided as hot rolled strip in thicknesses of 1.6, 2.0, 2.5 or 3.0 mm as necessary, which are prepunched to match the holing on the cover plate component.
- 3 Two web cover plates, one on each side of the web, are recommended for bolted/welded splices. This creates a symmetric load transfer with respect to the plane of the web.
- 4 In order to accommodate out-of-alignment of member webs at a splice, the use of packers may be necessary.
- 5 For members assumed to be in full bearing contact, the ends of the member must be prepared in accordance with Clause 14.4.4.2 of AS 4100 (Ref. 1). This specifies that the maximum clearance between the abutting surfaces shall not exceed 1 mm and shall not exceed 0.5 mm over at least 67% of the contact area. Cold sawing of members to length meets this requirement.

When members are prepared for full contact splices, compression forces in the flanges and the web may be assumed to be transferred by bearing alone rather than through plates or connectors. If full contact is not provided, plates and connectors must be designed to transmit the compression force.

- 6 Column splices should be located in positions where access for the installation of the bolts is easily obtained (see Figure 7).

NOTES ON BOLTING PRACTICE

- 7 Bolting category 8.8/TB is the usual category chosen for bolted/welded splice connections. Category 8.8/TF is only chosen when slip under serviceability loads must be limited. In practice, very limited slip will occur in any bolted/welded splice using 8.8/TB category which contains at least two rows of bolts in the flange each side of the splice location.
- 8 Only one bolt category should be used in any bolted/welded splice connection.
- 9 Only one bolt diameter should be used for both the flange and the web splice. Bolt diameters are usually either M20 or M24, larger bolt diameters being difficult to install and to obtain the minimum bolt tension specified in Section 15 of AS 4100 (Ref. 1).
- 10 The use of the three plate flange splice results in the flange bolts being loaded in double shear, which is markedly more efficient from a design point of view and is favoured for larger members. It is more difficult to erect and the one plate flange splice is generally preferred wherever possible.
- 11 Threads would normally be assumed included in the shear plane for both the flange and web splices, although in thicker flanges threads excluded is achievable. For the three plate flange splice, it is common to have threads intercept one shear plane and plane shank the other. Check using the guidance in DESIGN GUIDE 1—Reference 16.

NOTES ON WELDING PRACTICE

- 12 The welding of the flange cover plates or web plates should be done in the fabrication shop. Field welding is to be avoided.
- 13 Fillet welds should be either 5 mm, 6 mm or 8 mm leg length wherever possible, and should run along the sides of any flange or web cover plate and across the end. Check with fabricator before specifying 10 mm leg length fillet welds or larger.



Design Guide 13
Splice connections

by

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CONTENTS

	<i>Page</i>		<i>Page</i>
List of figures	iv	B3 Detailing considerations	48
List of tables	v	B4 Basis of design model	49
Preface	vi	B5 Recommended design model— Summary of design checks	50
About the author	vii	B6 Recommended design model— DESIGN CHECK NO. 1	51
About the contributing author	vii	B7 Recommended design model— DESIGN CHECK NO. 2	56
Acknowledgements	viii	B8 Recommended design model— DESIGN CHECK NO. 3	59
1 CONCEPT OF DESIGN GUIDES.....	1	B9 Recommended design model— DESIGN CHECK NO. 4	61
1.1 Background	1	B10 Recommended design model— DESIGN CHECK NO. 5	65
2 AS 4100 REQUIREMENTS	2	B11 Recommended design model— DESIGN CHECK NO. 6	67
2.1 Minimum design actions	2	B12 Recommended design model— DESIGN CHECK NO. 7	68
2.2 Member section capacity at splice location	3	B13 Recommended design model— DESIGN CHECK NO. 8	69
2.3 Full contact splices in columns	6	B14 Design example	70
3 CALCULATION OF DESIGN ACTIONS	7	B15 Design capacity tables	76
4 REFERENCES.....	12	PART C FULLY WELDED SPLICE	82
PART A BOLTED COVER PLATE SPLICE..	13	C1 Description of connection	82
A1 Description of connection	13	C2 Typical detailing of connection	83
A2 Typical detailing of connection	14	C3 Detailing considerations	84
A3 Detailing considerations	16	C4 Basis of design model	85
A4 Basis of design model	17	C5 Recommended design model— Summary of design checks	86
A5 Recommended design model— Summary of design checks	19	C6 Recommended design model— DESIGN CHECK NO. 1	87
A6 Recommended design model— DESIGN CHECK NO. 1	20	C7 Recommended design model— DESIGN CHECK NO. 2	88
A7 Recommended design model— DESIGN CHECK NO. 2	26	C8 Recommended design model— DESIGN CHECK NO. 3	89
A8 Recommended design model— DESIGN CHECK NO. 3	28	C9 Recommended design model— DESIGN CHECK NO. 4	91
A9 Recommended design model— DESIGN CHECK NO. 4	32	C10 Design example	93
A10 Recommended design model— DESIGN CHECK NO. 5	33	C11 Design capacity tables	96
A11 Recommended design model— DESIGN CHECK NO. 6	34	APPENDICES	
A12 Design example	35	A Limcon software	99
A13 Design capacity tables	39	B ASI Design Guide 13 comment form	108
PART B BOLTED/WELDED COVER PLATE SPLICE	45		
B1 Description of connection	45		
B2 Typical detailing of connection	46		



LIST OF FIGURES

		<i>Page</i>			<i>Page</i>
Figure 1	Flange hole configurations.....	3	Figure B4	Typical detailing in tension member	47
Figure 2	Design actions at splice.....	7	Figure B5	Geometry of flange splice plates	53
Figure 3	Section dimensions— Symmetrical section	8	Figure B6	Fillet weld arrangement at flanges.....	57
Figure 4	Alternative stress distributions in section due to M^*	10	Figure B7	Single line of bolts—Bolt forces acting towards an edge	61
Figure 5	Design factors for unsymmetrical sections	11	Figure B8	Double line of bolts—Bolt forces acting towards an edge	62
Figure 6	Design moment at a column splice	11	Figure B9	Geometry and design actions on web weld	65
Figure 7	Preferred column splice location.	11	Figure B10	Geometry of web cover plates	67
Figure A1	Bolted cover plate splice.....	13	Figure B11	Design example—Column splice not prepared for full contact.....	70
Figure A2	Typical detailing in flexural member	14	Figure B12	Section with holes in one flange—Elastic section	74
Figure A3	Typical detailing in column/beam-column	15	Figure B13	Section with holes in one flange—Plastic section	75
Figure A4	Typical detailing in tension member	15	Figure C1	Fully welded splice	82
Figure A5	Eccentricity in flange cover plates.....	18	Figure C2	Typical detailing of welded splice	83
Figure A6	Geometry of flange splice plates	22	Figure C3	Use of backing strips	84
Figure A7	Single line of bolts—Bolt forces acting towards an edge.....	28	Figure C4	Preferred splice location in column.....	84
Figure A8	Double line of bolts—Bolt forces acting towards an edge....	29	Figure C5	Staggering of flange and web splice locations	85
Figure A9	Geometry of web cover plates	32	Figure C6	Design actions on flange welds ...	87
Figure A10	Design example—Beam splice ...	35	Figure C7	Web cover plate dimensions	89
Figure B1	Bolted/welded cover plate splice	45	Figure C8	Geometry and design actions on web weld	91
Figure B2	Typical detailing in flexural member	46	Figure C9	Design example—Beam splice....	93
Figure B3	Typical detailing in column/beam column.....	47	Figure C10	Web fillet weld geometry for design example	94



LIST OF TABLES

		<i>Page</i>			<i>Page</i>
Table 1	Universal beams Grade 300— Design section moment and shear capacities.....	4	Table B5	Values of ϕV_{bf} and ϕV_{bi}	56
Table 2	Parallel flange channels— Grade 300—Design section moment and shear capacities	5	Table B6	Design strengths of cover plates ..	60
Table 3	Welded beams— Grade 300—Design section moment and shear capacities	5	Table B7	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.....	77
Table A1	Summary of design actions from Section 3	19	Table B8	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	78
Table A2	Reduction factor for lap connections (k_r)	21	Table B9	Design moment capacity of bolted/welded three cover plate splice, Universal column sections, M24 bolts, 6/8 fillets to flange plates and 6 fillets to web plates	79
Table A3	Strength limit state 8.8/TB, 8.8/TF bolting categories	21	Table B10	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	80
Table A4	Serviceability limit state 8.8/TF bolting category	22	Table B11	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	81
Table A5	Values of ϕV_{bf} and ϕV_{bi}	25	Table C1	Summary of design actions from Section 3	86
Table A6	Design strengths of cover plates	27	Table C2	Design strengths of web cover plates.....	90
Table A7	Design moment capacity of bolted single cover plate splice— Universal beam sections < 400 deep—M20 bolts	40	Table C3	Universal beams—Grade 300— design section moment and shear capacities	96
Table A8	Design moment capacity of bolted inle cover plate splice— Universal beam sections > 400 deep—M24 bolts	41	Table C4	Welded beams—Grade 300— Design section moment and shear capacities	97
Table A9	Design moment capacity of bolted three cover plate splice— Universal column sections— M24 bolts.....	42	Table C5	Universal columns/welded columns—Grade 300—Design section moment and shear capacities	98
Table A10	Design moment capacity of bolted three cover plate splice 700WB/800WB Welded beam sections—M24 bolts	43			
Table A11	Design moment capacity of bolted three cover plate splice 900WB/1000WB Welded beam sections—M24 bolts	44			
Table B1	Summary of design actions from Section 3	50			
Table B2	Reduction factor for lap connections (k_r)	52			
Table B3	Strength limit state—8.8/TB, 8.8/TF bolting categories	52			
Table B4	Serviceability limit state— 8.8/TF bolting category	53			

