

DESIGN CHECK NO. 2—Design capacity of flange cover plates**One Plate Flange Splice**

Design requirements:

$$\phi N_{pt} \geq N_{ft}^* \quad \text{tension flange, } N_{ft}^* \text{ calculated in accordance with Table A1}$$

$$\phi N_{pc} \geq N_{fc}^* \quad \text{compression flange, } N_{fc}^* \text{ calculated in accordance with Table A1}$$

where: ϕN_{pt} = design capacity of flange cover plate in tension (using AS 4100 Clause 7.2)

= for one plate splice, the minimum of:

$$0.9 \times f_{yi} t_i b_i$$

$$0.9 \times 0.85 f_{ui} t_i (b_i - n_g d_h)$$

 ϕN_{pc} = design capacity of flange cover plate in compression (using AS 4100 Clause 6.2.1 assuming holes are filled with bolts and that $k_f = 1.0$)

$$= 0.9 \times f_{yi} t_i b_i$$

Three Plate Flange Splice

Design requirements:

$$0.8 \leq (b_{i1} t_{i1} / 2b_{i2} t_{i2}) \leq 1.25$$

$$\phi N_{pt1} \geq N_{ft1}^*$$

$$\phi N_{pt2} \geq N_{ft2}^*$$

$$\phi N_{pc1} \geq N_{fc1}^*$$

$$\phi N_{pc2} \geq N_{fc2}^*$$

where N_{ft1}^* , N_{ft2}^* , N_{fc1}^* , N_{fc2}^* are as defined in DESIGN CHECK NO. 1

$$\phi N_{pt1} = \text{minimum of } [0.9 \times f_{yi1} b_{i1} t_{i1}; 0.9 \times 0.85 \times f_{ui1} (b_{i1} - n_g d_h) t_{i1}]$$

$$\phi N_{pt2} = \text{minimum of } [0.9 \times f_{yi2} 2b_{i2} t_{i2}; 0.9 \times 0.85 \times f_{ui2} (b_{i2} - 0.5n_g d_h) 2t_{i2}]$$

$$\phi N_{pc1} = 0.9 f_{yi1} b_{i1} t_{i1}$$

$$\phi N_{pc2} = 0.9 f_{yi2} 2b_{i2} t_{i2}$$

Terms are as defined in Figure A6 and Table A5 in DESIGN CHECK NO. 1.

Detailing limitations:

 b_i , b_{i1} – approximately equal to b_f (= member flange width)

$$b_{i2} \leq 0.5 (b_f - t_w) - r$$

where: t_w = member web thickness r = member root radius
 $t_{i1} = t_{i2}$ preferred for three plate splice from fabrication viewpoint but above limitation on ratio of cover plate areas must be complied with for three plate flange splice

Cover plates may be either

- flat bars (discussed in Section 5.2 of Handbook 1); or
- plates (discussed in Section 5.3 of Handbook 1—Ref. 15).

Strength of flat bars and plates used as cover plates are given in Table A6.



TABLE A6
DESIGN STRENGTHS OF COVER PLATES

Strength of flat bars to
AS 3679.1 (Ref. 8)
Grade 300

Thickness of bar mm	Yield stress MPa	Tensile strength MPa
< 11	320	440
≥ 11, ≤ 17	300	440
> 17	280	440

Strength of plate to
AS 3678 (Ref. 7)
Grade 250

Thickness of plate mm	Yield stress MPa	Tensile strength MPa
≤ 8	280	410
> 8, ≤ 12	260	410
> 12, ≤ 50	250	410



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Splice connections

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