

4 WELDED BEAM TO COLUMN MOMENT CONNECTION

4.5 Design capacity tables

The following Design Capacity Tables are provided, derived using DESIGN CHECK NOS 1 and 2. Column stiffening requirements must be separately assessed using DESIGN CHECK NOS 3 to 8 inclusive. Design of column stiffeners can be carried out using DESIGN CHECK NOS 9 to 17 inclusive.

4.6 Configuration A—Full penetration butt welds to flanges and webs

Table 15 Universal beams Grade 300, Design section moment and web capacities

Table 16 Welded beams Grade 300, Design section moment and web capacities

4.7 Configuration B—Fillet welds required to develop section moment capacity

Table 17 Universal beams Grade 300, Weld configurations to achieve design section moment capacity, ϕM_s

Table 18 Welded beams Grade 300, Weld configurations to achieve design section moment capacity, ϕM_s

4.8 Configuration C—Fillet welds to flanges and web

Table 19 Universal beams Grade 300—Design moment capacity of welded connection with 10 mm flange fillet welds and 8 mm web welds

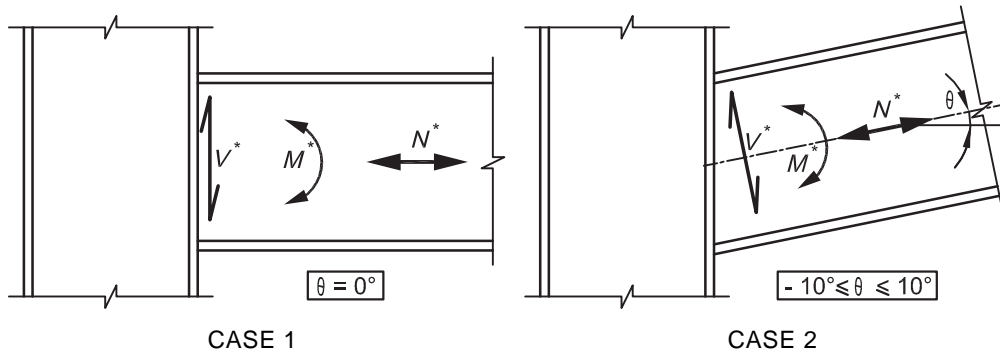
Table 20 Universal beams Grade 300—Design moment capacity of welded connection with 8 mm flange fillet welds and 6 mm web welds



4 WELDED BEAM TO COLUMN
MOMENT CONNECTION

4.7 Configuration B—Fillet welds
required to develop section
moment capacity

TABLE 17
UNIVERSAL BEAMS GRADE 300
WELD CONFIGURATIONS TO ACHIEVE
DESIGN SECTION MOMENT CAPACITY ϕM_s



Section, Grade 300	ϕM_s kNm	Welds		CASE 1		CASE 2 $\theta \neq 0, N^* \neq 0$		
		Flange	Web	Max V^* (plus or minus) kN	$\theta=0, N^*=0$	Max V^* (plus or minus) kN	Max N^* (Tens or Comp) kNm	ϕM_{conn} Refer Note kN
					ϕM_{conn}			
610UB125	927	FPBW	10	708	927	708	201	927
610UB113	829	FPBW	10	660	829	660	183	829
610UB101	782	FPBW	10	660	782	660	176	782
530UB92.4	640	FPBW	10	563	640	563	160	640
530UB82.0	558	FPBW	10	526	558	526	142	558
460UB82.1	496	FPBW	10	473	496	473	142	496
460UB74.6	449	FPBW	10	431	449	431	129	449
460UB67.1	399	FPBW	8	400	399	400	116	399
410UB59.7	324	FPBW	8	328	324	328	103	324
410UB53.7	304	FPBW	8	317	304	317	99.0	304
360UB56.7	273	FPBW	8	297	273	297	98.0	273
360UB50.7	242	FPBW	8	269	242	269	87.5	242
360UB44.7	222	FPBW	8	252	222	252	82.5	222
310UB46.2	197	FPBW	6	213	197	213	80.0	197
310UB40.4	182	FPBW	6	192	182	192	75.0	182
310UB32.0	134	FPBW	6	170	134	170	59.0	134
250UB37.3	140	FPBW	6	170	140	170	69.0	140
250UB31.4	114	10	8	159	114	131	58.0	114
250UB25.7	92.0	10	8	128	92.0	128	47.0	92.0
200UB29.8	90.0	10	8	104	90.0	85.0	55.0	90.0
200UB25.4	74.6	8	8	120	74.6	106	47.0	74.6
200UB22.3	65.3	8	8	104	65.3	104	41.0	65.3
200UB18.2	51.8	8	8	92.0	51.8	92.0	33.0	51.8

NOTES:

ϕM_{conn} = design moment capacity of connection, ϕM_s = design section moment capacity.

Case 1 applies to right angle beam to column connections, (i.e. $\theta=0$) with no axial force ($N^*=0$).

Case 2 applies to connections where θ is within the range -10 to 10 degrees, and design axial force (N^*) does not exceed the value tabulated (approx. 5% of design section capacity). Axial/moment combination to be checked separately, for the beam section.

Minimum design shear force V^* is 15% of ϕV_v , design shear capacity of section, or 40 kN (whichever is greater).

Maximum design shear force V^* limited to $0.6\phi V_v$ to ensure M^*, V^* combination is satisfied for the beam section.

Welds: E48XX/W50X electrodes, all welds category SP.

Fillet weld size is in mm—a larger fillet size or FPBW may be used in lieu of tabulated value.

FPBW = full penetration butt weld.



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Volume 4: Rigid connections—Open sections

by

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