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27 March 2019

Director Operations 2  
Anti-Dumping Commission  
GPO Box 1632  
Melbourne VIC 3001

### **Dumping investigation into solid base angles exported from the Peoples Republic of China**

Dear Director

This submission is made on behalf of Vincent Buda & Company (V.Buda) to the application by Galintel Pty Ltd (Galintel) for the publication of dumping duties on solid base angles exported from the Peoples Republic of China (China).

Further to our previous submissions, we further highlight possible local manufacturers of like goods that may be relevant to defining the Australian industry and scope of the investigation.

#### **Bluescope Lysaght**

We note that at page 10 of the Bluescope Lysaght (refer to **non-confidential attachment 1**) published catalogue for its cold formed sections, it offers cold-rolled steel angles in two standard sections. Beyond these two standard sections, it also states that '[i]n addition, many major Bluescope Lysaght centres have roll-forming and brake pressing equipment to manufacture these special sections outside the standard range.'

Given that Bluescope appears to be the sole manufacturer of hot-rolled coil and cold-rolled coil in Australia, there is genuine scope for them to also roll form angles that would fall within the parameters of the goods description, notwithstanding that they may not be categorised as solid base angles or lintel angles.

#### **Liberty Steel**

We note that in the current expiry review (Review 505) and review of measures (Review 499), that OneSteel Manufacturing Pty Ltd (Liberty Steel) has provided the Commission with submissions<sup>1</sup> outlining goods covered by the measures and their end-use applications. Page 9 of those submissions identifies:

- equal angles: which are most often used for balconies, stairs, concrete supports and platforms; and
- unequal angles: which are often used as lintels due to greater loading capabilities.

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<sup>1</sup> EPR 499, [Briefing - Australian Industry - Liberty Steel](#)

A review of Liberty Steel's website reveals that it '*manufactures and supplies an extensive range of Hot Rolled Structural Steel*' including L-shaped sections which cover the equal and unequal angles referred above. This is confirmed in OneSteel's steel products catalogue (refer to **non-confidential attachment 2**). The Commission must therefore consider whether these L-shaped sections manufactured by Liberty Steel are like goods as defined by the *Customs Act 1901* (the Act).

Determining which like goods fall within the definition of local production and the Australian industry requires assessing whether products have characteristics closely resembling each other. The Commission's like goods framework undertakes this assessment against the following factors:

- physical likeness;
- commercial likeness;
- functional likeness;
- production likeness; and
- any other relevant considerations raised by interested parties.

To that end, V.Buda notes that Galintel's application has defined the goods subject to investigation as '*Solid base angle, made from hot rolled coil steel, alloyed or non-alloyed, cold roll-formed, whether or not galvanised.*' and excluded the following goods from investigation:

- T-bar,
- flat bar,
- perforated bar (e.g. Rendabar), and
- hot rolled sections, goods made from hot rolled coil steel that are subsequently subject to a further hot rolling process.

Critically, the goods description outlined above, including the excluded products, is relevant only in the context of establishing which 'goods' (ie, the exported goods) are to be included in the determination of dumping. However, the determination of like goods is not limited to the goods description as like goods are able to encompass products beyond the goods description and which are found to possess characteristics closely resembling the exported goods. Likewise, the goods to be investigated for determining dumping cannot be broadened by the industry's like goods.

This point was made in a submission by OneSteel Manufacturing dated 23 March 2017 to the investigation into alloy round bars from China<sup>2</sup>:

The issue of whether or not the applicant produces in Australia, like goods to the goods under consideration is a secondary matter. Therefore, the assessment of a domestic producer's production of "like goods" does not "*broaden the scope of range of goods in this investigation*" as the respondent's submission appears to suggest. [original emphasis]

V.Buda agrees with OneSteel Manufacturing's interpretation that the domestic manufacturer's production of like goods does not and cannot broaden or narrow the scope of the range of goods under investigation. That is, the parameters of the goods under investigation is to a large extent determined and defined by the applicant in its application, and nothing prevents the locally produced like goods being determined and found to be broader than or narrower than the goods subject to investigation. The only required determination by the Commission is to establish whether

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<sup>2</sup> EPR 384 – record no. 11, [Submission - Australian industry - One Steel Manufacturing](#)

the local industry manufactures like goods and to ensure that all such like goods are included in its assessment of material injury.

To highlight using the example in the Commission's guidelines for applicants<sup>3</sup>, if the applicant defines the goods as blue and red pencils and specifically excludes yellow pencils, but itself produces blue, red and yellow pencils, the goods subject of the investigation for the purposes of determining dumping is not defined by the applicant's like goods. The investigated goods are defined by the goods description, being blue and red pencils, and like goods are defined by the applicant's 'like' production, being blue, red and yellow pencils (assuming yellow pencils are found to possess characteristics closely resembling).

Likewise, if the applicant defines the goods as blue, red and yellow pencils, but itself only produces blue and red pencils, the goods subject of the investigation for the purposes of determining dumping is not defined by the applicant's like goods. The investigated goods are defined by the goods description, being blue, red and yellow pencils, and like goods are defined by the applicant's 'like' production, being blue and red pencils.

Applying that correct interpretation to this particular investigation, like goods in this case include all goods produced locally that *'have characteristics closely resembling those of the goods under consideration'*. Based on public information relevant to Liberty Steel's production of L-shaped sections, these products appear to be like as they clearly possess characteristics that are closely resembling the goods description in that:

- they are angles with a solid base;
- they are made from hot rolled coil;
- they are either alloyed or non-alloyed; and
- they are used in lintel (unequal angles) and structural (equal angles) application;
- they are manufactured with a non-galvanised finish.

The only difference being that they are not cold form rolled. Although in our view this is a minor and inconsequential factor as the input material is identical, being HRC, and the cold roll forming process does not contribute to the products attributes such that they are prevented from being used in exactly the same applications as those that are hot-rolled. Therefore, the roll forming process does not define the essential characteristics of the goods.

In those circumstances, local production of L-shaped sections by Liberty Steel would in our view possess characteristics closely resembling the imported goods and therefore must be considered to be like goods for the purposes of defining the Australian industry and assessing material injury.

V.Buda therefore contends that the Commission must define and determine like goods for material injury purposes to include all types of L-shaped sections (steel angles) including those produced by Liberty Steel. In doing so, the Commission's material injury assessment must include these like goods as required by subsection 269TAE of the Act. On that basis, the Commission must request the cooperation of Liberty Steel, and the necessary cost and sales data required by the approved form.

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<sup>3</sup> [ADC - Guidelines for applicants](#), pages 9-10.

### Ancon Australia

A review of Ancon Australia's website reveals that it offers its own type of specialised and standard lintels (<https://www.ancon.com.au/products/lintels>). It is noted that its website confirms that it *'operates from advanced manufacturing facilities in Australia'* and a review of their product catalogue (refer to **non-confidential Attachment 3**) states that *'Ancon Building Products manufactures a complete range of galvanised and stainless steel lintels'* and *'Ancon Lintels are manufactured from galvanised or Austenitic stainless steel.'*

### Galintel

Applying the like goods framework and interpretation that the goods description does not limit the scope of like goods manufactured by the Australian industry, the mere fact that Galintel excludes certain sub-types from the goods description, does not prevent their own production of those excluded goods from meeting the definition of like goods. To again highlight using the earlier example of pencils, if an applicant defines the goods under investigation as coloured pencils but specifically excludes red pencils, and itself produces coloured pencils including red pencils, then all locally produced coloured pencils including red pencils that have characteristics closely resembling the goods, must be considered like goods and relevant for the purposes of determining material injury.

To that end, V.Buda contends that if Galintel manufactures the following products, then these would clearly possess characteristics closely resembling the goods subject to investigation:

- traditional angles (refer **non-confidential attachment 4**);
- rendabar (refer to **non-confidential attachment 5**).

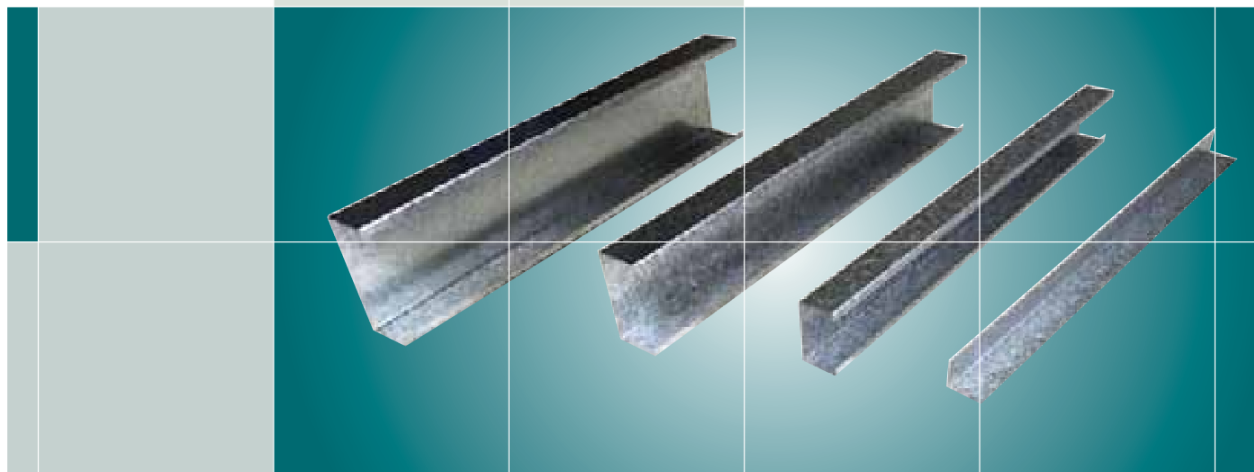
If cost and sales data for these goods were not included in Galintel's application, the Commission must request this information to ensure it is able to undertake a meaningful material injury assessment.

Yours sincerely

John Bracic

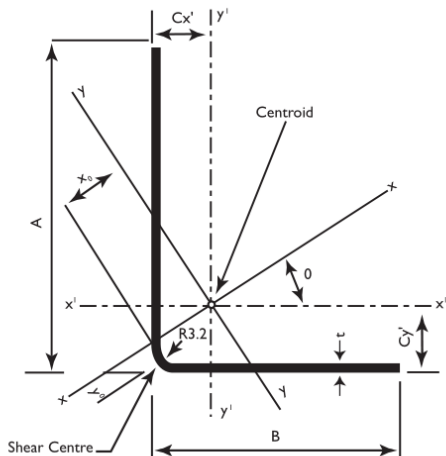
# Cold Formed Sections

## CFS-1 Section Properties



- Many uses in the construction, general fabrication and home handyman fields
- Roll-formed from zinc-coated and uncoated BlueScope steel
- Strength of cold formed sections has been increased from 240 and 250 MPa to 300 MPa
- Attention to quality control provides a product of uniform straightness and mass
- Economical

# Angles



**Method of Cataloguing**

Angles are denoted by the letters "LA". In the number following these letters, the first two digits indicate the dimensions of the angle in millimetres. The last two digits indicate the thickness of material in tenths of a millimetre, e.g.

LA 4630 - Angle 46 mm x 3.0 mm

**Tolerances**

Legs: ±1.5 mm, equal within 1 mm for equal angles.  
Length: + 15 mm – 0.

**Packing**

40 lengths per bundle.

**Angles — Dimensions and Properties of Full Unreduced Sections**

Catalogue No.	Nominal Dimensions			Area mm <sup>2</sup>	Mass		Second Moment of Area				Angle
	A	B	t		Galv.	Black	I <sub>x'</sub>	I <sub>y'</sub>	I <sub>x</sub>	I <sub>y</sub>	θ
	mm				kg/m		10 <sup>6</sup> mm <sup>4</sup>				Deg.
LA4630	46	35	3.0	225	1.79	1.77	0.0484	0.0251	0.0614	0.0120	30.9
LA5130	51	30	3.0	225	1.79	1.77	0.0608	0.0167	0.0683	0.0092	20.8

**Other BlueScope Lysaght Steel Sections**

BlueScope Lysaght manufactures an extensive range of other standard sections for the building industry.

In addition, many major BlueScope Lysaght centres have roll-forming and brake pressing equipment to manufacture these special sections outside the standard range.

For details of these other sections and facilities, consult your nearest BlueScope Lysaght office or distributor.



The logo for onesteel, with 'one' in red and 'steel' in grey, is positioned in the upper left quadrant of the cover. The background is a close-up photograph of a dark grey steel beam with 'one steel' and 'A5' embossed on its surface.

**onesteel**

SEVENTH EDITION

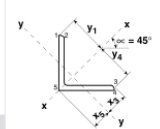
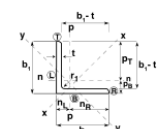
# HOT ROLLED AND STRUCTURAL STEEL PRODUCTS



Equal Angles

Table 23 Equal Angles - x-axis and y-axis - Dimensions and Properties

Designation	Nominal Thickness	Mass per metre	Actual Thickness	Radii			Gross Area of Cross Section	Coordinate of Centroid		About x-axis				About y-axis				Torsion Constant	Designation				
				Root	Toe	(b <sub>1</sub> -t)		n <sub>x</sub>	n <sub>y</sub>	Y <sub>c</sub>	Z <sub>x</sub>	I <sub>x</sub>	I <sub>y</sub>	I <sub>xy</sub>	Z <sub>xy</sub>	Z <sub>yx</sub>	Z <sub>xx</sub>			Z <sub>yy</sub>	r <sub>x</sub>	r <sub>y</sub>	J
Leg-size	t	t	t	r <sub>1</sub>	r <sub>2</sub>	t	A <sub>g</sub>	n <sub>x</sub>	n <sub>y</sub>	I <sub>x</sub>	I <sub>y</sub>	I <sub>xy</sub>	Z <sub>x</sub>	Z <sub>y</sub>	I <sub>xy</sub>	Z <sub>xy</sub>	Z <sub>yx</sub>	Z <sub>xx</sub>	Z <sub>yy</sub>	r <sub>x</sub>	r <sub>y</sub>	J	
b <sub>1</sub> x b <sub>2</sub>	t	t	t	r <sub>1</sub>	r <sub>2</sub>	t	A <sub>g</sub>	n <sub>x</sub>	n <sub>y</sub>	I <sub>x</sub>	I <sub>y</sub>	I <sub>xy</sub>	Z <sub>x</sub>	Z <sub>y</sub>	I <sub>xy</sub>	Z <sub>xy</sub>	Z <sub>yx</sub>	Z <sub>xx</sub>	Z <sub>yy</sub>	r <sub>x</sub>	r <sub>y</sub>	J	
200 x 200 x 26 EA	76.8	26.0	18.0	5.0	6.69	9780	59.3	141	56.8	141	402	643	76.2	149	73.9	202	83.8	178	329	39.0	2250	200 x 200 x 26 EA	
20 EA	60.1	20.0	18.0	5.0	9.00	7660	57.0	143	45.7	141	323	511	77.2	11.8	72.9	162	80.6	147	260	39.3	1060	20 EA	
18 EA	54.4	18.0	18.0	5.0	10.1	6930	56.2	144	47.1	141	295	464	77.6	10.8	72.6	149	79.5	136	236	39.4	778	18 EA	
16 EA	48.7	16.0	18.0	5.0	11.5	6200	55.4	145	37.6	141	266	407	77.9	9.72	72.3	135	78.4	124	212	39.6	554	16 EA	
13 EA	40.0	13.0	18.0	5.0	14.4	5090	54.2	146	31.2	141	221	344	78.3	8.08	71.9	112	76.6	105	176	39.8	304	13 EA	
150 x 150 x 19 EA	42.1	19.0	13.0	5.0	6.89	5360	44.2	106	17.6	106	166	265	57.2	4.60	54.9	83.8	62.6	73.5	135	29.3	657	150 x 150 x 19 EA	
16 EA	35.4	15.8	13.0	5.0	8.49	4520	43.0	107	15.1	106	142	225	57.8	3.91	54.3	71.9	60.8	64.2	115	29.4	386	16 EA	
12 EA	27.3	12.0	13.0	5.0	11.5	3480	41.5	108	11.9	106	112	175	58.4	3.06	53.7	56.9	58.7	52.1	89.3	29.6	174	12 EA	
10 EA	21.9	9.5	13.0	5.0	14.8	2790	40.5	109	9.61	106	90.6	141	58.7	2.48	53.4	46.4	57.3	43.3	72.0	29.8	88.9	10 EA	
125 x 125 x 16 EA	29.1	15.8	10.0	5.0	6.91	3710	36.8	88.2	8.43	88.4	95.4	153	47.7	2.20	45.4	48.5	52.1	42.3	77.8	24.4	313	125 x 125 x 16 EA	
12 EA	22.5	12.0	10.0	5.0	9.42	2870	35.4	89.6	6.69	88.4	75.7	120	48.3	1.73	44.7	38.6	50.1	34.5	60.8	24.5	141	12 EA	
10 EA	18.0	9.5	10.0	5.0	12.2	2300	34.4	90.6	5.44	88.4	61.6	96.5	48.7	1.40	44.4	31.5	48.7	28.8	49.0	24.7	71.9	10 EA	
8 EA	9.16	6.0	8.0	5.0	15.7	1770	26.8	73.2	1.78	70.7	25.2	39.3	39.1	0.458	35.0	13.1	37.9	12.1	29.0	19.8	14.8	8 EA	
100 x 100 x 12 EA	17.7	12.0	8.0	5.0	7.33	2260	29.2	70.8	3.29	70.7	46.6	74.5	38.2	0.857	35.8	23.9	41.3	20.8	37.9	19.5	10	100 x 100 x 12 EA	
8 EA	14.2	9.5	8.0	5.0	9.53	1810	28.2	71.8	2.70	70.7	38.2	60.4	38.6	0.695	35.4	19.6	39.9	17.4	30.7	19.6	56.2	10 EA	
6 EA	11.8	7.8	8.0	5.0	11.8	1500	27.5	72.5	2.27	70.7	32.0	50.3	38.8	0.582	35.2	16.5	38.9	14.9	25.6	19.7	31.7	8 EA	
5 EA	9.16	6.0	8.0	5.0	15.7	1170	26.8	73.2	1.78	70.7	25.2	39.3	39.1	0.458	35.0	13.1	37.9	12.1	29.0	19.8	14.8	6 EA	
90 x 90 x 10 EA	12.7	9.5	8.0	5.0	8.47	1620	25.7	64.3	1.93	63.6	30.4	48.3	34.5	0.500	31.9	15.7	36.4	13.8	24.6	17.6	50.5	90 x 90 x 10 EA	
8 EA	10.6	7.8	8.0	5.0	10.5	1350	25.0	65.0	1.63	63.6	25.6	40.4	34.8	0.419	31.7	13.2	35.4	11.8	20.5	17.6	28.6	8 EA	
6 EA	8.22	6.0	8.0	5.0	14.0	1050	24.3	65.7	1.28	63.6	20.1	31.6	35.0	0.330	31.5	10.5	34.3	9.62	16.1	17.8	13.4	6 EA	
75 x 75 x 10 EA	10.5	9.5	8.0	5.0	6.89	1340	22.0	53.0	1.08	53.0	20.4	32.8	28.4	0.282	26.6	10.6	31.1	9.09	16.8	14.5	41.9	75 x 75 x 10 EA	
8 EA	8.73	7.8	8.0	5.0	8.62	1140	21.3	53.7	0.913	53.0	17.2	27.5	28.7	0.237	26.4	8.99	30.1	7.87	14.0	14.6	23.8	8 EA	
6 EA	6.81	6.0	8.0	5.0	11.5	867	20.5	54.5	0.722	53.0	13.6	21.6	28.9	0.187	26.2	7.5	29.0	6.44	11.0	14.7	11.2	6 EA	
5 EA	5.27	4.6	8.0	5.0	15.3	672	19.9	55.1	0.563	53.0	10.6	16.7	29.0	0.147	26.1	5.62	28.1	5.22	8.61	14.8	5.78	5 EA	
65 x 65 x 10 EA	9.02	9.5	6.0	3.0	5.84	1150	19.6	45.4	0.691	46.0	15.0	24.3	24.5	0.183	23.7	7.71	27.1	6.60	12.5	12.6	35.1	65 x 65 x 10 EA	
8 EA	7.51	7.8	6.0	3.0	7.33	957	19.0	46.0	0.589	46.0	12.8	20.5	24.8	0.154	22.4	6.56	26.8	5.73	10.5	12.7	20.0	8 EA	
6 EA	5.87	6.0	6.0	3.0	9.83	748	18.3	46.7	0.471	46.0	10.2	16.2	25.1	0.122	23.1	5.26	25.8	4.71	8.25	12.8	9.37	6 EA	
5 EA	4.56	4.6	6.0	3.0	13.1	581	17.7	47.3	0.317	46.0	8.08	12.7	25.3	0.0959	23.0	4.18	25.0	3.83	6.46	12.9	3.66	5 EA	
55 x 55 x 6 EA	4.93	6.0	6.0	3.0	8.17	628	15.8	39.2	0.278	38.9	7.14	11.4	21.0	0.0723	19.6	3.69	22.3	3.24	5.82	10.7	7.93	55 x 55 x 6 EA	
5 EA	3.84	4.6	6.0	3.0	11.0	489	15.2	39.8	0.220	38.9	5.66	8.93	21.2	0.0571	19.4	2.94	21.5	2.66	4.57	10.8	3.71	5 EA	
50 x 50 x 8 EA	5.68	7.8	6.0	3.0	5.41	723	15.2	34.8	0.253	35.4	7.16	11.7	18.7	0.0675	18.1	3.73	21.5	3.14	6.00	9.66	5.52	50 x 50 x 8 EA	
6 EA	4.46	6.0	6.0	3.0	7.33	568	14.5	35.5	0.205	35.4	5.79	9.30	19.0	0.0536	17.8	3.01	20.5	2.61	4.76	9.71	7.21	6 EA	
5 EA	3.48	4.6	6.0	3.0	9.87	443	13.9	36.1	0.163	35.4	4.61	7.32	19.2	0.0424	17.6	2.40	19.7	2.15	3.75	9.78	3.38	5 EA	
3 EA	2.31	3.0	6.0	3.0	15.7	295	13.2	36.8	0.106	35.4	3.14	4.90	19.3	0.0289	17.6	1.65	18.7	1.55	2.53	9.90	1.01	3 EA	
45 x 45 x 6 EA	3.97	6.0	5.0	3.0	6.50	506	13.1	31.7	0.146	31.8	4.59	7.41	17.0	0.0381	16.0	2.39	18.8	2.04	3.79	8.71	6.32	45 x 45 x 6 EA	
5 EA	3.10	4.6	5.0	3.0	8.78	394	12.7	32.3	0.117	31.8	3.66	5.84	17.2	0.0303	15.8	1.91	18.0	1.68	2.99	8.76	2.96	5 EA	
3 EA	2.06	3.0	5.0	3.0	14.0	263	12.0	33.0	0.0790	31.8	2.48	3.92	17.3	0.0206	15.7	1.31	17.0	1.21	2.02	8.85	1.85	3 EA	
40 x 40 x 6 EA	3.50	6.0	5.0	3.0	5.67	446	12.0	28.0	0.0997	28.3	3.53	5.75	15.0	0.0265	14.3	1.86	17.0	1.55	2.95	7.71	5.60	40 x 40 x 6 EA	
5 EA	2.73	4.6	5.0	3.0	7.70	348	11.5	28.5	0.0801	28.3	2.83	4.55	15.2	0.0209	14.0	1.49	16.2	1.29	2.33	7.75	2.63	5 EA	
3 EA	1.83	3.0	5.0	3.0	12.3	233	10.8	29.2	0.0545	28.3	1.93	3.06	15.3	0.0142	13.9	1.02	15.3	0.930	1.58	7.82	0.85	3 EA	
30 x 30 x 6 EA	2.56	6.0	5.0	3.0	4.00	326	9.53	20.5	0.0387	21.2	1.83	3.06	10.9	0.0107	10.7	0.993	13.5	0.790	1.59	5.72	4.16	30 x 30 x 6 EA	
5 EA	2.01	4.6	5.0	3.0	5.52	256	8.99	21.0	0.0316	21.2	1.49	2.45	11.1	0.00839	10.5	0.799	12.7	0.660	1.26	5.72	1.98	5 EA	
3 EA	1.35	3.0	5.0	3.0	9.00	173	8.20	21.7	0.0218	21.2	1.03	1.67	11.2	0.00573	10.3	0.554	11.7	0.488	0.862	5.76	0.605	3 EA	
25 x 25 x 6 EA	2.08	6.0	5.0	3.0	3.17	266	8.28	16.7	0.0200	17.7	1.19	2.03	8.89	0.00650	8.97	0.669	11.7	0.513	1.07	4.75	3.44	25 x 25 x 6 EA	
5 EA	1.65	4.6	5.0	3.0	4.43	210	7.75	17.3	0.0173	17.7	0.980	1.65	9.07	0.00469	8.73	0.537	11.0	0.428	0.849	4.72	1.66	5 EA	
3 EA	1.12	3.0	5.0	3.0	7.33	143	7.07	17.9	0.0121	17.7	0.685	1.13	9.22	0.00319	8.56	0.373	9.99	0.339	0.583	4.73	0.515	3 EA	



HRSP 7th Ed. April 2014

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Equal Angles

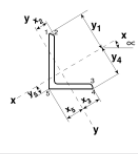
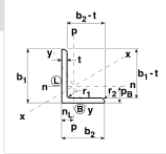
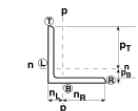
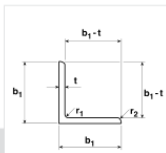
Table 25 Equal Angles - n-axis and p-axis - Properties

Designation	About n-axis and p-axis								Product of 2nd Moment of Area $I_{xy}$	Designation
	$I_{xx}$		$I_{yy}$		$I_{zz}$		$I_{zz}$			
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	
200 x 200 x 26 EA	35.8	59.3	605	141	255	460	605	200 x 200 x 26 EA		
20 EA	28.8	57.0	505	143	201	363	613	20 EA		
18 EA	26.3	56.2	467	144	183	330	615	18 EA		
16 EA	23.7	55.4	427	145	164	296	618	16 EA		
13 EA	19.7	54.2	363	146	135	243	622	13 EA		
150 x 150 x 19 EA	11.1	44.2	250	106	105	189	45.4	-6.48	150 x 150 x 19 EA	
16 EA	9.48	43.0	220	107	88.7	160	45.8	-5.58	16 EA	
12 EA	7.46	41.5	180	108	68.8	124	46.3	-4.40	12 EA	
10 EA	6.04	40.5	149	109	55.2	99.9	46.6	-3.56	10 EA	
125 x 125 x 16 EA	5.32	36.8	144	88.2	60.3	109	37.9	-3.11	125 x 125 x 16 EA	
12 EA	4.21	35.4	119	89.6	47.0	85.0	38.3	-2.48	12 EA	
10 EA	3.42	34.4	99.4	90.6	37.8	68.4	38.6	-2.02	10 EA	
8 EA	2.86	33.7	84.9	91.3	31.3	56.8	38.8	-1.69	8 EA	
100 x 100 x 12 EA	2.08	29.2	71.1	70.8	29.3	53.2	30.3	-1.22	100 x 100 x 12 EA	
10 EA	1.70	28.2	60.1	71.8	23.6	42.9	30.6	-1.00	10 EA	
8 EA	1.42	27.5	51.7	72.5	19.6	35.7	30.8	-0.842	8 EA	
6 EA	1.12	26.8	41.8	73.2	15.3	27.8	31.0	-0.661	6 EA	
90 x 90 x 10 EA	1.22	25.7	47.3	64.3	18.9	34.4	27.4	-0.716	90 x 90 x 10 EA	
8 EA	1.02	25.0	40.9	65.0	15.7	28.7	27.6	-0.604	8 EA	
6 EA	0.805	24.3	33.2	65.7	12.3	22.4	27.7	-0.475	6 EA	
75 x 75 x 10 EA	0.681	22.0	31.0	53.0	12.8	23.4	22.6	-0.399	75 x 75 x 10 EA	
8 EA	0.575	21.3	27.0	53.7	10.7	19.6	22.7	-0.338	8 EA	
6 EA	0.455	20.5	22.1	54.5	8.35	15.3	22.9	-0.268	6 EA	
5 EA	0.355	19.9	17.9	55.1	6.44	11.8	23.0	-0.208	5 EA	
65 x 65 x 10 EA	0.437	19.6	22.3	45.4	9.62	17.4	19.5	-0.254	65 x 65 x 10 EA	
8 EA	0.371	19.0	19.6	46.0	8.07	14.6	19.7	-0.218	8 EA	
6 EA	0.296	18.3	16.2	46.7	6.34	11.5	19.9	-0.175	6 EA	
5 EA	0.234	17.7	13.2	47.3	4.94	8.97	20.1	-0.138	5 EA	
55 x 55 x 6 EA	0.175	15.8	11.1	39.2	4.46	8.11	16.7	-0.103	55 x 55 x 6 EA	
5 EA	0.139	15.2	9.12	39.8	3.48	6.34	16.8	-0.084	5 EA	
50 x 50 x 8 EA	0.160	15.0	10.5	34.8	4.61	8.38	14.9	-0.0928	50 x 50 x 8 EA	
6 EA	0.129	14.5	8.90	35.5	3.64	6.63	15.1	-0.0756	6 EA	
5 EA	0.103	13.9	7.36	36.1	2.85	5.19	15.2	-0.0602	5 EA	
3 EA	0.0694	13.2	5.25	36.8	1.89	3.46	15.3	-0.0405	3 EA	
45 x 45 x 6 EA	0.0922	13.3	6.93	31.7	2.91	5.30	13.5	-0.0538	45 x 45 x 6 EA	
5 EA	0.0734	12.7	5.76	32.3	2.28	4.16	13.6	-0.0432	5 EA	
3 EA	0.0498	12.0	4.14	33.0	1.51	2.77	13.8	-0.032	3 EA	
40 x 40 x 6 EA	0.0631	12.0	5.24	28.0	2.26	4.12	11.9	-0.0366	40 x 40 x 6 EA	
5 EA	0.0505	11.5	4.39	28.5	1.77	3.24	12.0	-0.0296	5 EA	
3 EA	0.0344	10.8	3.19	29.2	1.18	2.17	12.2	-0.0201	3 EA	
30 x 30 x 6 EA	0.0247	9.53	2.59	20.5	1.21	2.22	8.71	-0.0140	30 x 30 x 6 EA	
5 EA	0.0200	8.99	2.22	21.0	0.951	1.76	8.83	-0.0106	5 EA	
3 EA	0.0138	8.30	1.66	21.7	0.635	1.18	8.93	-0.00804	3 EA	
25 x 25 x 6 EA	0.0135	8.28	1.63	16.7	0.807	1.49	7.13	-0.00750	25 x 25 x 6 EA	
5 EA	0.0100	7.75	1.42	17.3	0.638	1.19	7.23	-0.00632	5 EA	
3 EA	0.00765	7.07	1.08	17.9	0.426	0.802	7.33	-0.00466	3 EA	

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Unequal Angles

Table 26 Unequal Angles - x-axis and y-axis - Dimensions and Properties

Designation	Nominal Thickness	Mass per metre	Actual Thickness	Radii	Gross Area of Centroid	About x-axis														About y-axis														Torsion Constant	Tan Alpha	Designation
						Root Section (b1-t) (b2-t)														Root Section (b1-t) (b2-t)																
Leg-size	$b_1$	$b_2$	t	$r_1$	$r_2$	$t$	$t$	$A_g$	$p_x$	$p_y$	$I_{xx}$	$I_{yy}$	$I_{zz}$	$S_{xx}$	$S_{yy}$	$r_{xx}$	$r_{yy}$	$I_{zz}$	$S_{xx}$	$S_{yy}$	$r_{xx}$	$r_{yy}$	$J$													
mm x mm	mm	mm	mm	mm	mm	mm	mm	mm <sup>2</sup>	mm	mm	mm <sup>4</sup>	mm <sup>4</sup>	mm <sup>4</sup>	mm <sup>3</sup>	mm <sup>3</sup>	mm	mm	mm <sup>4</sup>	mm <sup>3</sup>	mm <sup>3</sup>	mm	mm	mm <sup>4</sup>													
150 x 100 x 12 UA	22.5	12.0	10.0	5.0	11.5	7.33	2870	491	24.3	7.51	102	73.5	75.3	99.7	35.2	213	127	512	1.35	27.6	48.8	52.9	25.5	42.0	32.1	51.7	21.7	141	0.438	150 x 100 x 12 UA						
10 UA	18.0	9.5	10.0	5.0	14.8	9.53	2300	48.1	23.3	6.11	103	59.5	74.9	81.5	34.6	177	102	516	1.09	26.9	40.7	53.0	20.6	40.7	26.9	41.8	21.8	71.9	0.441	10 UA						
150 x 90 x 16 UA	27.9	15.8	10.0	5.0	8.49	4.70	3550	52.5	22.7	8.80	99.5	88.4	71.9	122	41.9	210	154	49.8	1.32	24.6	53.8	49.9	26.5	38.9	34.0	55.9	19.3	300	0.353	150 x 90 x 16 UA						
12 UA	21.6	12.0	10.0	5.0	11.5	6.50	2750	51.0	21.2	6.97	100	69.4	71.3	97.8	40.8	171	120	50.4	1.04	23.4	44.5	50.1	20.8	37.2	28.0	43.8	19.5	136	0.360	12 UA						
10 UA	17.3	9.5	10.0	5.0	14.8	8.47	2200	50.0	20.2	5.66	101	56.1	70.3	80.1	40.1	141	96.6	50.7	0.847	22.6	37.4	50.4	16.8	36.1	23.5	35.4	19.6	69.0	0.363	10 UA						
8 UA	14.3	7.8	10.0	5.0	18.2	10.5	1820	49.2	19.6	4.73	101	46.7	70.3	67.3	39.5	120	80.1	51.0	0.710	22.1	32.2	50.6	14.0	35.2	20.2	29.5	19.7	39.0	0.364	8 UA						
125 x 75 x 12 UA	17.7	12.0	8.0	5.0	9.42	5.25	2260	43.3	18.4	3.91	83.2	47.0	59.7	65.5	34.6	113	81.4	41.6	0.585	19.9	29.3	41.4	14.1	31.9	18.4	29.7	16.1	110	0.356	125 x 75 x 12 UA						
10 UA	14.2	9.5	8.0	5.0	12.2	6.89	1810	42.3	17.5	3.20	83.8	38.2	59.3	53.9	33.9	94.4	65.8	42.0	0.476	19.2	24.9	41.6	11.4	30.7	15.5	24.1	16.2	56.2	0.360	10 UA						
8 UA	11.8	7.8	8.0	5.0	15.0	8.62	1500	41.5	16.8	2.68	84.2	31.8	58.9	45.5	33.3	80.4	54.6	42.2	0.399	18.6	21.5	41.8	9.55	29.9	13.3	20.1	16.3	31.7	0.363	8 UA						
6 UA	9.16	6.0	8.0	5.0	19.8	11.5	1170	40.7	16.0	2.10	84.7	24.8	58.5	36.0	32.8	64.1	42.4	42.5	0.315	18.0	17.5	42.1	7.47	29.0	10.8	15.7	16.4	14.8	0.364	6 UA						
100 x 75 x 10 UA	12.4	9.5	8.0	5.0	9.53	6.89	1580	31.8	19.4	1.89	69.2	27.3	54.5	34.6	18.6	101	46.5	34.6	0.401	22.3	18.0	36.4	11.0	32.2	12.5	21.2	16.0	49.1	0.546	100 x 75 x 10 UA						
8 UA	10.3	7.8	8.0	5.0	11.8	8.62	1310	31.1	18.7	1.59	69.4	22.9	54.3	29.2	18.2	87.0	38.7	34.8	0.337	21.8	15.4	36.4	9.26	31.3	10.7	17.8	16.0	27.8	0.549	8 UA						
6 UA	7.98	6.0	8.0	5.0	15.7	11.5	1020	30.3	17.9	1.25	69.7	17.9	54.0	23.1	17.9	70.0	30.1	35.1	0.265	21.4	12.4	36.5	7.27	30.3	8.75	13.9	16.2	13.0	0.551	6 UA						
75 x 50 x 8 UA	7.23	7.8	7.0	3.0	8.62	5.41	921	25.2	12.8	0.586	50.8	11.5	37.8	15.5	18.0	32.5	20.0	25.2	0.106	14.2	7.46	26.4	4.01	21.7	4.88	8.19	10.7	19.5	0.430	75 x 50 x 8 UA						
6 UA	5.66	6.0	7.0	3.0	11.5	7.33	721	24.4	12.1	0.468	51.2	9.15	37.5	12.5	17.6	26.7	15.8	25.5	0.0842	13.6	6.17	26.5	3.18	20.8	4.04	6.48	10.8	9.21	0.435	6 UA						
5 UA	4.40	4.6	7.0	3.0	15.3	9.87	560	23.8	11.5	0.370	51.5	7.17	37.2	9.93	17.2	21.5	12.3	25.7	0.0666	13.2	5.03	26.6	2.50	20.1	3.32	5.09	10.9	4.32	0.437	5 UA						
65 x 50 x 8 UA	6.59	7.8	6.0	3.0	7.33	5.41	840	21.1	13.6	0.421	44.9	9.37	36.3	11.6	11.6	36.4	16.1	22.4	0.0936	15.6	6.00	23.9	3.91	22.3	4.20	7.49	10.6	17.6	0.570	65 x 50 x 8 UA						
6 UA	5.16	6.0	6.0	3.0	9.83	7.33	658	20.4	12.9	0.338	45.2	7.48	36.1	9.35	11.2	30.2	12.7	22.7	0.0743	15.1	4.91	23.9	3.11	21.4	3.48	5.93	10.6	8.29	0.575	6 UA						
5 UA	4.02	4.6	6.0	3.0	13.1	9.87	512	19.8	12.4	0.267	45.4	5.89	35.9	7.43	10.9	24.5	9.92	22.8	0.0587	14.8	3.97	23.9	2.46	20.6	2.85	4.66	10.7	3.87	0.577	5 UA						

Unequal Angles

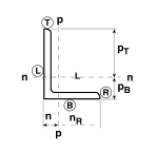
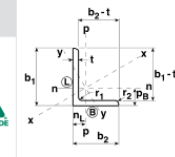
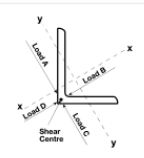
Table 27 Unequal Angles - x-axis and y-axis - Properties for Assessing Section Capacity

Designation	Yield Stress		Form Factor		About x-axis				About y-axis				Designation			
	$f_y$	$k_y$	Load A	Load C	Load B	Load D	Load A	Load C	Load B	Load D						
mm mm mm	MPa		$Z_{xx}$	$Z_{yy}$	$Z_{xy}$	$Z_{yx}$	$Z_{xx}$	$Z_{yy}$	$Z_{xy}$	$Z_{yx}$	MPa	$k_x$	$Z_{xx}$	$Z_{yy}$	$Z_{xy}$	$Z_{yx}$
<b>300PLUS* **</b>																
150 x 100 x 12 UA	300	1.00	102	110	35.3	38.2	340	1.00	100	110	34.7	38.2	150 x 100 x 12 UA			
10 UA	320	0.975	74.8	81.7	26.0	30.9	360	0.943	73.0	78.9	25.3	30.9	10 UA			
150 x 90 x 16 UA	300	1.00	132	133	39.5	39.8	340	1.00	130	133	39.0	39.8	150 x 90 x 16 UA			
12 UA	300	1.00	96.3	104	28.8	31.1	340	1.00	94.6	104	28.3	31.1	12 UA			
10 UA	320	0.973	70.6	81.8	21.2	25.2	360	0.940	68.8	79.5	20.6	25.2	10 UA			
8 UA	320	0.863	53.1	60.3	15.9	21.0	360	0.836	51.2	57.9	15.4	21.0	8 UA			
125 x 75 x 12 UA	300	1.00	68.6	70.5	20.6	21.2	340	1.00	67.6	70.5	20.3	21.2	125 x 75 x 12 UA			
10 UA	320	1.00	51.6	57.2	15.5	17.2	360	1.00	50.6	57.2	15.2	17.2	10 UA			
8 UA	320	0.964	39.8	46.0	11.9	14.3	360	0.931	38.8	44.7	11.6	14.3	8 UA			
6 UA	320	0.824	26.8	30.1	8.07	11.2	360	0.799	25.8	28.7	7.75	11.2	6 UA			
100 x 75 x 10 UA	320	1.00	39.4	40.9	15.9	16.6	360	1.00	38.8	40.9	15.7	16.6	100 x 75 x 10 UA			
8 UA	320	1.00	31.2	33.1	12.6	13.9	360	1.00	30.6	32.1	12.4	13.9	8 UA			
6 UA	320	0.946	22.0	21.8	8.93	10.9	360	0.917	21.4	20.7	8.68	10.9	6 UA			
75 x 50 x 8 UA	320	1.00	17.0	17.3	5.93	6.02	360	1.00	16.8	17.3	5.85	6.02	75 x 50 x 8 UA			
6 UA	320	1.00	12.6	13.7	4.37	4.77	360	1.00	12.4	13.7	4.30	4.77	6 UA			
5 UA	320	0.956	8.89	9.65	3.10	3.75	360	0.926	8.66	9.30	3.02	3.75	5 UA			
65 x 50 x 8 UA	320	1.00	14.1	14.1	5.86	5.86	360	1.00	14.1	14.1	5.86	5.86	65 x 50 x 8 UA			
6 UA	320	1.00	10.7	11.2	4.46	4.67	360	1.00	10.6	11.2	4.40	4.67	6 UA			
5 UA	320	1.00	7.76	7.92	3.23	3.68	360	1.00	7.59	7.64	3.17	3.68	5 UA			

\* 300PLUS\* replaced Grade 250 as the base grade for 150 x 90 x 8 unequal angles and larger in 1994.  
 \*\* 300PLUS\* replaced Grade 250 as the base grade for 125 x 75 x 12 unequal angles and smaller in 1997.  
 300PLUS\* hot rolled sections are produced to exceed the minimum requirements of AS/NZS 3679:300.

Notes

- For 300PLUS\* sections the tensile strength ( $f_u$ ) is 440 MPa.
- For Grade 350 sections the tensile strength ( $f_u$ ) is 480 MPa.



Unequal Angles

Table 28 Unequal Angles - n-axis and p-axis - Dimensions and Properties

Designation	About n-axis							About p-axis							Product of 2nd Moment of Area	Designation
	$I_n$	$P_n$	$Z_{nx}$	$P_n$	$Z_{ny}$	$S_n$	$r_n$	$I_p$	$P_p$	$Z_{px}$	$P_p$	$Z_{py}$	$S_p$	$r_p$		
mm mm mm	$10^8 \text{mm}^4$	mm	$10^6 \text{mm}^3$	mm	$10^6 \text{mm}^3$	$10^6 \text{mm}^3$	mm	$10^8 \text{mm}^4$	mm	$10^6 \text{mm}^3$	mm	$10^6 \text{mm}^3$	$10^6 \text{mm}^3$	mm	$10^8 \text{mm}^4$	
150 x 100 x 12 UA	6.52	491	133	101	64.6	117	47.7	2.34	24.3	96.2	75.7	30.9	56.0	28.6	-2.27	150 x 100 x 12 UA
10 UA	5.29	481	110	102	51.9	94.0	48.0	1.91	23.3	81.9	76.7	24.9	44.7	28.8	-1.85	10 UA
150 x 90 x 16 UA	7.97	52.5	152	97.5	81.7	145	47.4	2.15	22.7	94.9	67.3	32.0	59.5	24.6	-2.35	150 x 90 x 16 UA
12 UA	6.29	51.0	123	99.0	63.5	114	47.8	1.72	21.2	81.0	68.8	25.0	45.7	25.0	-1.89	12 UA
10 UA	5.10	50.0	102	100	51.0	91.5	46.2	1.41	20.2	69.5	69.8	20.2	36.5	25.3	-1.54	10 UA
8 UA	4.26	49.2	86.6	101	42.3	76.0	46.4	1.18	19.6	60.4	70.4	16.8	30.1	25.5	-1.29	8 UA
125 x 75 x 12 UA	3.54	43.3	81.8	81.7	43.3	77.3	39.6	0.958	18.4	52.0	56.6	16.9	31.4	20.6	-1.05	125 x 75 x 12 UA
10 UA	2.88	42.3	68.2	82.7	34.9	62.5	39.9	0.789	17.5	45.2	57.5	13.7	25.1	20.9	-0.867	10 UA
8 UA	2.41	41.5	58.1	83.5	28.9	52.0	40.1	0.664	16.8	39.6	58.2	11.4	20.7	21.0	-0.731	8 UA
6 UA	1.89	40.7	46.5	84.3	22.5	40.6	40.3	0.524	16.0	32.7	59.0	8.89	16.0	21.2	-0.575	6 UA
100 x 75 x 10 UA	1.55	31.8	48.6	68.2	22.6	41.3	31.3	0.743	19.4	38.3	55.6	13.4	24.3	21.7	-0.625	100 x 75 x 10 UA
8 UA	1.30	31.1	41.8	68.9	18.8	34.4	31.5	0.626	18.7	33.5	56.3	11.1	20.2	21.9	-0.528	8 UA
6 UA	1.02	30.3	33.7	69.7	14.6	26.9	31.7	0.494	17.9	27.5	57.1	8.67	15.7	22.0	-0.416	6 UA
75 x 50 x 8 UA	0.511	25.2	20.3	49.8	10.3	18.5	23.6	0.181	12.8	14.1	37.2	4.86	8.96	14.0	-0.174	75 x 50 x 8 UA
6 UA	0.407	24.4	16.7	50.6	8.05	14.6	23.8	0.145	12.1	12.0	37.9	3.84	6.98	14.2	-0.140	6 UA
5 UA	0.321	23.8	13.5	51.2	6.27	11.4	23.9	0.115	11.5	10.0	38.5	3.00	5.41	14.3	-0.111	5 UA
65 x 50 x 8 UA	0.341	21.1	16.2	43.9	7.75	14.1	20.1	0.174	13.6	12.7	36.4	4.78	8.74	14.4	-0.141	65 x 50 x 8 UA
6 UA	0.272	20.4	13.4	44.6	6.10	11.1	20.3	0.140	12.9	10.8	37.1	3.77	6.85	14.6	-0.114	6 UA
5 UA	0.215	19.8	10.9	45.2	4.75	8.70	20.5	0.111	12.4	8.96	37.6	2.95	5.32	14.7	-0.0903	5 UA

## Masonry Support, Windposts & Lintels

### Lintels

Ancon Building Products manufactures a complete range of galvanised and stainless steel lintels.

The Housing and Unilintel ranges are designed to suit the loading conditions found in the majority of residential and commercial buildings. Ancon's comprehensive standard range consists of:

- Housing Lintels
- Unilintels
- Channel Lintels
- Solid Wall Lintels
- Single Leaf Lintels

Bespoke lintels can also be manufactured to suit heavy duty situations, special shapes and wall constructions not covered by our standard range.

### Corrosion Resistance

Ancon Lintels are manufactured from galvanised or Austenitic stainless steel.

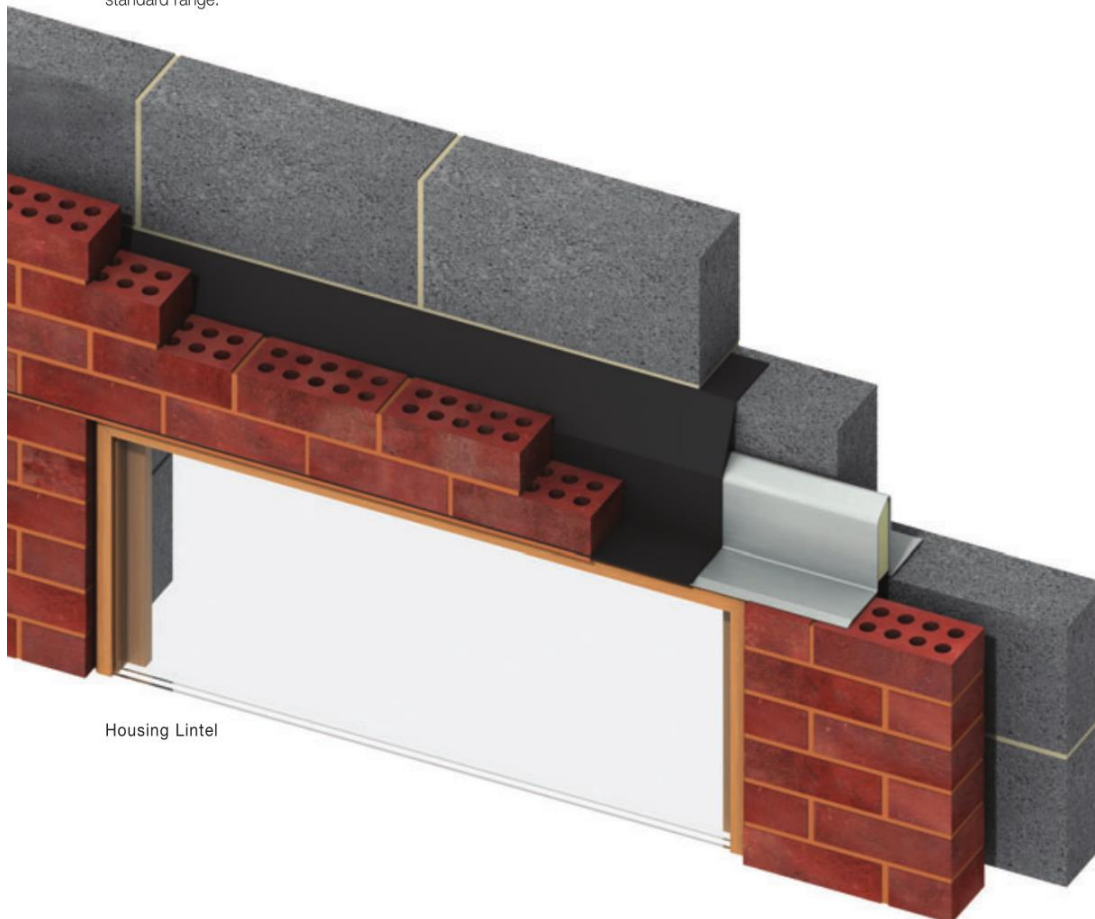
### Thermal Performance

The thermal transmittance, i.e. 'U' value, of any wall construction depends on the thermal characteristics of the individual components being used. The design of both the Housing Lintel and Unilintel is such that it allows for continuity of construction down to window head level.

Housing Lintels can be supplied insulated with CFC-free, high density polystyrene manufactured in accordance with BS 3837 : Part 1 : 2004 to be CFC-free with an ozone depletion potential of zero.

### Structural Performance

The safe working loads are derived by calculation and supported by tests to establish their validity.



Housing Lintel

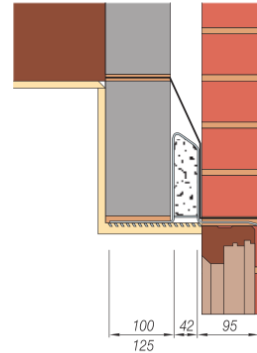
# Masonry Support, Windposts & Lintels

## Housing Lintels

These are suitable for most domestic, small commercial developments and framed structures. They are supplied complete with insulation and metal lathing to provide a plaster key. Housing lintels require a separate dpc.

When installing Housing Lintels and Unilintels the inner and outer leaves should be raised together to avoid twisting the lintel; blocks should continue for the full length of the inner flange. Masonry should have a maximum overhang of 25mm and blockwork should be built as close as possible to the upstand. Point loads should be applied at least 150mm above lintel flanges.

Cavity (mm)	Inner Leaf (mm)	Wall Widths (mm)	Ref.	Nom. Height (mm)	Gauge (mm)	Ixx (cm <sup>4</sup> )	Zxx (cm <sup>3</sup> )	Length (mm)	SWL (kN)
50-74	100-124	250-285	SH221	150	2.0	306.9	29.9	750-2100	20
			SH321	150	3.0	460.4	44.8	750-1650 1800-2550 2700-3000	33 24 20
			SH331	200	3.0	1300.0	89.4	750-2550 2700-3300 3450-3900	50 35 30
50-74	125-150	275-310	SH221E	150	2.5	402.0	38.0	750-2550	20
			SH321E	150	3.0	482.4	45.6	750-1650 1800-2550 2700-3000	30 20 18
			SH331E	200	3.0	1345.0	90.8	750-2550 2700-3300 3450-3900	40 30 25

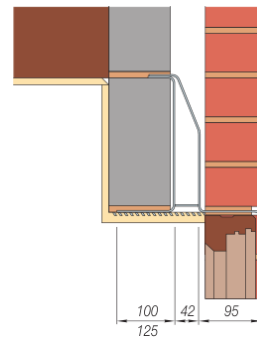


50-74mm Cavity

## Unilintels

Unilintels are designed for the heavy duty loading conditions often found in commercial developments and have the top flange built into the inner leaf. They are complete with metal lathing to provide a plaster key. Insulation can be supplied as an optional extra.

Cavity (mm)	Inner Leaf (mm)	Wall Widths (mm)	Ref.	Nom. Height (mm)	Gauge (mm)	Ixx (cm <sup>4</sup> )	Zxx (cm <sup>3</sup> )	Length (mm)	SWL (kN)
50-74	100-124	250-285	SU221	157	2.5/2.0	535.8	57.5	750-2100 2250-2700	30 25
			SU321	157	3.0/2.0	590.5	63.5	750-2100 2250-2700	38 31
			SU231	200	2.5/2.0	1317.4	99.6	750-2100 2250-2700	50 48
			SU331	200	3.0/2.0	1462.0	110.7	2550-3150 3300-3900	48 36
			SU431	200	4.0/4.0	2391.6	180.4	3000-3900	58
50-74	125-150	275-310	SU531	200	5.0/5.0	2989.4	225.6	3000-3900	65
			SU221E	157	2.5/2.0	562.7	58.8	750-2100 2250-2700	30 25
			SU321E	157	3.0/2.0	622.7	65.0	750-2100 2250-2700	38 31
			SU231E	200	2.5/2.0	1380.7	101.9	750-2100 2250-2700	50 48
			SU331E	200	3.0/2.0	1527.7	112.8	2550-3150 3300-3900	48 36
			SU431E	200	4.0/4.0	2505.6	186.0	3000-3900	58
			SU531E	200	5.0/5.0	3132.0	232.5	3000-3900	65

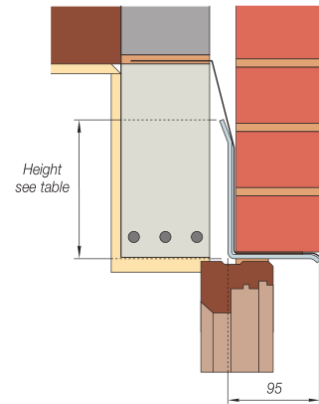


50-74mm Cavity

**Single Leaf Lintels/Angle Lintels**

These lintels carry a single leaf, usually the external leaf, of a cavity wall. The lintel can be supplied with lips to either leg if required. Single leaf lintels require propping during installation to limit deflections. A separate dpc is required.

Outer Leaf (mm)	Ref.	Height (mm)	Gauge (mm)	Ixx (cm <sup>4</sup> )	Zxx (cm <sup>3</sup> )	Length (mm)	SWL (kN)
95-120	SL31	95	3	50.7	7.2	750-1800	4
	SL41	95	4	66.5	9.5	750-2400	6
	SL32	150	3	175.4	17.1	750-2400	8
	SL42	150	4	231.2	22.6	750-2400 2550-3300	12 10
	SL33	200	3	379.7	29.1	750-2400 2550-3300	15 12
	SL43	200	4	502.5	38.6	750-2400 2550-3300	20 14
	SL53	200	5	622.3	48.0	750-1800 1950-3300	30 26



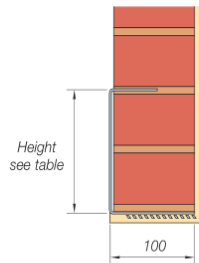
Single Leaf Lintel

**Channel Lintels**

The Channel Lintel can be supplied with welded metal lathing on any side to provide a plaster key. For wall widths over 100mm, please contact Ancon.

**Width 100mm**

Ref.	Nom. Height (mm)	Gauge (mm)	Ixx (cm <sup>4</sup> )	Zxx (cm <sup>3</sup> )	Length (mm)	SWL (kN)
SC322	170	3.0	328.4	37.3	750-1500	20
SC422	170	4.0	437.8	49.7	1650-2100	20
SC522	170	5.0	547.3	62.2	2250-3000	20
SC332	255	3.0	837.7	65.4	750-1500	20
SC432	255	4.0	1117.0	87.2	1650-2100	30
SC532	255	5.0	1396.2	109.1	2250-3000	40



Channel Lintel

**Note: Channel Lintels**

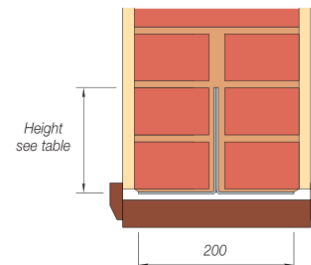
These lintels have been tested using composite action with surrounding masonry to BS 5628, and should be suitably restrained during construction.

**Solid Wall Lintels**

For use with solid walls, the Standard Duty has a top flange built into the brickwork. The Light Duty version is suitable for spans up to 2700mm.

**Width 200mm (Light Duty)**

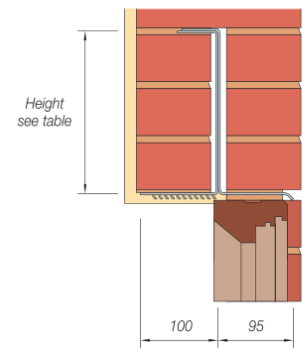
Ref.	Nom. Height (mm)	Gauge (mm)	Ixx (cm <sup>4</sup> )	Zxx (cm <sup>3</sup> )	Length (mm)	SWL (kN)
SS312	75	3.0	57.3	9.7	750 900-1500	12 10
SS422	150	4.0	371.3	35.4	1650 1800-1950 2100-2700	15 14 13



Light Duty Solid Wall Lintel

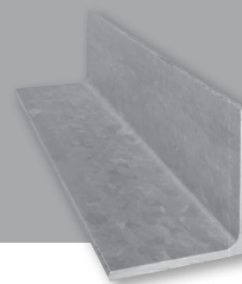
**Width 200mm (Standard Duty)**

Ref.	Nom. Height (mm)	Gauge (mm)	Ixx (cm <sup>4</sup> )	Zxx (cm <sup>3</sup> )	Length (mm)	SWL (kN)
SS321	170	3.0	503.6	58.7	750-1800 1950-2700	40 30
SS331	255	3.0	1581.2	125.9	750-1800 1950-2700 2850-3600	60 50 40
SS431	255	4.0	2108.3	167.8	750-3900	55



Standard Duty Solid Wall Lintel

# GALINTEL® TRADITIONAL ANGLES



## Quick selection guide

Use the Quick Selection Table to find an appropriate profile and length for the required span and Construction Category (see page 4). Include end bearing lengths of 100mm on both ends of bar (for openings up to 1000mm) or 150mm (for openings greater than 1000mm). Use the Safe Load Tables to determine which product will safely carry the load.

## Quick Selection Table

		CLEAR SPAN LENGTH (mm)							
<b>TRADITIONAL ANGLE</b> 100 x 75 x 10 13 kg/m	Category A	900	1200	1500	1800	2100	2400	2700	3000
	Category B								
	Category C								
	Category D								
	Category E								
	Category F								
<b>TRADITIONAL ANGLE</b> 150 x 90 x 10 18 kg/m	Category A	1800	2100	2400	2700	3000	3600	4000	
	Category B								
	Category C								
	Category D								
	Category E								
	Category F								
<b>TRADITIONAL ANGLE</b> 150 x 100 x 10 19 kg/m	Category A	2100	2400	2700	3000	3300	3600	4000	
	Category B								
	Category C								
	Category D								
	Category E								
	Category F								

## Galintel® Traditional Angles – safe load tables

Note a minimum of three courses of bricks must be laid above the lintel.

■ Loads limited by deflection of 1/600 span

<b>TRADITIONAL ANGLE</b> 100 x 75 x 10 13 kg/m	Span (mm)	900	1200	1500	1800	2100	2400	2700	
	Bar Length (mm)	1200	1500	1800	2100	2400	2700	3000	
	Total Load (kg)	1345	1005	805	670	575	500	415	
	UDL (kg/m)	1494	840	538	373	274	210	154	
	Point Load (kg)	670	500	400	335	285	250	220	
<b>TRADITIONAL ANGLE</b> 150 x 90 x 10 18 kg/m	Span (mm)	1500	1800	2100	2400	2700	3000	3300	3600
	Bar Length (mm)	1800	2100	2400	2700	3000	3300	3600	4000
	Total Load (kg)	3995	3090	2270	1735	1370	1110	915	770
	UDL (kg/m)	2664	1717	1081	724	508	370	278	214
	Point Load (kg)	1995	1665	1275	975	770	625	515	430
<b>TRADITIONAL ANGLE</b> 150 x 100 x 10 19 kg/m	Span (mm)	1800	2100	2400	2700	3000	3300	3600	
	Bar Length (mm)	2100	2400	2700	3000	3300	3600	4000	
	Total Load (kg)	3205	2355	1800	1425	1150	950	800	
	UDL (kg/m)	1781	1121	751	527	384	289	222	
	Point Load (kg)	1690	1325	1010	800	645	535	450	

## Notes on safe load tables for Traditional Angles

Loads given are total (allowable) loads including lintel and brickwork.

These load tables assume that bricks

and props fully restrain the lintel against twisting and local buckling of compression leg. Non-composite action was used in the calculations.

UDL for each Construction Category was based on 8m of supported span

of floor or roof (of which 4m is taken by the section being considered). Six courses of bricks were considered for each category. UDLs for each Loading Category in kg/m were: A – 124, B – 374, C – 391, D – 605, E – 2202, F – 1020.



# GALINTEL RENDABAR®

(100 x 100)



Galintel Rendabar® is a total load bearing bar, specifically designed to facilitate cement rendering.

The bond between mortar, brickwork and lintel forms a composite beam of superior strength and structural integrity.

The platform leg provides a wide base of support for brickwork and a generous keying area for cement rendering.

### Light weight, rigidity

Galintel Rendabars® are considerably lighter than other forms of lintels, contributing to ease of handling and faster construction and less potential damage to green masonry.

Mortar bonding with the multi-ribbed section locks the Rendabar® firmly to the masonry, providing superior lateral bracing and rigidity.

RENDABAR 100 x 100 x 8 9 kg/m		POINT LOAD (kg) 600mm TRUSS SPACING					
		Span (mm)	900	1200	1500	1800	2100
	Rendabar (mm)	1200	1500	1800	2100	2400	2700
	Brick courses 3	895	430	510	335	350	235
	4	1560	710	805	490	470	290
	5	1875	845	940	570	530	315
	6	2205	990	1100	655	610	360

RENDABAR 100 x 100 x 8 9 kg/m		POINT LOAD (kg) 900mm TRUSS SPACING					
		Span (mm)	900	1200	1500	1800	2100
	Rendabar (mm)	1200	1500	1800	2100	2400	2700
	Brick courses 3	595	570	545	260	290	210
	4	1040	950	855	380	395	385
	5	1250	1125	1005	440	445	425
	6	1470	1320	1170	510	510	480

RENDABAR 100 x 100 x 8 9 kg/m		DISTRIBUTED LOAD (kg/m)					
		Span (mm)	900	1200	1500	1800	2100
	Rendabar (mm)	1200	1500	1800	2100	2400	2700
	Brick courses 3	1120	805	615	490	400	330
	4	1950	1335	965	720	540	410
	5	2340	1585	1130	825	610	450
	6	2760	1860	1320	955	700	505

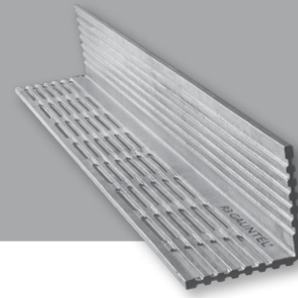
### Fire-rated Rendabar® – safe load table (100 x 100)

Use this table when a fire resistance rating is required (at least 15mm of cement render must be applied to underside of lintel).

RENDABAR 100 x 100 x 8 9 kg/m		MAXIMUM LOAD (kg/m)						
		Span (mm)	600	900	1200	1500	1800	2100
	Rendabar (mm)	900	1200	1500	1800	2100	2400	
	Fire Resistance Level	60 min	6810	3025	1705	1090	755	555
	Fire Resistance Level	90 min	5060	2250	1265	810	560	415
	Fire Resistance Level	120 min	4445	1975	1110	710	495	365

# GALINTEL RENDABAR®

(150 x 100)



## Control joints

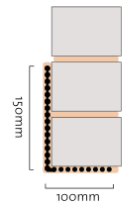
Where control joints are used as a required structural element, loading of the lintel must be reduced by one-third.

## Propping

Rendabar® spans must be propped or tommed at equal intervals (not more than 1.2m apart) when brickwork is laid up rapidly over and above two courses.

## Code compliance

Galintel Rendabars® have been extensively tested by Unisearch Limited, the research and development company of the University of New South Wales, for strength, structural adequacy, and compliance with relevant Australian Building Codes. ABSAC approved (Technical opinion No.205).



Brick composite beam  
Minimum 3 courses of bricks.  
Note: Mortar must be present at all contact surfaces between bricks and Rendabar

## Composite Action

Galintel® products rely on composite action. Therefore, to achieve ultimate performance, mortar must be present at all contact surfaces between bricks and lintel.

RENDABAR 150 x 100 x 8 11 kg/m		POINT LOAD (kg) 600mm TRUSS SPACING						
		Span (mm)	1800	2100	2400	2700	3000	3300
Rendabar (mm)	2100	2400	2700	3000	3300	3600		
Brick courses 3	390	385	250	N/A	N/A	N/A		
4	600	615	410	425	305	300		
5	785	830	575	620	470	485		
6	910	975	685	760	585	615		

RENDABAR 150 x 100 x 8 11 kg/m		POINT LOAD (kg) 900mm TRUSS SPACING						
		Span (mm)	1800	2100	2400	2700	3000	3300
Rendabar (mm)	2100	2400	2700	3000	3300	3600		
Brick courses 3	305	325	330	N/A	N/A	N/A		
4	470	510	545	325	315	305		
5	615	690	765	475	485	490		
6	705	810	915	575	600	625		

RENDABAR 150 x 100 x 8 11 kg/m		DISTRIBUTED LOAD (kg/m)						
		Span (mm)	1800	2100	2400	2700	3000	3300
Rendabar (mm)	2100	2400	2700	3000	3300	3600		
Brick courses 3	570	445	350	N/A	N/A	N/A		
4	875	705	575	475	390	325		
5	1150	950	805	690	600	525		
6	1325	1120	965	850	745	665		

N/A indicates not applicable

## Fire-rated Rendabar® – safe load table (150 x 100)

Use this table when a fire resistance rating is required (at least 15mm of cement render must be applied to underside of lintel).

RENDABAR 150 x 100 x 8 11 kg/m		MAXIMUM LOAD (kg/m)							
		Span (mm)	1500	1800	2100	2400	2700	3000	3300
Rendabar (mm)	1800	2100	2400	2700	3000	3300	3600		
Fire Resistance Level	60 min	1220	845	620	475	375	305	250	
Fire Resistance Level	90 min	905	630	460	355	280	225	N/A	
Fire Resistance Level	120 min	795	550	405	310	245	N/A	N/A	

C.S.I.R.O. Opinion FOC-1242