CUSTOMER UPDATE

LHL TESTING

FEB 2013

Top Hat Cyclonic Design Supplement

This update has been developed to assist designers in cyclonic areas. This information pertains to components often used in steel shed construction, including Stramit® Corrugated and Stramit Monoclad® cladding and the full range of Stramit® Top Hats. The information also relates to other structures using these components.

Many shed designers utilise the numerous benefits of top hats in their constructions. The tables below include the design loads for Stramit® products for use in cyclonic regions. They give designers more flexibility and a better understanding of the relationship between cladding and the immediate supporting structure.

The Deemed to Satisfy provisions of the Building Code of Australia currently require all roof cladding, as well as its connections and the immediate supporting members, to be capable of withstanding the Low-High-Low cyclic pressure sequence, and remain in place.

Stramit Building Products has conducted extensive testing of cladding products and roof battens, and is currently in the process of testing the top hat range. Based on the testing carried out to date, the following interim tables have been prepared to aid the industry in designing buildings located in the cyclonic regions of Australia.

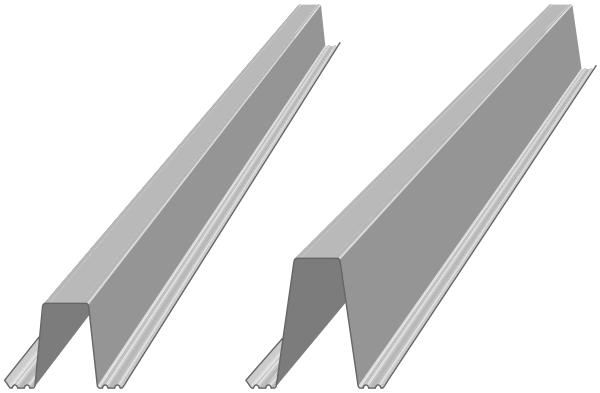

Table 1 gives Stramit® Top Hat spans for use in cyclonic areas. The spacing of the top hats would depend on the capacity of the cladding, and the pull-out value of the cladding screw from the top hat.

Table 2 gives the reduced pressures of the cladding, based on the different fastener arrangements and the thickness of the top hat support.

Both Table 1 and 2 must be used in conjunction with the Stramit® Top Hats & Battens Product Technical Manual and the Stramit® Cyclonic Areas Roof & Wall Cladding Technical Design Supplement.

These manuals are available on the Stramit Building Products website www.stramit.com.au. Supplementary data required for the design of the system, such as the serviceability limit state capacity and foot traffic limits, are given in these documents.

Note: This data is subject to change from time to time without prior notice. Please check the Stramit website for the latest data immediately before construction. A final design check must be performed using the latest information.

Stramit® Top Hat Cyclonic Design

Table 1a

STRAMIT® TOP HATS - MULTIPLE SPANS WITH NON STRUCTURAL LAPS

Outward Design Capacity (kN/m)									Four No 14-10 x 25mm fastener capacity					
Member strength design capacity for section shown									Support member thickness (mm)*					
Span	64075	64100	64120	96075	96100	96120	12070	12090	1.0	1.2	1.5	1.9	2.4	3.0
1500	4.64	6.22	7.44	5.33	6.67	8.00			2.37	2.69	3.10	3.93	4.96	6.20
2000	2.13	3.12	4.11	4.00	5.00	6.00	2.44	3.13	1.78	2.02	2.32	2.95	3.72	4.66
2500	1.36	2.00	2.63	1.89	2.77	3.53	1.95	2.50	1.42	1.61	1.86	2.36	2.98	3.72
3000	0.95	1.39	1.83	1.29	1.92	2.45	1.62	2.09	1.18	1.34	1.55	1.97	2.48	3.10
3500	0.70	1.02	1.34	0.95	1.41	1.80	1.33	1.60	1.02	1.16	1.33	1.69	2.13	2.66
4000		0.78	1.03	0.73	1.08	1.38	1.00	1.18	0.89	1.01	1.16	1.47	1.86	2.32
4500				0.58	0.86	1.09	0.76	0.91	0.79	0.90	1.04	1.31	1.65	2.07
5000					0.69	0.88	0.61	0.72	0.71	0.81	0.93	1.18	1.49	1.86
5500							0.49	0.59	0.65	0.73	0.85	1.07	1.36	1.69
6000							0.41	0.49	0.60	0.67	0.78	0.98	1.24	1.55

Table 1b

STRAMIT® TOP HATS - DOUBLE SPANS WITH 10% LAPS

Outward Design Capacity (kN/m)									Four No 14-10 x 25mm fastener capacity					
Member strength design capacity for section shown									Support member thickness (mm)*					
Span	64075	64100	64120	96075	96100	96120	12070	12090	1.0	1.2	1.5	1.9	2.4	3.0
1500	4.27	5.33	6.40	4.27	5.33	6.40	2.60	3.34	1.61	1.83	2.56	3.15	3.65	4.56
2000	2.92	4.00	4.80	3.20	4.00	4.80	1.95	2.50	1.20	1.37	1.92	2.37	2.74	3.42
2500	1.90	2.76	3.48	2.56	3.20	3.84	1.56	2.00	0.97	1.09	1.54	1.89	2.18	2.74
3000	1.33	1.93	2.42	1.87	2.67	3.20	1.30	1.67	0.81	0.91	1.29	1.57	1.82	2.28
3500	0.98	1.42	1.78	1.40	2.29	2.74	1.11	1.43	0.69	0.78	1.09	1.34	1.57	1.96
4000	0.75	1.09	1.37	1.09	1.96	2.40	0.97	1.25	0.60	0.69	0.97	1.18	1.37	1.71
4500	0.60	0.86	1.08	0.87	1.56	1.94	0.87	1.11	0.53	0.62	0.85	1.05	1.22	1.53
5000		0.70	0.88	0.71	1.27	1.58	0.78	1.00	0.49	0.55	0.77	0.95	1.09	1.37
5500			0.72	0.59	1.05	1.31	0.71	0.91	0.43	0.50	0.70	0.85	0.99	1.25
6000					0.89	1.10	0.65	0.83	0.41	0.46	0.64	0.78	0.91	1.15

Table 1c

STRAMIT® TOP HATS - TRIPLE SPANS WITH 10% LAPS

Outward Design Capacity (kN/m)									Four No 14-10 x 25mm fastener capacity					
Member strength design capacity for section shown									Support member thickness (mm)*					
Span	64075	64100	64120	96075	96100	96120	12070	12090	1.0	1.2	1.5	1.9	2.4	3.0
1500	4.85	6.06	7.27	4.85	6.06	7.27	2.95	3.79	1.85	2.11	2.95	3.63	4.20	5.25
2000	3.42	4.55	5.45	3.64	4.55	5.45	2.21	2.85	1.39	1.58	2.21	2.72	3.15	3.93
2500	2.19	3.21	4.22	2.91	3.64	4.36	1.77	2.28	1.11	1.26	1.76	2.17	2.52	3.15
3000	1.52	2.23	2.93	2.08	3.03	3.64	1.48	1.90	0.92	1.05	1.47	1.81	2.10	2.63
3500	1.12	1.64	2.15	1.53	2.27	2.89	1.26	1.63	0.80	0.91	1.26	1.55	1.81	2.25
4000	0.86	1.25	1.65	1.17	1.74	2.22	1.11	1.42	0.70	0.78	1.11	1.36	1.58	1.97
4500	0.68	0.99	1.30	0.92	1.37	1.75	0.98	1.26	0.62	0.70	0.98	1.20	1.40	1.75
5000		0.80	1.06	0.75	1.11	1.42	0.89	1.14	0.56	0.63	0.88	1.09	1.26	1.58
5500				0.62	0.92	1.17	0.80	1.03	0.50	0.57	0.80	0.99	1.15	1.43
6000					0.77	0.98	0.74	0.88	0.46	0.53	0.74	0.91	1.05	1.32

Outward capacity may be limited by fastener capacity - check right-hand columns.
Outward capacity will be limited by fastener capacity - determine from right-hand columns.
*Support member assumed to be of high tensile steel.

Stramit® Top Hat Cyclonic Design

Table 2a

STRAMIT® CORRUGATED CLADDING - STRENGTH LIMIT STATE CAPACITY (Cyclonic)

pressure (kPa) at the spans (mm) shown

					Roof Sheeting (Crest fixed)					
thickness bmt (mm)	fasteners per sheet	fastener type	support thickness	span-type	450	600	900	1200	1500	1800
0.42	5	Hex head No 14-10 self drilling screw	>= 0.9mm	internal	9.91	6.82	4.54	3.05		
				equal	9.01	6.20	4.13	2.77		
				double	7.93	5.46	3.63	2.44		
			0.75mm	internal	8.77	6.58	4.39	3.05		
				equal	7.97	5.98	3.99	2.77		
				double	7.02	5.26	3.51	2.44		
			0.7mm	internal	8.04	6.03	4.02	3.02		
				equal	7.31	5.48	3.65	2.74		
				double	6.43	4.82	3.22	2.41		
		Hex head No 14-10 Type 17 screw	<= 0.9mm	internal	9.91	6.82	4.54	3.05		
				equal	9.01	6.20	4.13	2.77		
				double	7.93	5.46	3.63	2.44		
	5 with cyclone caps	Hex head No 14-10 self drilling screw	>= 1.2mm	internal	14.36	12.82	8.51	5.45		
				equal	13.05	11.65	7.74	4.95		
				double	11.48	10.25	6.81	4.36		
			1.0mm	internal	12.57	9.43	6.29	4.71		
				equal	11.43	8.57	5.72	4.29		
				double	10.06	7.54	5.03	3.77		
			0.9mm	internal	10.96	8.22	5.48	4.11		
				equal	9.97	7.48	4.98	3.74		
				double	8.77	6.58	4.39	3.29		
			0.75mm	internal	8.77	6.58	4.39	3.29		
				equal	7.97	5.98	3.99	2.99		
				double	7.02	5.26	3.51	2.63		
			0.7mm	internal	8.04	6.03	4.02	3.02		
				equal	7.31	5.48	3.65	2.74		
				double	6.43	4.82	3.22	2.41		
		Hex head No 14-10 Type 17 screw	0.75-0.9mm	internal	14.36	11.18	7.46	5.45		
				equal	13.05	10.17	6.78	4.95		
				double	11.48	8.95	5.96	4.36		
			0.7mm	internal	13.16	9.87	6.58	4.93		
				equal	11.96	8.97	5.98	4.49		
				double	10.53	7.89	5.26	3.95		

Exceeds the foot trafficable span of the cladding.

Stramit® Top Hat Cyclonic Design

Table 2b

STRAMIT MONOCLAD® CLADDING - STRENGTH LIMIT STATE CAPACITY (Cyclonic)

pressure (kPa) at the spans (mm) shown

					Roof Sheeting (Crest fixed)					
thickness bmt (mm)	fasteners per sheet	fastener type	support thickness	span-type	450	600	900	1200	1500	1800
0.42	4	Hex head No 14-10 self drilling screw	>= 0.75mm	internal	7.02	4.91	3.38	2.63	2.11	1.75
				equal	6.38	4.46	3.07	2.39	1.91	1.59
				double	5.61	3.92	2.70	2.11	1.68	1.40
			0.7mm	internal	6.43	4.82	3.22	2.41	1.93	1.61
				equal	5.85	4.39	2.92	2.19	1.75	1.46
				double	5.15	3.86	2.57	1.93	1.54	1.29
		Hex head No 14-10 Type 17 screw	<= 0.9mm	internal	7.49	4.91	3.38	2.64	2.31	1.87
				equal	6.81	4.46	3.07	2.40	2.10	1.70
				double	5.99	3.92	2.70	2.11	1.85	1.50
	4 with cyclone caps	Hex head No 14-10 self drilling screw	>= 1.5mm	internal	14.37	12.54	8.47	5.60	3.93	3.45
				equal	13.06	11.40	7.70	5.09	3.57	3.14
				double	11.49	10.03	6.78	4.48	3.14	2.76
			1.2mm	internal	14.27	10.70	7.13	5.35	3.93	3.45
				equal	12.97	9.73	6.49	4.86	3.57	3.14
				double	11.42	8.56	5.71	4.28	3.14	2.76
			1.0mm	internal	10.06	7.54	5.03	3.77	3.02	2.51
				equal	9.14	6.86	4.57	3.43	2.74	2.29
				double	8.05	6.04	4.02	3.02	2.41	2.01
			0.9mm	internal	8.77	6.58	4.39	3.29	2.63	2.19
				equal	7.97	5.98	3.99	2.99	2.39	1.99
				double	7.02	5.26	3.51	2.63	2.11	1.75
			0.75mm	internal	7.02	5.26	3.51	2.63	2.11	1.75
				equal	6.38	4.78	3.19	2.39	1.91	1.59
				double	5.61	4.21	2.81	2.11	1.68	1.40
			0.7mm	internal	6.43	4.82	3.22	2.41	1.93	1.61
				equal	5.85	4.39	2.92	2.19	1.75	1.46
				double	5.15	3.86	2.57	1.93	1.54	1.29
		Hex head No 14-10 Type 17 screw	0.75-0.9mm	internal	11.93	8.95	5.96	4.47	3.58	2.98
				equal	10.85	8.13	5.42	4.07	3.25	2.71
				double	9.54	7.16	4.77	3.58	2.86	2.39
			0.7mm	internal	10.53	7.89	5.26	3.95	3.16	2.63
				equal	9.57	7.18	4.78	3.59	2.87	2.39
				double	8.42	6.32	4.21	3.16	2.53	2.11

Exceeds the foot trafficable span of the cladding.

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