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Studco Design & Installation Manual

TOP HAT & CLADDING SECTIONS

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Top Hat & Cladding Sections

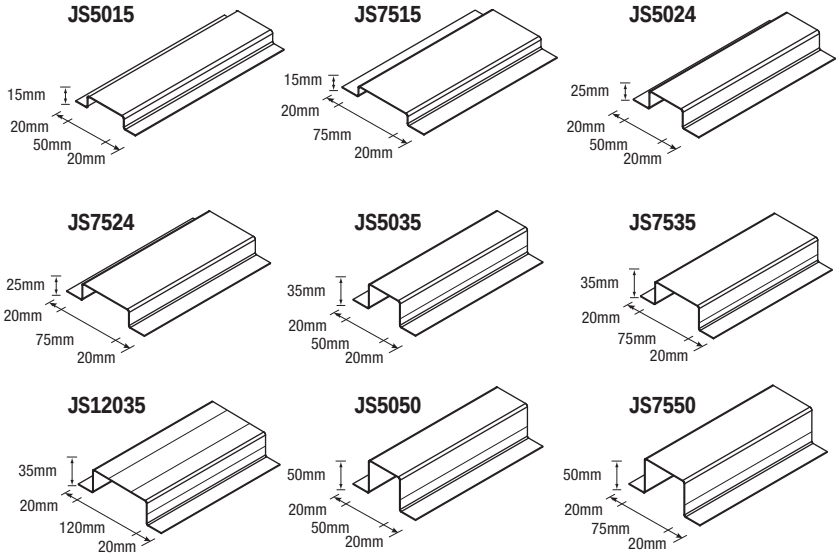
Top Hats are used for fixing support for lining material where the structural framework is not suitable for fixing directly to. A range of Junction Studs, Battens and Top Hats in various sizes and thicknesses are available to suit any cladding requirements for interior or exterior use. Refer to page 69-71 for Top Hat span tables. Top Hat sections can be custom rolled to suit your project specific requirements.

Components

Top Hats

Table 91

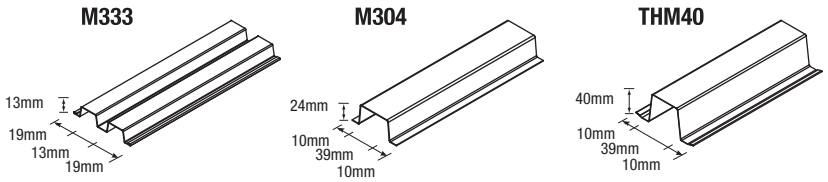
PART No	DESCRIPTION
JS5015	Top Hat 50 x 15 x 1.15BMT
JS7515	Top Hat 75 x 15 x 1.15BMT
JS5024	Top Hat 50 x 25 x 1.15BMT
JS7524	Top Hat 75 x 25 x 1.15BMT
JS5035	Top Hat 50 x 35 x 1.15BMT
JS7535	Top Hat 75 x 35 x 1.15BMT
JS12035	Top Hat 120 x 35 x 1.15BMT
JS5050	Top Hat 50 x 50 x 1.15BMT
JS7550	Top Hat 75 x 50 x 1.15BMT



Battens

Table 92

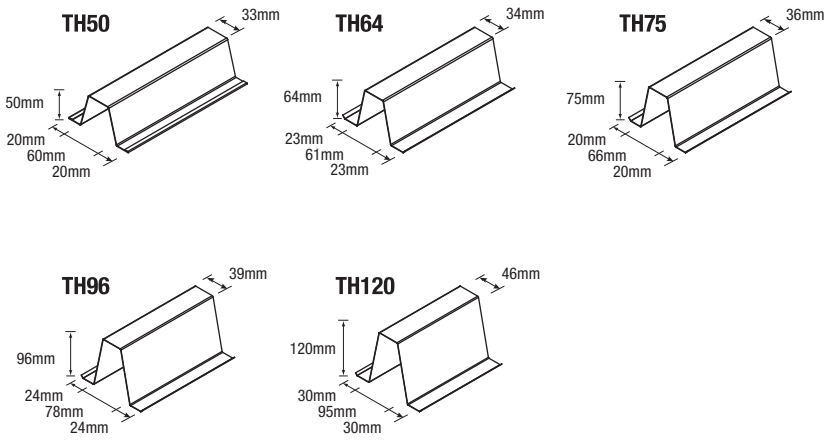
PART No	DESCRIPTION
M333S	Recessed Batten 13mm Smooth Face
M304	Batten 24mm x 0.75BMT
THM40	Batten 40mm x 40mm x 0.48BMT



Top Hat - Angled legs

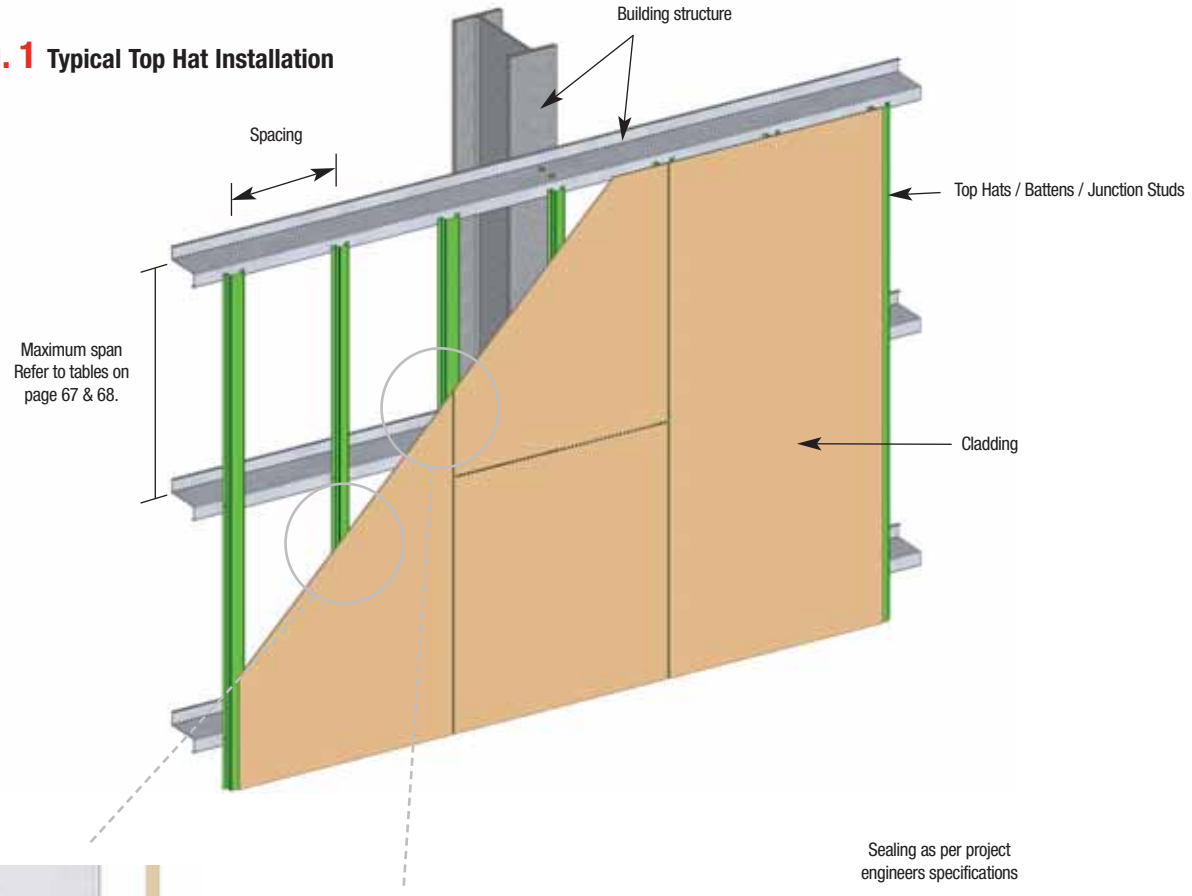
Table 93

PART No	DESCRIPTION
TH5075	Top Hat 50mm x 0.75BMT
TH6475	Top Hat 64mm x 0.75BMT
TH6495	Top Hat 64mm x 0.95BMT
TH7575	Top Hat 75mm x 0.75BMT
TH7595	Top Hat 75mm x 0.95BMT
TH9675	Top Hat 96mm x 0.75BMT
TH9695	Top Hat 96mm x 0.95BMT
TH12075	Top Hat 120mm x 0.75BMT
TH12095	Top Hat 120mm x 0.95BMT



Installation Guide - Top Hats and Junction Studs

Fig. 1 Typical Top Hat Installation



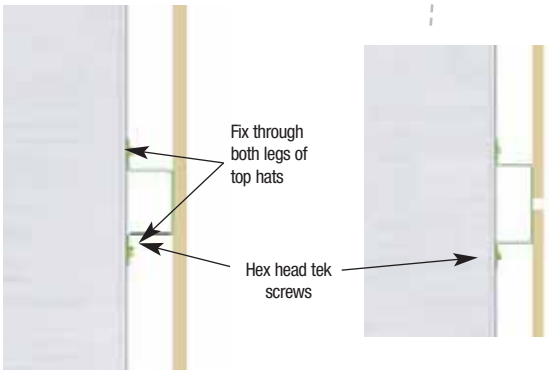


Fig. 2 Top Hat Sections to Support CFC Sheeting

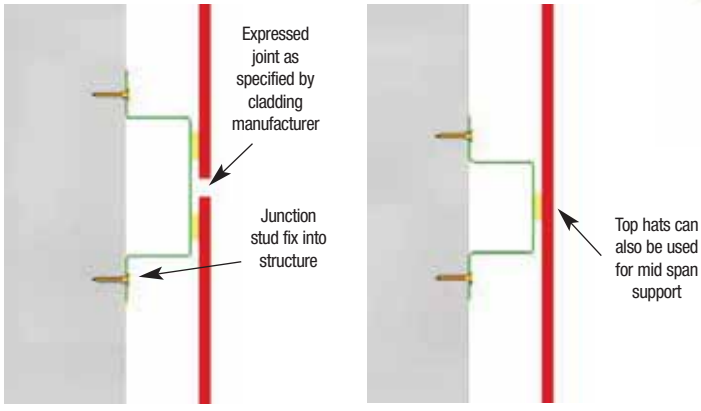


Fig. 3 Top Hat Sections to Support Aluminium Composite Panel

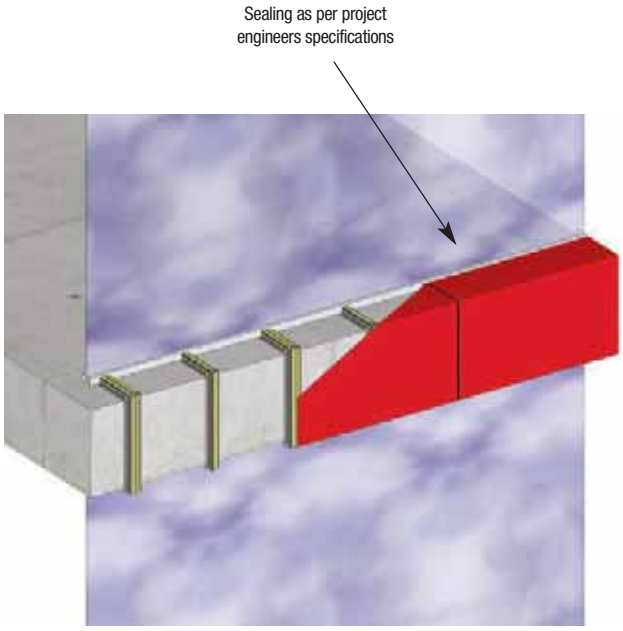


Fig. 4 Junction stud fixed to primary structure to support composite panel

Span Tables - Top Hats

Design Notes:
1. Cladding deflection limit = Span / 360
2. Seismic was not specified or considered in this design.
3. Framing design complies with AS/NZ1170 (Part 0, 1, 2)
4. Cladding weight = 30 kg/m2 Max
5. G2 Steel, Fy =300MPa and Fu = 350MPa

Table 94

JS5050115 (SPAN/360)							
Design Wind Pressure kPa		Single Span Top Hat Spacing mm		Double Span Top Hat Spacing mm		Three Spans Top Hat Spacing mm	
		450	600	450	600	450	600
SER	ULT	MAXIMUM SPAN OF TOP HAT PROFILE (mm)					
0.53	0.75	2450	2200	3200	2950	3000	2750
0.7	1.0	2200	2000	2900	2700	2700	2500
1.05	1.5	1900	1750	2600	2350	2400	2100
1.4	2.0	1750	1600	2300	2050	2150	1950
1.75	2.5	1600	1450	2100	1900	2000	1800
2.1	3.0	1500	1400	1950	1750	1900	1700
2.8	4.0	1400	1250	1750	1550	1700	1550

Table 95

JS12035115 (SPAN/360)							
Design Wind Pressure kPa		Single Span Top Hat Spacing mm		Double Span Top Hat Spacing mm		Three Spans Top Hat Spacing mm	
		450	600	450	600	450	600
SER	ULT	MAXIMUM SPAN OF TOP HAT PROFILE (mm)					
0.53	0.75	2050	1800	2700	2500	2500	2300
0.7	1.0	1850	1700	2500	2250	2300	2100
1.05	1.5	1600	1450	2200	2000	2000	1800
1.4	2.0	1450	1350	2000	1800	1800	1650
1.75	2.5	1350	1250	1850	1650	1700	1550
2.1	3.0	1300	1150	1700	1550	1600	1450
2.8	4.0	1150	1050	1550	1400	1450	1300

Table 96

JS5015115 (SPAN/360)							
Design Wind Pressure kPa		Single Span Top Hat Spacing mm		Double Span Top Hat Spacing mm		Three Spans Top Hat Spacing mm	
		450	600	450	600	450	600
SER	ULT	MAXIMUM SPAN OF TOP HAT PROFILE (mm)					
0.53	0.75	950	850	1300	1150	NA	
0.7	1.0	850	800	1150	1050		
1.05	1.5	750	700	1000	900		
1.4	2.0	700	630	900	850		
1.75	2.5	650	600	850	800		
2.1	3.0	600	550	800	750		
2.8	4.0	550	500	750	650		

Table 97

JS5025115 (SPAN/360)							
Design Wind Pressure kPa		Single Span Top Hat Spacing mm		Double Span Top Hat Spacing mm		Three Spans Top Hat Spacing mm	
		450	600	450	600	450	600
SER	ULT	MAXIMUM SPAN OF TOP HAT PROFILE (mm)					
0.53	0.75	1400	1250	1900	1750	NA	
0.7	1.0	1250	1150	1750	1600		
1.05	1.5	1100	1000	1500	1400		
1.4	2.0	1000	900	1400	1250		
1.75	2.5	950	850	1300	1150		
2.1	3.0	900	800	1200	1100		
2.8	4.0	800	700	1100	1000		

Table 98

JS5035115 (SPAN/360)							
Design Wind Pressure kPa		Single Span Top Hat Spacing mm		Double Span Top Hat Spacing mm		Three Spans Top Hat Spacing mm	
		450	600	450	600	450	600
SER	ULT	MAXIMUM SPAN OF TOP HAT PROFILE (mm)					
0.53	0.75	1850	1650	2300	2100	NA	
0.7	1.0	1650	1500	2150	1950		
1.05	1.5	1450	1300	1900	1750		
1.4	2.0	1300	1200	1750	1600		
1.75	2.5	1200	1100	1600	1450		
2.1	3.0	1100	1000	1500	1400		
2.8	4.0	1050	950	1400	1200		

Notes:
1. Ultimate limit state load capacity to be calculated in accordance with AS/NZS 1170.0 as applicable
2. Connections to be independently checked

Span Tables - Junction Studs

Design Notes:
1. Cladding deflection limit = Span / 240
2. Seismic was not specified or considered in this design.
3. Framing design complies with AS/NZ1170 (Part 0, 1, 2)
4. Cladding weight = 30 kg/m2 Max
5. G2 Steel, Fy =300MPa and Fu = 350MPa

Table 99

JS5050115 (SPAN/240)							
Design Wind Pressure kPa		Single Span Top Hat Spacing mm		Double Span Top Hat Spacing mm		Three Spans Top Hat Spacing mm	
		450	600	450	600	450	600
SER	ULT	MAXIMUM SPAN OF TOP HAT PROFILE (mm)					
0.53	0.75	2800	2550	3750	3300	3450	3150
0.7	1.0	2550	2300	3300	2850	3150	2850
1.05	1.5	2200	2000	2700	2350	2750	2450
1.4	2.0	2000	1800	2300	2050	2500	2250
1.75	2.5	1850	1700	2100	1900	2300	2050
2.1	3.0	1750	1500	1950	1750	2150	1900
2.8	4.0	1600	1450	1750	1550	1900	1650

Table 100

JS12035115 (SPAN/240)							
Design Wind Pressure kPa		Single Span Top Hat Spacing mm		Double Span Top Hat Spacing mm		Three Spans Top Hat Spacing mm	
		450	600	450	600	450	600
SER	ULT	MAXIMUM SPAN OF TOP HAT PROFILE (mm)					
0.53	0.75	2350	2100	3150	2850	2900	2650
0.7	1.0	2150	1950	2850	2550	2650	2400
1.05	1.5	1850	1700	2500	2250	2300	2100
1.4	2.0	1700	1550	2250	1950	2100	1900
1.75	2.5	1550	1400	2000	1650	1950	1750
2.1	3.0	1450	1350	1800	1550	1800	1650
2.8	4.0	1350	1100	1550	1350	1650	1500

Table 101

JS5015115 (SPAN/240)							
Design Wind Pressure kPa		Single Span Top Hat Spacing mm		Double Span Top Hat Spacing mm		Three Spans Top Hat Spacing mm	
		450	600	450	600	450	600
SER	ULT	MAXIMUM SPAN OF TOP HAT PROFILE (mm)					
0.53	0.75	1100	1000	1500	1350	NA	
0.7	1.0	1000	900	1350	1200		
1.05	1.5	850	800	1200	1050		
1.4	2.0	800	700	1050	950		
1.75	2.5	750	680	1000	900		
2.1	3.0	700	640	950	800		
2.8	4.0	640	580	800	700		

Table 102

JS5025115 (SPAN/240)							
Design Wind Pressure kPa		Single Span Top Hat Spacing mm		Double Span Top Hat Spacing mm		Three Spans Top Hat Spacing mm	
		450	600	450	600	450	600
SER	ULT	MAXIMUM SPAN OF TOP HAT PROFILE (mm)					
0.53	0.75	1650	1500	2200	2000	NA	
0.7	1.0	1500	1350	2000	1800		
1.05	1.5	1300	1150	1750	1600		
1.4	2.0	1150	1050	1600	1450		
1.75	2.5	1110	1000	1450	1350		
2.1	3.0	1000	950	1400	1250		
2.8	4.0	950	850	1250	1100		

Table 103

JS5035115 (SPAN/240)						
Design Wind Pressure kPa		Single Span Top Hat Spacing mm		Double Span Top Hat Spacing mm		Three Spans Top Hat Spacing mm	
		450	600	450	600	450	600
SER	ULT	MAXIMUM SPAN OF TOP HAT PROFILE (mm)					
0.53	0.75	2100	1900	2850	2550	NA	
0.7	1.0	1900	1750	2600	2350		
1.05	1.5	1650	1500	2250	2050		
1.4	2.0	1500	1400	2050	1850		
1.75	2.5	1400	1300	1900	1700		
2.1	3.0	1300	1200	1800	1600		
2.8	4.0	1200	1050	1600	1450		

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Span Tables - Top Hats

Table 104

TOP HAT SECTION TH50 X 0.75BMT													
		PURLIN SPACING											
Loading	Wind Class	600			900			1200			1500		
		Single	Double	Lapped	Single	Double	Lapped	Single	Double	Lapped	Single	Double	Lapped
		MAXIMUM ALLOWABLE SPAN (mm)											
INWARD LOADS		1600	2439	2661	1578	2389	2603	1556	2344	2551	1537	2303	2477
OUTWARD LOADS	TC3	2777	3715	3959	2426	3246	3458	2204	2949	3142	2046	2737	2917
	TC2.5	2691	3600	3837	2351	3145	3352	2136	2858	3045	1983	2653	2827
	TC2.0	2611	3494	3723	2281	3052	3253	2073	2773	2955	1924	2575	2743

Table 105

TOP HAT SECTION TH64 X 0.75BMT													
		PURLIN SPACING											
Loading	Wind Class	600			900			1200			1500		
		Single	Double	Lapped	Single	Double	Lapped	Single	Double	Lapped	Single	Double	Lapped
		MAXIMUM ALLOWABLE SPAN (mm)											
INWARD LOADS		2128	3229	3519	2090	3147	3424	2054	3074	3335	2022	3008	3202
OUTWARD LOADS	TC3	3380	4522	4819	2953	3951	4210	2683	3589	3825	2490	3332	3551
	TC2.5	3275	4383	4670	2861	3829	4080	2600	3479	3707	2413	3229	3441
	TC2.0	3179	4253	4532	2777	3716	3959	2523	3376	3597	2342	3134	3340

Table 106

TOP HAT SECTION TH64 X 0.95BMT													
		PURLIN SPACING											
Loading	Wind Class	600			900			1200			1500		
		Single	Double	Lapped	Single	Double	Lapped	Single	Double	Lapped	Single	Double	Lapped
		MAXIMUM ALLOWABLE SPAN (mm)											
INWARD LOADS		2384	3610	3932	2337	3510	3816	2293	3422	3714	2254	3343	3624
OUTWARD LOADS	TC3	3657	4893	5214	3195	4275	4555	2903	3884	4138	2694	3605	3842
	TC2.5	3544	4742	5053	3096	4143	4414	2813	3764	4011	2611	3494	3723
	TC2.0	3439	4602	4904	3005	4020	4284	2730	3653	3892	2534	3391	3613

Notes:

1. Definition of Wind Class as per AS 1170.2
2. The maximum spans stated in all cases are based on either strength or serviceabilty requirements for the following load cases

Serviceability Load Cases		Strength	
1. Dead Load Only	G	Dead Load + Live Load	1.2 G + 1.5Q
2. Live Load Only	0.7Q	Dead Load + Wind Load	0.9 G + W_U
4. Wind Load	W_S		

3. Deflection Limits - Span/150

Span Tables - Top Hats

Table 106

TOP HAT SECTION TH75 X 0.75BMT													
		PURLIN SPACING											
		600			900			1200			1500		
Loading	Wind Class	Single	Double	Lapped	Single	Double	Lapped	Single	Double	Lapped	Single	Double	Lapped
		MAXIMUM ALLOWABLE SPAN (mm)											
INWARD LOADS		2649	4003	4358	2591	3883	4217	2539	3778	4005	2492	3686	3824
OUTWARD LOADS	TC3	3936	5266	5611	3438	4600	4902	3124	4180	4454	2900	3880	4135
	TC2.5	3814	5103	5438	3332	4458	4751	3027	4051	4316	2810	3760	4007
	TC2.0	3701	4953	5277	3233	4327	4610	2938	3931	4189	2727	3649	3889

Table 107

TOP HAT SECTION TH75 X 0.95BMT													
		PURLIN SPACING											
		600			900			1200			1500		
Loading	Wind Class	Single	Double	Lapped	Single	Double	Lapped	Single	Double	Lapped	Single	Double	Lapped
		MAXIMUM ALLOWABLE SPAN (mm)											
INWARD LOADS		2964	4469	4864	2894	4324	4695	2831	4198	4551	2774	4088	4426
OUTWARD LOADS	TC3	4258	5698	6071	3720	4977	5304	3380	4522	4819	3138	4198	4474
	TC2.5	4127	5522	5884	3605	4824	5140	3275	4383	4670	3041	4068	4335
	TC2.0	4005	5359	5710	3499	4681	4988	3179	4253	4532	2951	3948	4207

Table 108

TOP HAT SECTION TH96 X 0.75BMT													
		PURLIN SPACING											
		600			900			1200			1500		
Loading	Wind Class	Single	Double	Lapped	Single	Double	Lapped	Single	Double	Lapped	Single	Double	Lapped
		MAXIMUM ALLOWABLE SPAN (mm)											
INWARD LOADS		3521	5289	5750	3426	5095	5527	3341	4930	5233	3266	4787	4960
OUTWARD LOADS	TC3	4808	6433	6855	4200	5620	5988	3816	5106	5441	3542	4740	5051
	TC2.5	4659	6234	6643	4070	5446	5803	3698	4948	5273	3433	4594	4895
	TC2.0	4522	6050	6447	3950	5285	5632	3589	4802	5117	3332	4421	4750

Notes:

1. Definition of Wind Class as per AS 1170.2
2. The maximum spans stated in all cases are based on either strength or serviceabilty requirements for the following load cases

Serviceability Load Cases		Strength	
1. Dead Load Only	G	Dead Load + Live Load	1.2 G + 1.5Q
2. Live Load Only	0.7Q	Dead Load + Wind Load	0.9 G + W_U
4. Wind Load	W_S		

3. Deflection Limits - Span/150

Span Tables - Top Hats

Table 109

TOP HAT SECTION TH96 X 0.95BMT													
		PURLIN SPACING											
Loading	Wind Class	600			900			1200			1500		
		Single	Double	Lapped	Single	Double	Lapped	Single	Double	Lapped	Single	Double	Lapped
		MAXIMUM ALLOWABLE SPAN (mm)											
INWARD LOADS		3935	5894	6404	3818	5661	6136	3716	5465	5914	3626	5297	5724
OUTWARD LOADS	TC3	5202	6960	7417	4544	6080	6479	4129	5525	5887	3833	5129	5465
	TC2.5	5041	6745	7188	4404	5893	6279	4001	5354	5705	3714	4970	5296
	TC2.0	4892	6546	6976	4274	5719	6094	3883	5196	5537	3605	4823	5140

Table 110

TOP HAT SECTION TH120 X 0.75BMT													
		PURLIN SPACING											
Loading	Wind Class	600			900			1200			1500		
		Single	Double	Lapped	Single	Double	Lapped	Single	Double	Lapped	Single	Double	Lapped
		MAXIMUM ALLOWABLE SPAN (mm)											
INWARD LOADS		4997	7438	8070	4821	7096	7679	4670	6816	7363	4539	6580	7098
OUTWARD LOADS	TC3	6174	8261	8803	5394	7217	7690	4900	6557	6987	4549	6087	6486
	TC2.5	5983	8006	8531	5227	6994	7453	4749	6354	6771	4409	5899	6286
	TC2.0	5807	7770	8279	5073	6787	7233	4609	6167	6571	4279	5725	6100

Table 111

TOP HAT SECTION TH120 X 0.95BMT													
		PURLIN SPACING											
Loading	Wind Class	600			900			1200			1500		
		Single	Double	Lapped	Single	Double	Lapped	Single	Double	Lapped	Single	Double	Lapped
		MAXIMUM ALLOWABLE SPAN (mm)											
INWARD LOADS		5571	8266	8962	5359	7860	8500	5180	7532	8131	5026	7258	7824
OUTWARD LOADS	TC3	6680	8938	9525	5836	7808	8321	5302	7095	7560	4922	6586	7018
	TC2.5	6474	8662	9230	5655	7567	8064	5138	6875	7326	4770	6383	6801
	TC2.0	6283	8407	8958	5488	7344	7826	4987	6672	7110	4629	6194	6600

Notes:

1. Definition of Wind Class as per AS 1170.2
2. The maximum spans stated in all cases are based on either strength or serviceabilty requirements for the following load cases

Serviceability Load Cases		Strength	
1. Dead Load Only	G	Dead Load + Live Load	1.2 G + 1.5Q
2. Live Load Only	0.7Q	Dead Load + Wind Load	0.9 G + W_U
4. Wind Load	W_S		

3. Deflection Limits - Span/150

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