

DATA SHEET

Portal Frames



Overview

Low cost Glulam Portals have been successful in achieving a total saving of up to 13% in comparison to standard steel frame structures, when compared to the erected costs. This economic design utilises gussets to provide moment connections to the Glulam columns and rafters. In this way a complete rigid frame is produced which is conveniently transportable and easily assembled. The specially designed gussets are precisely



cut and fixed to the Glulam columns in our factory. A typical frame arriving on site consists of two Glulam columns with gussets attached and one continuous pitched rafter member. The rafter is able to extend beyond the columns thus providing an overhang. For large spans the rafter can be supplied in two sections with an apex gusset. All members are pre-finished in factory and require no further attention once erected in industrial buildings.

Applications

Warehouses, factories, packing sheds, cool stores, sawmills, gymnasiums and halls have all been successfully designed using gusseted portals. Particularly suitable and economical for spans between 15m and 36m; these portals have also proved successful in smaller buildings.



Benefits

Aesthetics – Glulam portals provide a structural system that would otherwise require camouflaging or disguising. Staining Glulam Portals can bring added contrast to highlight the chosen ceiling form.

Pre-Fitting – Glulam portals can be pre-fitted in factory so that once onsite the members and their connecting brackets need only to be assembled. Pre- assembling creates savings in valuable on-site labour and craneage costs.

Ease of Installation – Light, dry timber beams arrive on site ready for speedy installation. Glulam portals are confidently handled by carpenters and subcontractors. They require no specialist erection techniques.

Fire Resistance - For superior fire resistance ratings of Glulam beams, see the Red Stag TimberLab Fire Performance Data Sheet.



Site Assembly

Once on site, the assembly and erection is speedily achieved with standard carpentry labour. Typical methods:-

1. While the rafter is lying on the ground, the two columns can be simply slid into position and the gusset is fixed to the rafter member. The assembled frame can then be stood up and fastened to anchor connections.
2. Alternatively, the columns can be stood in position with prefixed gussets ready to receive the rafter members. Rafters can be set out on the ground and purlins and bracing easily fixed before they are lifted. One complete beam pair may be raised conveniently into position on top of the columns and fixed with the gussets.



Indicative Span Tables

Span (m)	Spacing (m)	Eave Height (m)	Light Roof LL=0.25kPa	Light Roof & Ceiling LL=0.25kPa
10	4	2.5	315x90	315x90
	5	2.5	315x90	360x90
	6	2.5	360x90	405x90
12	4	3.0	360x90	360x90
	5	3.0	360x90	405x90
	6	3.0	405x90	450x90
14	4	3.5	405x90	450x90
	5	3.5	450x90	495x90
	6	3.5	495x90	540x90
16	4	4.0	450x90	495x90
	5	4.0	495x90	585x90
	6	4.0	540x90	630x90
18	4	4.5	540x90	585x90
	5	4.5	585x90	630x90
	6	4.5	630x90	630x115
20	4	5.0	585x90	585x115
	5	5.0	585x115	630x115
	6	5.0	630x115	675x115
22	4	5.5	585x115	630x115
	5	5.5	630x115	675x115
	6	5.5	675x115	765x115
24	4	6.0	630x115	675x115
	5	6.0	675x115	765x115
	6	6.0	765x115	765x135
26	4	6.5	675x115	720x135
	5	6.5	765x115	765x135
	6	6.5	765x115	855x135
28	4	7.0	720x135	765x135
	5	7.0	765x135	810x135
	6	7.0	810x135	900x135
30	4	7.5	765x135	810x135
	5	7.5	810x135	900x135
	6	7.5	900x135	900x180
32	4	8.0	810x135	900x135
	5	8.0	900x135	900x180
	6	8.0	900x180	945x180

Nothing contained in this material shall be construed as a warranty or otherwise as to the accuracy or safety of the information provided. Specific design work should be carried out by qualified engineers. Design information for structural laminated timber is fully contained in NZS 3603, Chapter 8.