

DATA SHEET

Angle Knee Portals



Overview

The Red Stag TimberLab Angle Knee Portal has become a mark of success combining the best in appearance with the best in economy. A factory-made interlocking glued knee joint provides the basis of the three pin or two pin portal design used. The maximum inside height possible at the knee is obtained in this portal - a factor which gives it an advantage over the curved portal in some applications. The build-up of interlocking rafter and column panels means that the column section is wider than the rafter e.g. 3 x 42mm column panels interlock with 2 x 42mm rafter panels. This gives a column width of $5 \times 42 = 210\text{mm}$ and a rafter width of $3 \times 42 = 126\text{mm}$. Column and rafter section taper from a maximum depth at the knee to a minimum depth at the base and apex. By increasing the depth of the panels and building up the number of interlocking panels, any practical span and spacing can be catered for. On smaller spans or farm buildings a double column and single rafter combination can be used.

A simple bolted pin joint at the apex is all that is required to connect the full portal frame together. All apex fitting and base connections are done in Red Stag TimberLab's factory and make for easy on-site assembly.

With a sanded and stained finish these portals enhance the appearance of any community building or with a dressed finish they are an economic winner in industrial buildings.

Site Assembly - Members arrive on site in the form of half portals. With the use of a mobile scaffold to support the apex, erection is quickly achieved by lifting the half portals into position onto holding-down bolts and aligning the simple bolted apex joint. An average of 7 to 10 portals can be fully erected in a working day. Each frame can be temporarily braced longitudinally so that a secure structure is available for cladding and roofing. With the convenience of nailing directly to the timber frames no specialist labour is required. Notching or cutting or drilling the portals must be approved by the Red Stag TimberLab designer or design engineer.

Benefits

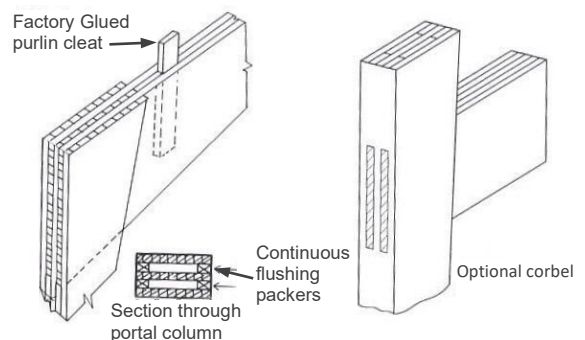
Economy - This type of portal has a proven cost saving record. Surprisingly, industrial projects already designed in steel, have been changed to Red Stag TimberLab Angle Knee Portals to take advantage of cheaper costs.

Shape - Because of the clean lines of the Red Stag TimberLab Angle Knee Portal, maximum height is obtained at the knee. This is especially significant for sporting facilities.

Simplicity - The pre-finished and stained members need a minimum of site handling. Shoes are factory fitted and once secured to anchor bolts on site, a few bolts at the apex complete the erection.

Purlin Fixing - Unique to this portal are the built-in purlin cleats. These are factory glued between the rafter panels and extend up to provide simple and direct fixing for purlins. This means that pre-cut purlins can be used to tie the portals together at pre-determined spaces. Girt block can also be built into the columns.

Note: Corbels to support floor beams can be incorporated into the column section of these portals for two storey construction.



Applications

Gymnasiums, churches, school halls, sporting facilities, factories, storage buildings, swimming pools. Two storey buildings and gantry supporting corbels are also able to be incorporated in the versatile portal design. This portal form may also be adapted to provide clerestory profiles.

Specifications

See "Data Sheet – Specification"

Note – Resorcinol glue should always be used for cross lap joints at the knees.

Quality Control

Red Stag TimberLab Ltd is a licensed manufacturer, independently audited under AS/NZS 1328.1 for glulam manufacturing (License No. 2916) and AS5068 for finger jointing (License No. 2915).

Regular in-factory quality control is carried out in conformance with these, third-party auditing carried out by Bureau Veritas.

Services Available

- » Free cost estimates
- » Experienced advice on suitability of Glulam design options
- » Full engineering design and drawing facilities
- » Complete building packages including design, manufacture, supply of all connections and components, and installation supervision
- » Close liaison and client satisfaction are high priorities in Red Stag TimberLab's personal care.



Table: Indicative Sizes for Angle Knee Portals

Portal Span (m)	Frame Spacing	Eave Height	Light Roof & LL=0.25 kPa	Ceiling	Heavy Roof & LL=0.25 kPa	Ceiling
			Column	Rafter	Column	Rafter
8	3	2.5	315x149	360x65	315x174	360x90
	4	2.5	315x149	360x65	315x174	360x90
	5	2.5	315x149	360x65	360x174	405x90
9	3	2.5	315x174	360x90	315x174	360x90
	4	2.5	315x174	360x90	360x174	405x90
	5	2.5	315x174	360x90	405x174	450x90
10	4	2.5	315x174	360x90	360x174	405x90
	5	2.5	315x174	360x90	405x174	450x90
	6	2.5	360x174	405x90	450x174	495x90
11	4	2.5	315x174	360x90	405x174	405x90
	5	2.5	360x174	405x90	450x174	495x90
	6	2.5	405x174	450x90	450x210	540x90
12	4	3.0	360x174	405x90	450x174	495x90
	5	3.0	405x174	450x90	450x210	540x126
	6	3.0	450x174	495x90	495x210	585x126
13	4	3.0	405x174	450x90	450x210	540x126
	5	3.0	450x174	495x90	495x210	585x126
	6	3.0	405x210	450x126	540x210	630x126
14	4	3.5	450x174	495x90	495x210	585x126
	5	3.5	405x210	450x126	540x210	630x126
	6	3.5	450x210	495x126	585x210	675x126
15	4	3.5	405x210	450x126	540x210	630x126
	5	3.5	450x210	495x126	585x210	675x126
	6	3.5	495x210	540x126	630x210	720x126
16	4	4.0	450x210	495x126	585x210	675x126
	5	4.0	495x210	540x126	630x210	720x126
	6	4.0	540x210	585x126	675x210	765x126
17	4	4.0	495x210	540x126	630x210	720x126
	5	4.0	540x210	585x126	675x210	765x126
	6	4.0	585x210	630x126	720x210	810x126
18	4	4.5	540x210	585x126	675x210	765x126
	5	4.5	585x210	630x126	720x210	810x126
	6	4.5	630x210	675x126	765x210	855x126
19	4	4.5	585x210	630x126	720x210	810x126
	5	4.5	630x210	675x126	765x210	855x126
	6	4.5	675x210	720x126	810x210	900x126
20	4	5.0	630x210	675x126	765x210	855x126
	5	5.0	675x210	720x126	810x210	900x126
	6	5.0	720x210	765x126	855x210	945x126

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.