

4th November 2020

TECHNICAL UPDATE – CONNECTIONS FOR INTERNAL NON-LOAD BEARING WALLS

Internal non-load bearing walls are installed with a clear gap between the top plate and the underside of the roof trusses. Australian standards require a shear connection across this gap to provide stability and robustness for the walls while still allowing the trusses to move up and down under load.

AS1684 provides a detail for these connections that calls up a slotted bracket such as the Pryda Partition Hitch. It's important to note that this doesn't mean a bracket is the only acceptable connection, as the preface to AS1684 states "this Standard does not preclude the use of framing, fastening or bracing methods or materials other than those specified".

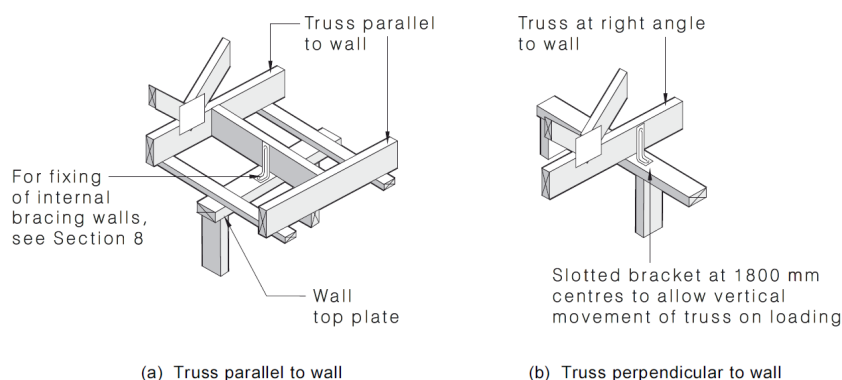


Figure 1: AS1684 Figure 6.11 shows a fixing detail between trusses and non-load bearing internal walls

The preface goes on to say, "alternatives may be used, provided they satisfy the requirements of the Building Code of Australia". In this case that means engaging a structural engineer to design the connection to comply with the timber design standard, AS1720. This design will include requirements for how the connection is installed such as the distance to the edge of the timber and how far the fastener(s) need to penetrate each timber member. If these requirements aren't met, the design becomes invalid and the builder takes on the risk of how the connection performs.

Once the design requirements of AS1720 are satisfied, we also need to look at the performance requirements in AS1684. As noted on the detail for the slotted bracket, this connection must "allow vertical movement of truss on loading". Loading in this context includes gravity loads (from roof tiles etc.) that push the truss down, and wind loads, which in the case of a sheet roof may in fact cause the truss to deflect upwards.

It's therefore critical that the connection allows movement in both directions, otherwise the non-load bearing wall suddenly becomes load bearing and the support conditions of the truss are altered, leading to problems such as noise, cracking, and potentially structural damage or failure. This can occur when nails in partition hitches are over-driven, or with headed fasteners such as batten screws.

As the table on the following page shows, Pryda's FastFix™ Internal Wall Screw (IWS) meets the compliance requirements of AS1684 and AS1720, forming a deemed-to-comply solution under the NCC and delivering reliable performance with its fast, safe, consistent installation process. The IWS provides equivalent or better structural performance than a partition hitch while being less time consuming and easier to install correctly.

Other screw-based solutions such as a typical batten screw are unlikely to be compliant (unless an engineer's certification is provided) and introduce the risk of re-work, defects and callbacks. They require a multi-stage process to install, including pre-drilling with a larger drill bit then manually driving the screw to just the right depth to achieve enough embedment into the truss and a large enough clearance between the head of the screw and the underside of the top plate. This process is difficult to do consistently and makes it harder for certifiers to be confident that every connection is correct.

PRYDA FASTFIX INTERNAL WALL SCREW



- 8mm shank
- No pre-drilling; CEE thread cleans out the hole to allow free movement
- Free movement under sheet roof uplift
- Engineered design certified by Pryda
- Deemed-to-comply solution according to the NCC
- Every screw is fully driven home by default - consistent embedment into the truss chord

TYPICAL BATTEN SCREW



- 6.5mm shank
- Larger re-drilled hole required
- Screw head may bear on the timber under uplift
- Needs to be signed off by an engineer
- Performance solution report may be required. May not be covered by the certifier's insurance.
- Manual process to get the correct screw embedment, and the actual embedment will vary from screw to screw and installer to installer.

To avoid project delays and added costs, builders should pay close attention to the products being used for internal non-load bearing wall connections and how they are being installed. Similarly, building certifiers should ensure that any product not explicitly detailed in AS1684 is supported by the appropriate documentation and requesting that all non-compliant fasteners are removed and replaced.

If in doubt, contact a member of the Pryda Engineering Team for support and clarification.



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