

SHARPEN YOUR AXE BEFORE CUTTING DOWN THE TREE

The key to success of any construction project is preparation.

Making sure to consider the full breadth of detail requirements prior to erecting the structure, is especially important when using prefabricated building products; and if done correctly, will result in each structural component achieving the maximum level of efficiency and compliance.

As Abraham Lincoln put it succinctly,

“Give me six hours to chop down a tree, and I will spend the first four sharpening the axe”.

It is common practice for most manufacturers of structural components to make typical design considerations, such as:

- using up to date material inventories,
- optimising timber usage, and
- minimising factory labour.

On top of that, it is vital that the design process should also factor in the construction process. This is ideally done by collaboration across all structural component suppliers, with a common goal to best service the installers, supervisors and following trades to build efficiently.

Integrating Different Systems

When it comes to specifying and designing PosiStrut or timber webbed floor truss systems, making such considerations is pivotal to success, especially where there is a high level of integration between timber and steel.

By accurately matching the connection details between trusses and steel beams, carpenters will be able to quickly repeat the process once they have worked out the installation of the first truss. As an example, in a project where there are varying steel beam depths, the top of each beam should ideally be detailed at the same height, resulting in the floor trusses having the same end detail and fixing method.

In general, if we ensure consistency between the different component systems in a project, it will always deliver a reliable result through ease of installation.



Figure 1: Matching floor truss end details with steel work

Courtesy of Pro Truss & WA Country Builders



Figure 2: Tolerances allowing for some steel beam flexibility

Courtesy of Colli Timber & Hardware and Bellissimo Homes



Figure 3: Floor trusses fitted in between steel beams

Courtesy of Pro Truss & WA Country Builders

Dimensional Tolerances

The selection of an appropriate tolerance is an important consideration to the success of timber floor trusses and steel structural components fitting together well on site. In cases where components can be juggled, for example where the components are being erected at the same time, 0mm to 2mm tolerance would be suitable. In most instances however, the steel structure is erected well before the PosiStrut floor trusses are delivered to site, and under these circumstances, 2mm to 5mm of tolerance at each bearing would be more appropriate.

For the most part, applying a tolerance assists the installation process. However, caution should be exercised because it can also be a trap. If a floor truss is fitted in between two steel beams, the installer will first instinctively position one end of the truss hard up against the beam. If this truss has maximum tolerances built in at both ends, a massive gap that is effectively twice the tolerance will form at the opposite end, thereby risking inadequate bearing width.

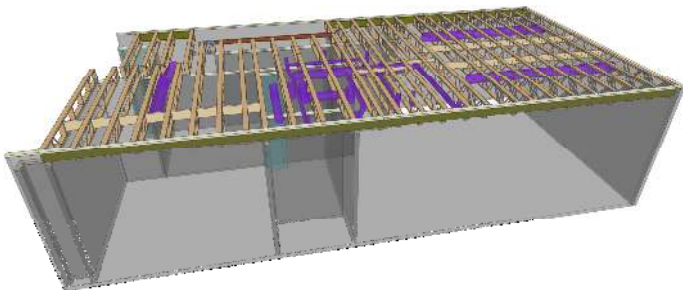


Figure 4: Services displayed in SAPHIRE Design Software
Courtesy of Independent Timber Supplies & Homebuys

Aligning Services in Voids

Even though PosiStrut floor trusses contain plentiful voids, any potential requirement by various services for extra space or alignment is best considered during the design stage. To deliver a system that meets the geometric needs of plumbers, electricians, tilers and plasterers, it is important for all independent designers involved in the project to work collaboratively to ensure the various inter-connected structural components are situated in such a way that allows services to pass easily through the floor, or be recessed into it.

To do this and ensure adequate space, the truss designer, engineer and draftsman should all receive plumbing and electrical layouts prior to design stage. This is of upmost importance in locations like wet areas, and where air conditioning ducting and electrical services are laid.

If the above considerations are adhered to during the design process, the strengths of a timber webbed truss or Posi-Strut floor system, as a well-integrated, compliant and efficient method of construction, can be fully realised. Appreciating its importance and giving it adequate time during this critical phase in the construction process, hence “sharpening your axe”, are vital to the success of any project.



Figure 5: Trusses designed with allowances for services
Courtesy of Independent Timber Supplies & Homebuys



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