

ANOTHER MITEK ADVANTAGE

DOCUMENTING & IMPLEMENTING LOADS

A builder and his truss fabricator rely heavily on drawings to perform their tasks.

These drawings, whether they are architectural, structural and/or mechanical, must specify all loads expected of the truss design.

For successful truss performance, the building designer, truss fabricator and builder must understand their obligations in documentation, communication and implementation.

The Building Designer is responsible for documenting the overall design specification and that must include all loads carried by the roof structure.

To be effective, the building designer must understand the homeowner's specific requirements, including future intentions for expansion.

Roof loads such as roof material, ceiling material and design wind speed are the minimum basic information that should be clearly indicated on the drawings so that all suppliers and trades can take appropriate action.

Many house plans vaguely specify "tiled roof" and "plaster ceiling".

While this clearly indicates a tiled roof, the weight can vary vastly in between terracotta tiles and concrete tiles.

Even within terracotta or concrete materials, there are significant weight differences between different compounds, profiles and manufacturers. It is preferable to name the roofing product.

A plaster ceiling could similarly refer to several different plaster thicknesses, including fire rated ceiling systems.

Furthermore, how the plaster ceiling is fixed - e.g. directly, battened, with furring channels or suspended - makes a difference to the ceiling diaphragm required under AS1684 and to lateral restraint of the truss bottom chords (refer Gang-Nail Guidelines #108).

Any supplementary loads on the roof must also be clearly specified on the drawings.

These include additional fittings such as air conditioning units, heater units, solar panels and water tanks.

By **DEAN ASHTON**

*State Engineering Manager, Victoria
MiTek Australia Limited*

A truss fabricator has to be given the weight, size and location of such items to apply in design.

Some commercial projects require fall arrest anchors and these must also be shown on the drawings if trusses are to support them.

Professional advice from truss engineers should be sought whenever unusual or dynamic loads from fall arrest anchors, hoists, cantilevered signs, towers, antennas and other



similar devices are attached to roof trusses.

The truss fabricator should clearly communicate his design assumptions and requirements by marking the loads that have been included in design on their truss layout.

This may include a note or table showing the roof and ceiling materials and design wind speed.

Where they include additional fittings, their precise locations must be shown.

Some items, such as solar hot water systems, may also require additional installation instructions

describing special requirements, such as underpurlins for distributing the loads evenly across a group of trusses.

If there is some uncertainty about a fixture (e.g. provision for a future pergola attachment), it may be worth adding a note indicating any potential loads that have not been included in design.

The Builder is responsible for implementing the design plans by ensuring that only the designated materials and fittings are installed on the roof structure.

Any changes must be passed by all designers, including the fabricator, prior to installation. For example, a heavier roof cladding could result in trusses being overloaded.

Conversely, a lighter roof material could result in trusses and tie-downs being overloaded due to increased wind uplift.

Trusses that are specially labelled to support additional fittings must be installed in their correct location and the specified fittings must naturally not be installed elsewhere.

Changing a fitting to a different type or locating it in another position could have a negative impact on truss performance.

On a recent inspection, I observed a fold-down ladder for easy access to the roof space above the garage.

Peering in the roof space, there was floor sheeting laid in preparation for storage loads but the trusses were not designed for any additional loads.

Several archive boxes full of books or previous years' tax returns and other documents can be quite heavy and would certainly have an impact on the design and performance of trusses.

Careful consideration must be made on the impact of any modifications before carrying them out.

With clear documentation of all design loads, clear communication of installation instructions and strict implementation of construction drawings, the homeowner's satisfaction will be ensured when roof trusses perform as they should. **TTN**

Visit: www.mitek.com.au for all Guidelines