



BRETT BOLDEN
Fabricator Support
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COMMUNICATING DESIGN ASSUMPTIONS

One of the main objectives in the ABCB Software Protocol is to reinforce communication between truss designer, certifier and installer.

It seeks to make sure that any assumptions that have been made during design will be adequately conveyed to the certifier and builder.

It may be a matter as simple as the roof weight or wind speed or girder truss locations for the certifier to verify that the design parameters are consistent with the approved construction drawings.

Or it may be about additional measures that the truss designer requires for truss performance such as the propping of overhangs or structural fascias or variations from AS4440 which the builder may not know to do unless told.

For this purpose, the Protocol requires truss software to produce output which includes "Specific recommended installation/transport procedures if these procedures are essential parts of the design assumptions".

Generally all truss software rely on AS4440 to form the basis for the installation of roof trusses in a safe manner.

If the limitations of AS4440 are exceeded, it does not mean that the truss designs are in themselves inadequate or uncertified.

It usually means that further installation measures (such as tiedown and bracing) beyond AS4440 may be required.

These special measures may be contained in the software design output or it may be contained in the nailplate supplier's installation handbook.

But as most installers universally follow AS4440 by default, the software should, wherever possible, underscore when conditions exceed the scope of AS4440 and also to follow that up with information on what will be required to overcome the limitations of the Standard.

Here are some typical examples of appropriate software notifications and alerts:

SUSPENDED OR NO CEILING

This is an important area where it may not be clear where responsibilities lie.

Although a detailer may show binders and diagonal bracing for bottom chord stability according to AS4440 in layout, others may misconstrue those details to constitute a structural ceiling diaphragm to resist lateral wind loads on the building.



That is outside the scope of AS4440 and the Protocol and an engineer must be called upon to certify that part.

STEEP ROOF PITCHES

Although the Protocol & AS1684 are limited to 35°, AS4440 provides sufficient information to install trusses up to 45°.

Beyond that, professional advice should be sought for design wind speeds, pressure coefficients, roof bracing and overturning effects.

STRUCTURAL FASCIAS AND OVERHANG STRUTS

These components assist the performance of truss overhangs.

When they are utilised in design, the assumption of structural fascias and/or the locations of overhang struts should be indicated in the construction layout along with any suitable installation instructions deemed necessary.

TRUSS SPANS EXCEEDING 16M

The Protocol, AS1684 & AS4440 are all limited to truss applications below 16m.

Beyond that truss certification is conditional upon the provision of additional information such as roof bracing by an engineer.

TRUSS SPACING BETWEEN 900-1200MM IN HIGH WINDS

The hip and saddle connections in AS4440 are limited to 900mm truss spacing but it does permit 1200mm for sheet roof up to N3.

However for concrete tiles, or sheet roof in high wind or cyclonic areas on trusses beyond 900mm spacing, the installer should be alerted to rely instead upon the designed connections in the software output and not AS4440.

SNOW LOADING

Likewise, the hip end & saddle connections in AS4440 do not take snow loading into consideration and software designed connections must be used instead of those in the Standard.

In extreme alpine conditions, an engineer may also be needed to design extra roof bracing.

FINALLY

It is often not miscommunication but the lack of communication that leads to unsafe or costly mistakes to occur.

It is the responsibility of the designer to clearly convey the assumptions and basis of design and any specific installation requirement necessary to fulfil the structural integrity of the roof structure.