



STA guide to propping and bracing

Design guidance for open and closed panel systems

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Introduction

Generally propping and bracing of structural timber panels has been left to the erector to deal with on site. Various timbers and fixing methods are utilised some satisfactory and others less so. For some time now the HSE have been asking for more specific details to be included in method statements including connection details for various panel types. The STA have prepared guidance for member companies to use in preparation of their method statements to give the erector more detail in the use of props and fixing methods so that the work place becomes a safer environment to work in.

It is important to consider not only the prop but also the sequence of the panels to be erected.

Although propping is carried out on site it is the responsibility of all involved, from design through to delivery to site.

Design stage

Consideration of propping should be considered at design stage, the size and height of panels, and the connection details.

Manufacturing stage

At manufacturing stage panels should be made and stacked in sequence wherever possible so that panels can be built in sequence to avoid double handling etc. Obviously at loading stage consideration also has to be given to the safety of the load so it will not always be possible for some panels to be in sequence.

Erecting stage

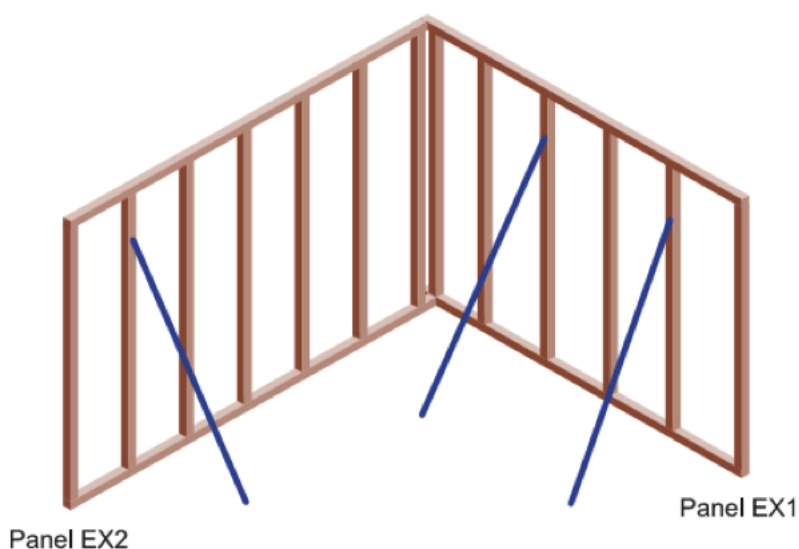
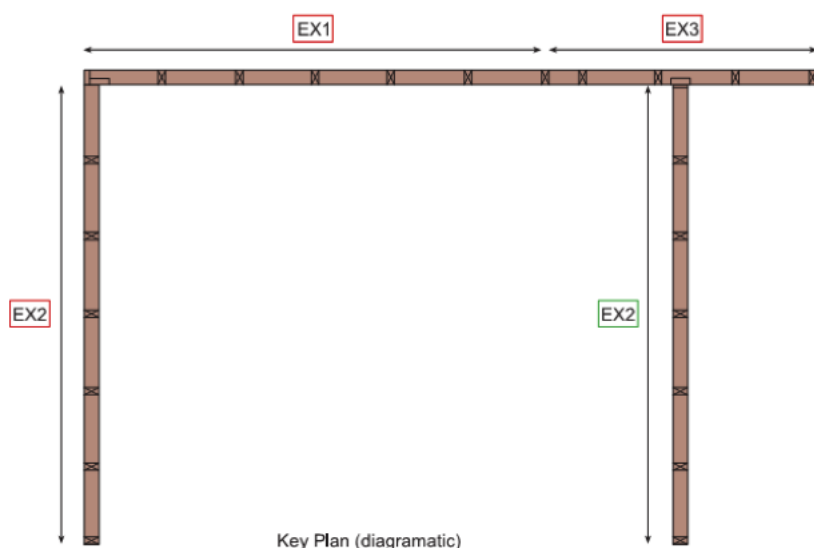
The focus has to be on the overall objective of assisting the erector to be able to erect in sequence and not have panels leant up against scaffolding and laid around the slab/upper floor levels trying to sort them into a sequence, raising the risk of panels falling and trip hazards.



Open panel timber frame

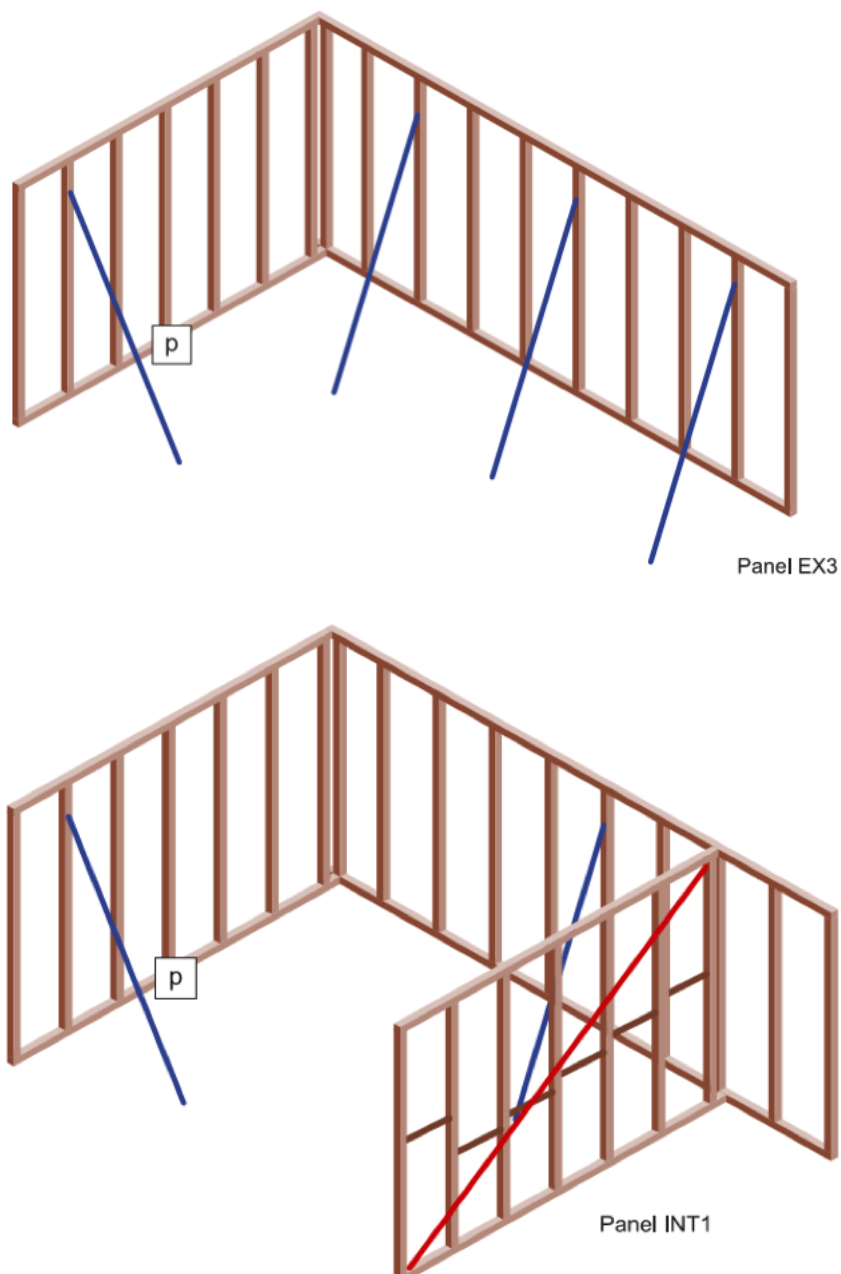
Panels should be erected starting at an external corner at 90 degrees (see key plan).

Erect panel EX1 and apply fixings into base of the panel, a temporary prop should be fitted at both ends of the panel at approx 600mm in from each end and at a 45 degrees angle fixed as shown. The return panel EX2 should then be installed fully nailing the corner junction and base of panel and apply a single prop approx 600mm in from end of the panel. Panel EX3 should then be installed and fully nailed, internal panel INT1 should then be position and fixed and a 95 by 22 timber brace fixed to the face of the panel at an angle of 45 degrees ensuring that the external panel is in a plumb position. The panels will now be secure and plumb and the same method can be used to erect the remainder of the panels.





Open panel timber frame cont.../



Props should be fitted at approx 2.4m intervals and wherever an internal wall meets an external wall these should also be installed to tie the structure together.

Where large panels are erected using a crane the panel should be fully braced before the straps/chains are disconnected from the panel.

Where smaller light weight panels are used these can be erected by hand by two operatives and braced as the works proceed.

This sequence can be repeated at upper floor levels, and it would be advisable to close the centres of the props above three stories due to the increased wind load.



Open panel timber frame cont.../

Bracing to corridor panels should be applied to the room side of the panel to avoid obstructions in the corridors as these will normally be utilised as escape routes in the event of an emergency or fire evacuation.

At the end of each day/shift or weekend consideration should be given to the amount of panels erected which will be exposed to the possibility of high winds etc. Wherever possible the panels should be completed to a flat or level of a house to form a complete four sided unit, this will reduce the risk of any damage or collapse of panels in the event of storms.

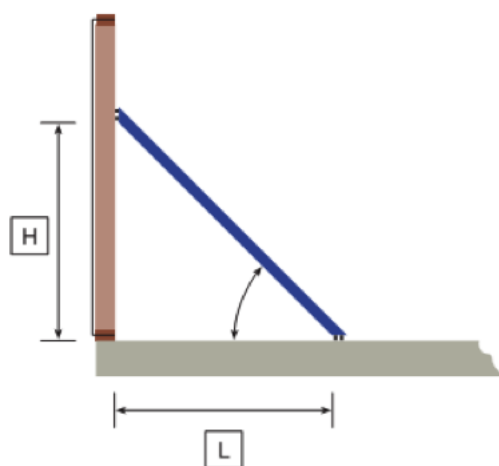
Gable end panels should be braced via the roof trusses immediately they are placed in position to design detail on manufacturer's drawings. Generally the gable panels are braced at all truss node positions and at diagonal brace positions. The brace should be tied back across a minimum of two trusses.

Once the floor joist and decking and/or floor decks have been installed and fully fixed the temporary props can be removed.

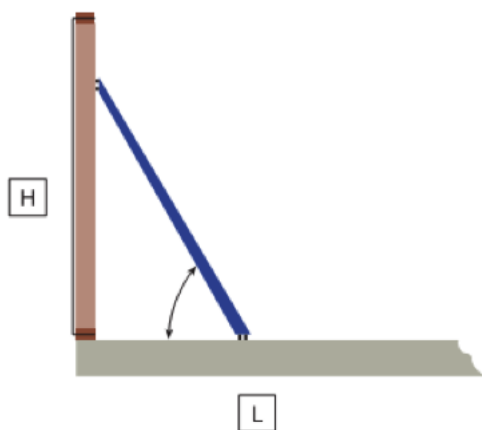
The props should only be used once as repeated use will weaken the end of the timber where the fixings are applied.

The minimum section of timber used should be 89 x 38 CLS for propping external panels and 95 x 22 can be used to face fix to internal panels.

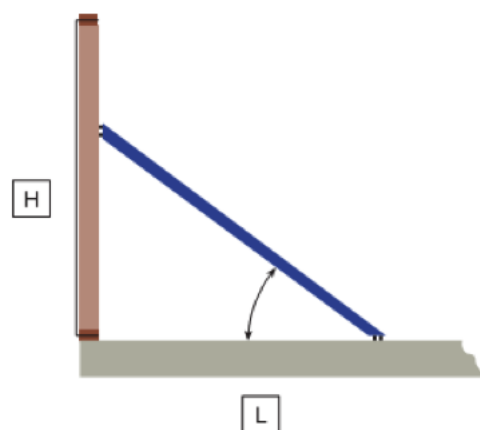
Prop connection details



Props to walls
Preferred angle to be 45 degrees
i.e. $L=H$



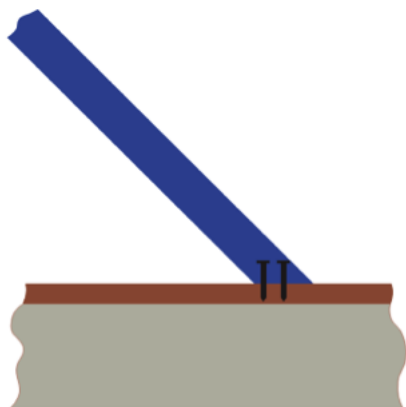
If the prop is at an angle greater than 55 degrees, i.e. $H \gg L$
Not acceptable



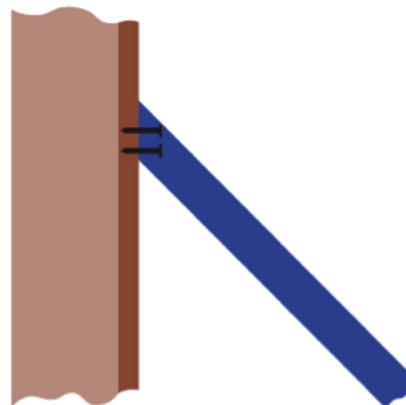
If the prop is at an angle less than 35 degrees, i.e. $L \gg H$
Not acceptable



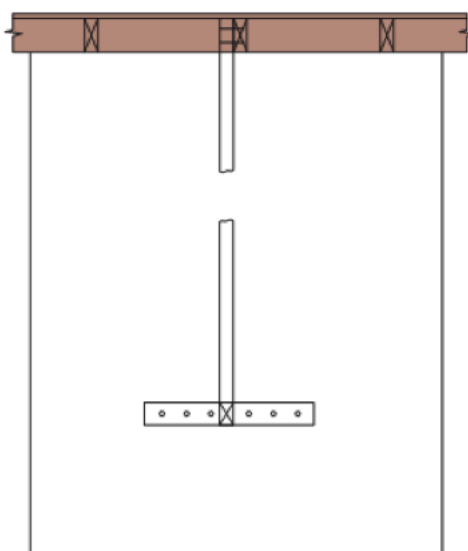
Open panel timber frame cont.../



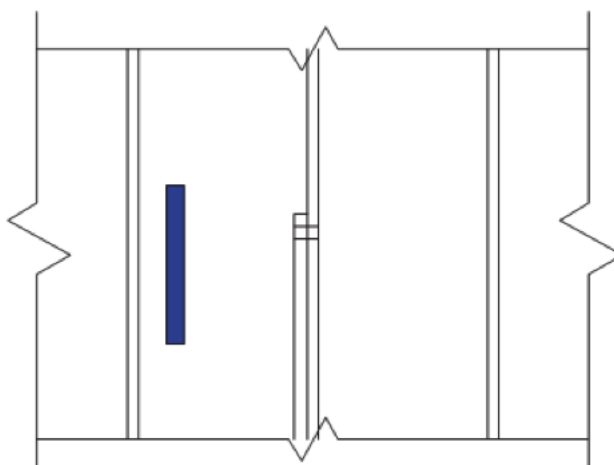
Exploded detail showing
nails fixing prop to batten



Exploded detail showing
nails fixing prop to batten



Plan for prop to connect
to exposed stud

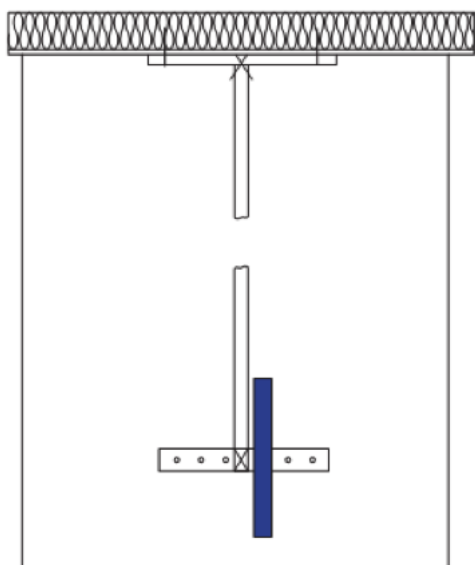


Elevation from prop fixing to side of stud

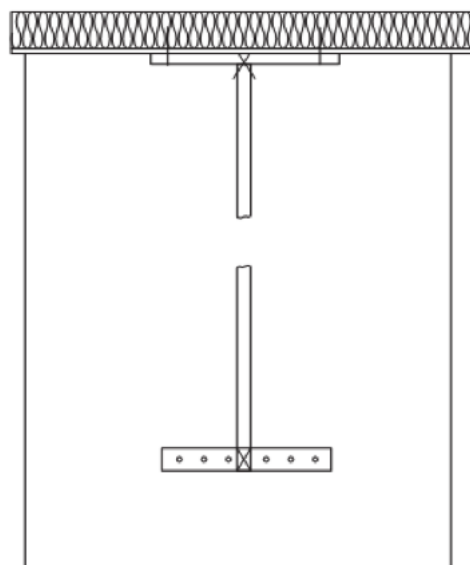


Closed panel systems

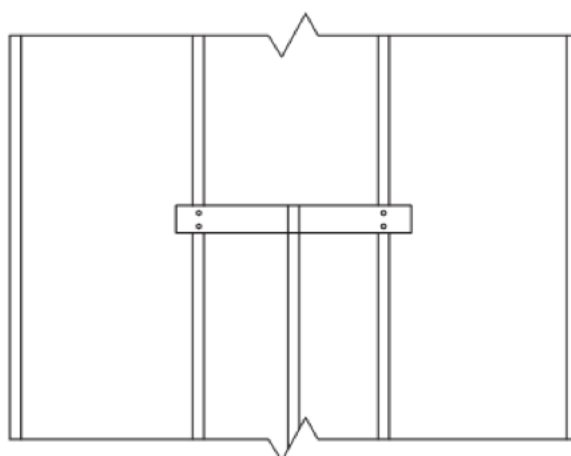
The same sequence can be used as open panels but the detail for fixing the prop to the panel changes, see below the recommended fixing details. It is important not to disconnect the panel from the crane until the panel has been fully propped.



Alternative prop support



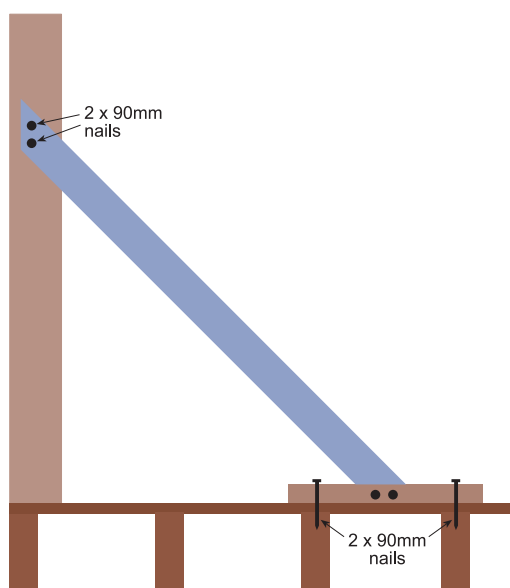
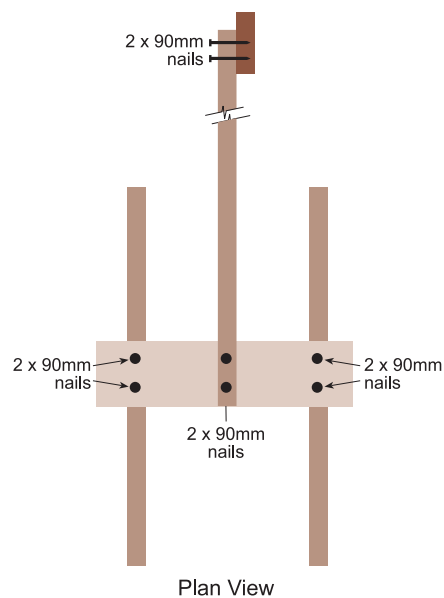
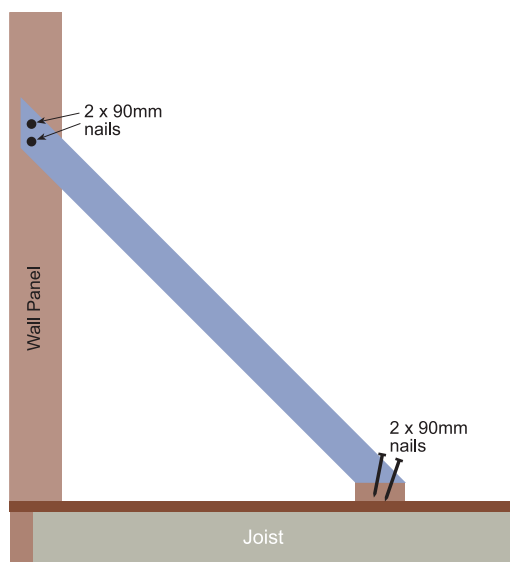
Plan on fixing a prop to a closed panel showing the brander to fix the prop to.



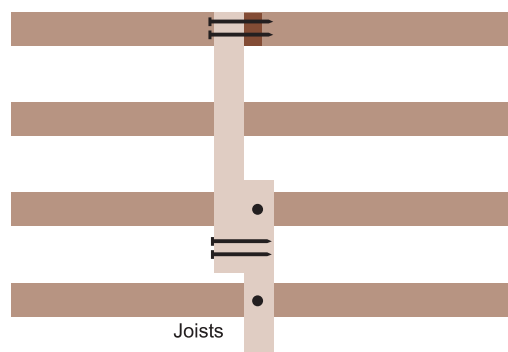
Elevation on closed panel / semi-closed panel
All fixings to studs either internal boarding or exposed in semi-closed panels.



Prop fixing details

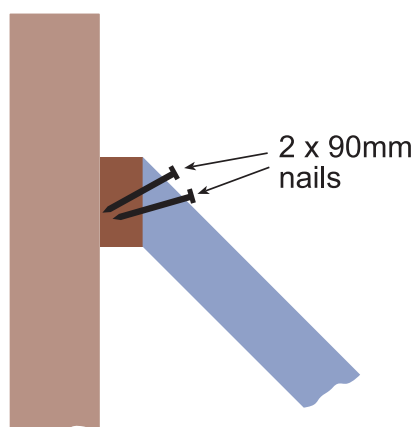


Where joists run parallel to wall panel to be braced,
an alternative noggin fixing point would be:

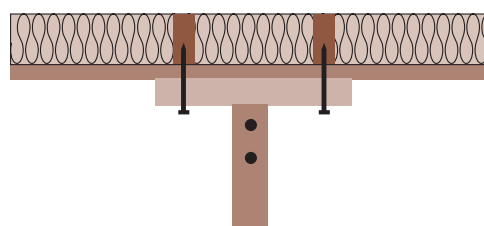




Prop fixing details cont.../

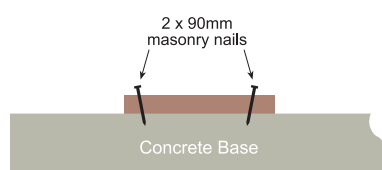
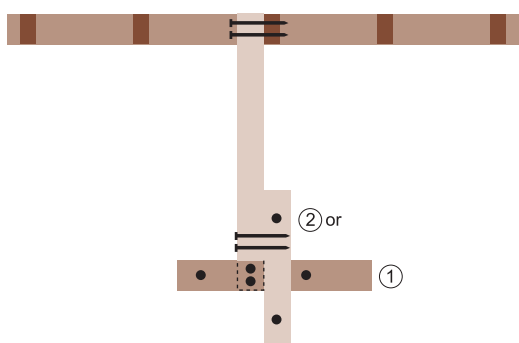


Closed Panel



Plan View

When fixing noggins to concrete base, 2 x 90mm fixings to hold down noggin, either parallel or horizontal.





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