Design and Setting Out

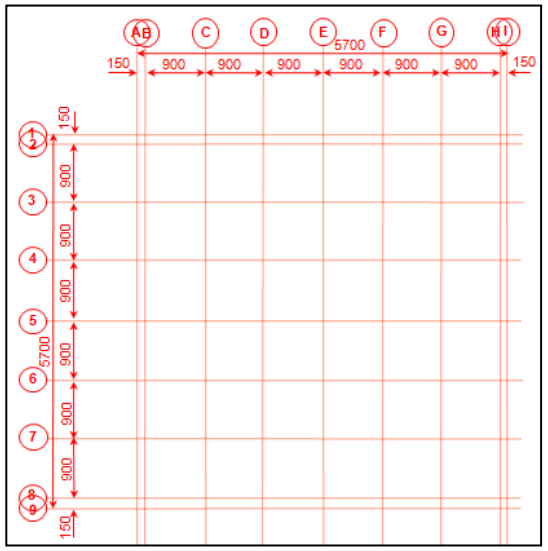
This training package provides information on how to read architectural and engineering drawings for village infrastructure and houses, common in South-East Asia and the South Pacific region.

The example used in this training package is one of several standard designs that are available.

Information Required on Drawings

Construction drawings must include the following:

- Title block stating the client, building and location.
- A notation indicating whether the drawing is “Preliminary” or “Approved for Construction” etc. and by whom.
- Issue or revision number and date
- Location on the site (orientation and distance from side boundaries. This is normally provided by a surveyor.
- Grid lines and grid dimensions. These should define the principal dimensions, orientation and position of the building on site, and enable the setting out of footings and sub-floor structure,
- Height datum and finished floor level.
- North point. While this is not sufficiently accurate for setting out, it enables the drawing to be quickly oriented to avoid confusion in labelling particular elevations.
- An approximate scale. Often drawings show a numerical value for the scale of each view (e.g. 1 : 100). As the drawing is copied and reduced or enlarged, this will become misleading. Use the dimensions stated on the drawing for construction purposes. Do not scale. A diagram showing the approximate scale may be provided to assist interpretation.



Use dimensions stated on the drawing for construction purposes. Do not scale.
This approximate scale is provided to assist interpretation.

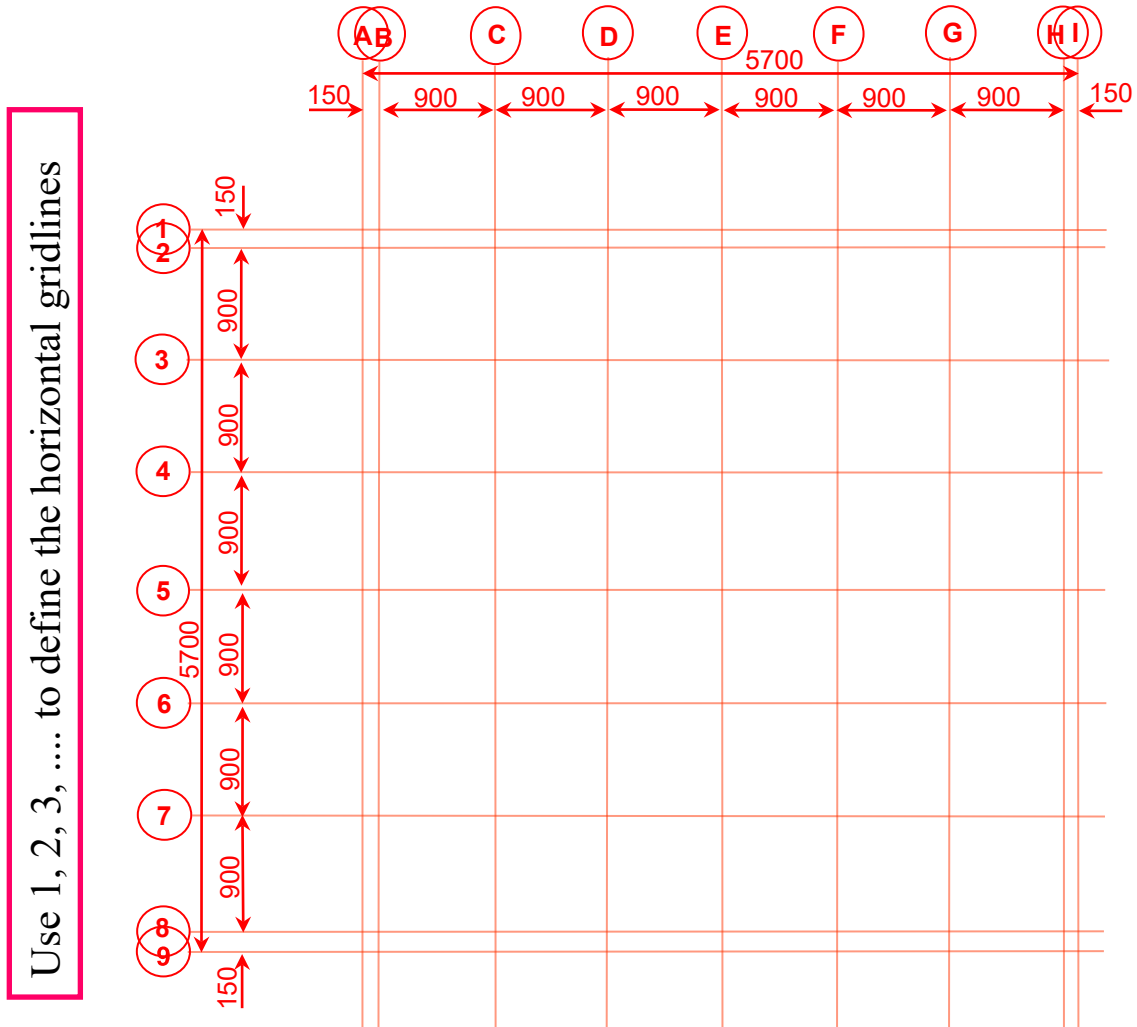
Grid Lines and Dimensions

Grid lines should define the principal dimensions, orientation and position of the building on the site, and enable the setting out of footings and sub-floor structure.

When using CAD, the grid should be on a separate layer.

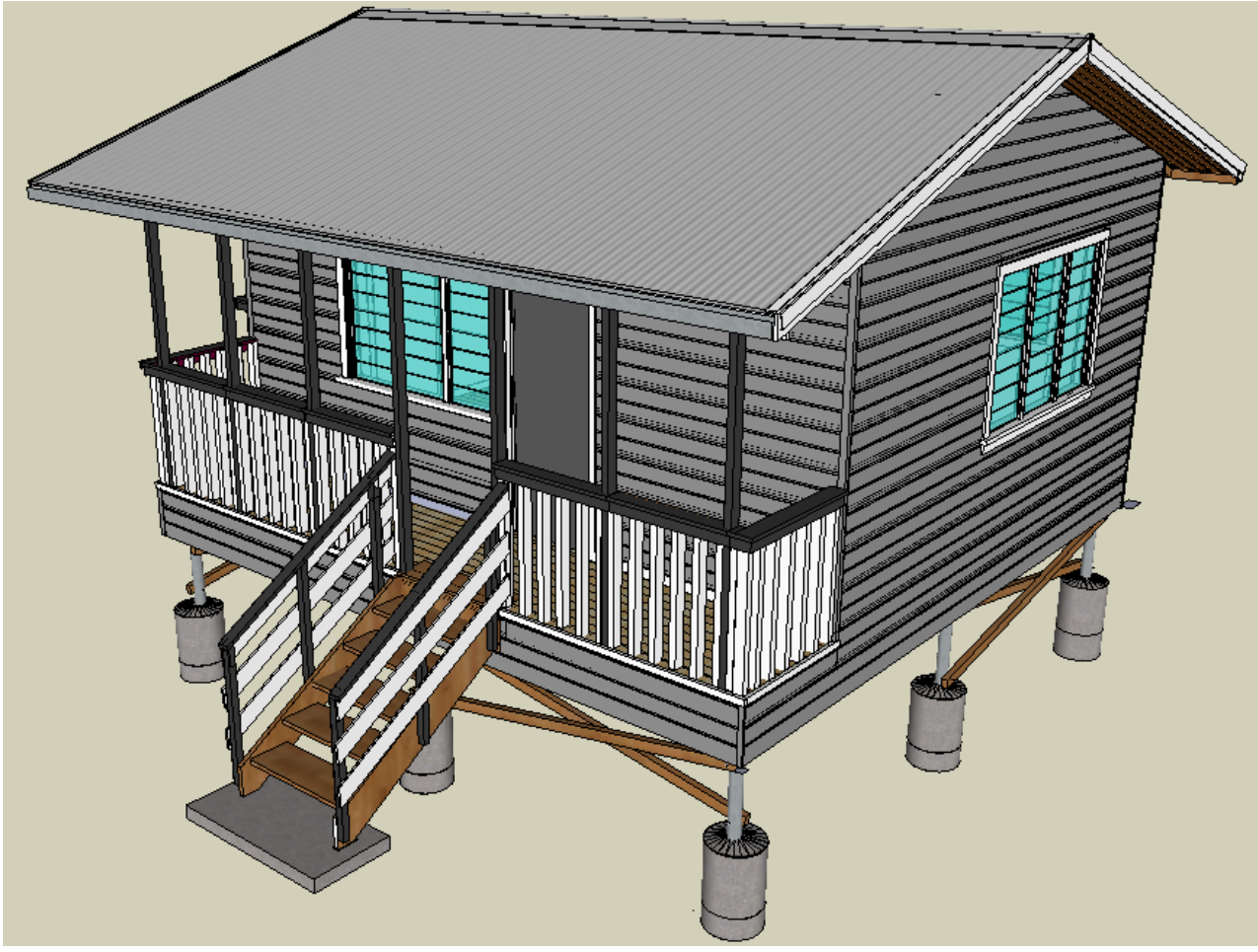
All dimension should be in millimetres.

Use A, B, C, ... to define the vertical gridlines



Example

Following are the architectural and engineering drawings necessary to describe the Partner Housing Standard Demonstration House, with the following features - elevated timber framed 5.7 x 4.6 m house with an external balcony 1.1 m wide.



Floor Plan

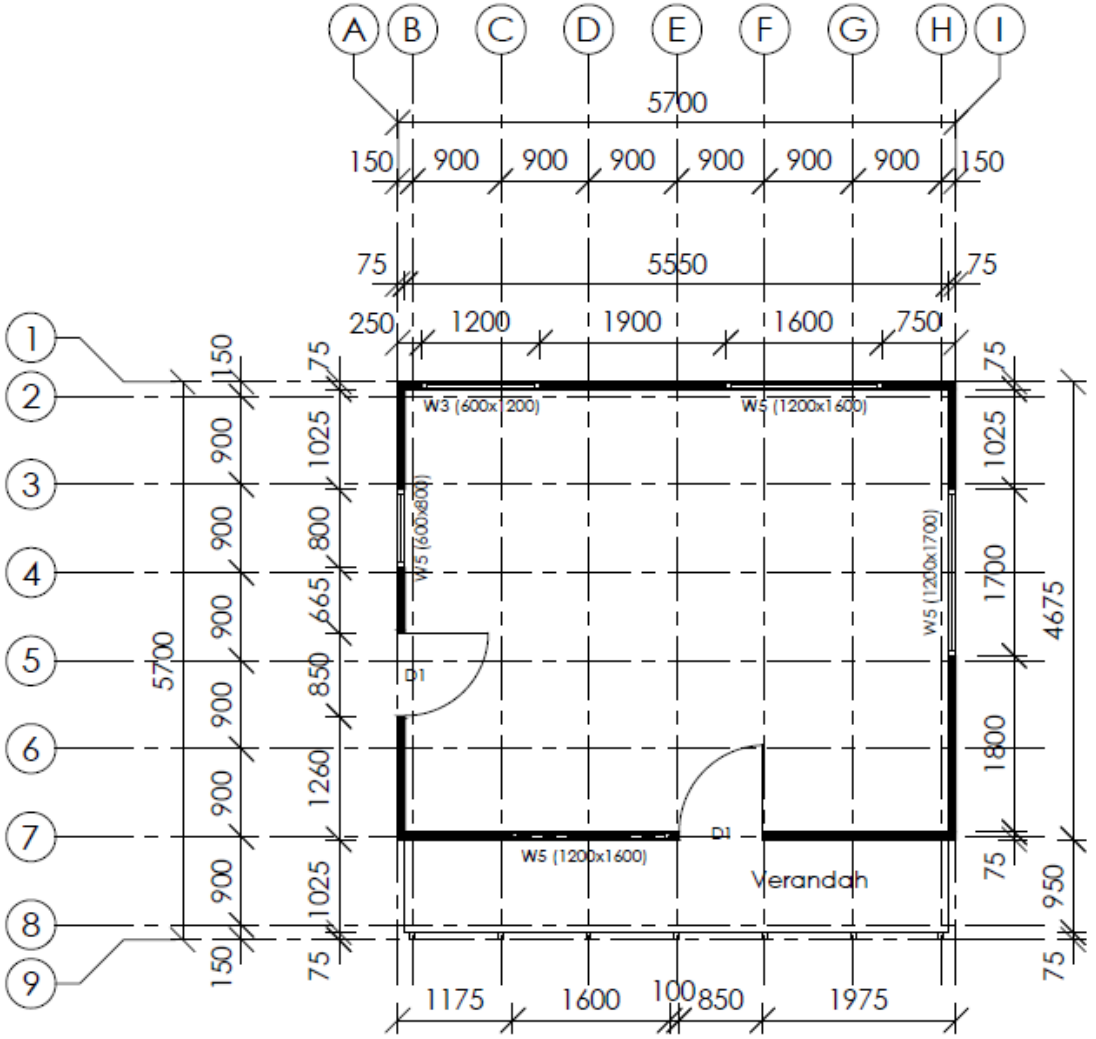
The floor plan is used to define the dimensions of all external walls, internal walls, doors and windows.

Dimensions of all components are related to the relevant grid lines.

Gridlines to which dimensions do not refer may be omitted.

The floor plan should include:

- Dimensions to all rooms and walls
- Dimensions to windows and doors and the nomenclature of window and door schedules
- Details of the walls
- Details of external cladding and internal lining
- Details of the stairs
- Details of the deck
- Roof line above



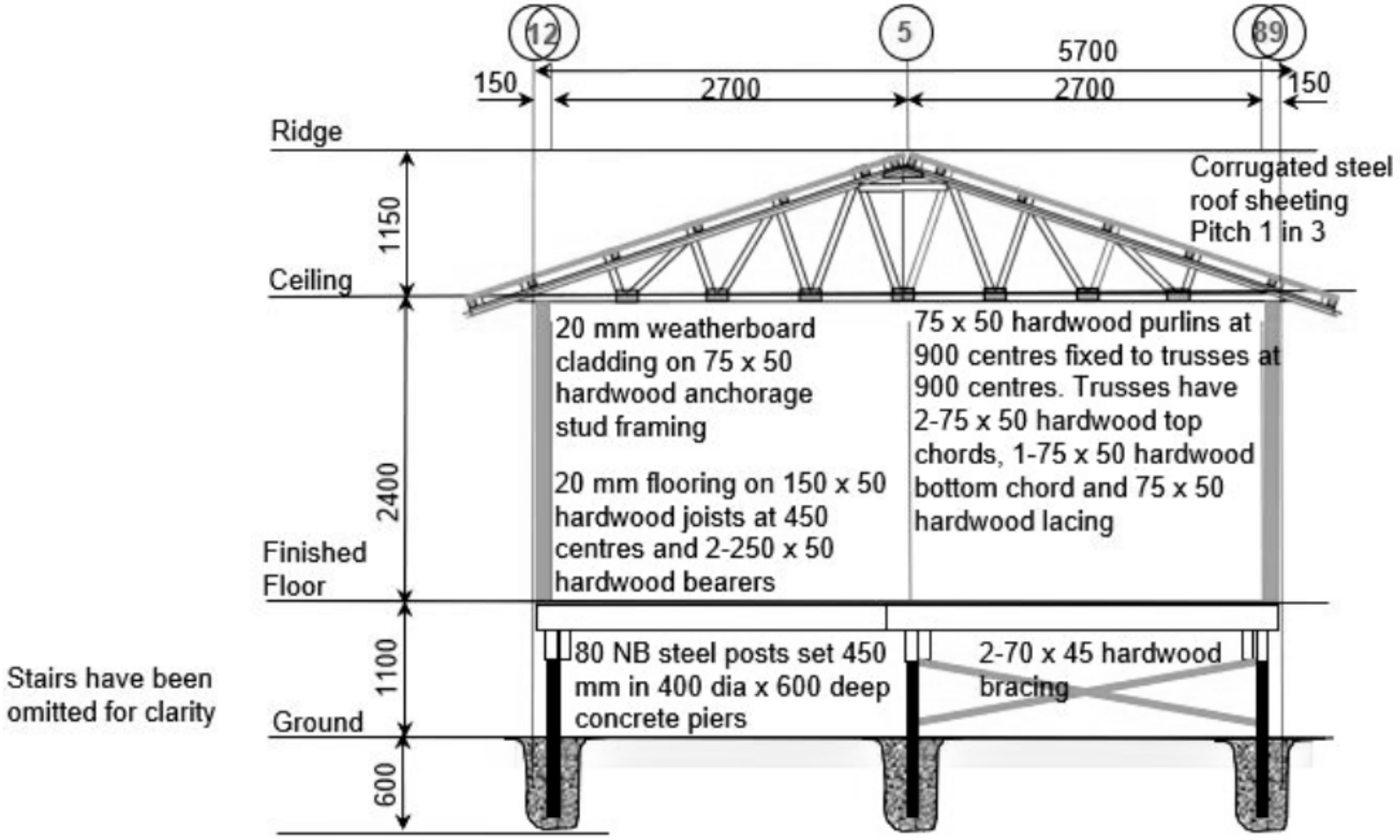
Elevations

The elevations are used to define the features, cladding, roof shape, external doors and windows.

Section

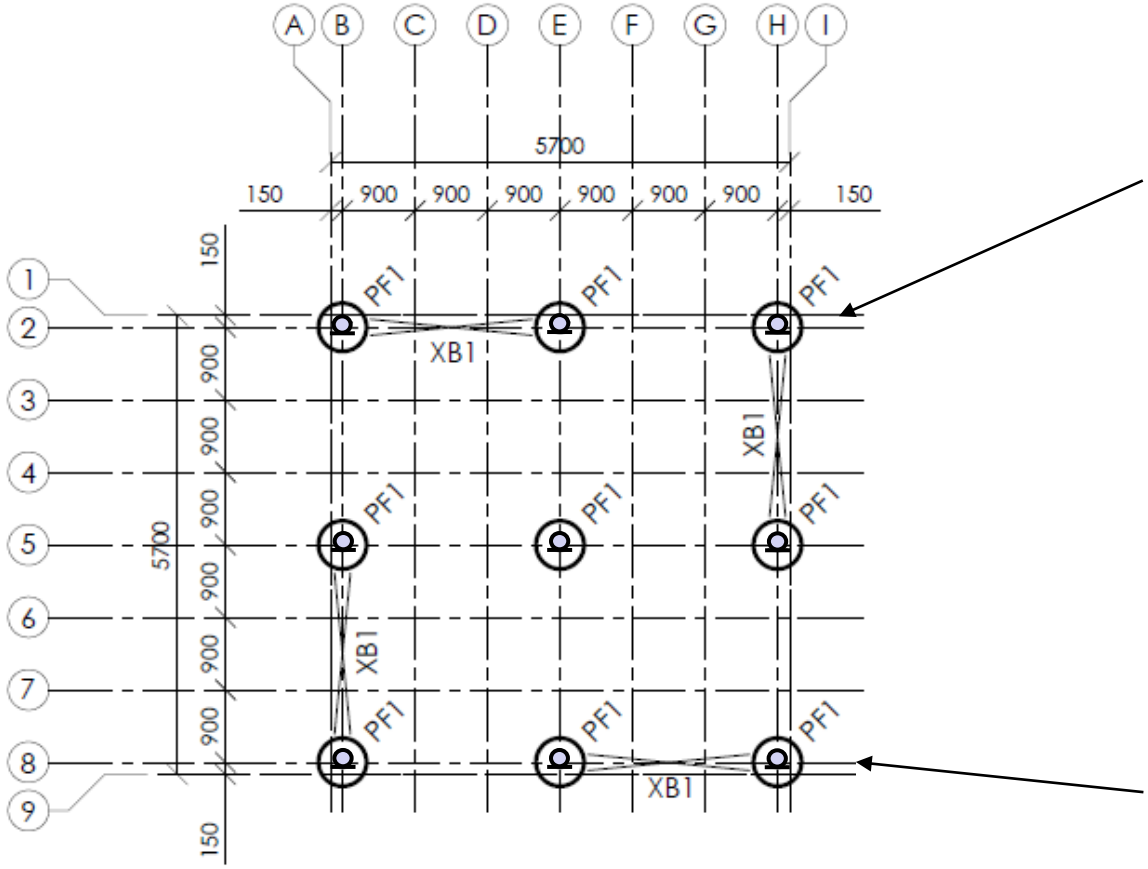
The section is used to define the heights and levels, including ground level, floor level, ceiling level, ridge level, and the principle features of the house.

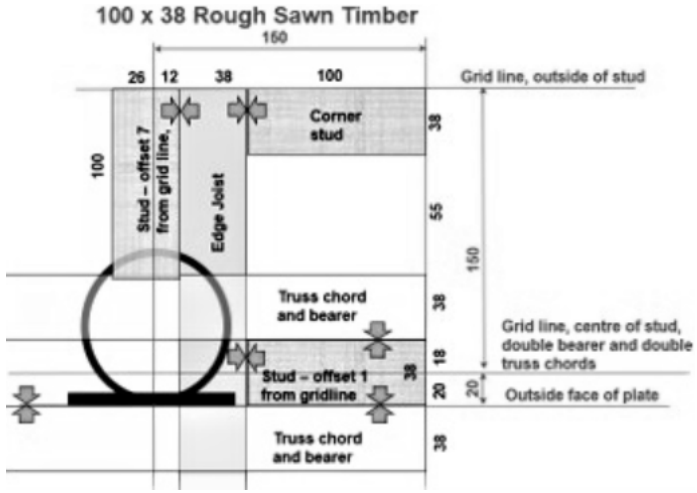
The following illustrations show typical engineering details (without commentary).

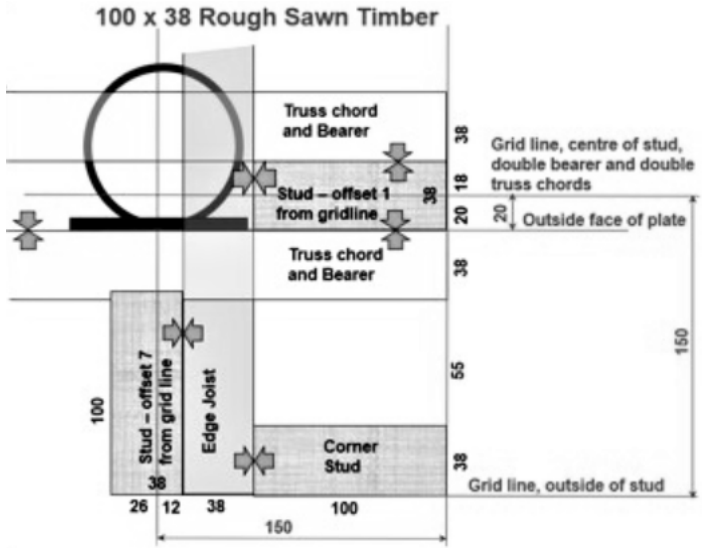


Sub-floor Layout

The grid for setting out is 2.70 x 2.70, with the end distance to the edge of the building as 0.150 m as shown. Steel fixing plate on the top of the steel post must always be on the same side of the steel post.







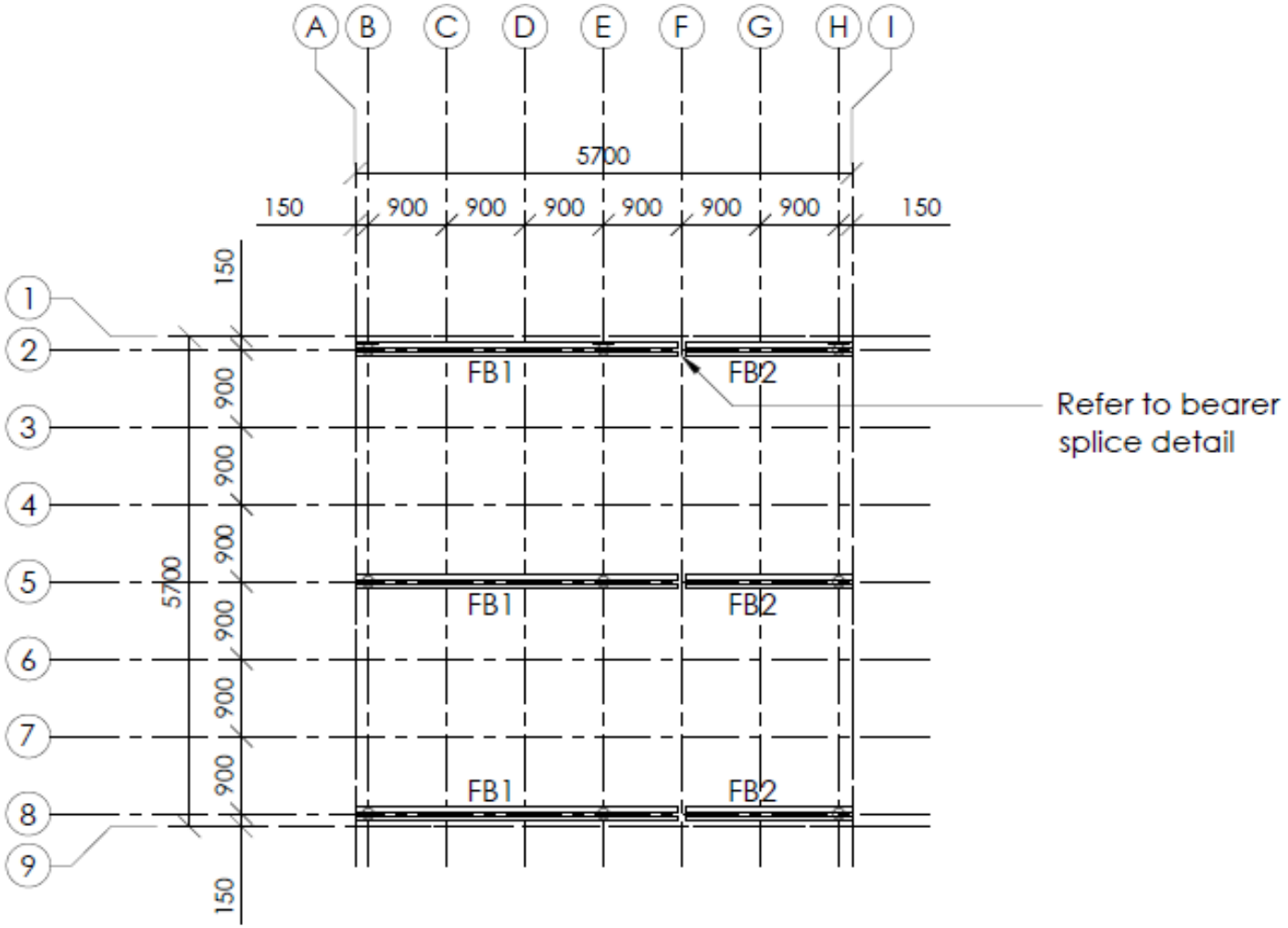
FOOTINGS & SUBFLOOR LAYOUT

SCALE 1:100

PF1 - 400Ø Concrete footing with steel post

XB1 - 90x38 F11 timber subfloor cross bracing

Floor Bearer Layout



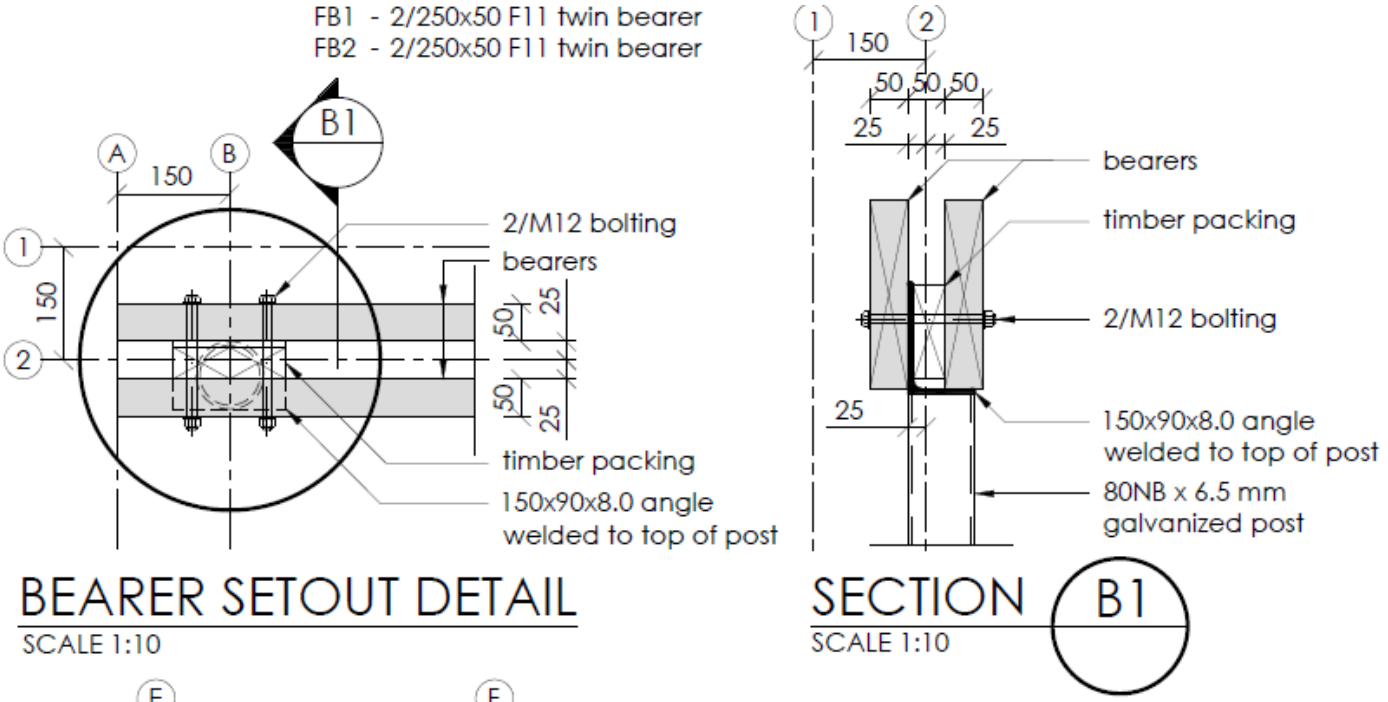
FLOOR BEARER LAYOUT

SCALE 1:100

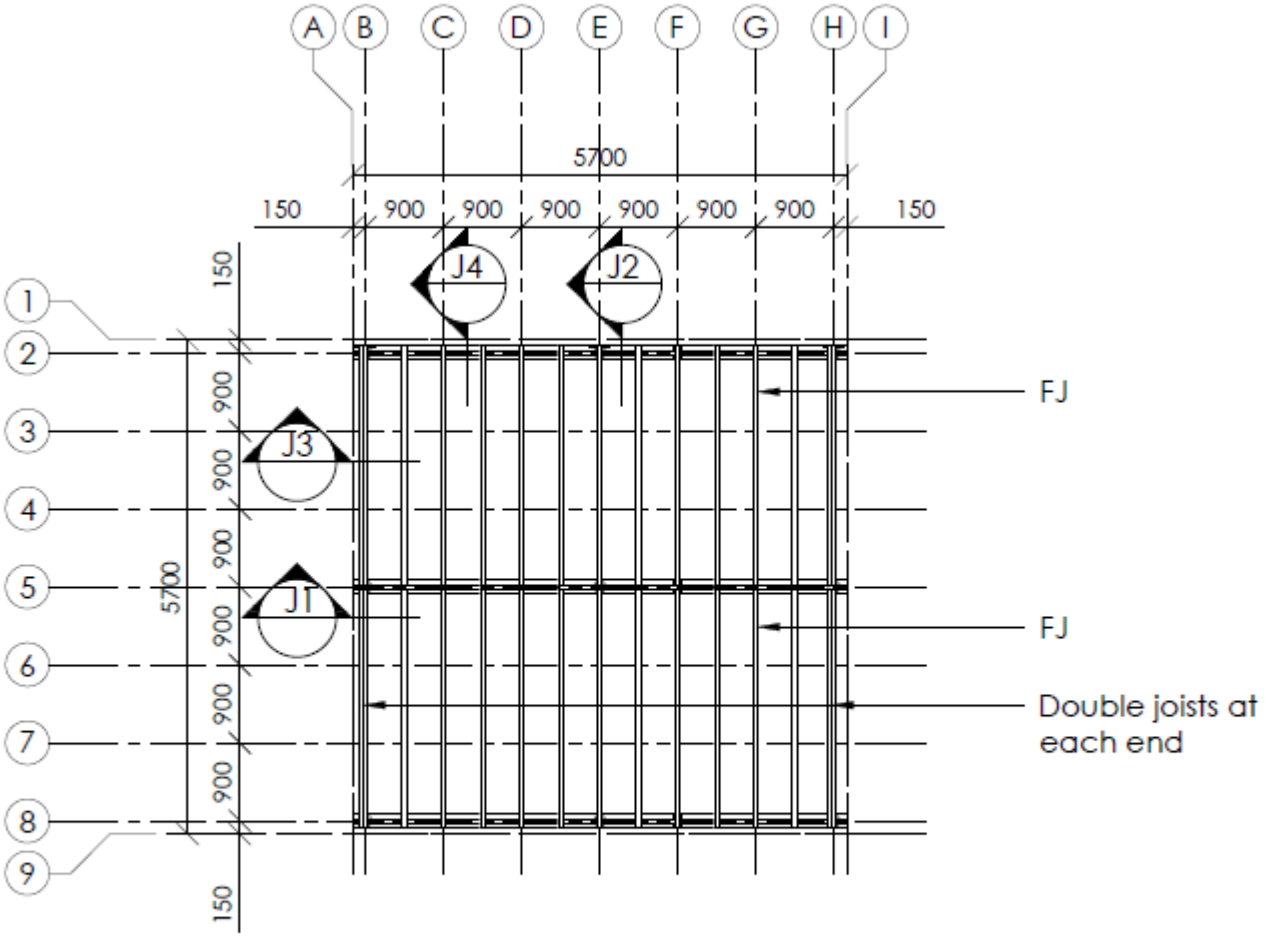
FB1 - 2/250x50 F11 twin bearer

FB2 - 2/250x50 F11 twin bearer

Floor Bearer Details



Floor Joist Layout

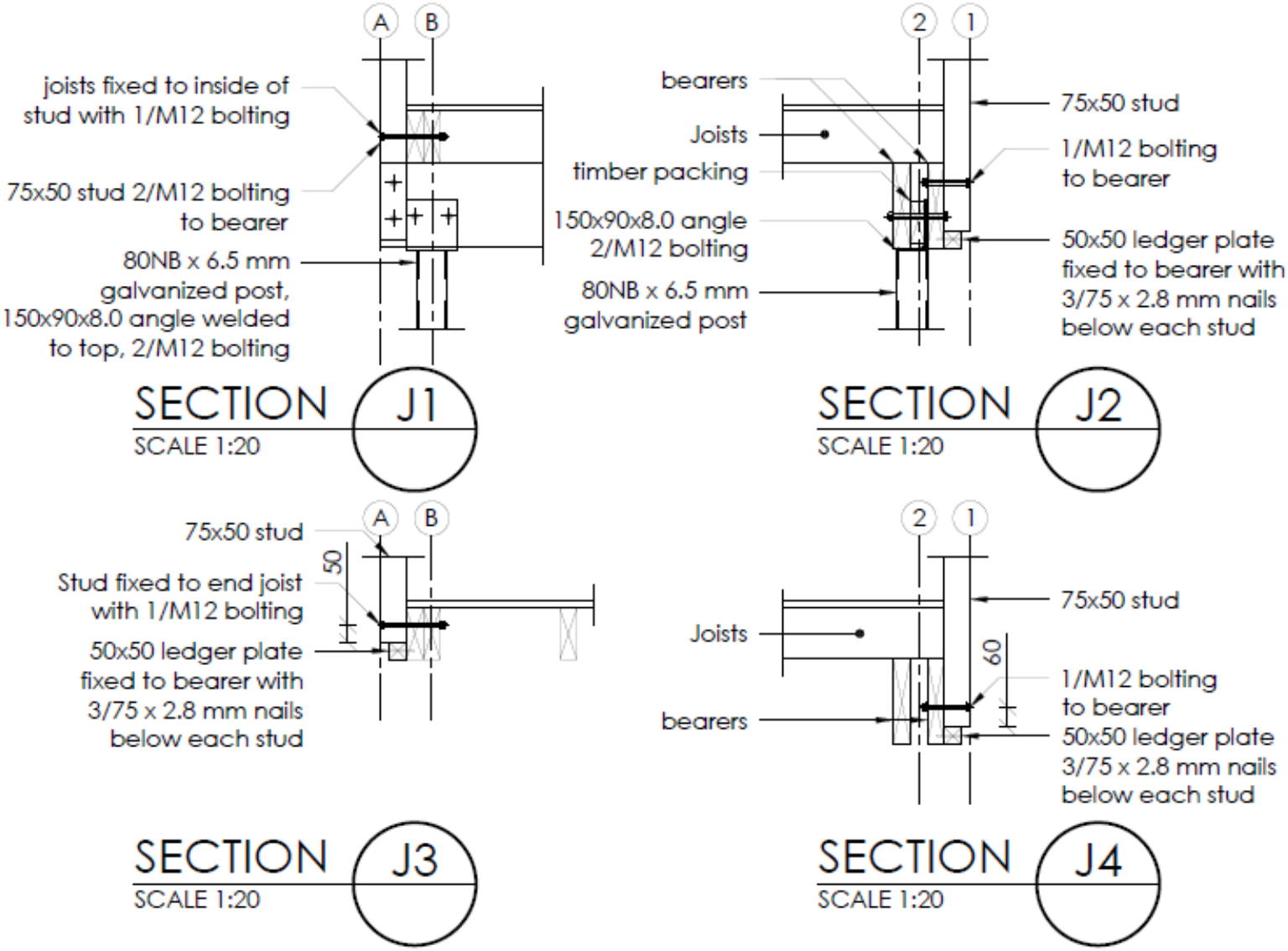


FLOOR JOIST LAYOUT

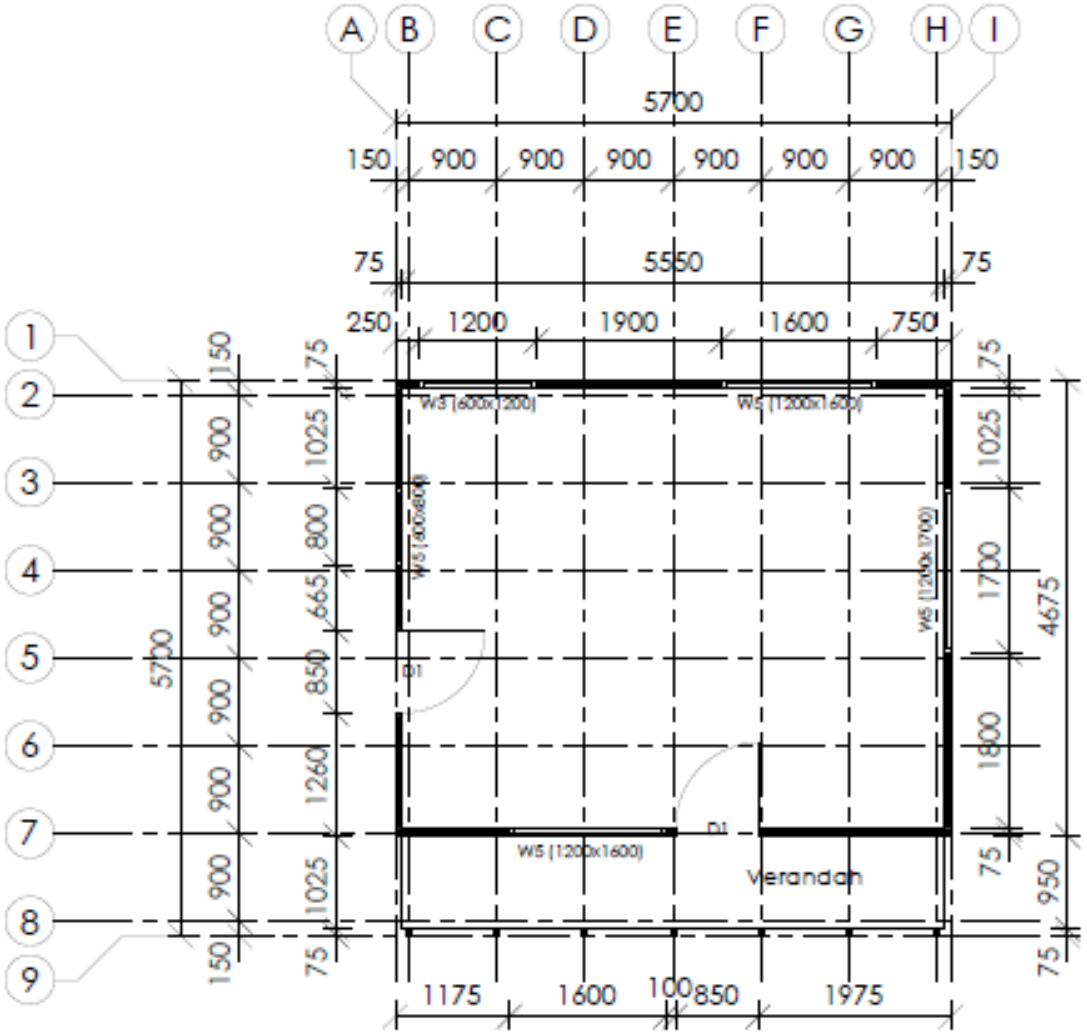
SCALE 1:100

FJ - 150x50 F11 joists @ 450 centres

Floor Joist Details



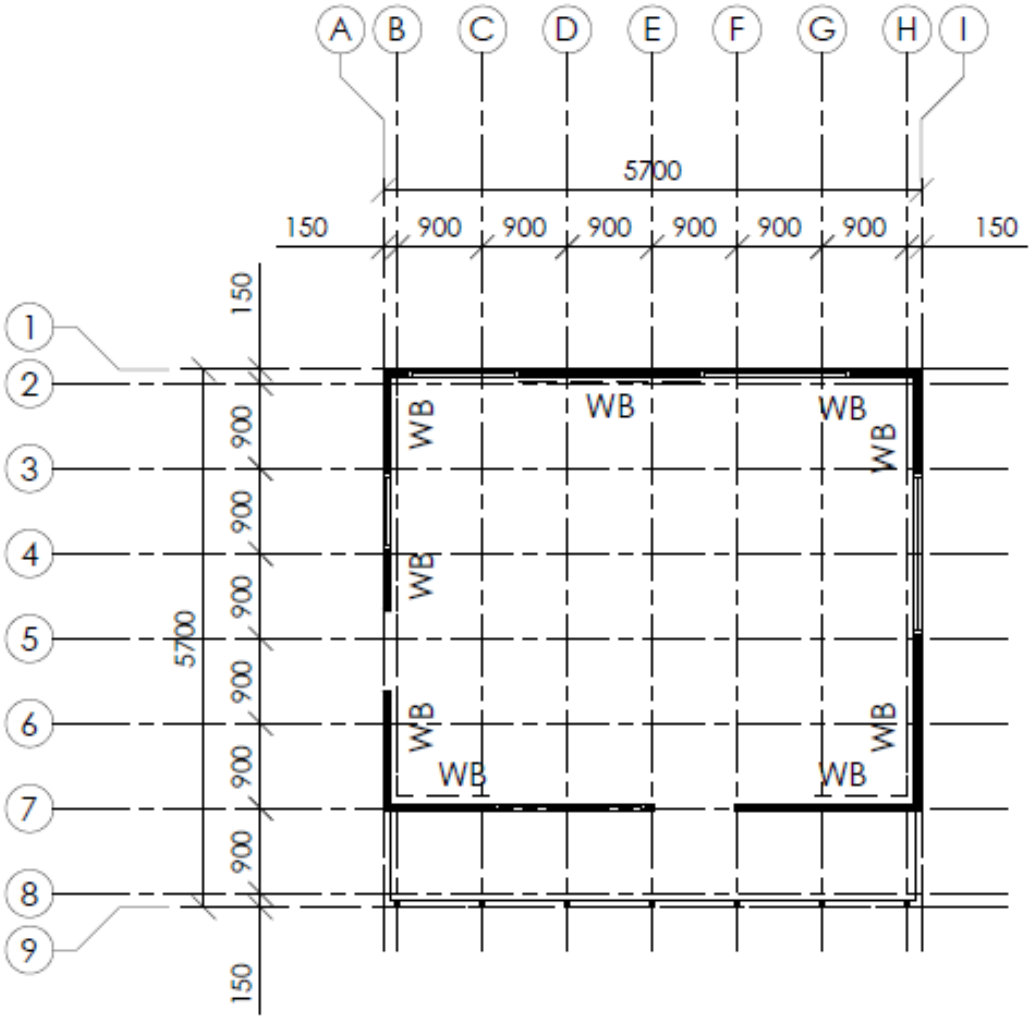
Wall Layout



WALL LAYOUT

SCALE 1:100

Wall Bracing Layout

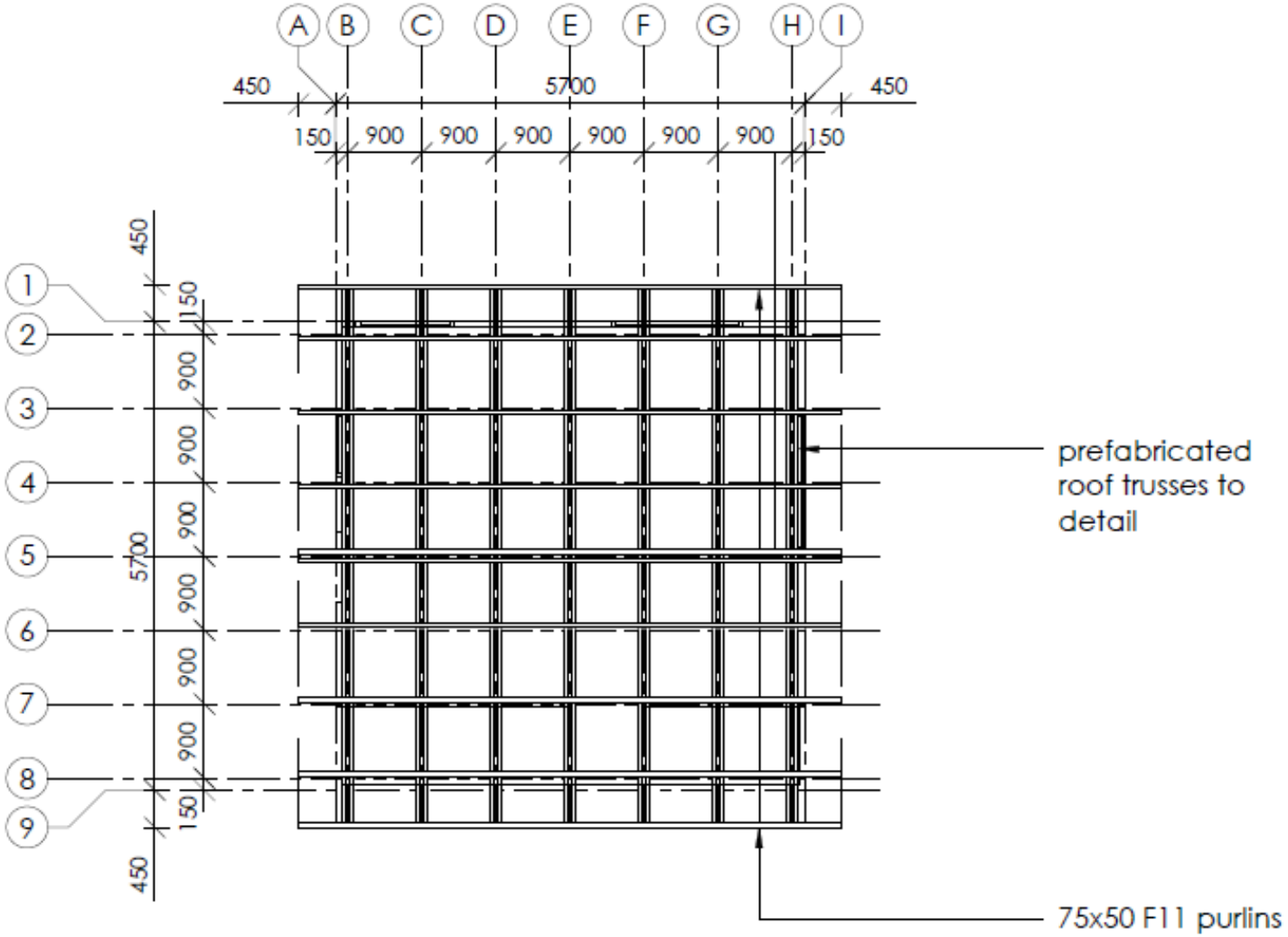


WALL BRACING LAYOUT

SCALE 1:100

WB - PLYWOOD WALL BRACING

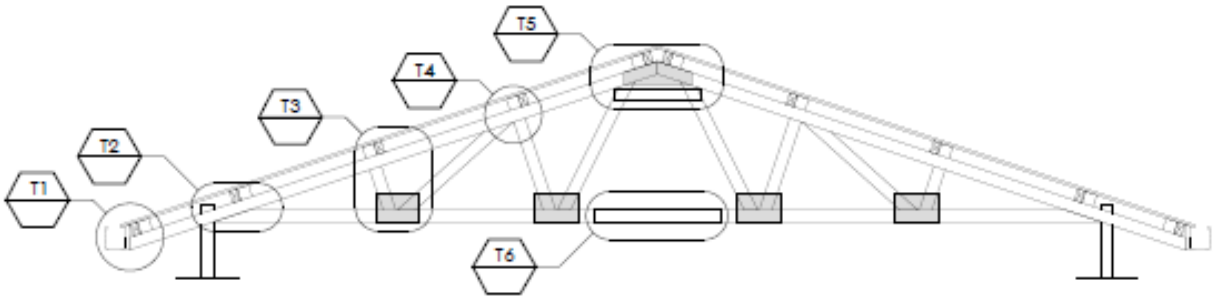
Roof Frame Layout



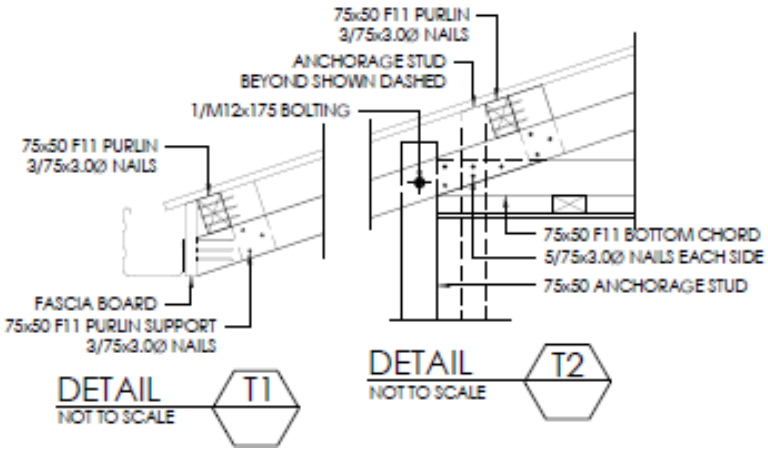
ROOF FRAME LAYOUT

SCALE 1:100

Truss Details

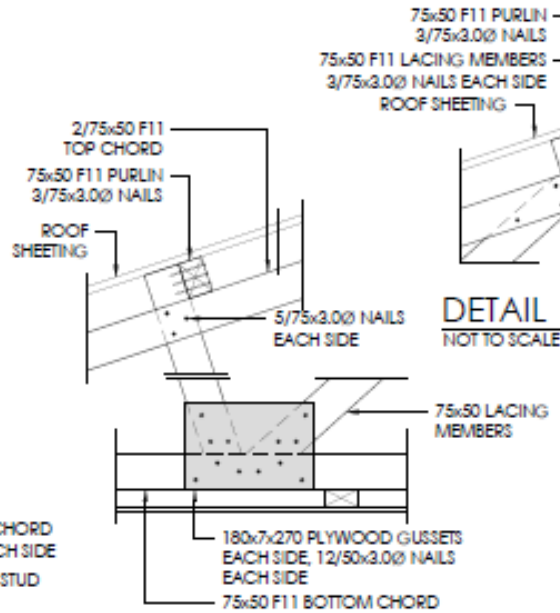


ROOF TRUSS DETAIL
NOT TO SCALE



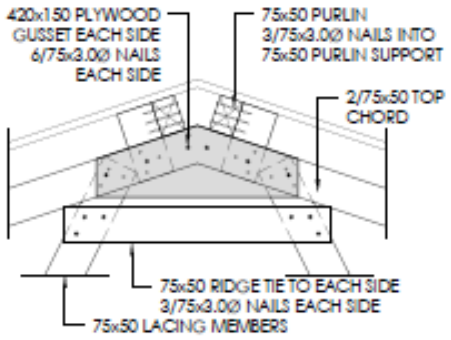
DETAIL T1
NOT TO SCALE

DETAIL T2
NOT TO SCALE

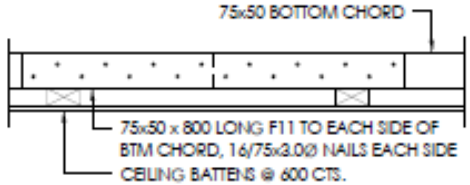


DETAIL T3
NOT TO SCALE

DETAIL T4
NOT TO SCALE

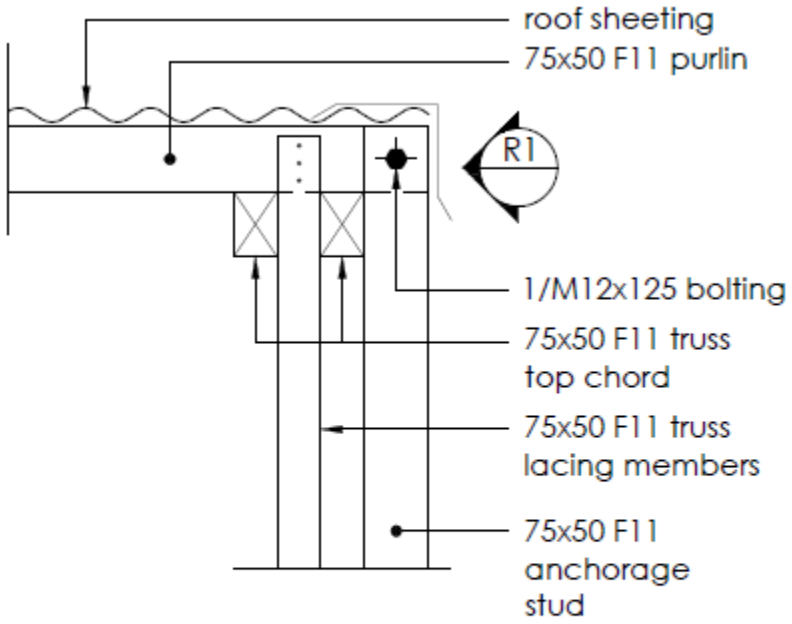


DETAIL T5
NOT TO SCALE

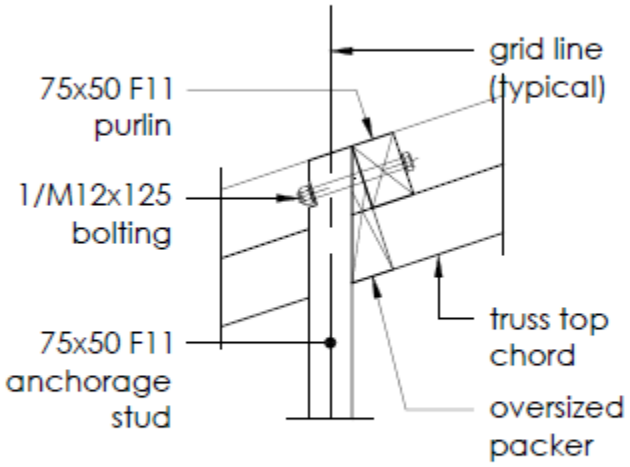


DETAIL T6
NOT TO SCALE

Purlin Connection Details

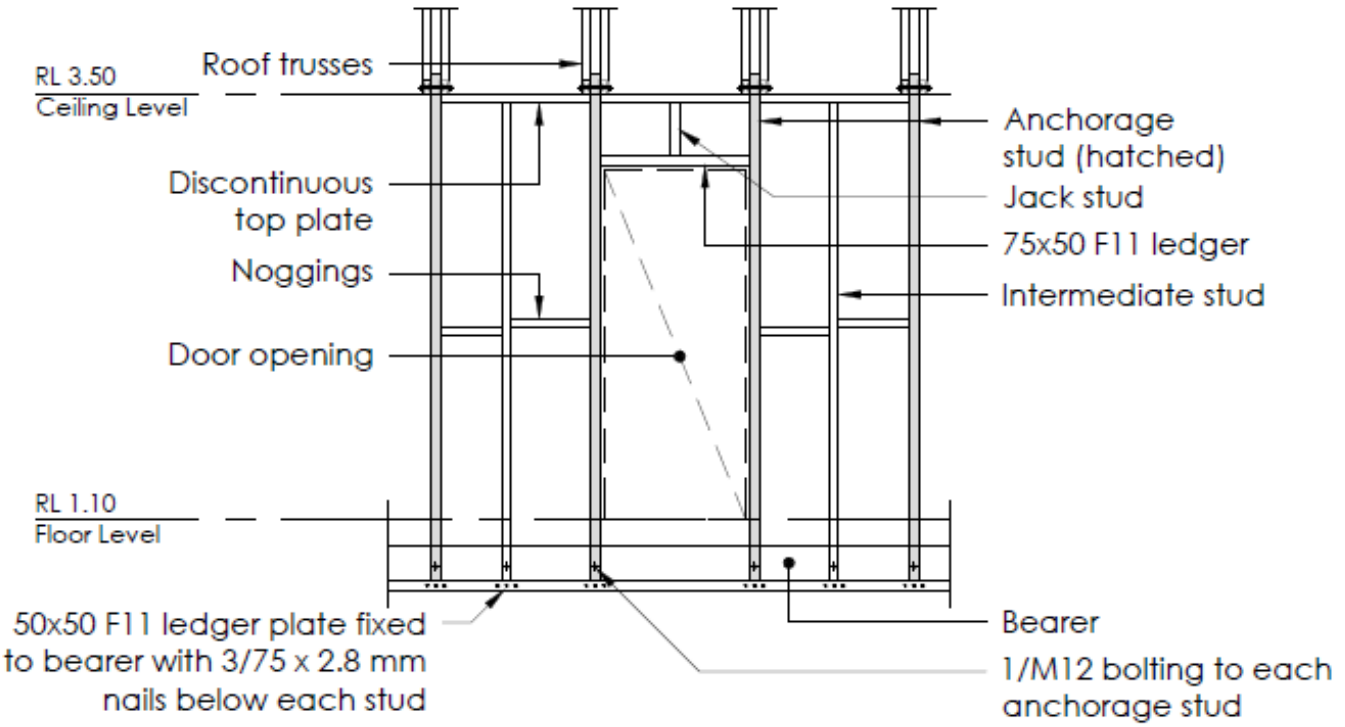


ANCHORAGE STUD TO PURLIN DETAIL
SCALE 1:10



SECTION R1
SCALE 1:10

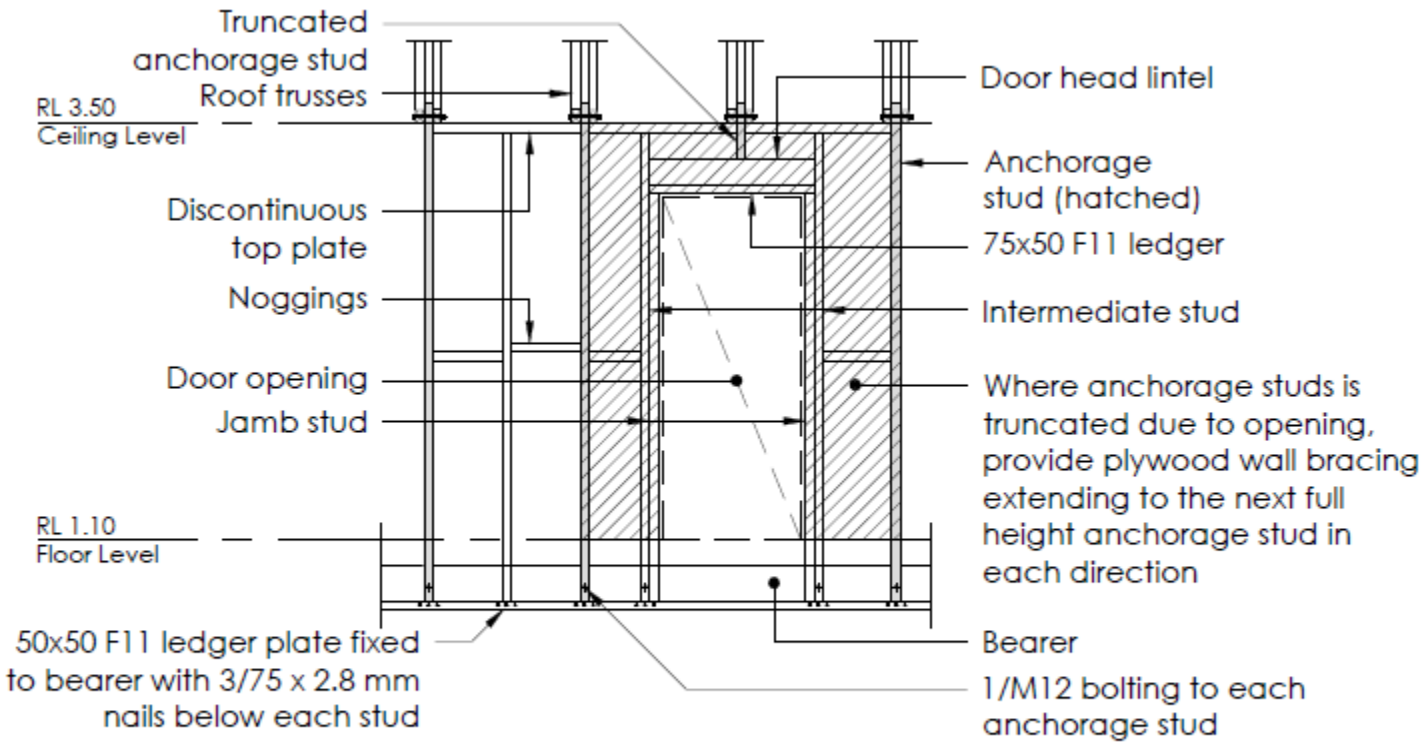
Door Opening Details



DOOR OPENING WALL FRAMING DETAIL 1

SCALE 1:50

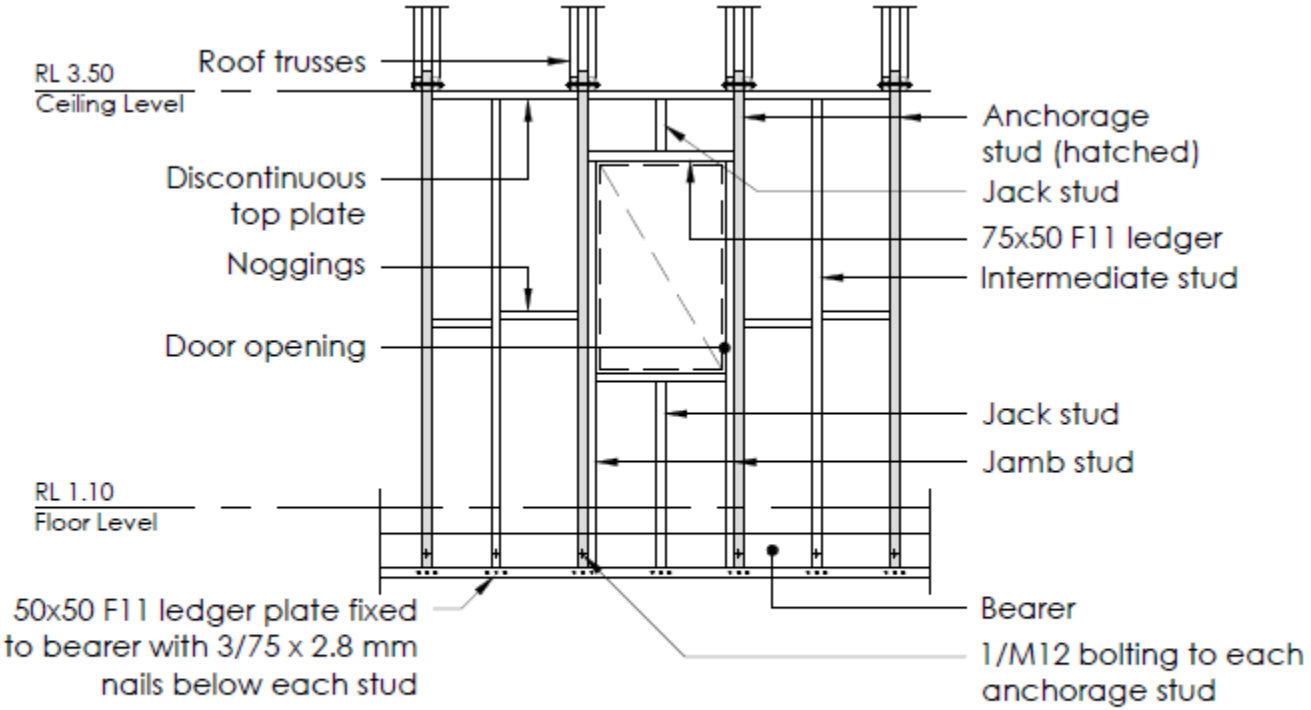
Door Opening Details



DOOR OPENING WALL FRAMING DETAIL 2

SCALE 1:50

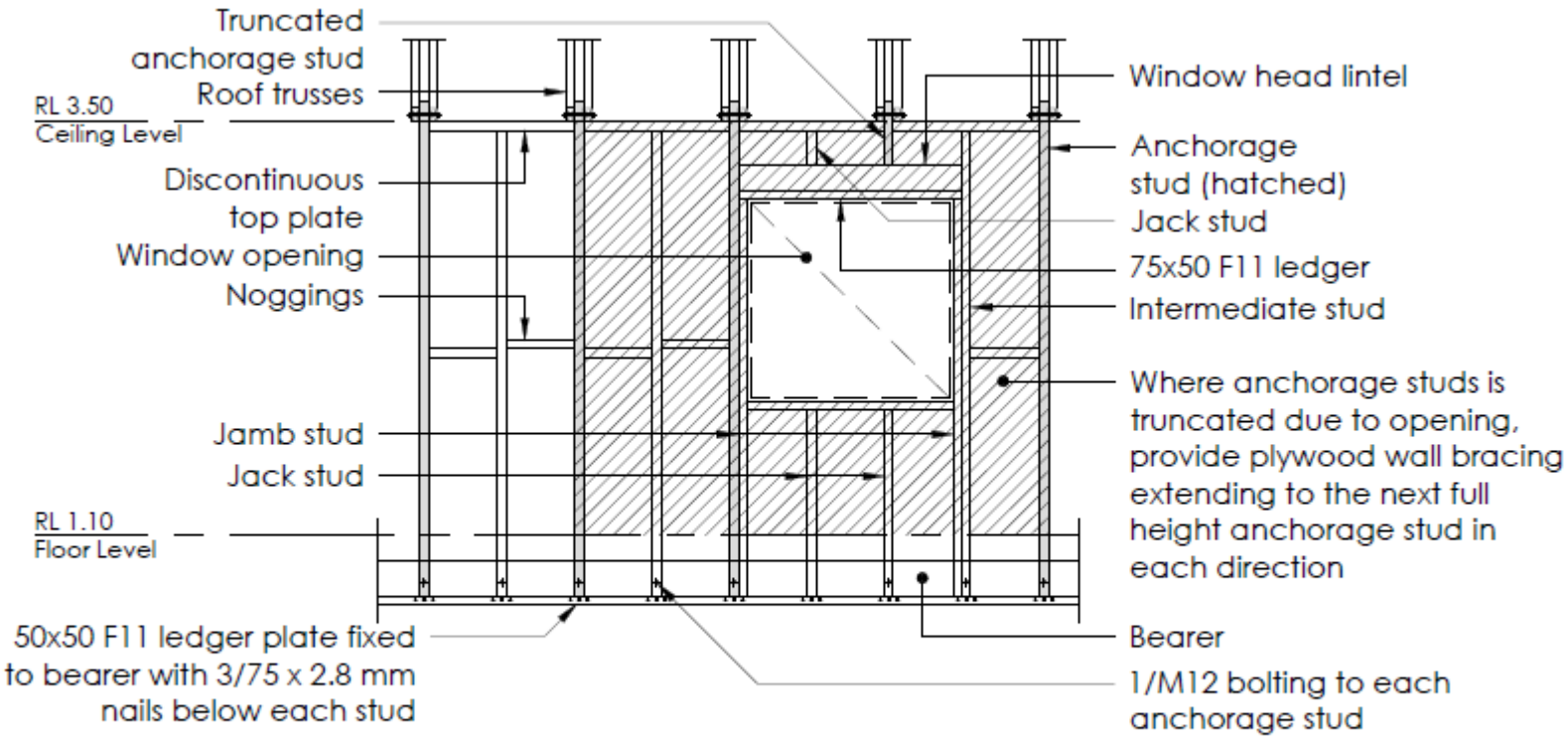
Window Opening Details



WINDOW OPENING WALL FRAMING DETAIL 1

SCALE 1:50

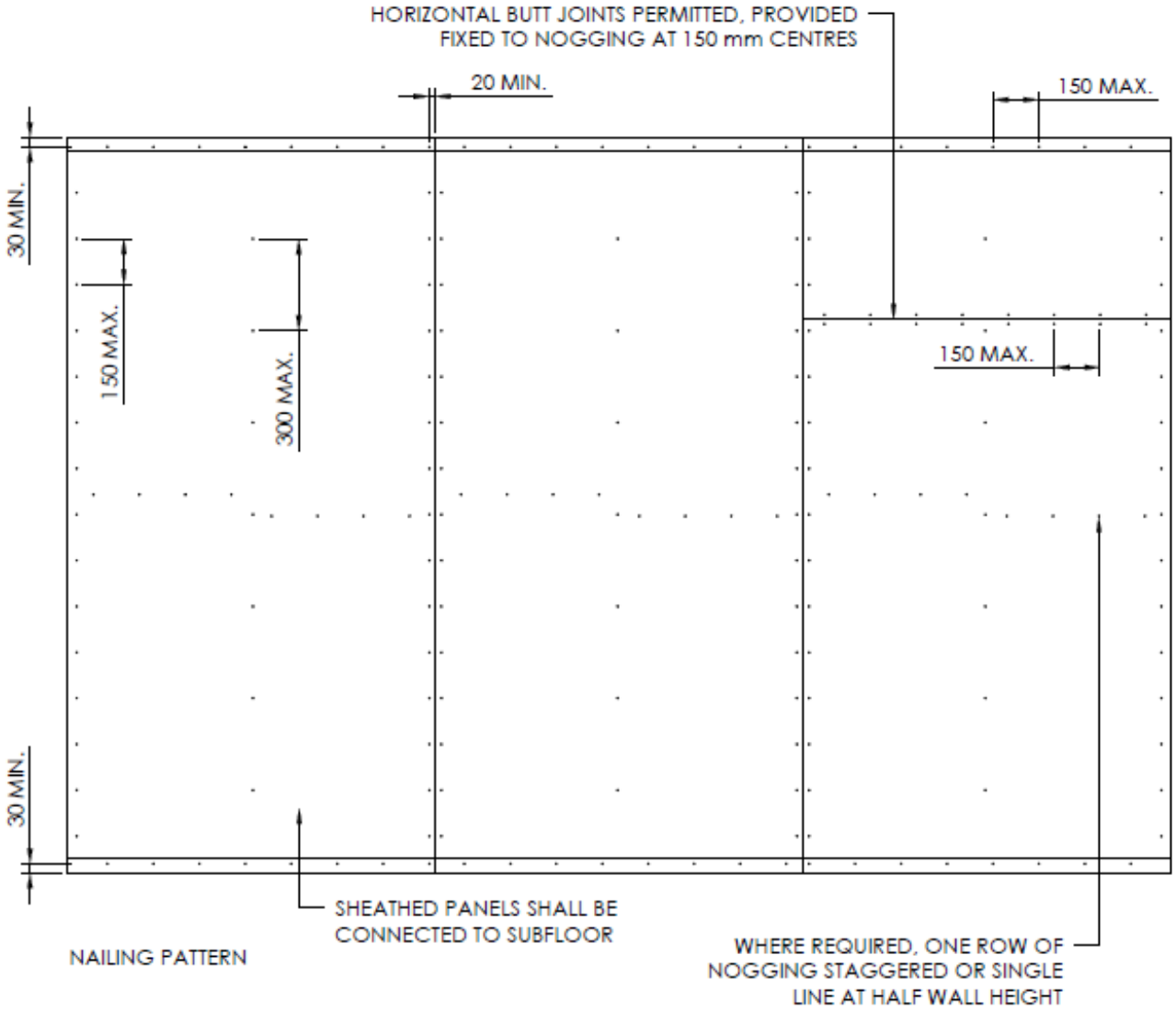
Window Details



WINDOW OPENING WALL FRAMING DETAIL 2

SCALE 1:50

Wall Bracing Details



WB - WALL BRACING DETAIL

SCALE 1:20

NOTE: PLYWOOD SHALL BE 7mm THICKNESS AND NAILED TO FRAME USING 30x2.8mm Ø GALVANISED FLAT HEAD NAILS OR EQUIVALENT.

Disclaimer & Copyright

Disclaimer

This training package covers broad engineering principles and building practices, with particular emphasis on affordable housing and associated village infrastructure in the Asia-Pacific region. These broad principles and practices must be translated into specific requirements for particular projects by professional architects, engineers or builders with the requisite qualifications and experience. Associated sample specifications and drawings are available in electronic format, with the express intention that architects, engineers and builders will edit them to suit the particular requirements of specific projects. The design, construction and costing of structures must be carried out by qualified and experienced architects, engineers and builders, who must make themselves aware of any changes to the applicable standards, building regulations and other relevant regulations. The authors, publishers and distributors of these documents, specifications and associated drawings do not accept any responsibility for incorrect, inappropriate or incomplete use of this information.

Copyright