

The SIPS Process

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SIPS: A smarter building choice.

Structural Insulated Panels (SIPS) technology is a strong, affordable and environmentally responsible solution. SIPS have been used successfully worldwide for more than 40 years. SIPS Industries Australia operates state of the art manufacturing facilities.

The panels are engineered, structural and used for internal and external walls, floors and roofs, so there's no need for traditional steel, timber frame or brick work. Once assembled, traditional finishings (such as cladding or render) can be easily applied.



SIPS' excellent insulation properties make them perfect for the hot Australian climate, as it takes three times as much energy to cool a home than to heat it. New legislation is ensuring that Australian homes are energy efficient increasing the importance of insulation. SIPS Ready Cut provides a simple, fast, cost effective solution for builders and home owners.

Globally and in Australia, SIPS panels and construction systems have undergone rigorous structural and engineering testing. They comply fully with Australian building standards and with Building Codes of Australia (BCA).

1.1 ENERGY EFFICIENCY

There are three main factors impacting on the insulation effectiveness of your home. In order for insulation to be effective all three of these must be present. These factors are;

- **Thermal Resistance.** The R-value is a measure of insulation's heat loss retardation under specified test conditions. The higher the R-Value, the greater the products insulation against heat loss or gain. SIPS panels range from R2.7 to R6 depending on thickness of EPS core. As a comparison a double brick, brick veneer or weatherboard house are R0.4-0.5 before insulation, with insulation increasing the R-Value to 1.5-3.4. SIPs insulation is inert which means it won't break down and sag over time.
- **Thermal Bridging.** The continuity of insulation ensures that thermal bridging doesn't occur.
- **Air-tightness.** Being air-tight, a SIPS building will not leak hot or cool air therefore saving you the cost of excessive heating or cooling bills.



1.2 SPEED

SIPS Industries provides a panel system that can be erected substantially faster than traditional methods of construction. A single storey home can be at lock-up within one week of delivering the SIPS panels. A double storey home can be at lock-up within two weeks of delivery.

1.3 SAVINGS

The SIPS building system can save you on build costs. Savings are made in the following ways;

- Less labour is required to erect the house.
- With a fast build time you don't require your build team on site for as long as a traditional build.
- The hidden costs in traditional builds such as equipment hire, additional trades, and rubbish removal are eliminated. This can amount to 20% of your build cost.
- Ongoing energy costs are reduced as your home is air-tight and energy efficient.



2 WHAT IS THE TYPICAL PROCESS FOR BUILDING A HOME USING SIPS INDUSTRIES?



1. Once the decision has been made to build, your first step should be to engage an Architect, Designer or Draftsperson. They will be able to provide assistance and advice in regards to designing your perfect home that meets all of your requirements. Discuss your desire to build with SIPS with your chosen building professional. We can provide them with information and drawings to assist them in meeting your needs. This step will save you time and professional fees.
SIPS panels can be worked into most designs as it is quite a flexible design product. If you are unsure of which Building Professional to use, we are able to provide you with contact details of professionals who have designed using SIPS before, and would be happy to assist.
2. Your next step would be to decide on which builder you will be using. Again, we have contact details of building professionals that we can offer if you are not sure who to use.
3. Your completed plans should now be submitted to your local council for planning approval. The building material of your project doesn't need to be specified for planning to be approved at this step in the process.
4. Ideally you would have your finance approval in place now.
5. Once the above steps have been completed, you are now ready to engage SIPS Industries for costing of your project. As a manufacturer, we do require specific information to be supplied so that we can provide you with the best indicative price possible. You would be required to submit the following information to SIPS Industries:
 - To 1:100 scale drawings and elevations (soft copies preferred).
 - Completed Request for Quotation form available from our website or by contacting the office.

A file will be created for your project, and a quote will be provided to you within 10-14 days of receiving the information.

The quote will provide pricing information on the supply and optional installation of a SIPS kit. It can also include extras such as engineering, steel, transport, crane hire - depending on your needs.

A member of our team will contact you within 5 working days of sending you the quote and discuss with you further the details involved with the pricing.

If you decide to go ahead with the project based on the price SIPS Industries has provided, you will then be required to sign and return the quoting documents to SIPS.

6. SIPS Industries will then work with your engineer to produce detailed engineering drawings and to ensure that the building meets the required specifications and regulations.
7. Once the engineering has been finalised this information is incorporated into our construction 3D model drawing. This information from the engineer is used for the build licence application; our shop drawings are not required for the application.
8. The manufacture drawings are produced from the 3D model drawing and sent to the client/architect to be signed off as correct.
9. After signing off, the drawings are scheduled in our factory to produce the SIPs kit, and a build date is scheduled with our construction teams.
10. If steel, joists or other components are included in the quote; these are ordered at this point.
11. On the scheduled build start date the SIPs kit panels and related material are delivered to site.
12. The kit will be assembled on the site as per the manufacture drawings and the building wrapped with the building paper supplied to protect the building until the external finish is applied.
13. Your builder completes external cladding, fits windows and doors, roof tiles etc. according to your architect's design, to make the building weatherproof. Internal wiring, plumbing and finishing are carried out at the same time.
14. Now you can move in and enjoy your new home.



3 THE FACTORY PROCESS

There are three components to a SIP:-

1. Orientated Strand Board (OSB) for the timber skins. (Australian Standards 1604.2 H2)
2. Expanded Polystyrene (EPS) with a Fire Retardant Additive (Australian Standard AS 1366.3 - 1992).
3. D4 PVAc structural adhesive with a cross link.

Step 1: Lay the first sheet of OSB board onto the layup table ensuring the board is square and firmly against the guide posts. All boards visually inspected prior to commencing for quality purposes.



Step 2: Run pre formed fire treated polystyrene core through glue spreader to mechanically apply equal amount of D4 structural glue to each face. All EPS boards visually inspected prior to commencing for quality purposes.



Step 3: The second sheet of OSB board is placed onto the top of the fire treated polystyrene core ensuring the board is square and firmly against the guide posts forming the sandwich. All boards visually inspected prior to commencing.



Step 4: This process is repeated until the required number of panels have been made up for the press. All panels are visually inspected during the build up procedure to ensure consistency.



Step 5: The completed block of panels are rolled into the press for a specified time and press pressure (to meet the temperature conditions in the factory at time of production).

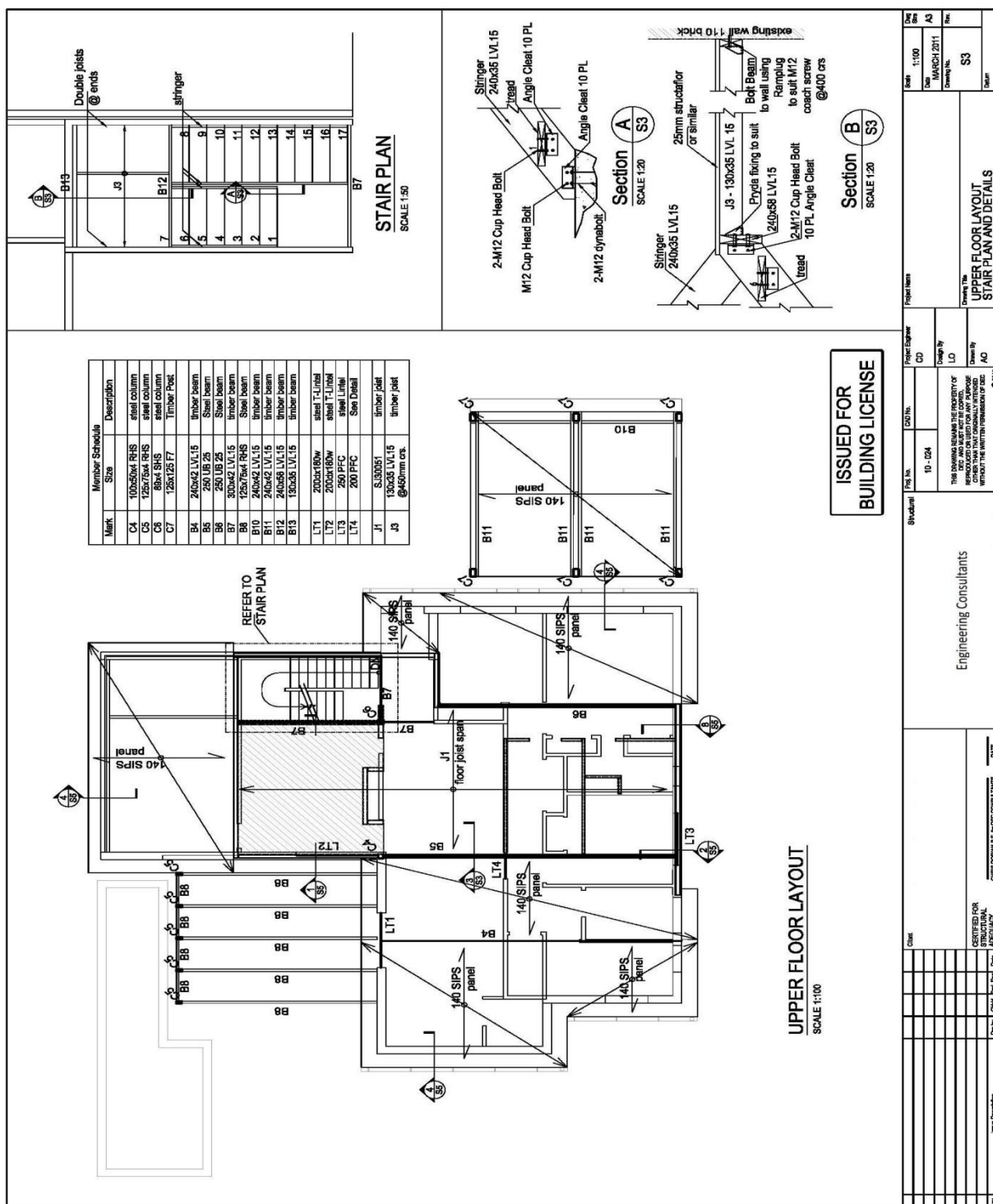


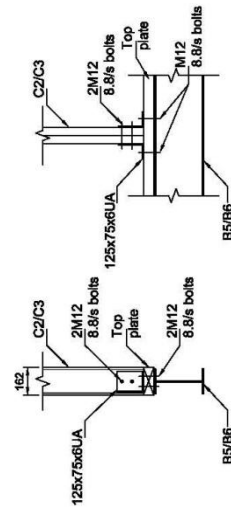
Step 6: After the panels have been pressed for a specified time and pressure allowing the adhesion process to take place, they are rolled out of the press and moved into a storage area only to be used after 24 hrs to ensure that there is complete adhesion.



4 ENGINEERING

The client's drawings are engineered by a structural engineer to suit the required design. An example of a structural engineering follows.





Double Stud Hold Down Detail
SCALE 1:20

ROOF LAYOUT

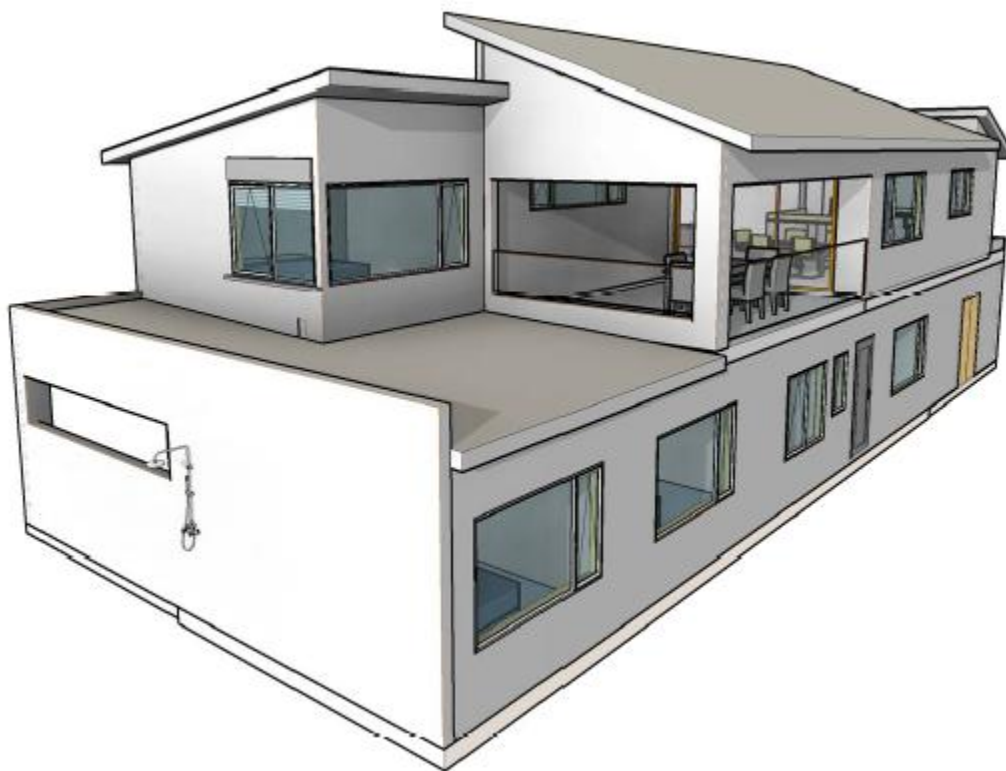
SCALE 1:100

**ISSUED FOR
BUILDING LICENSE**

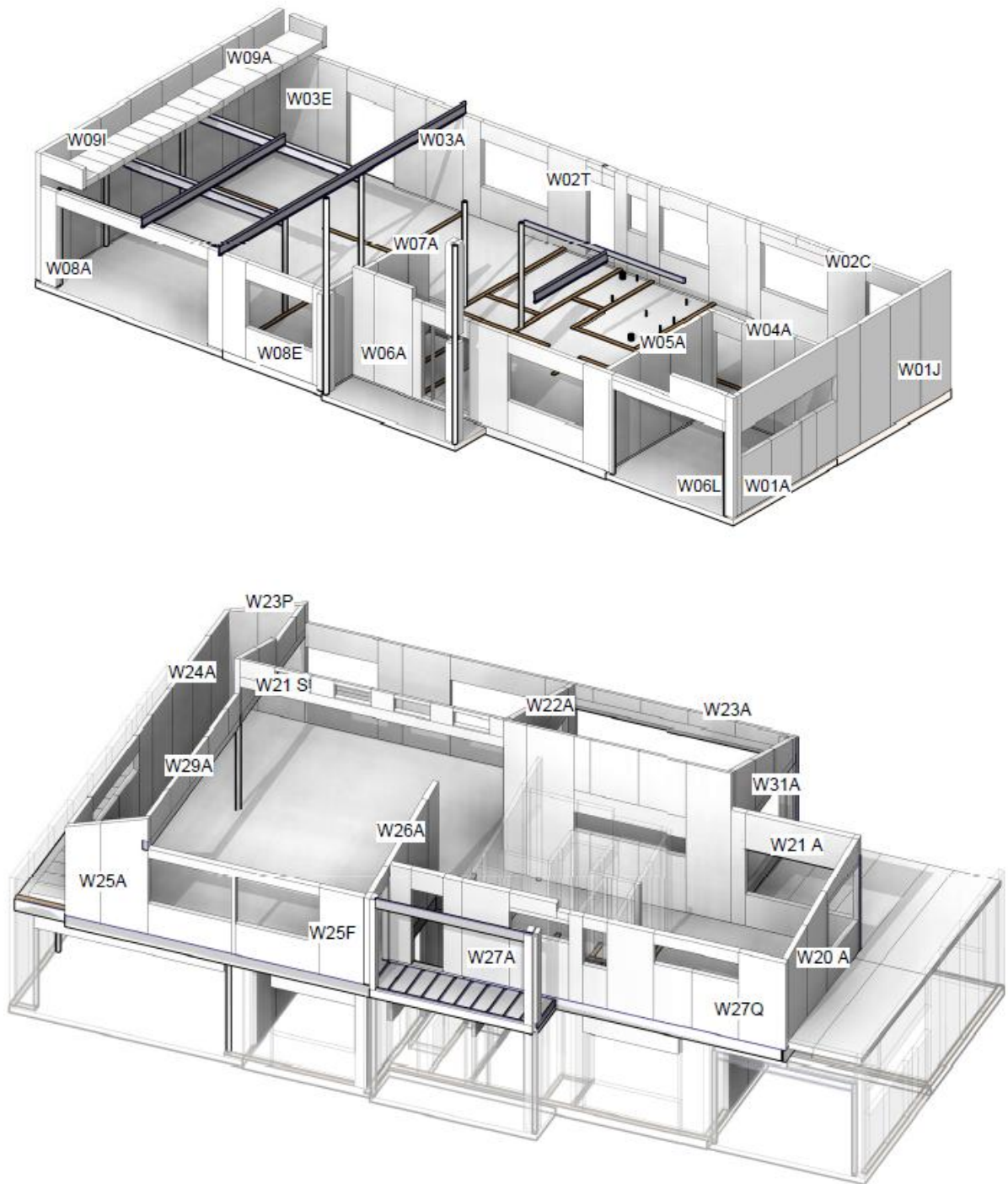
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5 THE DRAWING PROCESS

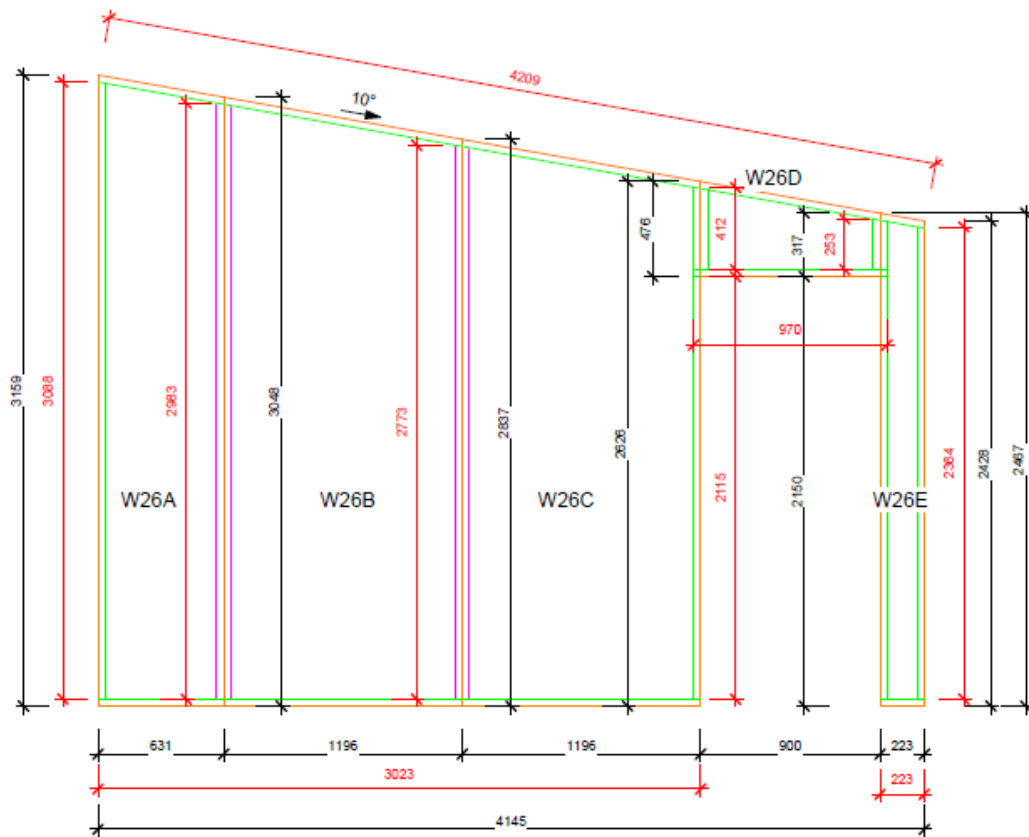
A 3D REVIT model is created and the engineering by a structural engineer is incorporated into the design, e.g. steel or timber beams. The following shows a 3D model of a Sips project.



Drawing process cont: The following shows the ground floor and roof of the same SIPs Industries project, incorporating the engineering by a structural engineer into the design, steel beams or timber beams.



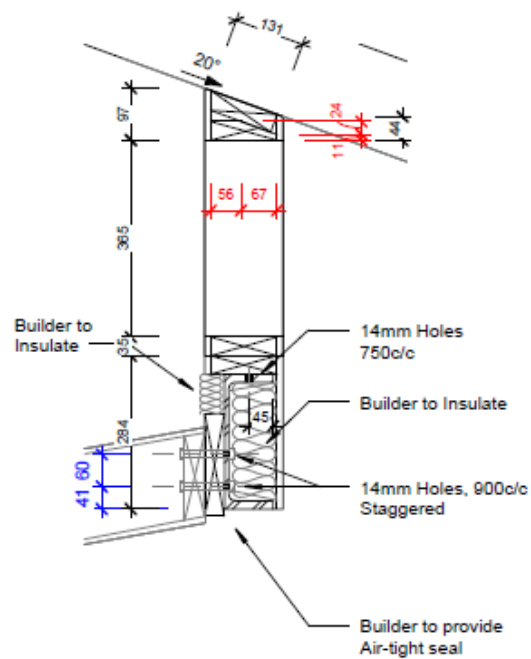
The factory drawing for wall 26 for the above project incorporating all engineering and design.



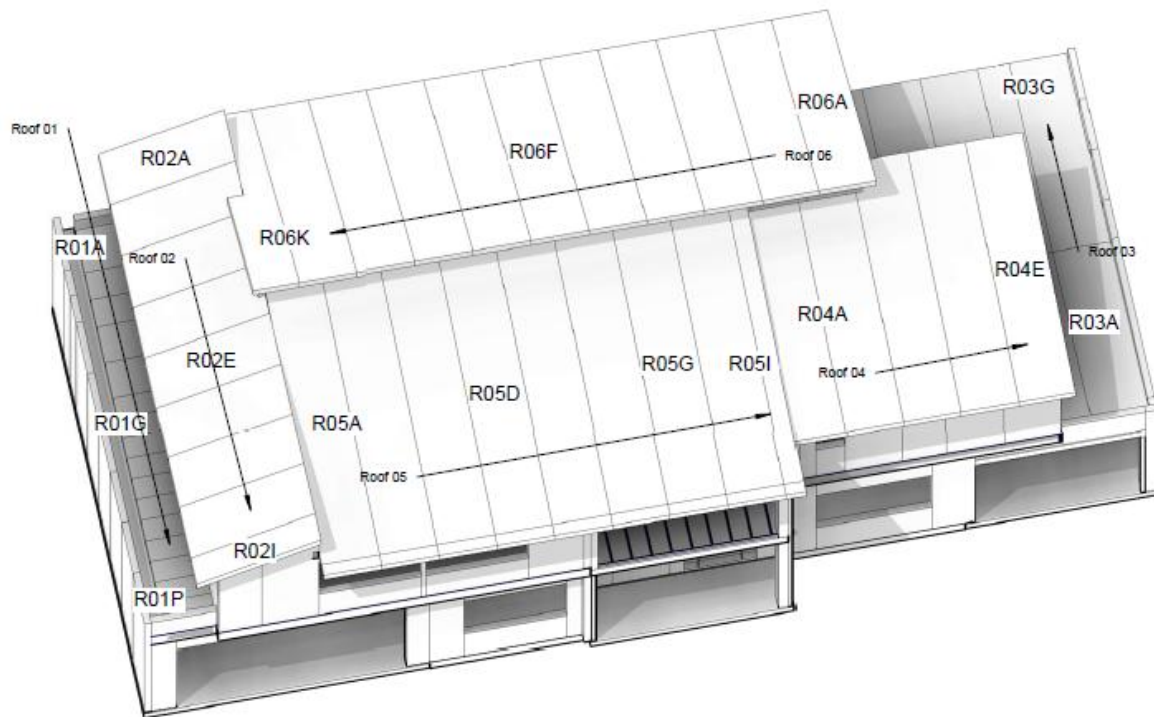
1
4.08

Wall 26 - 145
1:25

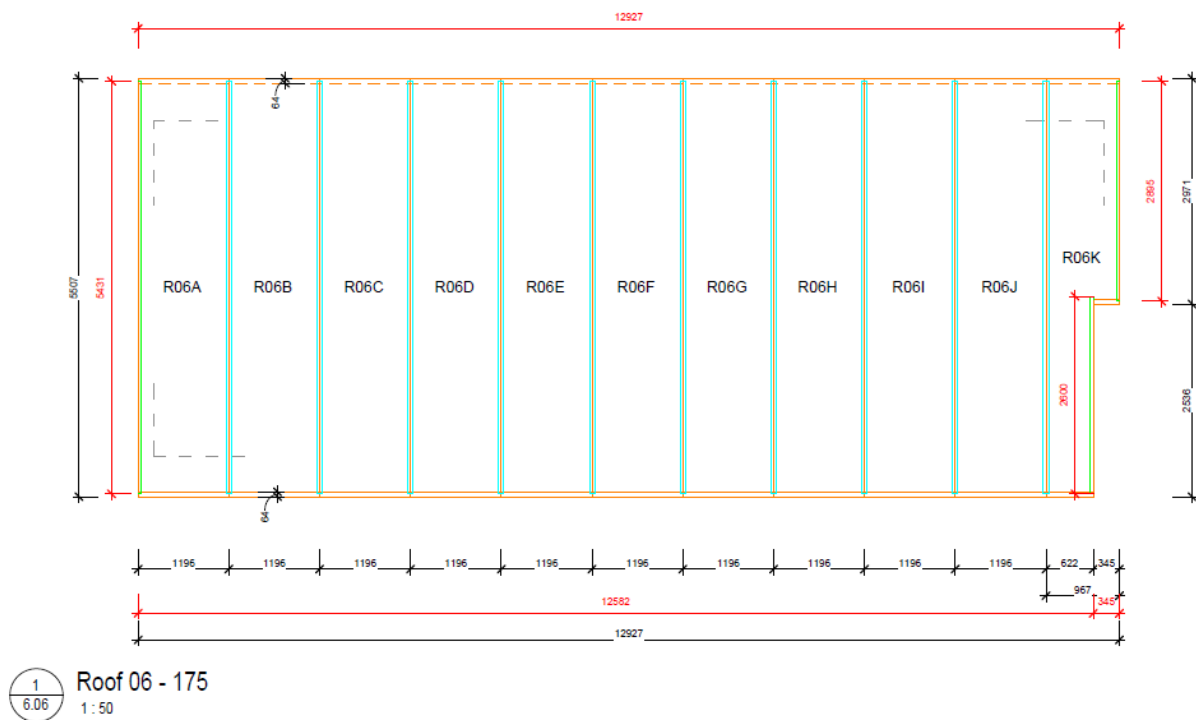
DETAILING WHERE REQUIRED



ROOF DRAWINGS



ROOF PANEL DRAWINGS



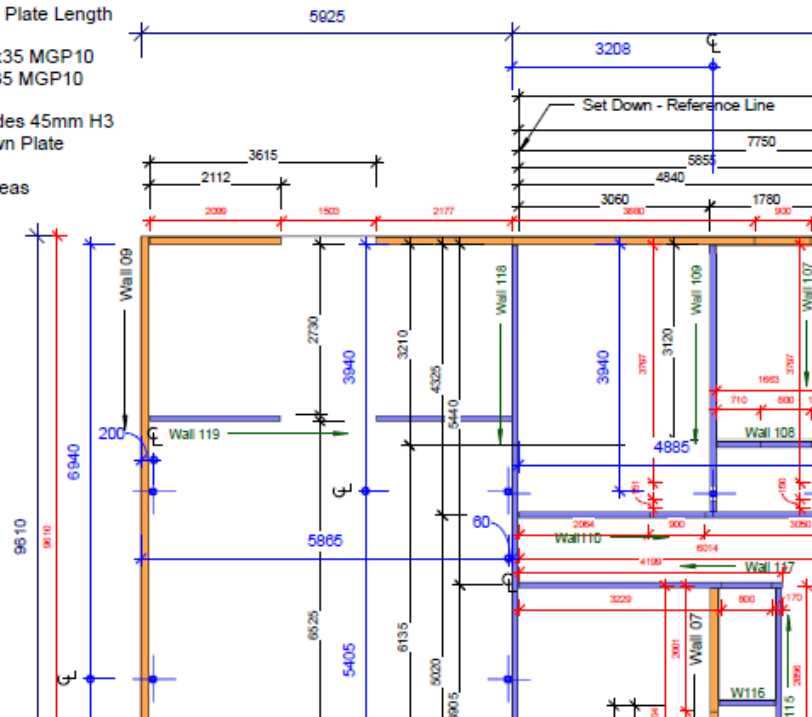
Set-Out Drawings

Navy Dimensions: Overall Slab
Black Dimensions: Plate to Plate
Red Dimensions: Sole Plate Length

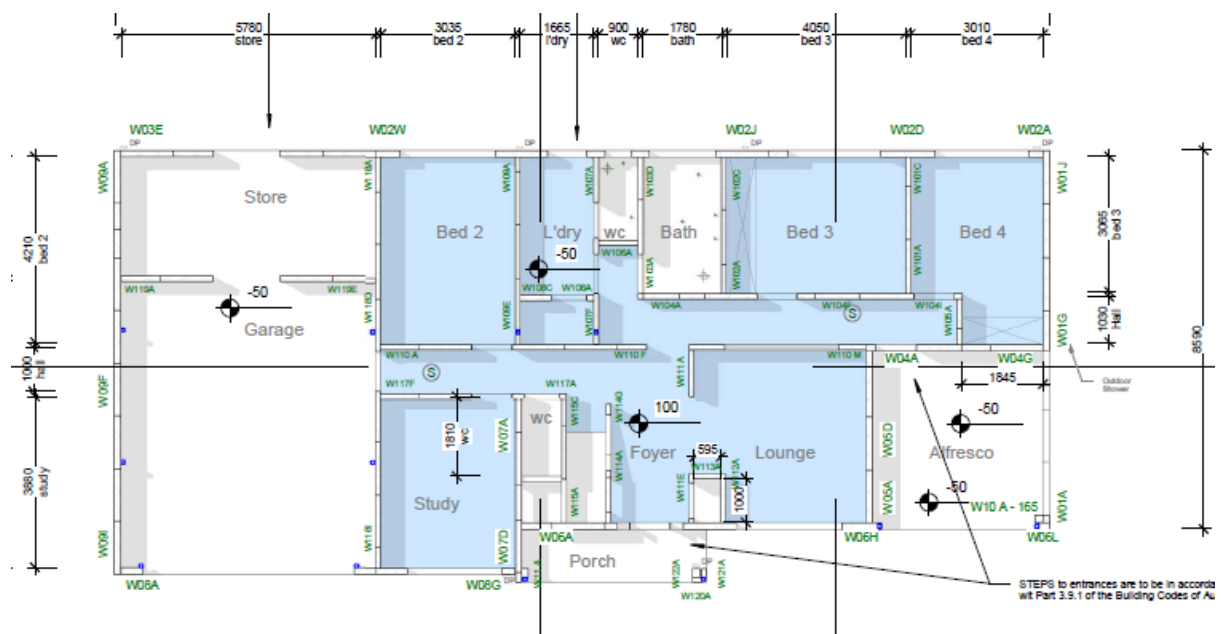
Orange Plates: 120x35 MGP10
Blue Plates: 90x35 MGP10

NOTE: Garage area includes 45mm H3
Additional Set-Down Plate

Similarly for wet areas



Plan layouts for ground floor



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