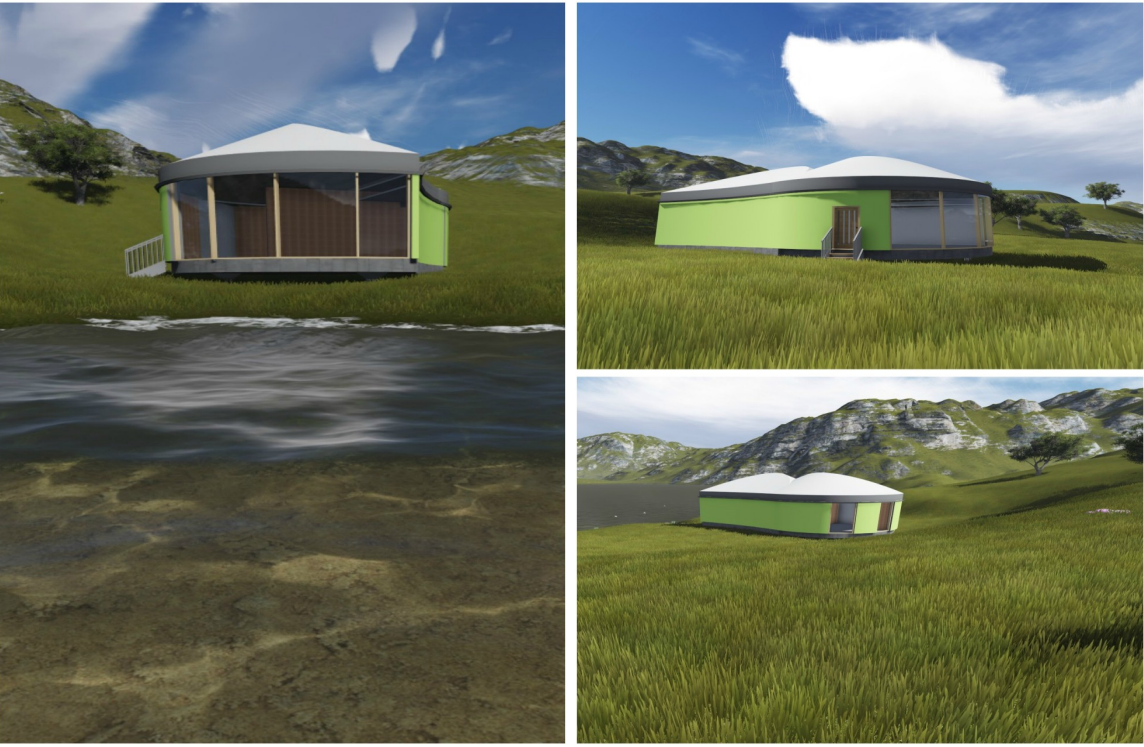


Brief

I was tasked with designing a life pod for a client which was limited to 70 meters squared. The client enjoys bird watching as his hobby, his main purpose for this building was to have a private retreat from the noisy city so he can concentrate on his music. The life pod was situated in dove stone next to the reservoir. The main features of the building are , the pier foundations , curtain walling and is made up of curved walls which is finished of with a rendered finish and a white tiled roof.



Scheme of design

The scheme of my design was to create a sustainable timber dwelling that has very little effect on the surrounding environment, what I mean by this is because of the location my aim was to have building that has very little effect to the surrounding environment before, during and after construction, This is known as passive construction The details developed for my designs was derived from more than one building.

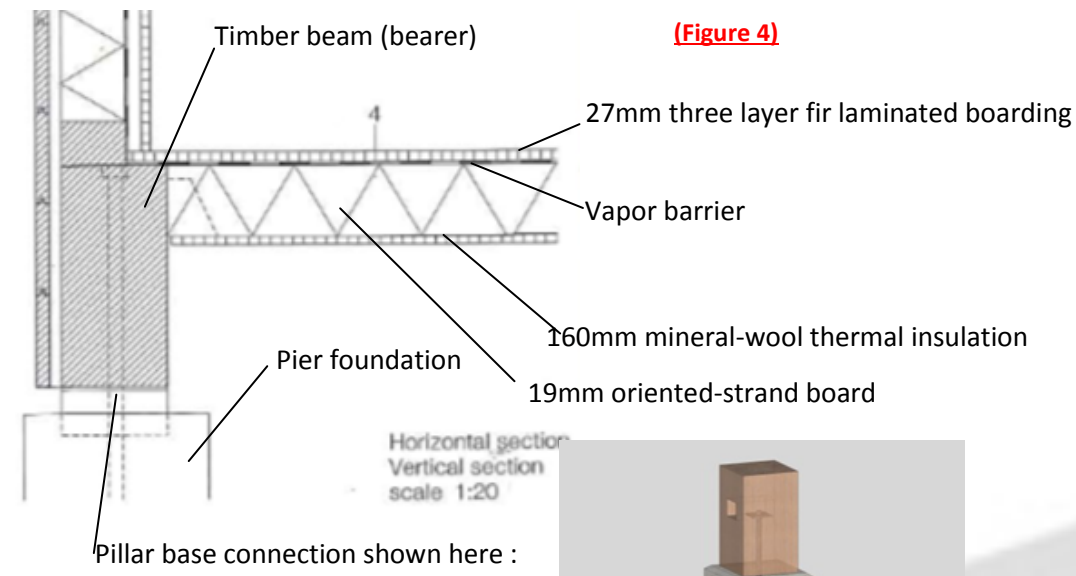
I looked at many buildings that match the scheme I was going for and two stood out the most, the first one is the modular 3 building designed by studio 804. the building is located in Kansas city and the main scheme of the architects was to create a highly sustainable design , with things such as the recycled cellulose insulation that make up the pre fabricated walls floor and roof, it is also built on pier foundations to lift the building of the uneven surface and limit on site work. (Figure 2)



Foundations/ground floor detailing

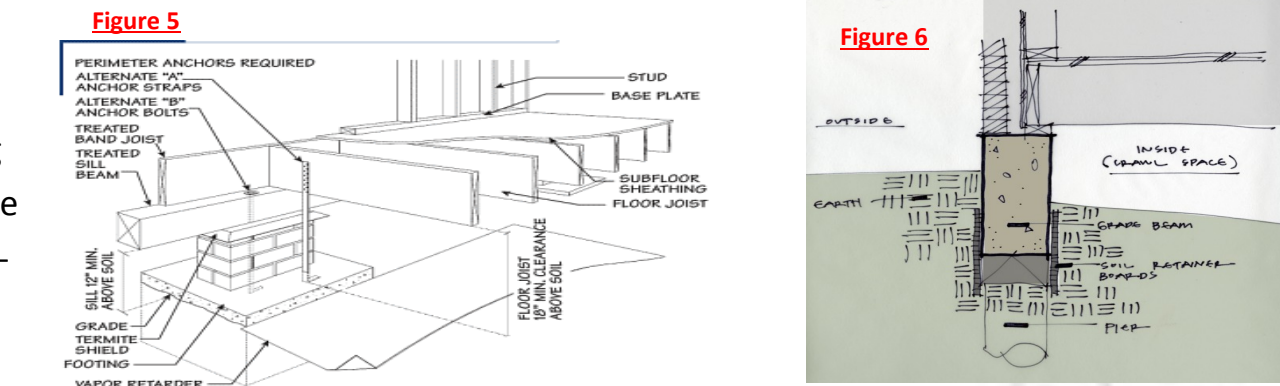
Research

Naturally I looked at other buildings that use this type of foundation system and the main ones that stood out to me is the weekend house in Valley in Maggia, Switzerland which uses a similar system and is in a similar location to the life pod building. Shown below



Alternative configurations

I also looked at other alternatives on how the foundation and floors would be assembled, figure5 Shows a much more detailed image of how configuration of the foundation and floor, however the pier foundation on figure 5 Does not match the one required for the life pod and will required to be change when sketching out proposals. I have also looked at the way the pier foundation is installed into the ground shown in figure 6 which is sketched by an architect which explains the process.

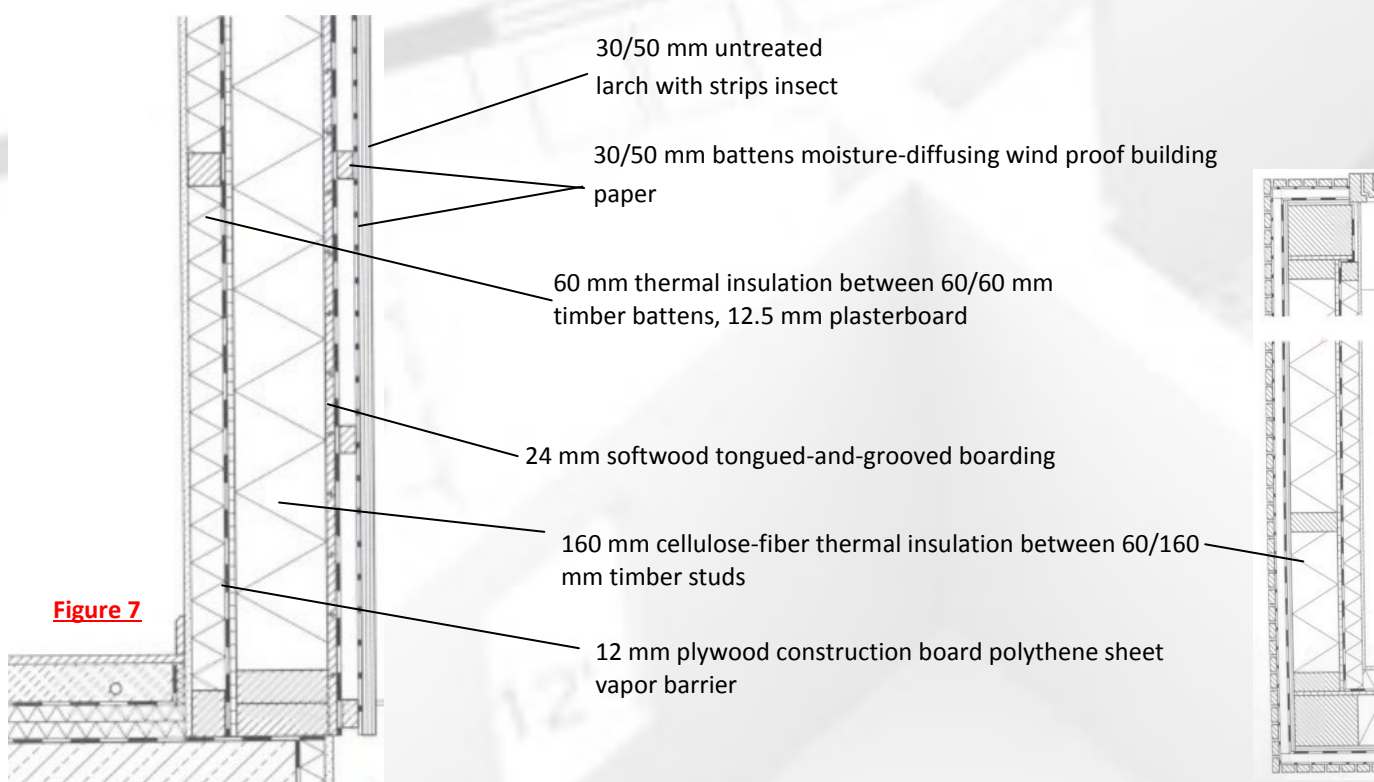


Walls and window detailing

Research

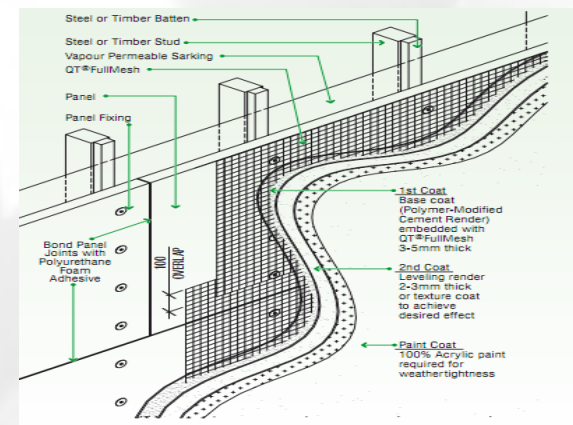
For the walls and window of the life pod it was important that I kept with the scheme of my design which is a quickly erected and a sustainable structure, while also considering the needs of the client, the clients main job is he is a musician and this means that the internal finish and also the walls insulation must be selected with consideration in relation to sound insulation.

The best suited building I found when researching different types of walls was the called the house near bad tolz located in Germany which was designed by Fink and Jocher, because as mentioned earlier when explained in the scheme of my design.



Exterior wall finish

The exterior finish of the life pod will be a fine render finish this means that the wall details shown earlier will have to be adapted when it comes to the proposal stage. The image below figure 8 shows an idea of how the finish will be applied.

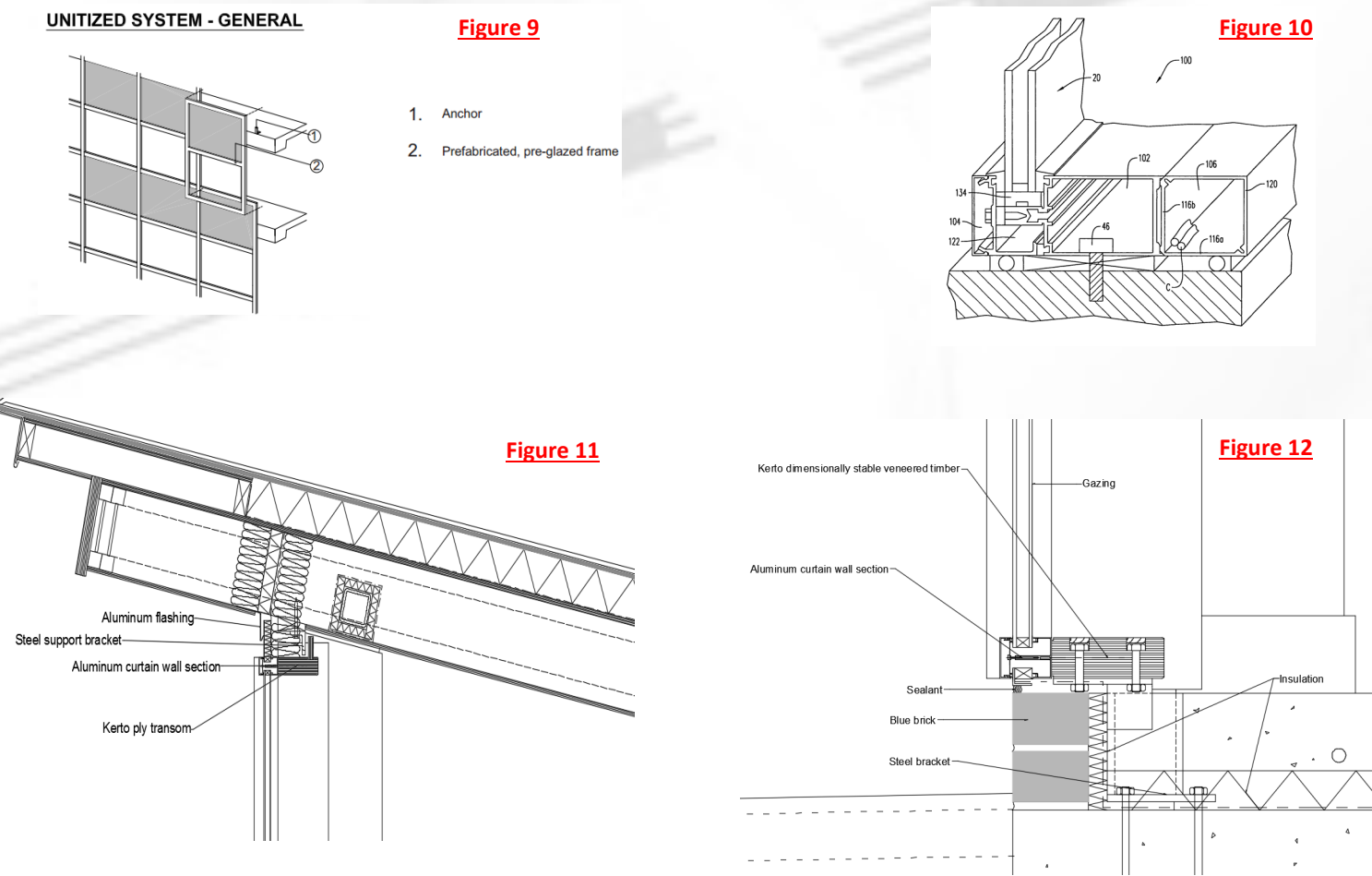


Curtain walling

For the curtain walling in the life pod I looked at different types of methods of installation, to consider which would best suit the scheme of my design. After some research I felt the best type of system would be a unitized system of curtain walling shown below. The reason being is because it is a quicker method of installation because it comes prefabricated, as oppose to the stick system which requires skilled workers and is assembled form scratch.

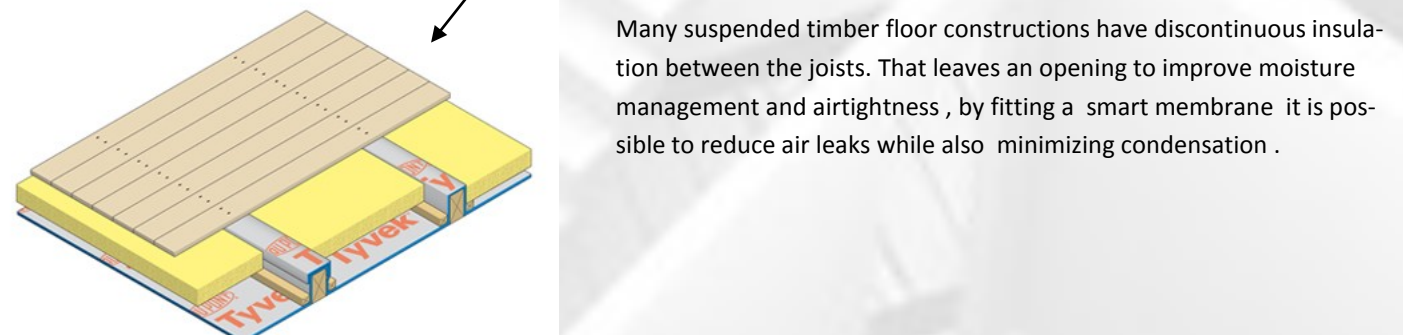
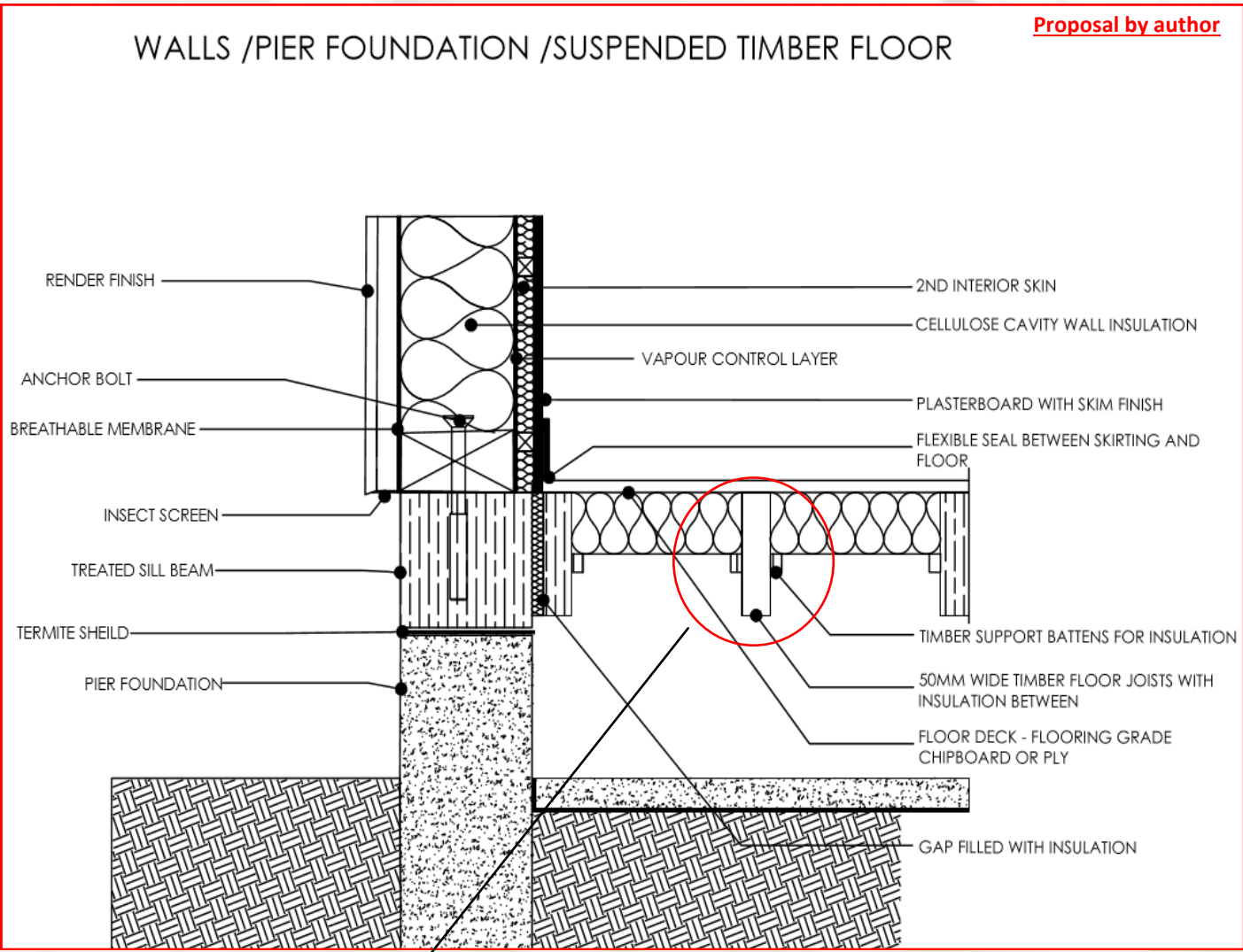
The connections to the wall and roof is an important factor because it can effect the air tightness of the building envelope as wall as thermal bridging. I looked at different methods of this and found a basis to go of in the form of the Avenham park pavilion in Preston (figure 11/12) which is predominantly composed of curtain walling and the details below shows how this assembly method can be adopted for the life pod designs.

I have also looked at isometric views of manufactures to gain a better understanding of how the components are assembled. (Figure 10)



Analysis and performance

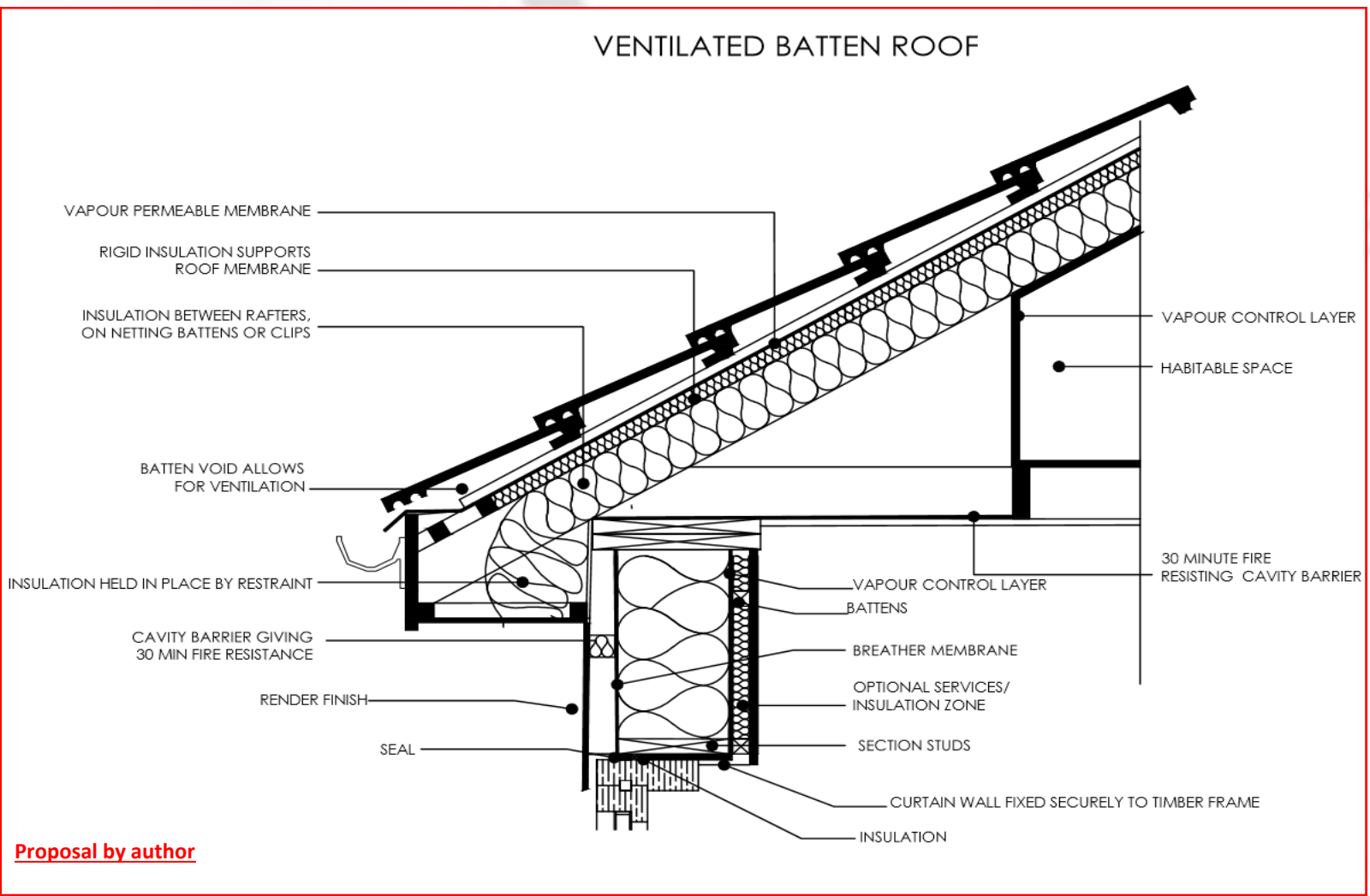
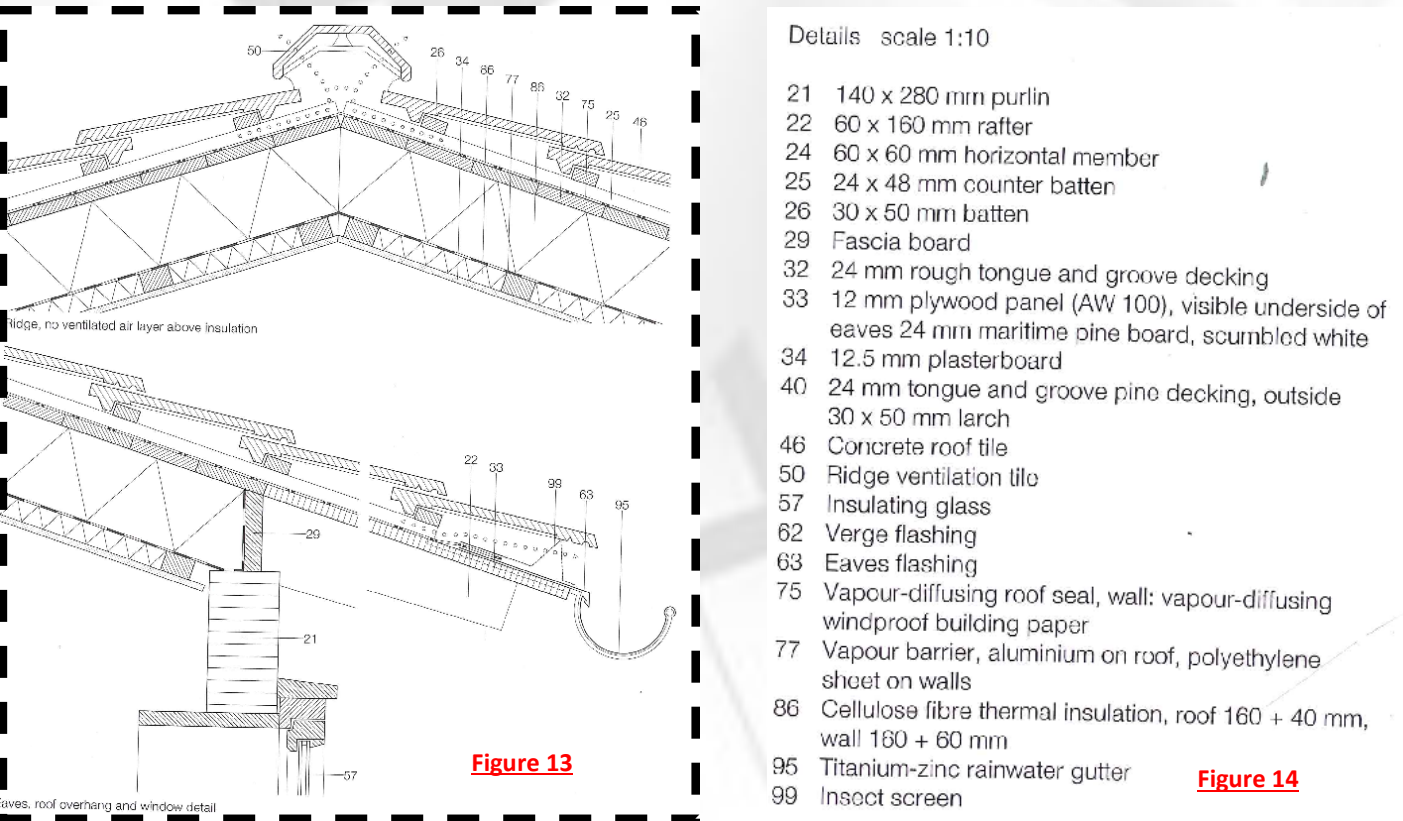
The walls in this building (figure 7) is a two-skin form of construction which is braced by the internal plywood lining. The inner leaf, of the wall contains the mechanical services of the building and also bears the loads from the floor, which stops short of the vapor barrier. This makes it easier for the house to be assembled while maintaining an airtight construction. The wall is insulated with a total thickness of 22 cm cellulose fiber. Noise is pollution is also kept to a minimum because the inner leaf.



Roof details

The roof of my design is a complicated pitched/curved roof the structural frame of the roof will be illustrated shown at the end along with the rest of the building skeleton. Although the roof is slightly complicated it is till however a pitched roof , which means that there are many ways to construct the roof eaves details.

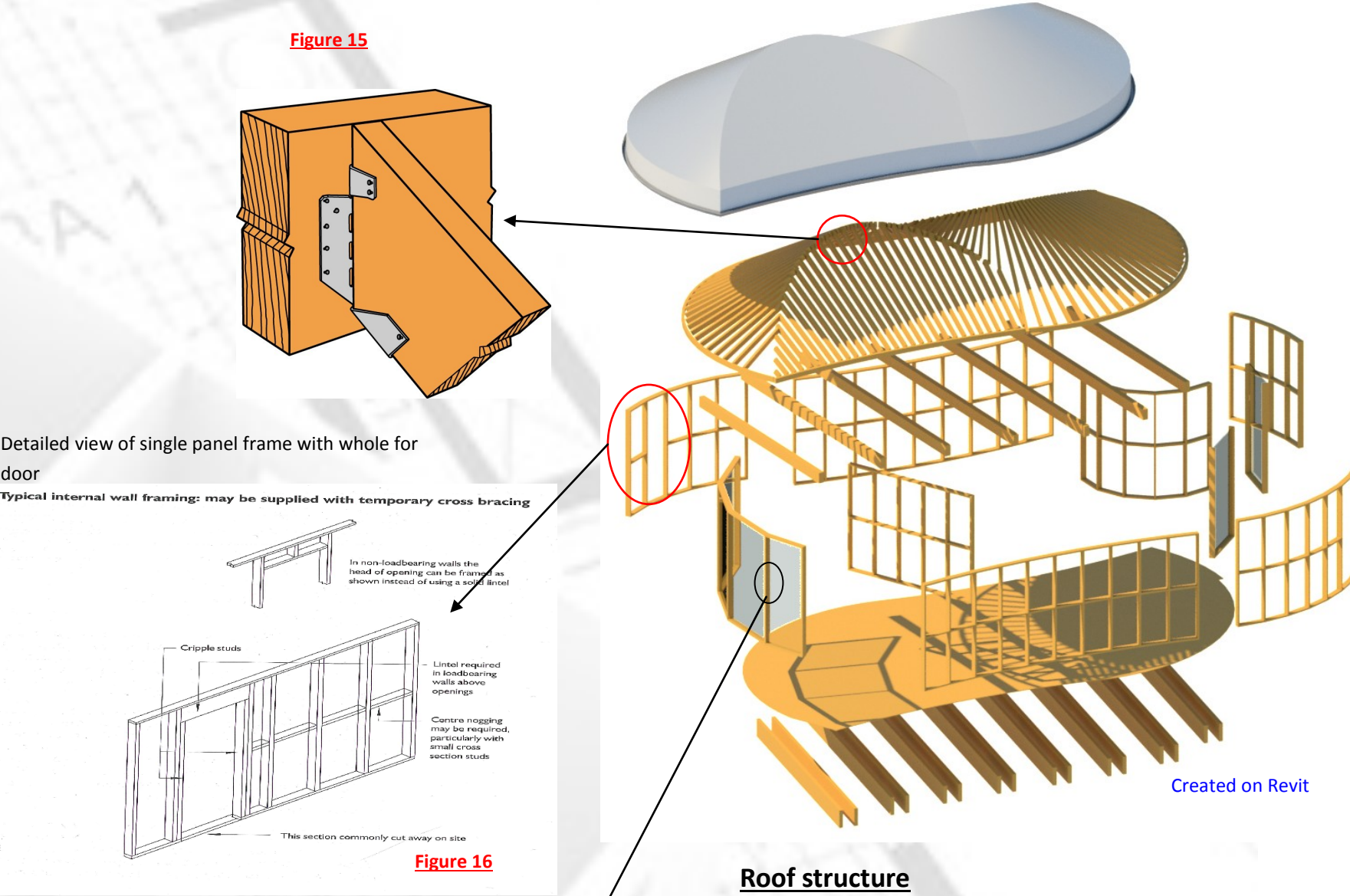
For the roof I will be going back to is the house near Bad Tolz, as a reference and emulating some features of the roofs construction. However things such as the interior and exterior and interior finishes will be altered and adapted to suit the life pod.



Structure

As mention earlier my design will be constructed with pre fabricated parts , the reasons for this is because of the advantages such as speed of construction and factory quality. The preferred method of construction will be platform frame construction as which is made up of floor to ceiling height panels that make up the skeleton of the building. The floor deck of the building becomes the erection platform. An example is shown below.

Similarly the life pod will for the same principle of this method however my walls will be curved and the roof will also be conical shaped. Because the building is prefabricated it will require analysis of major connections details .



For the roof I looked at conical roofs as well as concaved roofs to gain an understanding of how the roof trusses would go together . The figure below gave me a basis on where to start.

