My Journey

My journey to becoming an apprentice began back in 2019, during my final year of high school at St Bede's College in Christchurch.
As the year progressed I still didn't know what career path I wanted to pursue. I always had a passion for doing hands-on work so I decided to visit the careers advisor looking to do some work experience with a builder.

The following day LOC Construction emailed the school looking for someone to start an apprenticeship with them. I wasted no time with putting my name forward, and a few days later had an interview with the boss of LOC who is still my current boss today.

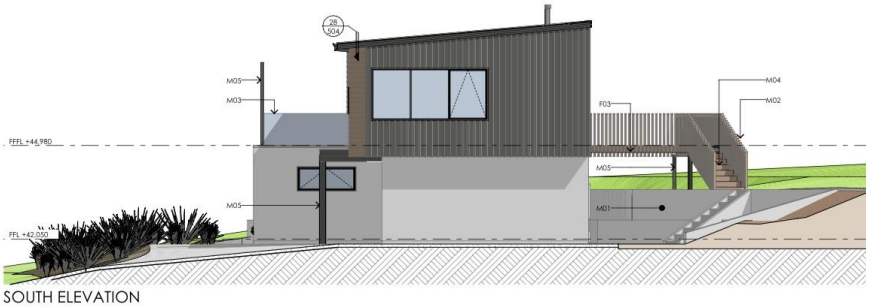
Since I wanted to complete my final year at school, I started working 1 day a week with LOC in September 2019. I didn't know what to expect when I first started, but LOC were extremely welcoming and it didn't take me long to figure out that I enjoyed working for them. In October 2019 I began working 2 days a week and this was when I fully committed to starting my apprenticeship with them. I began working full time in November 2019 as soon as school finished and I haven't looked back since.

LOC Construction is an award winning family owned business that mainly focuses on high end architectural builds. With 30 years experience in the industry and a passion for building outstanding homes they have provided me with the best possible training and knowledge to become the apprentice I am today.

Project Submission - 16 Matuku Lane

In August 2022, Loc Construction had the privilege of working with Bespoke architecture and Blueprint engineering to design and build the dream home of two amazing clients. I have been lucky enough to be involved with this project from the very start working alongside one of our foremans Jarred. Working on this project from the start has been extremely beneficial to developing my skills as an apprentice.

NORTH ELEVATION
SCALE 1:100 (A3)



SOUTH ELEVATION
SCALE 1:100 (A3)

WEST ELEVATION
SCALE 1:100 (A3)

This amazing two storey home is located on the top section of Matuku Lane, giving it wonderful views over the Heathcote Valley in Christchurch. The lower level consists of 3 large bedrooms, a bathroom, laundry and a 2 car garage. The upper level consists of a large open plan living, dining and kitchen area that has been purposely designed and positioned to capture the afternoon sun. 2 big bifolding doors open out onto large deck areas giving this space an amazing indoor/outdoor flow. A large master bedroom, walk in wardrobe, ensuite and office take up the remaining space on the upper level.

Retaining walls.

In August 2022 work began marking out and constructing the footings for the retaining walls. Unfortunately, I was not on the site at this time but was involved in the drainage work behind the walls. The front retaining wall was constructed at the height of .860mm, while the second retaining wall was built intentionally to be 1 meter taller than the front retaining wall. As stated in clause F4 of the building code (safety from falling) a handrail does not need to be provided if the fall is 1 meter or less. This was one of the reasons it was designed this way.

After passing a pre-fill block inspection, we were able to fill the blocks with concrete and began work on backfilling the retaining walls. This was a good learning experience as I had never worked on retaining walls before.
We began the process by painting 3 layers of mole seal on the back of the blocks for waterproofing. Afterwards, we glued polystyrene sheets onto the back of the block wall. This was to stop our hardfill from damaging the moleseal. We then laid out all of the filter cloth behind the block walls as seen in the photo to the right. Our next job was to cover a perforated pipe with a filter sock. This ran behind both retaining walls, helping water drain to our sumps. We then secured this with wire straps and completed the job by backfilling the wall with AP40 gravel. We then folded the filter cloth on top of the gravel and filled the rest up with soil.

The filter cloth acts as a barrier by only allowing water to drain from behind the retaining walls. While the retaining walls were a lot of work, it was a great learning experience and they are an amazing feature at the back of the house.

Concrete slab-

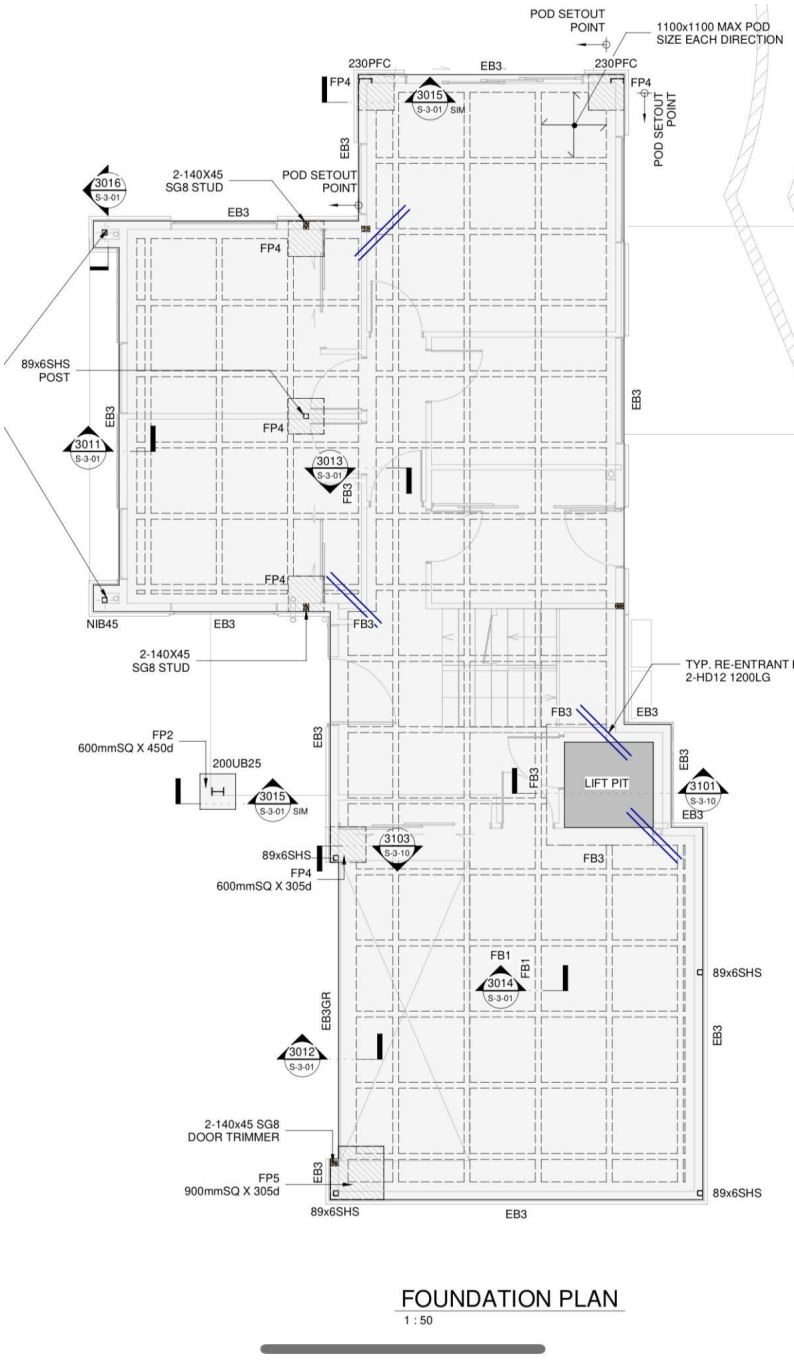
Our next task was to create a 300mm reinforced concrete waffle slab using the engineers plans. Alongside this using the architect's plans, we were able to determine the correct position of the slab by measuring off our boundary pegs.

After determining the position of the slab we set up profiles and string lines. We began boxing the slab working off these lines.

After setting our shutters in the correct place and height we installed pegs at 600crs and braced them well to stop any bowing when the concrete was poured. Since our frames had been measured off the plans this was an important part of the build and one we made sure to get right.

We then got the plumbers in who were able to measure off our boxing to put their pipes in the correct places. The next job for us was to lay a single layer DPM vapor barrier which we made sure was lapped and taped to comply with NZ3604.

Before installing the polystyrene pods we had to box and install a 1660x1525 lift pit which would be 300 Mms below finished floor height. This was a good challenge for us as we had to get it in the exact right place. We came up with a plan to hold it in place and braced it so it wouldn't move when we poured the concrete.



We were now able to start installing the polystyrene pods. By following the engineers plan we were able to quickly and accurately install the pods. We created footings everywhere steel beams were going and had a 300mm footing around the whole outside of the building. There was also a 300 mm footing through the middle where the hallway wall was going to be. This meant we were able to put more steel in these areas which meant the concrete would be stronger.

Our final task on the slab was to install all the rio bars and mesh. The engineer provided us with clear details which we followed when installing the steel. This again made it easy for us and after a few days we would be ready for the engineers pre-pour inspection followed by an inspection from the council. Our concrete slab was poured on 11th October 2022

Ground floor framing and steel

Prior to our frames arriving we marked out lines on the slab for reference points for when we installed our frames. Our down stairs frames were dropped off on the 19th of October 2022. We wasted no time and started standing them as soon as they arrived. All our external frames were made from 140x45 sg8 timber and our internal frames were made of 90x45 sg8 timber. All of our studs were at 600crs max and had nogs at 800 crs max.

After we had stood our frames we began plumbing and straightening them. We shot all our bottom plates down first with 75x3.8mm shot fired fasteners. After that we plumbed and braced all external frames before coming back through to straighten. This process did not take very long and all our frames were secured and braced within a couple of days.

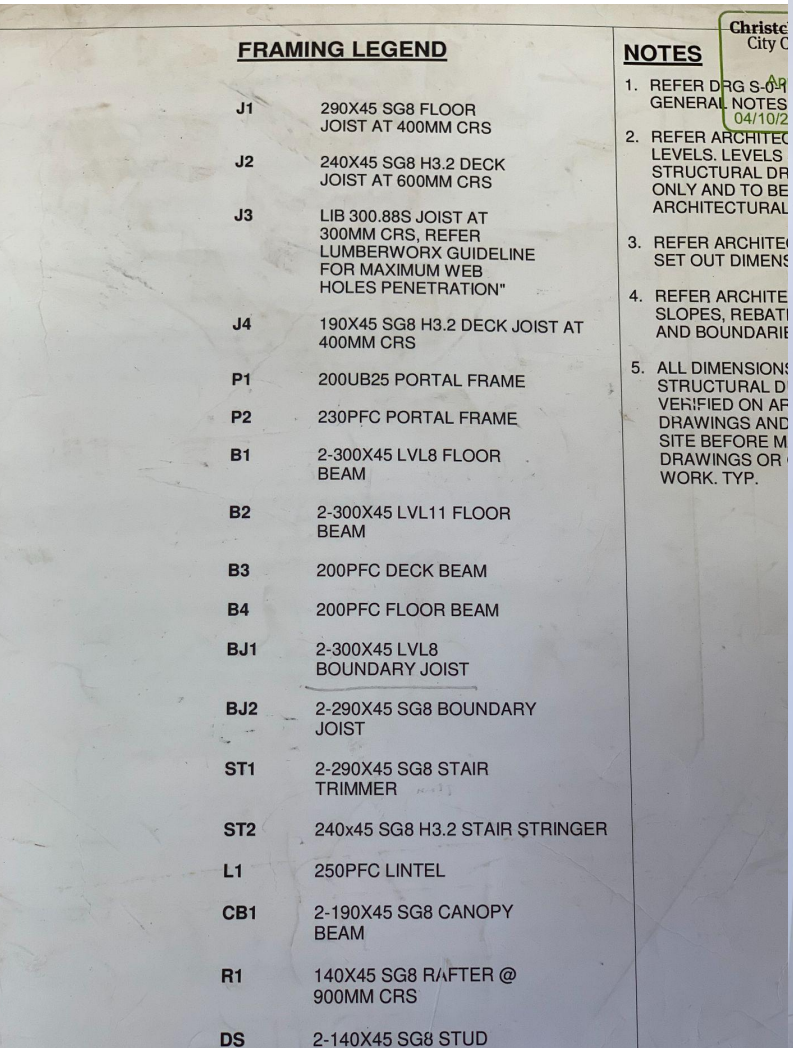
Our down stairs steel was dropped off and installed at the end of October 2022 with the help of East Coast Steel. By working with the engineers and architects' plans we were able to quickly determine the position of the steel beams. They were lifted in by a hiab and bolted down in the correct place.

Our next job was to connect our frames and steel together as seen in the photo to then right. We did this by bolting timber to the side of the steel and then framing it out to make it one solid structure. We also put timber infills inside of our steel columns to make sure we had fixing and the correct overhangs as per plan. After plumbing and straightening everywhere the steel was we were now happy with everything downstairs so started on the fixings. The first thing we did was figure out how many bolts and handi brackets we would need by looking at the ground floor bracing plan. We started by installing the handi brackets as per plan and then began installing all of our thru bolts. These had to be 150mm long with 50x50x3mm galvanized washers and be spaced at 900 crs max on all external frames. They also had to be within 150 mms of the corners and within 150mm from any joins in our frames. For all of our internal GS1-N walls we were able to use 75 x 3.8mm shot fired fasteners with 16mm discs spaced at 150mm and 300mm from end studs and 600mm centers thereafter. This was in accordance with the GIB Ezybrace systems and compliant with NZ3604. We then installed nail plates on top of every join in our frames.

Mid floor framing

So far the mid floor framing has been the most interesting and enjoyable part of the build for me. Coming in with minimal knowledge I knew this stage of the build would be extremely beneficial for me to develop my skills. I tried to take on as much learning as I could and by the end of the mid floor I felt like I had a better understanding of it all.

As seen in the framing legend below there was a large variety of materials used to construct this mid floor. Everything from Steel beams, I beams, LVL and SG8 timber was used during this stage of the build. Throughout the makeup of the mid floor there was a large focus and contrast between the engineers and architects' plans. We had to use both of these to ensure that we were placing everything in the correct place and staying within the boundary requirements we were given. We also had to install multiple types of fixings on the mid floor too. Everything from joists hangers to cpc-80s were put in the correct places to ensure we would pass the engineers mid floor inspection.

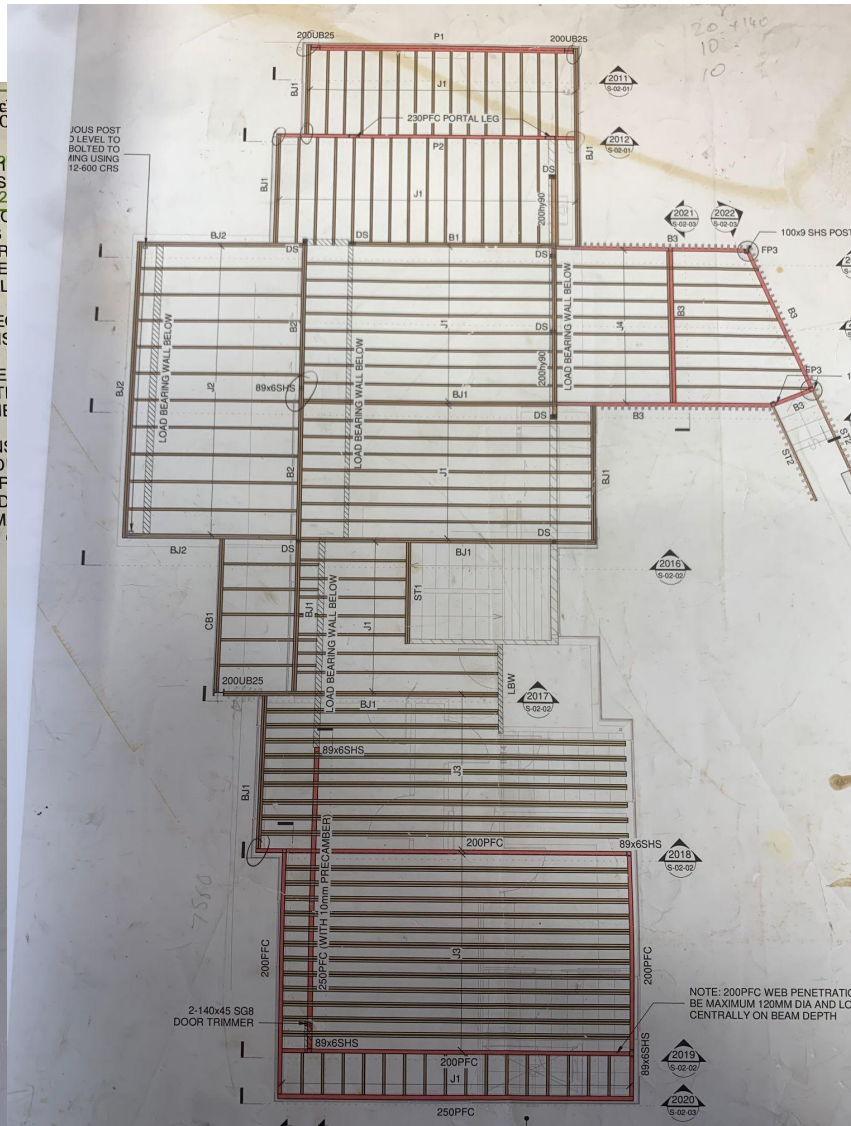


FRAMING LEGEND

J1	290X45 SG8 FLOOR JOIST AT 400MM CRS
J2	240X45 SG8 H3.2 DECK JOIST AT 600MM CRS
J3	LIB 300.88S JOIST AT 300MM CRS, REFER LUMBERWORX GUIDELINE FOR MAXIMUM WEB HOLES PENETRATION"
J4	190X45 SG8 H3.2 DECK JOIST AT 400MM CRS
P1	200UB25 PORTAL FRAME
P2	230PFC PORTAL FRAME
B1	2-300X45 LVL8 FLOOR BEAM
B2	2-300X45 LVL11 FLOOR BEAM
B3	200PFC DECK BEAM
B4	200PFC FLOOR BEAM
BJ1	2-300X45 LVL8 BOUNDARY JOIST
BJ2	2-290X45 SG8 BOUNDARY JOIST
ST1	2-290X45 SG8 STAIR TRIMMER
ST2	240x45 SG8 H3.2 STAIR STRINGER
L1	250PFC LINTEL
CB1	2-190X45 SG8 CANOPY BEAM
R1	140X45 SG8 RAFTER @ 900MM CRS
DS	2-140X45 SG8 STUD

NOTES

1. REFER DRG S-0-1 GENERAL NOTES
2. REFER ARCHITEC LEVELS. LEVELS STRUCTURAL DR ONLY AND TO BE ARCHITECTURAL
3. REFER ARCHITE SET OUT DIMENS
4. REFER ARCHITE SLOPES, REBATI AND BOUNDARIE
5. ALL DIMENSIONS STRUCTURAL D VERIFIED ON AR DRAWINGS AND SITE BEFORE M DRAWINGS OR WORK. TYP.



Mid floor Framing

By packing timber level on top of the steel beams this was able to set the height we would set all of our mid floor framing to. We first set all of our i beams flush with the height of the steel as we knew this was at the correct height. We set all of our perimeter and LVL beams to the same height. We were able to do this by running string lines from each end of the building. This allowed us to determine if we had to pack up the LVL beams or take them down. By setting the LVL beams in the correct position and height first we were then able to quickly cut the rest of the sg8 joists to length and nail them flush with the top of the lvl beams. Doing it this way helped speed up the process immensely. We then quickly checked over our work with a big straight end and buzzed down any high points. This ensured our floor would be perfectly straight.

Laying flooring

Laying the mid floor was a quick and straightforward procedure. We used a Kopine particle board flooring system. This was a tongue and groove system and the sheet size was 3.6x1.2. This system did not require any nog along the t&g edge which sped us up massively. Every joist and sheet join had to be glued with holdfast gorilla grip. The ends of our sheets had to be screwed off at 150mm centers and intermediate joists at 200 centers. For our flooring in the ensuite and powder room we used h3.2 plywood and screwed it off as required with stainless steel screws.

Flat Deck Framing

Our next job was to create a large flat roof area that would eventually accommodate a deck outside of the living area. This was not an easy challenge as there were a numerous amount of things we had to think about during this process. We began by running 240x45 sg8 timber joists at 600 centers to set the base of our flat deck. These all had a check out at the far end of them which would eventually create our gutter. Our plan showed we needed a 1.5 degree fall so our next task was to figure out what size our timber rippings needed to be cut at. After cutting these we were then able to screw them directly on top of our joists which would create the 1.5 degree fall we needed. Our gutter also needed a 1:100 fall allowing water to flow nicely into the drains we had installed. Blocking was also required at 400 centers to give us solid fixing around the outside of our sheet and to help support our plywood. Installing our H3.2 plywood was a quick and straightforward process as we were fresh from laying the mid floor. Screwing was required at 150mm centers around the full perimeter of the sheet and 200 mms centers on every other joist. These screws had to be stainless steel and glue was also required on every joist before installing our sheets. After completing all of this a contractor came in to install a Weldtec Roofing Membrane over the ply as we were not qualified to do so. This meant the whole structure was now waterproof and we would be able to construct the deck at a later date.

First floor Frames

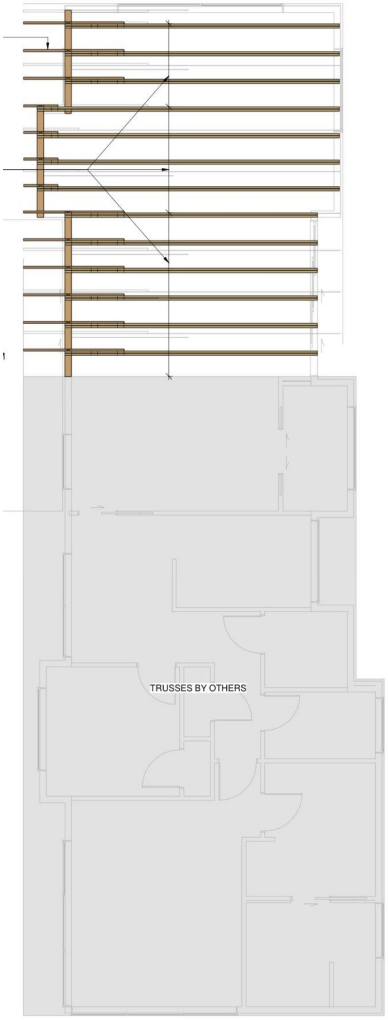
By the end of November 2022 we had all of our first floor frames stood, plumbed, braced and straightened. This was a big achievement for us and we were able to see massive progress after putting a lot of work into the mid floor and flat deck framing.
All our external frames had varying stud heights determined by the roof structure but were made up of 140x45 sg8 timber again. Our internal frames were again made of 90x45 sg8 timber and also had varying stud heights. All of our studs were at 600crs max and had nogs at 800 crs max.

Handi brackets were again shown on the first floor bracing plan so we were able to install these in the correct places. We used 150 mm coach screws for these as they were going into timber not concrete. The rest of our bottom plates were fixed down with 3/90x3.75mm power driven nails spaced at 600m centers. Nail plates were again required on the top of our frames everywhere there was a join.

During the installation of our first floor frames we had a large focus around our lift shaft and stair well. We wanted to make sure that these frames were put in perfectly plumb from the top plate of the first floor all the way down to the bottom plate of the ground floor. We were able to use a weighted plumb bob to determine the exact position of our first floor frames. By getting these plumb at this stage of the build it was able to speed us up massively when we came to straighten the inside of these areas.

Roof structure

At the start of December 2022 we began the roof structure with a goal of having the roof finished and all of the ibs board on by Christmas break. This building had a 5 degree flat roof spanning across the whole job. Around half of this roof structure was made up of timber trusses while the other half was made up of lumberlok i beams to create a skillion ceiling in the living and dining area. We were able to construct the roof structure correctly from the plan dropped off by the truss manufacturer and by using the engineers plan for the I beams. When installing everything we had a massive focus on making sure the roofline was straight. It was extremely important that the i beams and trusses were set at the same heights so we didn't have to do any altering when installing our purlins. We used 70x45 H1.2 SG8 purlins spaced at 900mm max on their flat. Since it was a high wind zone we fixed our purlins on with 1 lumberlok blue screw and 2 nails into every truss and i beam. We used cpc-40s to fix our trusses and i beams to our top plate when we knew they were in the correct position. Finally by using the architect's plan we were able to determine the position and install the 25x1mm Lumberlok strip braces with 4KN tensioners. We were now ready for the pre-roof inspection.



Ibs rigid rap.

We started doing our IBS Board in late December 2022. Before starting we went around and straightened the outside of our framing as this would not be possible when the IBS board was on. IBS RigidRAP® is an 8mm sheet product that has been laminated with an approved building paper on the outside of each sheet already. It has been manufactured specifically to be used as a bracing element and gives protection from the weather during the building process. The product is lightweight, easy to cut and nail. It can be exposed to the weather for up to 90 days so it was a perfect product to use as it would be exposed over Christmas break.

We figured out a fast and efficient system and began installing the Ibs board. We started on the ground floor and made sure to hang the sheets below the bottom plate the required distance. By installing our first sheet plumb we were able to quickly go around and tack the sheets up while one person cut. Each sheet required a 4 mm expansion gap around all edges so we made sure to do this. When we had time we came back through with a storey rod nailing off the sheets fully. We used 50mm x 2.87 mm round head gun nails, these were required at 150mm around the outside of the sheet and 300mm up the middle stud. Nailing on our nogs was not required. It was important when nailing the sheets that the head of our nails did not go through the building paper.

Taping all joins was required after all of our sheets were up. We used Marshalls Innovations super stick building tape. 150mm tape was used on horizontal joins and 75mm tape on vertical joins. This ensured the building was now waterproof.

External joinery

Our external joinery arrived at the end of January 2023. Since all of the windows and doors were gib groove we quickly had to straighten our internal frames around the openings before we began. This ensured we would be able to set them correctly for 10mm gib. When installing our doors we made sure to set the heights correctly so they would work with our timber flooring and carpet. We also had to set some windows and doors in certain places to ensure they would work with our external cladding. After they were all set in the correct place we went around and installed PEF rod and foam on all windows and doors. Finally we went outside and screwed on all the wanz bars completing our external joinery.

Soffits

On our last day of work in December 2022 we went around and measured the amount of soffits we would need so it would arrive in time for us to install in 2023. 12mm LMA timber was to be used in 3 areas of the home while standard 6mm Hardiesoffit was chosen for all remaining areas. We began by going around and framing all of our soffits to the correct heights. We then had to install mid floor insulation in some areas as this was not possible after the soffits were up. After this was completed we were able to install our soffits. The LMA soffits were a tongue and groove system so it was quick and easy to install. Our hardies were butt joined together and our screws were to be filled and painted to create an amazing finish on the final product.

Cladding systems

Rockcote -
Rockcote was the choice of cladding to be used on most of the downstairs area of this home. Contractors came in to install this system and began by installing eps cavity battens and their flashings around the windows. They then went around and screwed all of the 50 mm panels onto the building. The plasterers were now able to begin and create a smooth finish over the rockcote which would eventually be painted. Although we were not installing this cladding we still had to make sure the work was up to our standard to ensure the clients would be happy with the final product.

Metal Cladding-
Vertical 5 rib profiled metal cladding was to be used on most of the upstairs area of this home. Contractors were again in charge of installing the flashings and metal sheets. After running through everything with the contractor our job was to install cavity battens and get everything ready for the pre clad inspection. We began by installing vertical cavity battens on every external corner to give them solid fixing for their flashings. This product required horizontal battens at 800 crs max so we were able to install these by nailing into our dwang lines on our framing. We made sure the battens were spaced the same distance apart around the whole job so the screw lines would line up. Since we had already straightened the outside of our building we were able to install all the battens quickly in time for the pre clad inspection.

Timber cladding

The rest of this home's exterior was to be cladded with horizontal LMA timber. Lma timber is a shiplap weatherboard system made from recycled power poles in Australia. It is a low maintenance cost effective product that has a 40+ year durability rating.

Because this cladding was running horizontally the first thing we had to do was install vertical H3.1 cavity battens spaced at no more than 600 crs. Since our studs were spaced at 600 crs we were able to locate these and nail our battens on with galvanized 65x2.7 round head gun nails. While installing our battens we made sure to double check our cladding was still going to work with the windows and doors we had already set in place.

To give this product the best possible finish we decided to use black aluminum flashings on every external corner as seen in the photo below. While installing these it was crucial that we put them in plumb, straight and parallel so we could cut all our LMA boards to the same length from top to bottom. We also installed j mold flashings on each side of every window and all internal corners. These would not be seen but were required for waterproofing.

Timber cladding

After passing the pre clad inspection we could now begin installing our LMA timber. We wanted to deliver the clients with the perfect finish so did not want any joins in our timber where possible. We began by sorting through what we had so we could achieve this goal. Since this was a natural product there was also a lot of variation in color between some of the boards.. Our priority was to match the colors on each face and around all of our external corners, which ensured a cohesive and natural look for the final product.

We were extremely proud to stand back and admire our work once it was completed. The finished result was a testament to the hard work and attention to detail that we had put in.

Interior work

Prior to booking a pre line inspection and getting insulation installed, we had to complete several tasks inside of the home. Our first task was to check all of the interior frames for straight by using a straightedge. This allowed us to determine which studs needed to be packed or buzzed in order to achieve a flawless finish. During this process, we also made sure to straighten any areas around internal door openings.

Once our internal doors, wardrobe reveals, and cavity sliders arrived, we were able to install them immediately since we had already ensured the areas around the openings were straight and plumb. As all internal doors were gib groove, it was crucial to set them in the correct positions to ensure that the gib would fit perfectly. We also made sure to install the doors in the center of the openings wherever possible and to the correct heights to accommodate the timber flooring and carpet.

The interior of this home was beginning to take shape, and it was almost ready for gib. Before we could install the gib, we had to ensure that solid fixings were in place in several areas. These included fixing for the tv brackets, vanities, mirrors, stairwell handrail, and garage door tracks. We installed dwangs in correct locations which ensured we would have fixing when installing these items later on in the job.

Insulation could now be installed in all required areas. Although we were not directly involved in installing the batts, we still had to ensure that the installation was carried out correctly to avoid any potential issues during the inspection.

After we had double checked that everything was done correctly, we booked and passed a pre line inspection, which allowed the gib fixers to begin lining the house.

Conclusion

In conclusion, working on this home has been an incredible experience for me as an apprentice. I am extremely proud of the project we have produced so far and am grateful for the opportunity to have been involved in the project from the very beginning, which has allowed me to develop my skills and knowledge.

Throughout the project, I have had the privilege of working alongside experienced sub trades and builders who have taught me valuable lessons and helped me to improve my abilities. From laying the foundation to installing cladding, I have gained hands-on experience and deepened my understanding of the many aspects involved in building a home.

A key benefit of this experience has been the opportunity to improve my ability to read plans which is a crucial skill in the construction industry. I have become more confident in my ability to interpret plans and understand the various details involved in the construction process.

I am excited to complete the rest of the project, and I am looking forward to the new challenges and opportunities that will come my way. The prospect of eventually handing over the completed home to the amazing clients is a source of motivation for me. I take pride in knowing that I have contributed to building their dream home that will bring joy and comfort for years to come.

Overall, this experience has been invaluable, and I am excited to continue growing and learning as an apprentice. I am confident that the skills and knowledge I have gained from this project will serve me well in the future.