



APPRENTICE OF THE YEAR	
RESOURCE	STAGE 1 - PROJECT SUBMISSION
COMPETITION YEAR	2025
REGION	WAIKATO
ENTRANT	JOSH GULLERY

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Apprentice of the year 2025 Project Submission Joshua Gullery



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My Journey:

During my last year of school I had aspirations of becoming a pilot and plans of potentially going into the Australian Air Force to pursue a career in aviation. This was short lived as the global pandemic Covid-19 became present and paused my dream of pursuing aviation.

Nearing the end of year 13, I realised University wasn't for me so I had to find a job. Following in my Father's footsteps, I decided a career in construction would be a safe alternative. I started out doing work experience for a family friend during the holidays and quickly got the urge to further progress down this pathway. Soon after school finished, I secured a job with my friend's Father, erecting pole sheds for Totalspan.

Wanting a change of scenery, I moved to Hamilton and laboured for Anthem Homes for 3 months before signing up to my apprenticeship. I spent one year being involved in a number of new builds including the opportunity to work on the Company show home. Soon after, due to the Company folding, I became redundant and I had to look for a new position. I now work for JCC Build, directed by Will Johnson which is a team I have proudly been a part of for the last two years. This Company specialises in renovations and alterations around Hamilton and the wider Waikato region.

JCC consists of 11 carpenters on the tools and 7 office staff. Working in this environment has allowed me to gain a lot of knowledge from a variety of people who all specialize in different areas. Surrounding myself with some highly experienced carpenters has helped me develop substantially. I feel comfortable around them and I do not hesitate to ask them for their input if required at any point.

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


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Shaw Alteration Project:

In September 2024 I was given an opportunity to be fully involved and was given greater responsibility within the Company to help manage the creation of this entire project. This project enabled me to push myself to the next level and gain valuable knowledge along the way which helped me grow as a carpenter. It involved working from the foundation stage and right through most of the construction process to reach the completion and handover. Throughout the entire build, Malcolm (Foreman) and myself witnessed the client's (Alaine) gratefulness and satisfaction as each stage was completed. This is important to me as I too get personal satisfaction out of bringing a client's ideas together and creating a finished product that they are happy with.

This project was an extension to an existing garage, converting the garage into a granny flat to accommodate Alaine's parents. It is a single storey conversion, one bedroom with a walk-in closet and ensuite. We also converted the existing garage area into a living space.

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Health & Safety:

Before any work started onsite Malcolm and I both self inducted each other via the use of a tool box meeting. The job start commenced and we introduced ourselves to the client, viewed the proposed construction site, scope of works and identified site specific hazards. These hazards were then thoroughly discussed and Malcolm and I came up with acceptable and responsible solutions to manage any potential risks if they were to arise.

The access to the site was established through the main gates of the driveway with our vehicles parked on the roadside out of the way. The use of a site hazard board was staked into the ground at the front entrance to make the contractors aware of the expectations and guidelines that need to be followed when working on a JCC construction site.

Site facilities such as the site toilet and rubbish bin had already been established prior to us arriving at the site.

The health and safety mindset was at the forefront of both our minds during the entire build process. To ensure that we were keeping each other safe and accountable.

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Set out:

The set out commenced midway through September 2024. Using timber pegs as profiles, the boundary lines of the extension were established by running a parallel string along the backside of the garage allowing a seamless finish from existing to new foundations. From then, the rest of the lines were squared using the 3,4,5 method and then double checked using the parallel technique.

The datum height of the profiles was taken from the FFL (finished floor level) of the existing garage. Using a rotating laser and receiver to accurately determine the floor level, made it easy to obtain. Spot checking was carried out around the existing floor to make sure the height was consistent and sure enough, it was more or less within a few millimetres, which worked well in our favour.

Foundation:

The foundation works commenced. Steel waratahs were placed at 400mm centers, 25mm offset from the string line to allow adequate spacing for the boxing. 200x25mm untreated rough sawn timber was laid out and screwed to the inside of the steel pegs, this was then lasered to the height of the finished floor. A second 100mm timber ripping was added below, to allow the slab to be 300mm thick and be within compliance of the plans. The general best practice would be to use 300x25mm, in this instance, we had access to previously used 200x25mm. To be more efficient, we opted to use that instead. The installation of 45 degree angle braces were spaced out at 800 centers along a runner board to make sure the formwork would hold its shape for when the concrete would be poured.



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Once the base course was compacted, a layer of Empac polythene damp-proof membrane (DPM) was installed, making sure a 150mm lap was maintained and penetrations from services were taped to ensure the moisture barrier was up to standard. Following that, a layer of Expol expanded polystyrene sheets (EPS) ThermaSlab H was laid. With an R-value of 1.39 this is used to protect the building from heat loss directly from the concrete slab. 1100mm x 1100mm x 220mm polystyrene pods were placed according to the plans, starting from the back corner with a 350mm offset from the side boxing and 300mm off the back edge. Within the internal ribs of the slab, 1x HD12 steel bar was run along the bottom, propped on chairs. Around the perimeter, 2x HD12 bars ran along the bottom and a singular HD12 bar ran nearing the top of the slab. This bar was tied to the underside of the mesh. The mesh used was SE62 RES Seismic graded mesh. According to the plans the mesh had to be placed at a minimum of 30mm below the surface, 50mm from edges and lapped at a 250mm minimum. To ensure we guaranteed significant coverage we lapped 2 squares which is a total of 400mm lap. Plastic chairs were used to make sure everything was propped into the correct position and the use of tie wire made sure everything was securely in place as the concrete pour commenced.



Following the plans, I drilled 150mm into the existing slab at 500mm centers. To anchor the D12 starters I used Chemset into the existing slab and extended the steel by 600mm into the newly proposed slab to create connection between the two slabs.



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Within the foundation details on the plans it was specified to use RibRaft HotEdge around the perimeter of the slab.

RibRaft HotEdge:

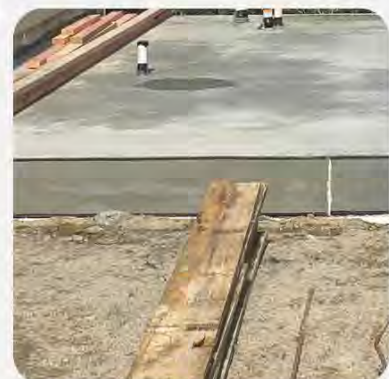
- It was the first time that Malcolm and I have ever used this product, so we sat down and thoroughly inspected the installation and specification guides.
- Has an R-value to help achieve H1 (energy efficiency) requirements
- Suitable for residential and commercial
- Plaster rendered face for reduced finishing time
- Easy installation
- Tornado wires to provide anchor points
- Complies with Firth's RibRaft foundation systems
- BRANZ tested and appraised.

Although I had not worked with the HotEdge product before, it was a straightforward system to pick up. Due to the product being made from foam with a thin plaster render, cutting it with a grinder fitted with a tungsten carbide blade was ideal. Both Malcolm and I had a good system in place where he would measure the length of the boxing and I would cut the HotEdge and then together we would install the product.

Starting from an external corner, MS silicone was applied to one end of the board, Dandam tape was used on the front face and inserted into the external corner flashing. Moving forward the process was simple: one singular 12g Tek screw spaced at a max center of 1.5m was screwed right through the boxing, HotEdge and into a timber shim. (This would be a temporary screw until it was time to de-box and the hole created into the HotEdge product would be filled later by the external plasterer.)

Tornado screw wires were supplied and pre-marked on the back face of the board, staggered top and bottom at 300mm centers. These were screwed in using a driver and Phillips bit. These wires are to help provide adequate anchor points to allow the HotEdge to adhere to the concrete.

The slab was then inspected by a Council inspector prior to the pour. This was to ensure all details had been met and coincided with the Council approved plans. This included making sure the RibRaft HotEdge detail was installed correctly, the mesh had the correct lap and the amount of steel used was adequate.



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Demolition:

Before any demolition began, Malcolm and I both conducted a Health and Safety checkpoint meeting. This included looking over the scope of work to be undertaken, the potential risks and the management we would put in place to help minimise these risks. Demolition consisted of removing the external plaster cladding from the wall that would at a later stage be reframed to create doorways into the bedroom and ensuite.

A discussion was also had about what potential materials were going to be saved, restored or recycled and what was not able to be reused and needed to be thrown into the general waste. The existing barge flashing was carefully taken off the gable-end and stored away from the construction zone as this could potentially be reused. The aerated concrete and plaster cladding was not beneficial to be recycled so it was thrown into waste.

Framing:

Simultaneously to the start of demolition, we were already working on the framing phase. At the start of October I oversaw the delivery of the prefabricated 90x45 H1.2 frames and landed them directly on the pad. It was my responsibility to run and coordinate the placement of the frames.



Before placing the frames, I had Malcolm assist me with the mark and chalk out of where the frames would sit. Malcolm held the tape on 100mm to eliminate any margin for error. It was important to make sure to add 100mm to the overall measurement. Once the slab was chalked I went around with my ruler and marked an offset line to the inside of the chalk lines. This meant that when the frames were stood, it was possible to butt my ruler into it and see a visible line to work off.

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Our frames came with DPC (Damp Proof Course) already stapled onto the underside of the bottom plate as well as easement cuts within the doorways to make it easier for us to cut out the bottom plates. As per the plans, the external frames were to be made up using H1.2 90x45 treated timber with studs spaced at 400mm centers and nogs at 800mm centers. The internal frames were built to standard stud and nog spacing.

Starting with the longest external walls that ran perpendicular, Malcolm and I stood the frames along the chalk line and fixed the bottom plates using the Ramset powder actuated tool with 75mm Ramset fasteners and 16mm washers. Where the frames intersected, I clamped and fixed two 90mm brite nails at the bottom and ensured the frame was flush before tacking the top plates together. This was continued on each frame until they were all stood and tacked in position.

Afterwards we went through and braced all the frames using lengths of 90x45 timber. A straightedge and level were used to make sure the frames all sat plumb. Once we were happy, we nailed off where the frames intersected using two 90mm brite nails going down the stud at 300mm spacings.



The next step was to go around and permanently fix the bottom plate to the slab. For this, I used M10 x 155mm ECKO screw bolts and 50x50x3mm washers placed at a maximum of 900mm centers. These were also placed on either side of a break in the bottom plate and no further than 150mm from either end of the frame. In conjunction with the bracing plan, I identified that there would be Braceline and Ecopy elements which in itself required its own hold downs, so I placed a singular GIB HandiBrac at either end of the braced section.

Now that all hold downs were in place, it was time now time to apply all the other hardware including, MiTek's PLATE-LOK, stud to top plate fixings, and lintel fixings. Most of these lintel fixings were Type F and Type G for the larger opening.

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Roof Framing:

At this stage scaffolding was erected around the perimeter and netting was installed just below the height of the top plate in every room, as a means of fall protection while working from heights.

Our scissor trusses were made in the Carter's frame and truss factory. To match the existing, the trusses were made using 90x45 H1.2 treated timber at a slope of 30 degrees. Malcolm and I started marking the truss locations as set out on the plans at 900mm centers. From there we erected the gable end truss and ran a string line from the apex right through the existing roof line which then gave us a straight line to follow when erecting the remaining trusses.



The trusses were set with 2 skew nails and a singular cpc40 to reach the required kN rating for the wind zone. We also laid a pair of tensioned LUMBERLOK Strip Brace over the top chords of the trusses and installed them at 45 degrees to the truss line. We fixed the top end using five 30mm x 3.15d product nails and a skew screw at the bottom, followed by another five product nails to pull the strap tight. As the strap intersected over the intermediate trusses, one product nail was inserted. This was done to essentially create four "x" along the roof planes.



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To create the outriggers, I located within the plans that the eaves would be 600mm wide. This meant the outriggers would need to be cut to a length of 1455mm to butt it into the second truss from the end and cantilever 555mm over the gable-end truss, leaving 45mm to frame out for the fly rafter. The outriggers were permanently fixed using a pair of left and right galvanized wire dogs (Z nails).



Once the fly rafter was installed Malcolm and I custom made the cedar fascia and rebated the soffit groove that we would then nail to the side of the fly rafter using a stringline and packers to ensure it was straight. The fascia was fixed using 75mm silicon bronze annular grooved rose head nails.



Due to the Asphalt Shingle roof cladding over DiamondDeck underlay is a specialty cladding system, from this point on the rest of the roof framing and cladding was subcontracted out to Roofs R Us LTD.

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Cladding:

Due to other project commitments within the Company the cladding works were subcontracted out. I did however help out with the installation of the Ecoply Barrier before moving on from this particular site.

Ecoply Barrier:

- A product both Malcolm and I are quite familiar with
- Suitable for residential and commercial
- Required for specific bracing elements
- Easy installation
- Pre sealed face and treated ply
- Been tested using the P21 method to identify the wall bracing potential
- Meets NZ's Building Code B1, B2 (structure) & E2 (external moisture)
- BRANZ tested and appraised



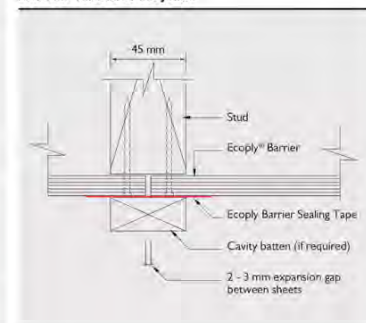
The installation of this product is reasonably straightforward. The sheets were marked at 150mm centers around the perimeter and 300mm up the intermediate studs. This was fixed off using 50mm hot dip galvanised power driven nails using a compressed coil nailer.

The first sheet was plumbed up and we ensured that it had an overhung clearance below the FFL, between 25-40mm. A 3mm gap was required between the joining sheets to allow for expansion.

Once the sheets were fixed to the framing I taped the joins using Ecoply 60mm joint sealing tape. Ecoply sill tape was then used for the window openings and installed as per the installation guide.

Due to the 50mm EZpanel and plaster render being a specialty cladding and cavity system this was subcontracted out to Deryk from Dunright Textures.

BAR006: Vertical Sheet Joints



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Interior Linings:

Even though the GIB install was subcontracted out to Waikato Fixing, I was required to return to site the morning of the post-line inspection to make sure that all bracing elements had been fulfilled correctly. It was my responsibility to conduct a walk-through of the work site to inspect that all the bracing elements were correctly screwed off and the correct linings were used e.g. the use of GIB Standard, Braceline and Aqualine as required on the plans.

A total of 12 bracing elements were inspected including, GS1's, GS2's, BL1's and BLP's. All of these required a different method of fixing and each had their own type of linings. The Building Inspector was happy and passed the post-line inspection without any issues.



Fit-off:

In late January I returned to this project, in time for the fit-off stage. This included installing a wall hung double vanity unit and a mirror cabinet.

The vanity unit had round basin sinks so I needed to take into consideration the depth of the bowl when installing so it would be at the correct height and functional for the client. It was important to centre the vanity against the wall for visual purposes. The JCC standard when hanging a vanity is to make sure there is adequate fixing to hold the unit. This was taken into consideration before the linings were installed. I referred back to the past pre-line daily log to identify where the fixing would be. I used 80mm 10g blue screws to secure the unit to the wall.

The mirror cabinet was also centred along the wall and the height was determined by the personal preference of the client along with the consideration of the height of the basin and accessibility of the light switch. To fix the mirror cabinet to the wall I once again used 80mm 10g blue screws, making sure it was plumb.

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Landscaping:

Construction of the 25m² deck commenced after establishing the clients wants and needs. Treated timber was used for the framing and the decking product of choice was Outdure composite material..

Piles and Bearers:

I set profiles and ran strings to create the boundary of the deck to align with the side of the new extension and the pillar at the front entrance. The pile placement was marked at 1200mm centers and I dug 300x300x300mm holes.

Two rows of H5 CCA treated 90x90mm posts were propped parallel to the extension and were used as the bearers. A laser was used to establish the correct height so that the deck would have a 5mm step up to the door threshold. The joins in the bearers were positioned directly above a pile hole and staggered between the two bearer lines. These bearers were set before the pour of the piles.



Since we used concrete piles for this deck the concrete needed to be a minimum of 17.5MPa to achieve the strength required and comply with NZS 3109. The depth of the hole had to be at minimum the same as the width of the footing.

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Joists:

I completed a running measurement to identify the placement of the joists. Then H3.2 150 x 50mm rough sawn timber was laid, bow facing up, at a spacing of 450mm and fixed using 90mm ss nails. This is aligned with the standard practice and outlined in the BRANZ guideline. A straightedge and planer were used to straighten the joists before laying the decking.



Decking:

Outdure composite decking was the decking of choice by the client. Both the specifications and installation guides were followed to make sure the product was installed correctly to avoid the risk of terminating the warranty period.

Starting furthest from the house, using provided Outdure starter clips, the first decking board was laid. This was then fixed with Outdure spacers that would slip into the side rebate to the decking board and screw into the joist. I worked back towards the house measuring our way down against the joinery units to make sure the decking was running parallel with the building until we got to the final ripping. The last board was ripped to suit, leaving a 12mm gap off the joinery/cladding line to allow for adequate drainage.

The fascia board used was also an Outdure 180 x 15mm product. This was face fixed using provided Quickbuild 45mm screws and the external corners were mitred. I face fixed the mitre join 60mm off either end and 30mm from the top and bottom, ensuring the mitre would not split open.



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Conclusion:

Having the opportunity to work on this project while being trusted to take on greater responsibilities has been the ideal scenario for my constructional development. During this project I had gained a lot of behind the scenes knowledge and it has really helped me become more confident in my abilities. I was able to learn about what it takes to manage a project as well as how to correctly talk to other parties involved in the construction process. I get a lot of satisfaction from being able to take a step back and admire the hard work and time taken to produce something that the client loves.

I am proud to not only be involved in this project but I am also proud to be a member of JCC Build. It is great to witness the effort and attention that Will and the team go to when looking after their employees. I am always wanting to take on greater responsibilities and JCC Build has always given me the opportunity to further develop my skill set in all areas. I am beyond grateful to be involved in a Company that will listen and be prepared to give me the chance to improve myself.

Thank you for your time,

Joshua Gullery