



<b>APPRENTICE OF THE YEAR</b>	
<b>RESOURCE</b>	STAGE 1 - PROJECT SUBMISSION
<b>COMPETITION YEAR</b>	2024
<b>REGION</b>	WAIKATO
<b>ENTRANT</b>	HUNTER MOON

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### Apprentice of the Year 2024, Project Details - Fergus Bar and Restaurant By Hunter Moon

Fergus Bar and Restaurant is a newly constructed, commercial use building by Foster Construction. Begun in the winter of 2023, and handed over to the client in February 2024, Fergus is a Heavy Steel and Timber Frame building designed to function as an avant-garde Restobar, incorporating energy saving features into a modern dining space

I began work on Fergus shortly after the project got out of the ground. My main apprenticeship goals whilst at Fergus centred around the large amount of timber framing and cladding works. I was initially brought onto the team to lead 1-2 other apprentices, and work under Leading Hand Alec Slomp. I thoroughly enjoyed my time working under Alec, as he is a carpenter with high standards who helped solidify my working processes. However, with Alec sustaining a significant injury outside of work, I was presented with the opportunity to step up and lead the Fosters on-site team of up to 7 apprentices. I used this time to progress my ability to lead others and improve my own carpentry skills.



Heavy Steel Structure up shortly after I arrived on site at Fergus. This was one of the best days of weather we got! Pictured on left is my mate Roque- hailing from the Philippines, I love working with Roque as he is always sharing with me his stories and knowledge from working all around the world. One of the great things about large builds is the opportunity to meet lots of people from wide backgrounds and ethnicities.



Working around the steel structure, we employed a 200 ton crane to assist us in lifting pre-nailed 140x45 frames into place. These were 400c stud frames, both due to their unusually large size (NZS 3604), and also because the brick cladding required ties into the frame at 400c in both directions. To install the frames I followed the pre nail plan provided to us by Placemakers frame and Truss, which details exactly where each individual frame sits in the structure. Sitting on top of a 120x100 30mpa concrete nib wall, after straightening them using the dodger block method seen in this photo (first on the bottom, referencing the grid lines already set out on profiles, before using a plumb laser at each end of the frame to set the top) I fixed the frames down with 150mm through bolts at 900 centres as specified in the engineers spec sheet.

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One of the most interesting features of the wall framing was installing the 300x100LVL Lintels over the very large window and door openings. The large LVL was chosen to transfer the downward load due to the size of the openings being larger than 4m (NZS3604), and the building being in a high wind zone also, the engineer designed a steel SHS brace to sit in behind each opening and provide support against the deflecting force of the wind. Due to their size and weight, I drafted a JSA for the boys and I to ensure we could conduct the task safely using hoists and lifting blocks.



On commercial builds we often do a lot of in-situ infill framing, and the gable ends of the bar were no different. Working around access issues, also common on our sites, we used hoists to get to our workspace safely. We were quickly able to use pythagoras theorem to take the pitch of the roof (15 degrees) combined with our known stud spacing of 400mm, and pre determine the lengths at which we would need to cut each stud, manoeuvre them into position and nail off.



Once most of the exterior walls were framed, our attention could turn to the framing and lining of the parapet walls and internal gutters. These were both specified to be built out of H3.2 timber, due to their proximity to large amounts of moisture. The Architect specified a minimum fall of 5%, so we framed our falls to approx 6.5% to ensure we had no water pool. We referred to the product spec sheet provided with the structural 19mm plywood to determine we needed solid fixing on all edges, at maximum of 400c, and framed as such. From the spec sheet we also determined the type of polyurethane glue we were allowed to use, and also that all screws were to be minimum 65mm SS at 200mm centres throughout.

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One of the two main gutters and parapets, completely finished and ready for TPO waterproof membrane to be installed by a professional waterproofer. Before the TPO was installed, we poured water down each drain to ensure we did not have any ponding issues. As seen in this photo, each plywood sheet retained a 3mm expansion gap. This ensures that even if the plywood expands and contracts as it naturally will, there are no ridges formed in the TPO which will hold water. Whilst we were up working in the gutter, we ensured our safety by putting in a temporary handrail to minimise the fall risk presented by working at height. Working also involved occasionally harnessing into an anchor, which I am licensed to do as it is regularly part of our scope of work.



Once we had completed the internal guttering, the next big task I was trusted with was the framing and lining of the large canopy that extends over the entryway. First we had to construct the base floor from 190x45 h1.2 timbers at 400c, which was suspended from the structural steel. From there we could install a 90x45 h3.2 ribbon board, ensuring it was high enough to create sufficient fall into the centre drain. Next, I ripped and planed the fairings that form the four corners of the valley, and fixed these down with HDG nails. It is critical to use HDG nails into CCA treated timber, even if they are not specified for moisture resistance, as the treatment will corrode untreated steel. I could then cut, rip and install all of my joists. This involved some complicated compound cuts to get everything perfect.



Lining the main canopy was one of my greatest challenges in this build. All sheets of 19mm h3.2 ply were required by the spec sheet to have staggered laps and 3 mm expansion joints. I took considerable effort to ensure I used the expensive sheets of ply in an efficient manner to ensure I didn't use more than required. This was a challenge as all sheets had to have the top grain of the timber facing the same direction, to ensure expansion and contraction does not cause bubbles or tears in the TPO.

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One of the best features of the build to me was the use of Kingspan insulated panel for the Roofing. These high density foam filled colour steel shells ensure that the building is highly thermally efficient, dispersing heat away in summertime and transferring warmth inside in winter. This means the building does not require any form of heating or air conditioning system that is so commonly found in other commercial spaces.



Another feature of Fergus is the use of FPS building wraps. Whilst common in residential it is not often used in commercial spaces. This system, due to its waterproof properties, allowed us to weatherproof the building extremely quickly and continue with interior framing and lining whilst the cladding was still being completed. Usually interior lining cannot be considered for inspection until the building is closed in, so this was a huge help. To install the paper, we worked in small teams and followed the guides provided to us by FPS. This included using their proprietary tapes and fixings to attach and seal the paper according to their spec sheet.



Here the unique waterproof tapes and staples can be seen clearer, installed at 200c on every stud. This is a typical example of the several hundred m2 of cavity systems I installed over the building to support multiple different types of cladding. Due to the unique junctions, joints and shapes of the building, installing the cavity system and cladding to suit was a great lesson in ensuring my understanding of weatherproofing principles. In this case, H3.2 castellated cavity batten was used to support a symonite alucobond aluminium panel, and thus had to be within 1 mm tolerance of straightness per m in order to install the product correctly. I went to great effort to ensure I packed and planed the batten to suit this but not compromise any drainage or deflection.

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An example of some of the cladding I got the chance to work on. One of the key factors that makes commercial construction different from residential is the number of stakeholders and subcontractors- there are many people on site, and relationship building is a large part of my job as such. On this job in particular I knew that I would need the roofers help to gain knowledge of how to install colour steel cladding, so I went out of my way to make their job as easy as possible so that they could help me in return. Here, we are installing the cladding on the parapet walls, over a HDPE CavBatt plastic cavity batten system.



With the exterior under control and sealed away by the FPS wrap, I could begin to tackle the significant amount of interior framing. To do this, I referenced the architectural plans to find the interior dimensional plan, and used this to set out on the floor using a combination of straight edges, lasers and chalk, the location of my frames. I could then begin to pre-nail frames, before fixing them to the floor with the fasteners detailed. I had to pay particular attention when framing to the bracing plan, as some walls were load bearing- supporting a mezzanine mid floor storage space. These walls required double 90x45 studs, with the studs nailed off at 150mm centres, and fixed at each end of the frame with Gib Handi Brackets as opposed to just 150mm bottom plate screws on the non-load-bearing walls.



Once frames were in place, plumbed and fully fixed off, I added additional bracing elements as per the bracing schedule, which included dragon ties fixed on all corners within the interior frame assembly. I could then come through and straighten all interior walls to a zero tolerance. Despite 3604 stating that walls may be within +/-6mm per 3m, we needed these walls to be perfect as they were to be client facing, mainly within the high end bathrooms featuring downward facing light, which would expose any crooks and bends in the wall.

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One of my last photos taken before I was transferred to a new site in January 2024. I am proud of this build, it has an extremely high finish quality, it encompasses some of my best work, and I am stoked to be able to take my friends and family there now that the restaurant is open, and show them the results of all my hard work.

I hope to be able to show you through the build too!