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CONNEXIONS

D&H STEEL PEOPLE + PROJECTS + PERFORMANCE

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D&H STEEL PUSHES THE PACE ON REGIONAL DISTRIBUTION CENTRE

For Countdown's new Regional Distribution Centre in Palmerston North, the biggest challenge for the Watts & Hughes and D&H Steel team was accurately planning the fabrication and erection of the structural steel within a very tight timeframe.

The programme allowed a quick 12-month turnaround from initial site works to finished construction.

"From the start we worked closely with the D&H team on the erection sequence," says Watts & Hughes contracts manager Jonathan Tindall.

The collaboration led Watts & Hughes to change its original plan to suit D&H Steel's preferred method, for good reason.

"D&H's solution had a flow-on effect for the roofing installation and post-tensioned floor slabs. The advantage of the new programme was that it offered the quickest way to build the main warehouse," says Tindall.

The developed pre-tender shop drawings were changed and efficiencies were identified for the site installation. Specifically, the locations of the rafter-bracing joints were altered in such a way that less site welding was required and more ground assembly was possible.

"This is a true show of the experience and knowledge D&H has, and their willingness to work collaboratively with designers and the main contractor to benefit the overall project," says Tindall.

D&H Steel site supervisor Ina Taikakara oversaw the on-site erection.

Above: Countdown's Regionial Distribution Centre in mid-construction. In a nod to the local economy, D&H Steel used Palmerston North companies such as Stevenson Engineering and McIntosh Cranes to help deliver the structural steel elements of the project.

"We assembled all of the steel roof sections in bolted modules on the ground and then lifted them in large, multi-crane lifts. Using six cranes, we could lift more than 400 tonnes of steel in a single day," says Taikakara.

Each section was about 34m by 100m and there were 10 in total.

Continued inside...

D&H STEEL CONSTRUCTION

Above: Artist depiction of The Spire.

Main Image: D&H Steel pushes the boundaries and embraces the new Quaketek technology on The Spire, Christchurch.

Below: D&H Steel site supervisor Kyle Finch.

DESIGN SMARTS AT THE SPIRE

A brand-new hotel and apartment development has been taking shape in the heart of the Christchurch CBD. Dubbed The Spire, D&H Steel successfully applied its considerable technical know-how to the nine-storey building.

The 96-room Wyndham Gardens Hotel forms the base of the building, with the Spire Apartments occupying the top four floors. There are also two levels of basement and mezzanine-level car parking, and a ground floor lobby and café.

The building – supported by 70 screw piles, each 25-28m deep – is a steel structure with Comflor, supported by primary and secondary structural steel members. D&H Steel supplied and installed all of the structural steel.

Clearwater Construction project manager Matt Robertson says that D&H Steel was very proactive.

"During the drawing and modelling phase, D&H identified several buildability issues, including the need for more temporary construction bracing. It was great to know that D&H were applying their design smarts and considering whole-of-project construction issues rather than just the steel structure. The additional bracing allowed us to revise our floor-pour sequence and gain significant time on our programme," says Robertson.

Initially, there were gaps in the structural steel erection phases while floors were being poured. But collaboration between Clearwater, D&H Steel and Metal Decks enabled the team to pour level five sooner which, in turn, enabled D&H Steel to have a continuous run on site at the steel erection of the upper levels.

"Overall, this shaved about six weeks off the programme for what was a complex and heavily phased project," says D&H Steel site supervisor Kyle Finch. "Good planning and communication were crucial to ensure the project went smoothly."

D&H Steel detailer Wayne Peachey also modelled all of the precast panels and the secondary steel such as weld plates and precast connections. "This meant we could provide detailed information to the pre-casters regarding the location of panel connections," says Robertson.

Another value-add was having the lift core frames arrive on site pre-assembled. "It made for a much faster build in that area and allowed for a very plumb lift shaft, accurate to about three millimetres," says Robertson.

Arguably, the biggest challenge related to the Quaketek seismic friction dampers. Sixty of these devices are installed in the building and it marks the first outing for this technology in New Zealand.

"It's an innovative, new proprietary solution out of Montreal, Canada," says D&H Steel managing director Wayne Carson. "We arrived at the solution together with structural engineer DHC Consulting and Clearwater Construction. We like to explore new ideas and push the boundaries on new technology."

The Quaketek seismic friction dampers are substitutes for both buckling restrained braces and eccentrically braced frame solutions. They limit the overstrength requirements in the structure, which led to large savings in the foundations for the project.

"Because it was a first, we went through an extensive third-party quality certification process," says Carson. "We engaged expat engineers in Montreal to observe the testing."

There were no surprises when the braces landed in New Zealand. It just came down to practical on-site issues.

"To begin with, it took two-three hours to install a brace," says Finch. "We quickly got the time down to 20 minutes."

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The process required considerable pre-planning.

"The workshop has been running just as hard as the site team to get the right elements delivered to site on time, in the right order," says Taikakara. "It means the rigging crew can have everything it needs to make the large lifts happen to schedule, which is important when the cranes need to be booked well in advance."

The distribution centre footprint is 195m x 189m and, due to the large, 60m spans between the portal supports, KCL Engineering designed Custom Welded Beams as the main structure – all up, 260 beams totalling 850t were made to enable the required long, clear spans. The main rafters were predominantly 1m deep and 24m long.

In all, 1,800t of structural steel was used for the project and the overall programme was ahead of schedule.

"As a result, we are re-programming earlier concrete pour dates and allowing access to the pallet racking contractor, a critical trade for this job," says Tindall. "This is a huge advantage for the whole project team as there is still a lot to happen once D&H leaves the site in early March."

The 38,000sqm state-of-the-art distribution centre is on track for completion later this year. Once fully operational, it will be able to move around 450,000 cartons per week through the Countdown, FreshChoice and SuperValue networks.

"It's been a delight to have D&H Steel on such a major project, and show the Manawatu region and Countdown what we can do working as a team," says Tindall.

ESI – ADDING VALUE FROM THE GET-GO AT 10 MADDEN STREET

When Hawkins Construction was considering how to approach the 10 Madden Street design and build, there was no doubt that early subcontractor involvement (ESI) was going to play an important role.

"ESI typically allows you to sail through the key challenges because you can make changes, to alter the trickier things and make it easier to build, and to coordinate with the other trades," says Hawkins Construction project manager Jason Carnie. "ESI was critical for this project.

"10 Madden Street wasn't the most straightforward structure so it was important that we had D&H Steel in the room with the designer. D&H offered valuable advice upfront with the design, which really benefited the project."

The new $72m office building in Auckland has a 1,275sqm floor plate comprising a single-level basement and seven upper floors. The building is a steel and concrete superstructure with a seismic resisting system of moment resisting steel frames along the building and buckling restrained brace frames in the opposite direction.

It was a challenge to build and significant thought went into devising the method for erecting the structure, says Carnie.

It required a lot of temporary bracing, which was designed to be reused and relocated after each concrete pour.

The steel detailers for the Madden Street project were Wayne Peachey and Wendy Sang.

D&H Steel's ESI approach was instrumental to the success of 10 Madden Street.

Another challenge involved the staircases.

The original base build design included one staircase on the exterior wall. Once the Media Design School came on board as a tenant, the design was altered to include an internal fire exit staircase within the core of the building. However, construction was already well underway when the design was changed. By the time the team had manufactured the steel for the stairs, the roof was already on.

"D&H rose to the challenge of supplying and installing the difficult retrofit staircases at a critical stage of the project," says Carnie. "They designed and built a manual gantry crane on level four to aid installation, then we built and fitted the internal stairs. A lot of thought and planning went into that."

With D&H Steel's support, Hawkins handed over the base build ahead of programme – despite the issues with COVID and the design changes.

So what is it like working with D&H Steel? It's more than simply its ESI approach and experience, says Carnie. "D&H Steel bring their culture of collaboration. They work with us on projects, that's why we like having them on the team."

MOVING ON UP

Exciting change is afoot within the D&H Steel ranks. First, we're pleased to announce Wayne Carson's appointment to Managing Director (MD).

Prior to taking on the MD role, Wayne was D&H Steel's General Manager (GM). For 12 years, he oversaw the business' transformation to become one of New Zealand's leading steel construction companies.

"I'm immensely proud of D&H Steel's growth and success," says Wayne. "As a business, we have gone from strength to strength, and it's a reflection of the committed and talented people that form our D&H Steel family."

And, following Wayne's move to MD, former Contracts Manager Richard Hine has stepped into the GM role. Richard has been with the company for five years.

As a civil engineer, Richard has held significant project engineering and management roles in Hong Kong and Dubai, where he delivered successful outcomes on multimillion dollar projects.

There is a clear aspiration to continue to build on the company's reputation, says Richard.

"As a leader in the market we are continually striving to improve, year on year," he says. "At the heart of this is our focus on growing and fostering our relationships with key clients across the industry, and our commitment to perform at the highest level."

WELCOME AMY KNOWLES

PROJECT MANAGER

Amy returned to D&H Steel last July after several years pursuing a career in project management. Following three years working for the Department of Corrections on a new prison building, Amy is now learning to be a project manager in structural steel at D&H. She says that, despite the uncertainty of 2020, some great opportunities have come her way and she's excited about learning some new skills among familiar and friendly faces.

WELCOME MORO SMITH

PROJECT MANAGER

Moro is a recent addition to the D&H Steel family. His career in steel spans 30 years spent working on a mix of local and international projects. Moro's life in steel started at Waikato Tech followed by several stints at local steel fabrication companies in Hamilton. Moving abroad, he worked for a variety of companies in Wales, with the majority of work undertaken on sites across the UK. Underpinned by some solid practical experience, he recently graduated with an Engineering degree from Cardiff University. Moro is looking forward to this next exciting chapter.

APPRENTICE SUCCESSES

A big shout out to Abishek Naidu, Adam Kidson and Angela Adams who have all successfully completed their apprenticeship journeys.

D&H Steel workshop manager Cameron Rogers presented each of them with their certificates in front of the team at an informal ceremony in December.

MATES IN CONSTRUCTION

D&H Steel is proud to be the first company in New Zealand to become an accredited partner of Mates in Construction. Mates field officer Richie Hepi visited our D&H Steel site to congratulate the team and present managing director Wayne Carson with a plaque to mark the achievement.

SAFETY AWARDS

In the first presentation since COVID-19 struck, operations manager Dean Pouwhare presented D&H Steel's well-deserved safety awards to Vince Naime, Jhun Bondad, Tofa Tapu and Ronaldo Villaran.

Vince Naime
Welder

Jhun Bondad
Fabricator

Tofa Tapu
Machine Operator

Ronaldo Villaran
Fabricator

CHRISTMAS

The D&H Steel family enjoyed an on-site Christmas BBQ. Aldrin Albo, Divnish Raj, Vince Naime and Justin Pateman enjoyed working the hot plates to serve up the festive tucker to the team, complete with a dose of Christmas spirit.

A STORY OF TWO TOWERS: AUT ACCOMMODATION

D&H Steel brought its skills to bear on New Zealand's largest student accommodation project. The new AUT development on Wakefield Street boasts 697 self-catered student apartments across two towers, which are connected by a 'podium'.

The multi-storey mixed concrete-and-steel structure is the first project D&H Steel has completed with Icon Construction.

D&H Steel was responsible for the steelwork in the podium, and in the lift shafts and staircases that run up through the towers, each 17-storeys high.

Constructing the stair shafts in the concrete towers presented a few challenges.

"Each piece of steel for the lift shaft was brought in by hand and installed with a manual chain block. And each piece was drilled and attached with chemical resin to the wall core, manually," says D&H Steel site supervisor Kyle Finch. "It was labour intensive."

The two towers were built simultaneously. "There were effectively five works sites within the one job – two lift shafts, two sets of stairs and the podium," says Finch.

A key part of the project was building the five-level AUT podium structure, which comprises a fitness centre, basketball court, retail spaces, health and wellness facilities, and administration and student services.

Situated at level three were the critical transfer beams – big, deep and heavy structures that stand between the two buildings and support the levels above.

"Like a bridge that has a building built on top of it," says D&H Steel general manager Richard Hine.

The largest beam weighed 9.35t and was 18.85m long.

Hine notes that it was Finch's first job with D&H Steel and his performance impressed the team on the job.

"Kyle picked up the D&H way very quickly; he was definitely a big part of making it a successful project," says Hine.

+ **Project Management**
+ **3D Modelling & Shop Drawings**
+ **Fabrication**
+ **Protective Coatings**
+ **Site Management & Erection**

D&H was the first steel constructor in NZ to be awarded this International Quality Accreditation. We comply with ISO 3834 for the benefit of our clients.

ISO 3834 Part 2
Certificate No. 001NZ/2014

We were also the first to acquire Steel Fabrication Certification - a quality management system under the auspices of the IIW (International Institute of Welding).

SFC CERTIFIED FABRICATOR
CONSTRUCTION CATEGORY 4
CERTIFICATE NO: 001/SFC-REV.0

We manufacture all the commonly specified welded beam and column sections and provide a free design service for optimised, tapered portal frames. Our custom welded beams are made from G350 steel and welded on both sides.

CUSTOM WELDED BEAMS

SCNZ MEMBER OF STEEL CONSTRUCTION NEW ZEALAND

KEEPING THE LID ON CONSTRUCTION NOISE

D&H Steel helped to deliver the huge, acoustically insulated noise enclosure at City Rail Link's (CRL's) Mercury Lane construction site. The structure plays a vital role in the 24-hour tunnelling operation.

A temporary, 22m-deep access shaft at the site, which provides below-ground access to the mined tunnels, is hidden from view beneath the large, noise enclosure structure. At 46m long, 39m wide and 16m high, it's half the size of a rugby field and it houses a spoil storage area, ventilation system and overhead gantry crane.

The enclosure muffles the construction noise and gives CRL the flexibility to work longer hours to get the underground job done without disturbing the local community. The other function of the building is to support a massive 50t single girder gantry crane, requiring 100t of Custom Welded Beams in the portal frames.

Ask D&H Steel's site supervisor Jordan Brown what sets this project apart from other projects and just one thing springs to mind: "The timeframe," he says.

"It was pretty intense. We had three crews of about 12 working alternate 12-hour shifts on site," says Brown.

The work started at midday each Friday when the cranes and access machines arrived on site. From three o'clock, the team received the steel.

Half an hour before the steel was needed, the on-site crew gave the go-ahead to the workshop, where the trailers were sitting loaded, ready and waiting.

"As soon as the steel arrived, we'd unload, lay it all out, and by five o'clock we'd start to assemble the roof frames and wall sections ready for Saturday morning when the erection work would start," says Brown. "Come Sunday night, we'd wrap up for the weekend with a site check."

The D&H Steel team completed two loads each weekend. "Then we'd 'rinse and repeat' the next weekend," says Brown.

The steel for the project was erected over six short, consecutive weekends as part of a finely orchestrated process where every detail was planned and organised two weeks in advance.

"I would go through all of the task and risk analysis with the site manager," says Brown. "I had to ensure that every piece of steel was on the truck. So I'd go to the workshop during the week to make sure it was all ready to go."

It was D&H Steel's workmanship and planning prowess on the job that set it apart.

"The way we got the work done in the required time and our application of rigorous safety procedures made us stand out on site," says Brown. "The tunnellers from Australia were surprised and impressed at how fast we did it."

The structure will be removed once the project nears completion in 2024.

Top: Pictured here, the first of eight portal frames. D&H Steel erected the steel for the CRL noise enclosure over six rapid, successive weekends.

Above: D&H Steel site supervisor Jordan Brown.

Phone one of our team today on 09 839 7250. We'd love to hear from you.

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