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Artist's impression of the new Tōtara Haumarū.

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D&H STEEL TAKES A HEALTHY PERSPECTIVE

If you take a look at D&H Steel's project list, you might notice an emerging trend – hospital builds.

It's a deliberate strategy, says Wayne Carson, Managing Director, D&H Steel. "It fits with our desire for ESI [Early Subcontractor Involvement] contracts but requires us to commit much greater high-level resources early and provide detailed input, however they invariably result in much more successful projects."

The ESI environment allows D&H to address areas of value and risk associated with buildability, with a view to delivering 'best for project' outcomes. It's a pivotal approach for hospital jobs, which are inherently complex and constantly challenge design teams with scope changes.

"They are detailed buildings that require extensive services coordination and involve plant-related considerations that generally fall later in the design process," says Carson. "Our challenge is to flush out the unknowns to ensure that the back end of the design and shop drawings are on time to meet the sequence of construction."

The series of hospital projects offers D&H a solid baseload and represents a reasonable proportion of its workload at any one time.

"And while they are significant projects, with front-end loaded effort, once the physical works start, there are usually fewer surprises and generally the projects run much smoother," says Carson.

TŌTARA HAUMARU

Construction of a new four-storey hospital for the Waitematā District Health Board is underway in Takapuna and includes 2,200t of structural steel.

Based on an IL4 requirement, the structure has been designed to the highest standard to resist high-magnitude earthquakes and allow the hospital to remain operational. They are more robust and demand a higher level of workmanship and, therefore, quality.

For this ESI project, D&H has value engineered many savings during the early ESI period, especially when working directly with the engineers. One area of focus was on welding detail that, on its own, generated \$500k of direct savings.

Continued inside



Hawkins Project Lead Phillip Helleur says that D&H “brought the firepower” in terms of its experience. “Wayne Carson and the team have driven the modelling and structural design process early, working closely with Hawkins Engineer Matt Campbell to refine a challenging design.”

Like most large-scale projects in New Zealand, the team has been facing COVID backlash, and supply chain and shipping delays, which are making deliveries unpredictable. “D&H have provided great visibility on shipping and are constantly remaining agile in this COVID minefield that, alongside the early input into the design, is a real advantage,” says Helleur.

“D&H are leaders in industry – they bring professionalism coupled with their advanced technical capabilities that are also amongst the best in the industry.”

PHILLIP HELLEUR Project Lead, Hawkins

PROJECT MAUNGA STAGE 2

Steel installation for this new seven-storey, base-isolated hospital at the Taranaki Base Hospital will commence in August 2022 and include 3,500t of structural steel.

The period of ESI was slightly shorter for this project – the design was largely developed but early procurement was needed and D&H had the opportunity to review the design and contribute to its final development.

D&H can deliver the project from Auckland, with assistance from local resources.

“We intend to support the local communities as much as we can and give them the opportunity to be involved in the project, in the same way that we will do for Dunedin Hospital,” says Carson.

DUNEDIN HOSPITAL

Another ESI project, Dunedin Hospital will be two years from the time D&H started to be involved till construction starts.

One of the largest steel projects ever undertaken in New Zealand, this 13-storey, base-isolated hospital will require an estimated 14,000t of structural steel. D&H is undertaking the steel contract as part of a joint venture.

“We wouldn’t want to commit to the whole project ourselves because it would require us to devote too much of our resource to just one project and one client,” says Carson. “So it’s a very complementary arrangement for us to work with Christchurch-based John Jones Steel to deliver this project, which we have done on many projects.”

DIAGRID MEGASTRUCTURE



D&H Steel’s work on the massive diagrid structure for the University of Auckland’s new Recreation and Wellness Centre required innovative thinking, skill, precision and plenty of space.

The structural steel frame for the Centre showcases a diagrid – a full-height perimeter steel-bracing technique that wraps around the main structure, creating an architecturally exposed structural system.

The diagrid was fabricated and painstakingly preassembled in D&H Steel’s workshop. D&H Steel General Manager Richard Hine says that accuracy drove the preassembly. “So when we put it together on site, we know each component will match exactly.”

Significant effort and sophistication went into developing the welding methodologies, along with a massive 24,000 hours of welding and fabrication time. “It is the largest single assembly that D&H has ever fabricated,” says Hine.

The largest of the holding down bolts, which are cast into the concrete for the diagrid to land on, are an impressive four metres long.

The size of the diagrid presented a major challenge, says Hine. “We had to convert half of our paint bay into a fabrication and welding area for the final assembly, so we could set up the diagrid structure and preassembly one elevation at a time.”

Next, it was cut into transportable and erectable components – ranging between 14t and 21t – for reassembly on site.

Significant temporary works are required on site to maintain the structure in position until it is site welded together again.

D&H used its smarts to design temporary erection aids, which are of sufficient strength that the erection of the superstructure above can continue while reassembly welding of the diagrid is undertaken. “It’s a simple yet robust solution that has taken the final welding off the critical path for a time,” says Hine.

The diagrid sections are being erected using high-capacity tower cranes, with some assemblies requiring a tandem lift due to their weight.

“It’s going well,” says Steve Ritchie, Project Director, Hawkins, adding that the architect, engineer and client’s project managers are very impressed with how it’s looking.

“D&H have considerable collective experience – the practical knowledge about how these things work and the engineering in behind it – which enables them to come up with solutions that are workable.”

Above: D&H Steel applied its considerable know-how to design temporary erection aids, to allow the superstructure above to progress while welding of the diagrid is undertaken.

KEEPING UP WITH COVID

Since COVID arrived on our shores just over two years ago, D&H Steel has kept pace with the ever-evolving pandemic and with changing guidance from the Ministry of Health.

To begin, the team created multiple policies to cover everything from contact tracing and declarations to mask wearing, hygiene and social distancing. These have been adapted depending on the alert level or traffic light setting.

“Our social distancing has centred on working bubbles,” says D&H Steel General Manager Richard Hine. Different company functions are siloed – management and admin, production, workshop and site crews.

During Level 3, site crews weren't allowed to come into the factory and were instead having contactless handovers. Meanwhile in the workshop, there have been numerous bubbles where different trades are separated across each shift.

“At one point, we were running 13

bubbles across the factory itself,” says Hine. “Not only did we have staff working in their own bubbles, but they had staggered start and finish times, and lunch and smoko breaks.”

More recently, D&H has reduced the number of workshop bubbles to eight. The practice ensures that staff don't all arrive on site at once.

But working bubbles also had an effect on productivity. Staff isolating at home has only deepened the impact – in early March, 111 staff were in isolation.

“We're slowly coming back to full capacity, but it's going to take some time as we are experiencing disruption across many of our supply chain partners. We estimate that we will have lost more than 20,000 productive hours across the business from isolation requirements alone, which is equal to about one month's productivity. But the time impact is much more due to some critical activities being impacted more than others.”

Impacts from the Level 4 lockdowns, when the facility was shut, greatly exceed that.

Rapid antigen tests (RATs) have been a gamechanger for D&H. “The day RAT

COVID testing became available, we quickly secured sufficient tests to help us manage COVID more effectively as a business,” says Hine.

And D&H went one step further, providing close contacts at-home RATs for additional daily testing over and above the two tests required by the Ministry of Health. “We knew as soon as they became positive, so no one stayed in isolation for any longer than necessary.”

D&H's strategy has had good staff buy in, including its vaccination policy. “We chose not to mandate vaccination but we encouraged it. Almost 100 percent of our workforce is vaccinated,” says Hine.

D&H has had all hands to the pump working on time mitigation measures, including running extended hours in the workshop and engaging every available additional resource across the country.

D&H is thankful for the support of many other fabrication subcontractors that have helped to minimise delays to projects. Steel is being fabricated as far away as Christchurch, and many places in between, and is being trucked back to Auckland.

DELIVERING THE GOODS FOR NZ POST

D&H Steel's experience, capability and tight industry relationships were invaluable for this significant warehouse project for NZ Post.

NZ Post is investing in infrastructure to meet the growing demand for online shopping, including a new processing centre in Wiri, South Auckland, due to open in 2023. It has signed up to a 20-year lease for the 33,700sqm premises.

The brief, says MSC Structural Engineer Patrick Wong, was to create the largest possible clear-span envelope for the site, so that NZ Post's fitout wouldn't be hampered by the supporting structure.

“D&H Steel has built a lot of steel structures so they have the background knowledge of what works, what doesn't work and what is cheaper for the client,” says Wong. “They provided the most economical solution for this job by creating portal frames using their efficient, custom-made welded beam sections.”

The 260m-long warehouse features a single internal spine beam and 24 Custom Welded Beam portals – each weighing 30t, and measuring 118m wide and 1,500mm deep at the eave.

D&H Steel also drew on its solid ties with the University of Auckland to support MSC with the engineering design process. “We leveraged D&H's relationship to quickly access specialist advice on the structure,” says Wong.



Above: 24 Custom Welded Beam portals provide the largest possible clear-span envelope, so the fitout won't be impeded by the supporting structure.

This is the fourth project that Macrennie Site Manager Brad Somervell has done with D&H Steel, and he's been impressed by the value the company brings.

“They have the experience, the resources, the machines, they have everything on hand to do what they need to do, efficiently. And their riggers and site staff are all great to work with,” says Somervell.

“The way these jobs go, to make them run as smooth as possible, it's about communication. Ina is always on site to discuss general site operations, methodology and programme, every day.”

The steelwork was overseen by D&H Steel's Site Supervisor Ina Taikakara, and involved Quantity Surveyor Jamie Moxon and Project Manager Moro Smith.

- + 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).



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.



50 – IT'S NOT JUST A NUMBER

You may have noticed a little something different about our logo recently – the addition of a noteworthy number. The fact is, we turn 50 this year and we're pretty excited about it. It's a significant milestone, and we're proud to not just be in business after all this time, but to have earned our place as a leader in the steel construction industry.

Without giving too much away, we have a few things planned for the year to mark the special occasion. We're looking forward to sharing more details in the coming months. Watch this space!



COVID SUPPORT

James Lousi stepped up to take on the role of D&H's COVID staff and visitor liaison. "James has done all of our declarations and visitor vetting," says D&H Steel General Manager Richard Hine. "And in more recent times he's become our D&H RAT 'nurse'. He set up the testing centre at the entrance and does an incredible job of managing the RATs for both the day and night shifts."

Left: James Lousi administers RATs to the morning crew.

NEW STARTERS



Edna Bondoc is a Civil Engineer with more than 25 years of experience. Outside of work she loves cooking, listening to music and watching movies.



Ravi Theivendram is a Quantity Surveyor, experienced in heavy structural steel construction. To relax, he plays social soccer and badminton.



Maryam Nasrollahi, an earthquake and structural engineer, has been involved in various noteworthy structural projects in Iran. She enjoys painting and Persian folklore music, and exploring the countryside.



Jack Prendergast joins D&H Steel as Assistant Workshop Manager after an extensive career at Fletcher Steel. After hours, Jack is a trainer for Otahuhu Rugby League and the Warrior Reserves.



Andrew Curtis (left) and **Kelvin Chand** (far left) return to D&H Steel in supervisory roles after breaks of five years.

Phone one of our team today. We'd love to hear from you.

Wayne Carson – 021 949 277
Managing Director

Richard Hine – 022 032 6622
General Manager

Dean Pouwhare – 021 523 788
Operations Manager/Director

Mike Thompson – 021 526 102
Detailing Manager

John Frederickson – 021 534 435
CWB Manager

Colin Ross – 021 422 819
Project Manager

Desmond Knowles – 021 526 008
Project Manager

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