

Meeting the challenges of Fonterra's Project Kiwi



It was always going to be a project with challenges. Fonterra at Takanini is a tidy but tight location. Adding a milk packaging hall, a warehouse plus offices and an amenities block, without disrupting existing production would need a real magician—a mere illusionist wouldn't do! NZ Strong's Managing Director Shane Brealey subcontracted the steelwork detailing, fabrication and erection to D & H Steel.

"Project Kiwi put us on a fast-track to deliver by Christmas 2012, a programme we measured in weeks, not months. Accommodating 70 milk tankers a day presented a logistical challenge, added to which Fonterra was filling 200 B-trains daily.

There were some 1,000 employees on site, and we had to maintain red-line hygiene protection areas.

"To avoid impeding any future development needs, the footprint of the new offices and amenities block was split over two levels and elevated over the



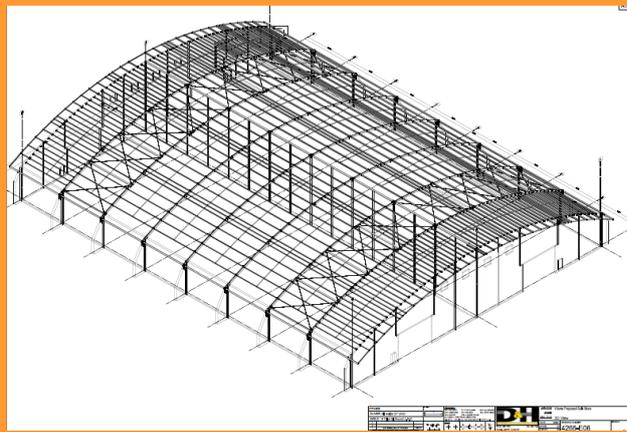
road to the milk tanker bays. D&H elected to pre-assemble the steel structure in an adjacent car park and took responsibility for the night-time lift of the 55-tonne steel frame. It was conducted with consummate precision and total safety."

D&H's Site Manager Dean Pouwhare: "Our paperwork is comprehensive and reflects deep what-if planning. Knowing the Safe Working Loads of the two

300-tonne cranes, we deducted 25% to allow for a tandem lift and loaded the cranes with the appropriate counterweights. For each stage I minimise the danger zone. Then I minimise the time any member of my team has to be in the danger zone. It's stressful and a huge relief when it goes to plan! Starting at 6.00pm, by 6.00am we were finished and the tankers were running again."

The successful roll-out of Fonterra's Milk for Schools programme continues.

Viterra's Prototype Grain Store



This is a Clearwater Construction design/build that could be easily replicated. The 250mm pre-fabricated concrete walls required buttress columns to withstand lateral pressure from the grain inside as well as possible earthquakes. (The location is Rolleston, near Christchurch.) The primary factor governing the curvature of the roof was the potential snow loading; the curve also mitigates against wind uplift. The roof has been designed for natural cross-ventilation, thus obviating the need for mechanicals.

The curved rafters were made at D&H Steel from Parallel Flange Channels (PFCs) welded toe-to-toe to form a 300mm box section. Each 12m length was carefully bent on a hydraulic jack to match the drawing detailed by Wendy Sang. The purlins were also boxed to minimise problems from grain dust. In addition to shipping the steel to the South Island, D&H sent one of its rigging crews to the site for the duration, just to make sure the final inspection was passed with flying colours.



CWBs in rail wagons

When KiwiRail sponsored a competition inviting students to develop technology for unloading cement and clinker, a key driver was the resource consent conditions that restrict train operating times. These limit the time available for unloading wagons at the port of Timaru to two and a half hours, which translates to 500 tonnes an hour. Four mechanical engineering graduates won a \$2,000 cash prize for their ideas which included unassisted unloading—no push-over when it comes to cement.

At the same time the outworn design of the old wagons needed a re-vamp, which is where D&H Steel was asked to come to the party with some Custom Welded Beams. These would help to ruggedise the new wagons and extend their working life, but the beams also had to be designed with a special function in mind—unassisted side-tipping.

Below left: Tony Tongiolo performs a final Quality Assurance check on a shipment of CWBs destined for the workshops of KiwiRail in Dunedin.

Below right: A side-tipping wagon equipped with D&H Custom Welded Beams is tested at Hillside.

KiwiRail's Principal Design Engineer, Tony Pepperell, says: "The work of the Canterbury students has been valuable in determining the feasibility of the concept and brainstorming ideas. One of the options is a new class of wagon design specifically for the project. If the project succeeds, detailed wagon design will commence."

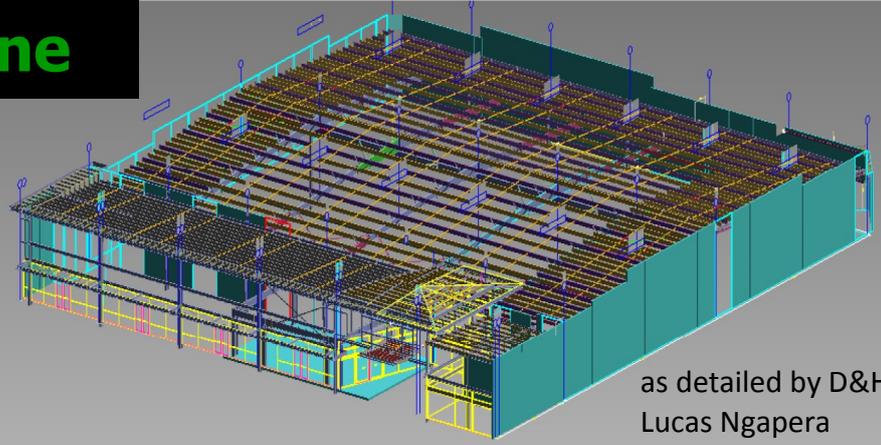
D&H is hoping that future rolling stock will ride on CWBs from Brick St.



Countdown Petone

Developed by Redwood Group for Countdown, the new supermarket and retail outlets are situated in an area where seismic loadings are high. Mathew Erskine-Shaw of Stephen Mitchell Engineering Ltd says seismic considerations were what governed the main design. "All four sides of the supermarket have been braced with a planar truss (see cross-bracing below right). The members and the nodes function in a 2-D plane, working in conjunction with the tapered steel portals and the Custom Welded Beams that span the concrete tilt-up walls. The planar truss effectively strengthens the whole structure's earthquake resistance."

Naylor Love's Project Manager, Dave Hanning, said: "The retail outlets are on the same side of the building as the main entrance (on the left hand side of the drawing). Even though there were three different roof levels, and the logistics of long-distance truck deliveries, D&H made sure the steelwork was installed according to our fast-track programme. The D&H rigging crew led by Jimmy Noble kept me very happy by staying 'on site' till erection was completed."



as detailed by D&H's Lucas Ngapera



Westgate Foot & Cycle Bridge Nears Completion

D&H's Wayne Peachey detailed this tubular truss structure, which spans 8 lanes of SH16 in Hobsonville, but he's quick to pay tribute to the vision of John McNeil, Technical Director of Aurecon. "He could have just zig-zagged the design," says Wayne, "but chose to curve the 100m ramp into a helix, angling it at 30° to avoid being too close to people's properties. Because he designed the truss **above** the deck, he was able to keep the depth of the bridge shallow. As a result, the rise in the disability access is

at the low ratio of 1:13, which was advantageous to those crossing. It also meant that the onramp could be kept short. Had the tubular truss been designed for construction below the deck, the ramp would have been 2m higher and 30m longer - and more expensive!"

HEB Project Manager Geoffrey Clayton says: "Given the nature of this bridge, we're very pleased with the relationship established with D&H. We combined skill and teamwork to ensure the project's success."





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In Auckland, Christchurch and all round New Zealand, our CWB services have been in demand. In addition, we’ve been busy with two large export orders. Two members of our CWB team, Parminder Sharma and Dennis Kochuraman, splice a length of plate to order, ready for the three men of our “I” team—Michael Amaya, Carlos Indo and Patrick Ngapera—who’ll turn it into a bespoke beam (or column) with a web and top and bottom flanges. The dimensions are engineered to meet specified load requirements along the length of the beam, whether it’s a tapered portal or an asymmetrical solution. Floor beams, bridge beams, crane beams—D&H makes them all to order, with no wastage. If weight is a factor, our Fabsec cellular beams are the option and save on cost.

Health & Safety Contributing to Long Service

Karl Muller is pictured (right) receiving the Hawkins Construction Health & Safety Award from Project H&S Manager Mike Richards. “Karl’s ongoing commitment to Health & Safety,” said Mike, “is reflected in the way he conducts himself with the D&H teams on site: always smiling, sharp-witted and professional.”



Hawkins Construction presents the award on the last Friday of each month, combining it with an on-site BBQ Breakfast. “I’ve known Karl for more than 20 years on numerous sites,” adds Mike. “He is always well respected by the crews he works with and is a very deserving recipient.”

Johnny Ahvui has been a D&H employee for more than 30 years. He and his wife Pula have four children; the eldest is studying Law at the University of Auckland and his sister will be the next to enrol. Says Johnny: “I came to D&H to work. Our late Samoan grandmother was very proud of us!”



Joey Cowan is one of D&H’s longest serving fabricators. “After more than 30 years, I’m about to blow full-time. I used to play Rugby League and still like to keep myself fit with the mountain bike. I have a daughter in Dunedin and some property I’ve inherited in the Cooks. But I’ll be missing my D&H family, for sure.”