

FRESH FACED

Innovation and experience adds value at Sunshine Hospital.

HEAD CONTRACTOR : Kane Constructions
CLIENT : Department of Health / Western Health
PROJECT MANAGER : Atkinson Johnstaff Projects
ARCHITECT : Silver Thomas Hanley
STRUCTURAL ENGINEER : IrwinConsult
QUANTITY SURVEYOR : Donald Cant Watts Corke
COMPLETION : September 2012
PROJECT VALUE : \$55 Million



In constructing the new Inpatient Building and ancillary works for Western Health's Sunshine Campus, Kane Constructions used their hands-on experience from prior hospital projects to refine the design, ensuring all systems would work in harmony, and that potential defects were resolved at the earliest opportunity.

The scope of works included a four level plus basement In Patients Building (IPU) with 16,000m² of floor space. The IPU contains a 34 cot special care nursery, paediatrics consulting suites, inpatients consulting suites, 128 bed general In Patients ward split over two levels with a mixture of single and two bed rooms, pharmacy, cytotoxic and biohazard laboratories, 11 isolation rooms (including 2 in the paediatrics

special care nursery), 14 day oncology chairs and 14 day procedure beds.

Structurally, the IPU is an alucobond clad concrete structure, with a concrete roof slab under a metal deck roof, which is future proofed for an additional 2 levels and carries solar hot water systems. The facade features double glazed punch windows, perforated metal sunshades and glazed curtain wall features. It forms a new frontage and main entrance for the hospital on Furlong Road, with several able body and disabled covered drop off zones. Two structural steel linkbridges connect the IPU to the Hospital's existing Building A. These were constructed to very tight tolerances so they could be craned into position and bolted to the buildings.

Kane had a team of 12 management staff on the Project, plus up to 6 directly employed labourers, and a subcontractor workforce peaking at 220 men daily. In terms of the hospital systems, there were numerous challenges to resolve.

"A new tunnel 15m wide x 70m long was required to be constructed under the existing hospital linking the new IPU Building with the existing hospital. This tunnel was on the critical path of the Project as it housed the main plantroom for the IPU and delivered all infrastructure services from the existing Hospital to the IPU Building," explained Kane Constructions Project Manager, Steve Theisz. "The tunnel was required to be dug in solid rock (basalt) using no vibration methods due to an MRI being located above the tunnel which was required to remain fully operational

Water System in the TTR Building which was a closed system. Kane was contracted to install a new chiller to add capacity to the existing chilled water system and to link the two systems and convert the entire system to a closed system. This was a very challenging task to ensure that the pressure in many different buildings of differing heights was maintained when the system was changed from an open system to a closed system.

"The design documentation lacked details of how the new system would run and be commissioned, so Kane in conjunction with the Mechanical Subcontractor A E Smith arranged for several workshops with the design team to investigate a solution. It was agreed that new valves would need to be installed in the existing system and pressure readings would need to be taken at certain intervals in order to establish the working pressure of the existing system. This allowed the design pressure of the new closed system to be established.

"The major infrastructure works were completed over a period of six months where a new chiller, a new closed circuit cooler and multiple pumps and header extensions were installed and the system was converted to a closed system linking the TTR to the Building A/B system. The commissioning of this new system went seamlessly, which is a credit to the Kane and AE Smith staff for their meticulous efforts."

"The project has benefited enormously from Kane's previous hospital experience, including our understanding of the interface required between different services to ensure that the entire building works in harmony. We identify these interfaces early, making sure they have been appropriately documented and ensuring the subcontractors install the interface between systems so that all services are communicating with each other in the appropriate manner, that is, the interface between security and Fire indicator panel (FIP), between FIP and mechanical services,

between FIP and Nursecall, between Nursecall and paging etc.

"By knowing the problems that typically occur in hospitals and identifying these in Kane's Quality Assurance Plan at the commencement of the Project and implementing strict QA ITP's and ITR's to eliminate these problems from occurring. Kane bring a D & C approach to a fully documented fixed lump sum project, by identifying design issues early and providing design solutions to ensure the right outcome for the Project and to avoid any delays being incurred to the Project.

"Stringent QA procedures were established for the construction of the isolation rooms. The isolation rooms are required to be at a negative pressure of 30pa and to achieve this, the rooms need to be air tight. Particular construction techniques are required to achieve this and the construction documents were deficient in this regard. Kane facilitated a workshop with the design consultants to suggest design solutions to achieve adequate sealing of the rooms. These solutions were implemented and strict QA ITR were developed, including hold points to ensure the rooms could achieve the pressure regime specified.

"We commenced defecting the Project months prior to handover. Kane implemented an iPad based, defects management system which saved significant time during inspections and sign off's. The early and progressive approach to identifying and closing out defects ensured Kane only had minimal defects at Practical Completion for a \$58M Project, an amazing achievement. This saved huge expense and aggravation for the client, consultants, Kane and subcontractors. Thanks to this approach, Western Health are able to occupy a defect free building immediately after practical completion."

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during the excavation. The MRI machine vibration tolerances were provided by Western Health, and extensive vibration monitoring was set up which alerted the Kane Site Manager via SMS if vibration being created was nearly the allowable levels of the MRI.

"After the tunnel had been constructed, main infrastructure services were fed through the tunnel to run the IPU, comprising the infrastructure Heating Hot Water Flow and Return Pipework (150mm Diam), Chilled Water Flow and Return (200mm diameter), Medical Gases, and 32 no. mains cables fed from the TTR Building main switch room through to the IPU switch room. The existing Chilled Water System to Building A/B of the hospital was on open system, there was also a separate Chilled



HIGH ACHIEVERS IN THE STRUCTURAL STEEL SECTOR



Three key values underpin everything R & M Engineering Pty Ltd undertake – delivering on time, within budget and to the highest standards of quality. Their award-winning approach to structural steel fabrication has produced outstanding results for numerous projects, including the Sunshine Hospital.

For this major health sector project, R & M fabricated the steel roof, window frames, bridge and link – a total of 130 tonnes of steel which was fabricated at their new \$500,000 Sale workshop, transported to site and erected by their own crew. It was a challenging assignment, requiring close coordination with numerous other trades and a tight construction program.

The bridge weighed in at 15 tonnes, with dimensions of 23m long, 2.5m high and 3.6m wide. It was transported to the site in sections, assembled at ground level, and then lifted by crane and installed in one piece, with no alterations required once in position.

From shop drawing stage through to final installation of all the elements onsite took fifteen months, and involved five draftsmen working with the 3D strucad drafting program, 12 trade-qualified boilermakers and three riggers. Throughout, R & M used stringent Quality Assurance procedures, specifically tailored to their business, to ensure the highest possible standard of workmanship.

As a construction and engineering firm, R & M are committed to building value through 'innovative, efficient and reliable design, manufacturing and fabrication of quality steel structures that stand the test of time'.

Their capabilities include manufacture of structural steel for domestic, commercial and industrial projects include: service stations, training towers, retail buildings, schools, community centres, police stations, supermarkets, car parks, factories and many other types of projects.

They also design, manufacture and repair industrial equipment including excavator buckets, semi-trailers and other plant and equipment, have a general retail steel operation and provide general welding services. Currently R & M are working on the BMW showroom at Traralgon, the Somers Water Treatment Plant and a Clinical Teaching Facility in Bendigo.

All of R & M's steel products are modeled by the use of state of the art Tekla structural 3D modeling software. This allows clients to see renderings of projects at any stage, and also allows any constructability issues to be identified and resolved well ahead of time.

Another major project the company recently completed was the Sugarloaf Pipeline, where R & M constructed four out of six of the structures required for the pipeline, a contract worth over \$3 million. These structures comprised the Goulburn River pump station, the power substation, the high-lift substation and the inlet structure. One of the biggest challenges with the project was the extremely challenging time constraints, and R & M formed an integral part of the delivery team, succeeding in producing results ahead of schedule, within budget and to a standard of quality which exceeded Melbourne Water's expectations.

Their talents have earned them a swag of awards since the business first began operation in 2002. One of their first major projects was the

structure for Simply The Best Retail Cars showroom, which won the builder B&F Neilson the MBAV's Commercial Builder of the Year Award for SE Victoria. R & M fabricated all the structural steel for the complex architectural design, which featured the exposed structural steel throughout the showroom area. The eye for detail and high level of workmanship delivered by R & M was therefore a major part of the success of the entire project.

Since then they have won numerous other awards including :

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| 2008 Manufacture & Fabrication Building Services & Construction Business of the Year 2008 (Bendigo Bank Business Awards) | 2009 Employer of the Year (East Gippsland TAFE 2009) |
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| 2010 Building Services & Construction Business of the Year 2010 (Bendigo Bank Business Awards) |   |
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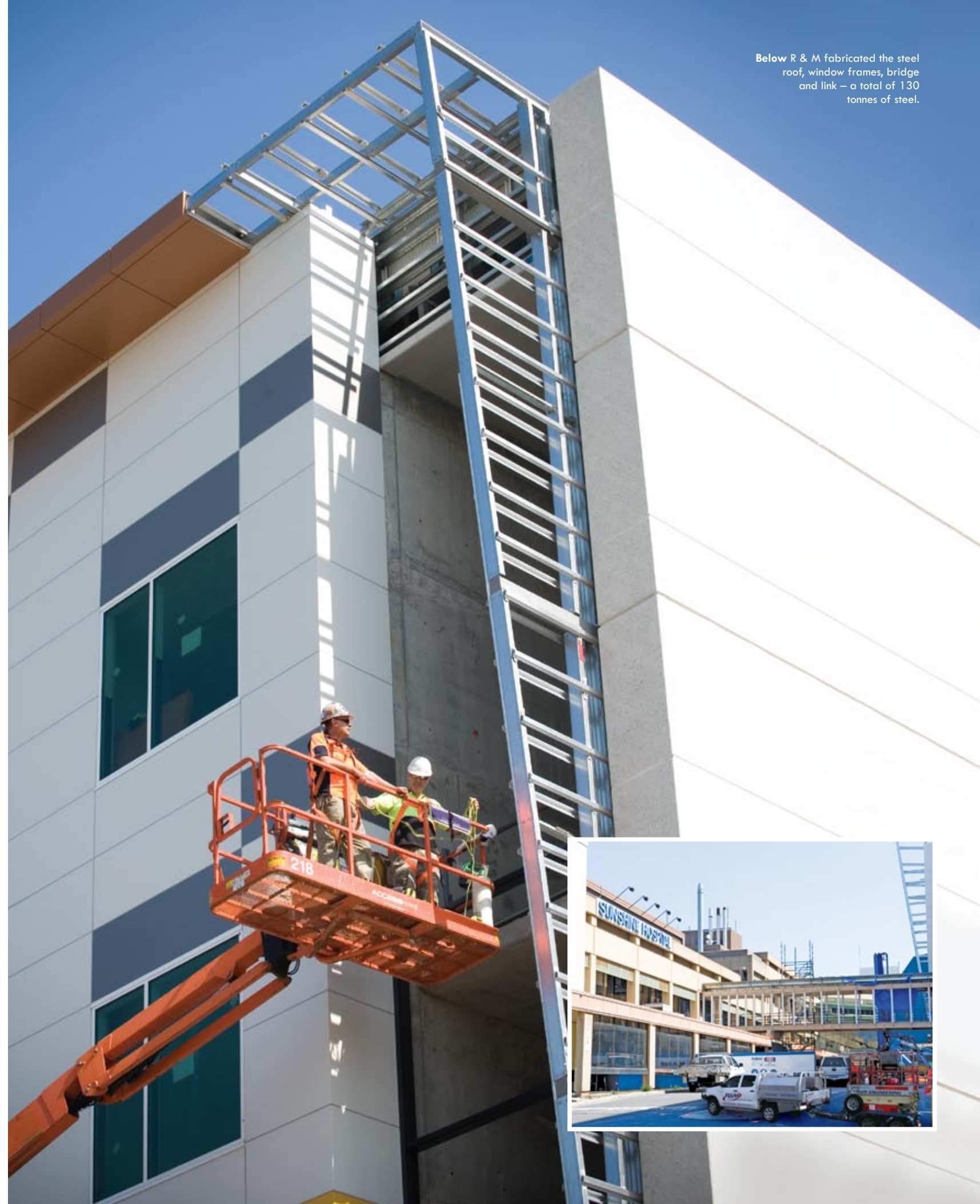
From the moment childhood mates Russell Wirken and Matthew Foat founded R & M from a shed in Gippsland, the company's focus has been on growing both their own capabilities as a leading structural steel design and construction firm, and growing the future workforce in the trade.

Every year the company employs a new 1st year apprentice, whilst also working closely with local schools and East Gippsland TAFE to provide valuable work experience opportunities.

The combination of dedication to workmanship, attention to client needs and expectations, and diligent pursuit of the highest standards of quality has built R & M an enviable solid reputation in the Victorian industry and beyond.



For more information contact R & M Engineering P/L, phone (Matthew Foat) 03 5143 1006, phone (Russell Wirken) 0417 197 697, fax 03 5143 1071, email: admin@rmeng.com.au



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