

A DRAMATIC VISION FOR VILLAGES ALOFT

8 Chifley Square is a striking, premium grade office building with highly articulated and expressive architecture.



Mirvac's 8 Chifley Square is a true game changer in terms of innovative and sustainable approaches to commercial space. The Six Star Green Star project is the result of a unique global design collaboration, and the process of building it showcased ingenious approaches to creating construction efficiencies.

"The building's design is a truly global collaboration between the internationally renowned Rogers Stirk Harbour + Partners and Australia's Lippmann Partnership, uniting the most innovative international design concepts to deliver a uniquely Australian vision for Sydney's CBD," said Jason Vieusseux, Mirvac's National Construction Director.

"From the unique suspended glass foyer enclosure to the elevated mid level terrace on the 18th floor, to the eye-catching red exterior braces, 8 Chifley will be one of the most progressive and innovative commercial towers in Australia.

"One of the most striking features of 8 Chifley is the six-storey open space at street level that not only forms a grand entrance to the building but creates a significant new area of public space which addresses and completes Chifley Square. The open space is repeated midway up the building and again at the top, integrating Australia's outdoor lifestyle into the city environment.

"8 Chifley's innovative design pioneers the 'sky village' concept in Australia. This concept produces a real sense of community and collaboration at work, as workspaces and floors are linked via a single atria to create natural, light-filled environments. The building comprises seven vertical villages, providing connectivity and vertical integration between the floors and adding to the feeling of extensive space and volume throughout the premises."

The project's Six Star Green Star Office Design V2 rating represents world-class sustainability. Some of the major sustainability initiatives include a gas-fired tri-generation plant, which re-uses waste heat from electricity generation. 8 Chifley also has a blackwater treatment plant, which will treat both the project's own waste water and also 'mine' the Sydney sewer system to produce extra non potable water which is then used for irrigation, toilet flushing and cooling towers. The HVAC system is an energy-efficient active chilled beam system, and T-5 lighting has been installed throughout. The facade cladding panels are double-glazed, with high vision glass, solar shading externally and internal blinds to combat solar gain. Car parking comprises just 32 spaces, and instead of more car spaces, there are 129 bays for secure bicycle storage, lockers and associated amenities.

Mirvac Constructions commenced the construction of the project in June 2011. Due to the tight access

to the site, there was extensive prefabrication and precisely timed deliveries for the installation of key elements. This allowed for a fast-tracked construction program, with completion achieved ahead of schedule in July 2013 of the base building.

"The four perimeter mega-columns are precast shells that were delivered to site to become permanent form-work and were filled with prefabricated reinforcement cages, the steel mega bracing node connections and concrete on site," explained Jason.

"To eliminate the internal columns at the ground plane and the level 18 break out space, the load from all internal columns is transferred via the composite steel transfer beams and columns to the concrete mega-columns.

"The steel inclined columns, like all major structural steel components and the external fire stairs, were manufactured in China, complete with internal stiffening and reinforcement. Once erected, concrete was pumped under pressure into the inclined columns from the base to remove all air pockets within the inclined composite members. This method for constructing the transfer structures was highly efficient, and took place in parallel with the jumpform core structure, allowing a jump start to the construction process."

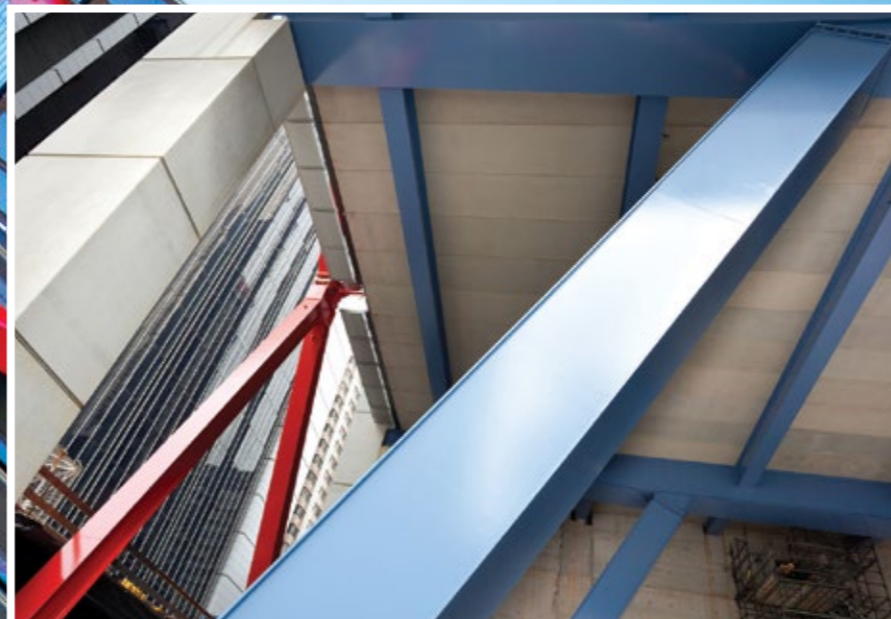
Mirvac Constructions had a team of 42 direct employees on the project, ranging from management staff and supervisors, to HSE officers, labourers, crane crew and hoist drivers. There were 75 separate subcontractors, and a peak daily workforce of 300. Due to the unique design of the structure working at heights was a major safety consideration, and all site workers were required to undertake detailed safety at heights training.

"8 Chifley further demonstrates the strength of Mirvac's integrated model, with the construction, development, leasing and asset management teams collaborating to deliver all essential components of the project," said Jason.

"The design and construction, whilst internationally significant, are very specific to the climate and culture of Sydney. The result is a beautiful piece of architecture that enhances the public realm while providing occupants with excellent internal spaces within which to develop working communities."

Mirvac are currently at work on a range of commercial projects, including 200 George Street Sydney, 699 Bourke Street Melbourne, and the Treasury Building in Perth.

For more information contact Mirvac, phone 02 9080 8000, website www.mirvac.com.au



HIGH RISE, HIGHLY DISTINCTIVE

The highly distinctive appearance of 8 Chifley Square is largely due to the massive and colourful steel elements – the braces on the façade and the struts which help create a five storey public space at ground level. These steel elements and all the structural steel for the project were supplied by NEPEAN Structures, a business unit within NEPEAN Building & Infrastructure, one of Australia's leading, fully-integrated manufacturers of large steel structures and associated metal products.

NEPEAN was originally founded as an Engineering company in 1974, in Narellan NSW, by current chairman David Fuller. NEPEAN now has 1100 employees across 8 countries. In Australia, NEPEAN Building & Infrastructure employs over 300 people in 5 national locations.

The company has a strong portfolio of iconic brands including Weldlok® Grating, Handrail and Drainage products, Mastermesh® perforated and expanded metal products, Galintel® galvanised steel lintels and Galserv® hot dip galvanising services, as well as NEPEAN Structures. Thanks to NEPEAN's integrated capability, over 3,300 m² of Mastermesh® perforated metal panels were also supplied and installed on 8 Chifley as part of the external fire stairs which were fabricated at the company's Narellan facility.

NEPEAN Structures offers structural steel project management solutions including in-house fabrication and erection which was utilised in the Chifley Square project. The company had 5 people on site, including a Project Manager and a Construction Manager who followed the installation and construction process as well as managing their own in-house rigging team.

To complete the Chifley Square project, NEPEAN Structures utilised NEPEAN Engineering and Innovation's strong local capability coupled with NEPEAN Asia sourcing from their highly competitive Asian steel fabrication partner.

Acting as third party inspector and project manager, their NEPEAN Asia business ensures the steel they use undergoes stringent quality checks by five different bodies including internationally recognized SGS acting as third party fabrication inspectors

and ABS International, a third party project manager. The protective coating, supplied by International Paint, also undergoes the same rigorous checking system through independent coating inspectors Incospec.

NEPEAN Structures professional team working together and alongside Mirvac, managed to overcome all manner of challenges. Perhaps the greatest challenges involved the location of the project in the middle of Sydney CBD and working with extremely rigid and short installation windows. The largest mega struts NEPEAN Structures supplied came in at a massive 37 and 30 tonnes, each measuring 18.5 meters long, whilst the mega braces weighed approximately 9 tonnes each. Installation windows were 3-4 hours for the 37 tonne struts, including all reo cage connections, and just 1 hour for the 30 tonne mega beams!

From delivery at the foot of the building, NEPEAN Structures were given just a 20 minute window during which to rig, hoist and install the members without any delays, failures or problems. The pieces were so well designed and manufactured they actually fitted to within 1mm and were able to be installed immediately.

Brent Poll, the General Manager of NEPEAN Structures says, "The project team has consistently met delivery, safety and quality targets across the board; not only do we supply a high quality product, but our project management skills are considered amongst the best in the industry and our in-house rigging team is committed to zero safety issues, which is also reflected in the Chifley project." He concludes, "An exercise like this is an incredibly satisfying experience, as well as a demonstration of how NEPEAN Structures's dedication to absolute quality and specialised project management has enabled us to meet Mirvac's strict requirements in regard to both time and quality."

For more information contact NEPEAN Structures (part of the NEPEAN Building & Infrastructure Division), 117-153 Rookwood Road, Yagoona 2199 NSW, phone 02 9707 5000, email structures@nepean.com, website www.nepean.com



HIGH RISE, HIGH STANDARDS

Triple M Mechanical Services was selected to undertake the design development, engineering, management, supply, installation and commissioning of the mechanical services systems for the 8 Chifley Square project. As the building provides 19,000 square metres of premium grade office space this was not a straight forward task. Triple M also faced the challenge of achieving 5-star NABERS Energy and 6-Star Green Star targets.

Triple M prides itself on being, “the team you can trust!” The company has been around for 18 years and has over 100 employees. It applied the latest Building Information Modelling (BIM), 3D modelling and co-ordination process on this project.

Traditionally, the co-ordination process was only possible in 2D. The 3D modelling eliminates much of the human error aspect that is inevitable in 2D co-ordination. It allows all building elements, including structure and services, to be modelled together. This enables you to view the entire building in 3D and promptly identify areas of issue. Triple M’s Project Manager for 8 Chifley Square, Mark Boyd, says, “This provided comfort and reassurance for all stake holders that the design and installation would be ‘clash free’”.

One of the many challenges on the project for Triple M was the limitation in available space within plant room areas. The expertise of

Triple M’s team, in conjunction with their suppliers, ensured operational plant rooms that also allowed for future access and maintenance.

During the tender stages of the project, the Engineering Manager, Morgan Smith, was involved in developing the design which allowed the realisation of capital cost savings by rationalising the equipment used. The Project Engineer was involved with the hands on engineering work and progressively defined the detail required to produce an operational HVAC (heating, ventilation, and air conditioning) system for the building.

The installation process was lead by the Triple M’s Site Manager, Greg Gillon. Triple M’s in-house site teams worked together with Mirvac’s construction team and ensured a streamlined and risk-free installation approach.

Other projects Triple M Mechanical Services is working on include Park Lane Apartments, Macquarie Shopping Centre and Australia Post, Strawberry Hills.

For more information contact Triple M Mechanical Services, Level 3, Quad 2, 8 Parkview Drive, Sydney Olympic Park NSW 2127, phone 02 9763 6200, email admin@triple-m.com.au, website www.triple-m.com.au

SCINTILLATING EXPERTISE FOR SPECTACULAR FAÇADES

Stunning façades like 8 Chifley’s require highly specialist talents such as Permasteelisa Group’s end-to-end engineered building envelope solutions. They designed and delivered the entire façade package for the 34-storey building, including glazed panels, sunshading, and an integrated access system for cleaning.

Their design for the highly translucent façade needed to meet the performance requirements for the project’s extremely high sustainability rating of 6 Star Green Star – Office Design v2 and is aiming for a Five Star NABERS rating. The façade’s legible structures (sunshading system), by reducing the thermal load and solar glare, makes a substantial contribution to energy-efficiency by reducing cooling needs while still allowing abundant natural light into the office spaces.

To develop and deliver this complex curtain wall, Permasteelisa worked closely with both Mirvac and the architectural team of Lippmann Partnership, and UK firm Rogers Stirk Harbour + Partners.

Innovations in the façade include the large spans of vision glass, and a highly sophisticated external sun shading system on the north, east and west face of the building. The sunshading on the east and west conceals an abseiling system which Permasteelisa built in to provide a safe way for abseilers to clean this part of the façade. Panels for the glazing

were manufactured as modules measuring 1.5m wide x 3.8m high, the substantial height required to match the high ceilings of the interior fitout.

“The challenges of installation related to the panels around the mega beams, which are the main starters to all floors, without these in place, we would not be able to start the floor installation,” said Permasteelisa Technical Manager, Dennis Battistella. “The façade installers were required to be working on separate floors with two teams - the mega beam panel’s installers, and then the typical installation team.

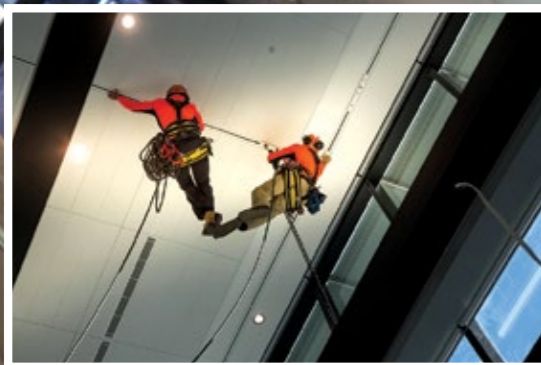
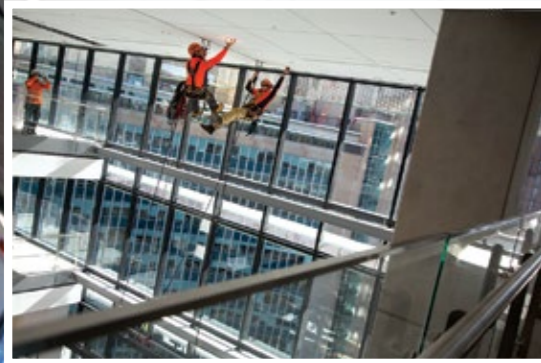
“In terms of design, the challenges were to have an abseiling system within our curtain wall, and have it concealed, and also having the mega beam which forms part of the main structure of the building going through our façade system.”

Permasteelisa use state-of-the-art digital technology for designing, engineering and fabrication drawings. On this project, ACAD and Rivett systems enabled them to streamline their production and develop the methodology for the complex installation.

Internationally, Permasteelisa Group is a leader in engineering and delivering sustainable and aesthetically dramatic building envelope and cladding solutions. The Australian operation has completed projects across New South Wales, Queensland, Western Australia and Victoria. Other noteworthy projects include RMIT Swanston’s multi-faceted façade, Crown Casino, Sydney Opera House, Eureka Tower and Brisbane Square.

For more information contact Permasteelisa Group, 13-15 Governor Macquarie Drive Chipping Norton, NSW 2170, phone 02 9755 1788, website: www.permasteelisagroup.com





MASTERS OF RISK MITIGATION

High risks require height safety solutions, which is exactly what Australian Lifting & Safety (AL&S) provided for Mirvac and their subcontractors at 8 Chifley Square.

Their team was on-site at the project regularly from early works designing and installing a range of measures to ensure a safe working environment, including a raptor absail rail for the internal atriums and roof access systems; temporary height safety fall restraint systems; debris and fall arrest net systems; and also inspection services for lifting gear and height safety harnesses. “The largest challenge to AL&S was the overall pace of the project. Due to the unique design of the building there were a number of times we were asked to design, supply and install solutions within days of the need arising. Luckily, rapid solutions to reduce high-risk work are our specialty,” said AL&S Director, James Steele.

To meet Mirvac’s need for an instant sign-off on each installation, AL&S utilised a cloud-based sign-off application developed by the company’s software partners SafesiteMax, which staff access through iPhone or Android smartphones or tablets. This app makes the installed item or system available for immediate use, by automating the flow of information to the OH&S team. “The whole process ties in with our lifting inspection application, where the lifting registers are viewable immediately following the inspection,” said James. “Mircvac

also asked AL&S to help some of the site contractors with their testing and inspections, and once these tasks were completed the forms were viewable in the contractor’s browser and also to Mirvac Chifley OH & S staff.”

Established in 1998, AL&S specialise in the design and installation of innovative and reliable roof access systems and work-at-heights safety systems which meet the complex criteria of contemporary architecture. The company’s site team comprises dedicated height safety professionals who are qualified riggers and/or scaffolders, and manufacturer accredited installers.

AL&S are also accredited to undertake inspection and certification of existing roof access systems, ensuring compliance is maintained for all permanent anchor points, permanent safety lines and roof access systems. The company’s Safe Site apps enable them to provide clients with live data feeds relating to testing and inspection, as well as secured compliance documentation which is accessible at any time in the cloud.

For more information contact Australian Lifting & Safety Pty Ltd, Unit E , Ground Floor. Ultimo Trade Centre. 42 – 44 Wattle Street, ULTIMO NSW 2007, James Steele, Director Phone 0407 272 637, website www.alsafety.com.au



WHO REMOVED THE RUBBISH?

Good question. The answer is Dial A Dump Industries. This waste removal and recycling company has a long-standing history within the construction and demolition industry. The 8 Chifley Square project is one of the large building sites where it has been employed.

Dial A Dump, which has over 150 staff, was established in 1984 by its Managing Director Ian Malouf. He leads the highly experienced and dedicated management team, who consult with and advise clients on their waste management needs, find solutions and assist in the development of complete waste management plans.

The biggest challenge on the 8 Chifley Square project was the difficulty of access for bins. To overcome this problem, Dial A Dump developed a new 17m³ bin that could be craned, to move bulk waste off the site.

Dial A Dump has a large range of equipment. This includes over 40 late model trucks including cranes, tippers, eight wheelers, trailers, skip trucks, forklifts, excavators, loaders, telehandlers, crushers and over 3,200 waste bins up to 27 m³ in size. The company has a fully computerised operations system and state of the art interactive GPS units fitted to all their vehicles. This ensures that the entire process from booking to delivery is efficient. The savings are passed on to customers,

along with the assurance that each bin can be tracked to its destination. The latest innovation is the smartphone App which allows direct online bookings and a confirmation of order by SMS.

The group has invested \$300 million in Sydney’s newest and largest landfill and a state of the art recycling facility at Eastern Creek. This will allow them to deal efficiently with contaminated soils and asbestos. Michael Harloff of Dial A Dump says, “the new facilities will extend and enhance Dial A Dump’s green credentials as the most technically advanced and innovative waste management service across Australia... we have continually expanded our services to cater for the needs of our customers, focusing on unequalled service, competitive rates and a faultless track record.”



For more information contact Dial A Dump Industries Pty Ltd, 32 Burrows Road Alexandria NSW 2015, phone 02 9519 9999 email sales@dadi.com.au website www.dadi.com.au

8 Chifley Square, NSW

MINING ONE WASTE TO REDUCE ANOTHER

Rose Atkins Rimmer (Infrastructure) (RARI) are able to assist projects like Mirvac's 8 Chifley Square to achieve their Green Star goals and reduce potable water use. RARI are Sydney Water accredited experts in water and sewer infrastructure. For this project, they developed the design for the sewer mining off-take from the Sydney Water sewer maintenance hole located in Hunter Street, to direct flows into the building's basement wastewater treatment plant. This included designing, preparing a detailed flow management plan and coordinating the construction of a six metre deep pipeline across the busy street without disturbing the myriad of existing services.

Construction was carried out by Glenmore Park Plumbing and Drainage who worked closely with RARI's Designers and Project Coordinators Steve Rimmer and Darren Sheather to achieve the successful outcome. RARI also obtained Sydney water approval for the design, coordinated the construction of the off-take and obtained final approval of the construction by Sydney Water.

Other major projects RARI has contributed their expertise to include the Southern Sydney Freight Line, North West Rail Link and South West Rail Link, 1 Bligh Street, and Oran Park Town for Landcom/Greenfields Developments. For over a decade RARI has been providing professional water and sewer related design and management services including Section 73 Certificate Applications; Water and Sewer Infrastructure Design; Water and Sewer Project Coordination; Building Applications; and Asset Protection Reports (Pegouts).

For more information contact Rose Atkins Rimmer (Infrastructure) Pty Ltd, PO Box 6745 Blacktown New South Wales 2148, phone 02 9853 0200, fax 02 9671 7399, website www.rari.com.au

"It is refreshing working on a project like 8 Chifley Square where the Commissioning is taken seriously, so that the finished building works as efficiently as possible," says Nic Mills, of Commtech Asia, the Country Manager for Australia. "8 Chifley Square has been a success and will hopefully lead to additional work both from new tenants and with the data centre providers who got to see first-hand the additional value added that Commtech Asia brings projects."

Commissioning Management is a quality-orientated process of risk reduction for new construction. Commtech Asia has been doing Commissioning Management for over 12 years in Asia and for 7 years in Australia. It has offices in Hong Kong, Singapore, Japan, China and the Middle East. Commtech Asia independently verified that the building services in 8 Chifley Square were installed to the correct standards, that they were tested and commissioned to perform as designed and that they operate to the client's requirements. Nic Mills, Damien McLynskey, Drago Karalic and John Smith were the experienced team that worked with all the different trades at 8 Chifley Square.

Commtech Asia provides Retro-Commissioning services for existing buildings. This addresses efficiency problems by undertaking a systematic process of investigating, testing, analysing, adjusting and correcting building systems to meet the user's current requirements, improve comfort and environmental quality, and to optimise energy and resource conservation. Commtech Asia also has experience with a wide range of international and local environmental accreditation schemes. Commtech Asia has successfully completed projects for clients across a wide range of sectors including financial services, general commercial, hospitality, healthcare, data centres and telecommunications.

COMMISSIONING MANAGEMENT



For more information contact Commtech Asia (Australia) Pty Ltd, Suite 601 King York House 32 York Street Sydney NSW 2000, phone 02 9262 2834, fax 02 9299 9666, email australia@commtechasia.com, website www.commtechasia.com