

Project: 420 George Street
Sydney, NSW

Products: 500PLUS® PREFAB
500PLUS® REIDBAR™

Re-shaping Sydney's skyline with PREFAB Solutions from OneSteel Reinforcing



Located in the central hub of Sydney's CBD, 420 George Street is the latest development by Bovis Lend Lease to take advantage of several innovative building solutions from OneSteel Reinforcing.

Situated within close proximity to public transport, entertainment complexes, and inner city bars and restaurants, the 37,750 square metre building. The development also comprises of three basement levels, five podium retail levels, which includes a food court and 30 floors of commercial office space.

Built on the former site of the Mid City Centre retail complex, which was demolished in December 2007, 420 George Street extends from its George Street frontage through to Pitt Street mall.

Adding a significant contribution to the efficiency and cost-effectiveness of construction was the incorporation of several steel reinforcing solutions by OneSteel Reinforcing.

Left: 420 George Street Sydney, a 35 storey office building which will incorporate five levels of retail outlets.

Above: Prefabricated column made from N28 500PLUS® Rebar One the four, 15 metre prefabricated beams installed per floor with prefabricated beam with post-tensioning cables.

500PLUS®
PREFAB

500PLUS®
REIDBAR



“When we reached the typical floors, the floor plate for the next 30 levels remained relatively the same, so it made perfect sense to use PREFAB beams and columns.”

Alex Cooney - Project Engineer, Bovis Lend Lease

500PLUS[®] REIDBAR

- Threaded rebar & coupler system
- Continuous reinforcing through the slab
- Can be cut and joined at any point
- Adds to steel fixing flexibility and speed
- Suitable for civil and commercial construction
- Extensive range of couplers and accessories

Below: Significantly helping streamline deck completion was the use of REIDBAR™ threaded coupler and REIDBOX[®] systems.

One solution was the introduction of prefabricated beams made from 500PLUS[®] REBAR, fabricated and supplied by OneSteel Reinforcing in lengths up to 15 metres. The use of 500PLUS[®] PREFAB beams led to considerable savings in reinforcing installation time and steelfixing requirements.

“Prefabricated beams are a relatively new innovation. They were very successful and a great addition to the construction of the project,” said Bovis Lend Lease Project Engineer, Alex Cooney. “I definitely see it as the way forward for Bovis Lend Lease as a reinforcing solution.”

During the construction of the podium levels, from ground to level five, the 500PLUS[®] REBAR steel reinforcing was laid and tied by hand.

“This was a complex job,” Alex said. “PREFAB beams weren’t utilised in the podium levels as the reinforcing requirements were constantly changing due to the floor layouts.

“When we reached the typical floors, the floor plate for the next 30 levels remained relatively the same, so it made perfect sense to use PREFAB beams and columns,” he said.

Alex commented that on a construction site of this scale there’s so much going on that the inclusion of PREFAB beams and columns, and REIDBAR™ and REIDBOX[®] helps streamline deck completion as well as administration management.

“If we didn’t use PREFAB beams and columns each level would take seven days instead of six, which over the course of construction is a significant difference.”

The beams are manually welded at the OneSteel Reinforcing factory in Revesby in Sydney’s west, ensuring accuracy of spacing.



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500 PLUS[®] **PREFAB**

- Reduces onsite labour costs
- Provides flexible programming
- Provides accuracy & quality finish
- Simplifies handling & improves Occupational Health & Safety
- Excellent design flexibility
- Minimise site congestion
- Minimise waste
- Simplifies placement of reinforcing
- Speed up programmes

The smaller intermediate beams are fully welded, while the large beams have been specifically designed to have a number of loose bars within the frame. The inclusion of post-tension cables is a unique aspect of the beams. Once the cables are fixed in place, the loose bars are adjusted into the optimum position and manually tied.

“This would be extremely difficult and time consuming to achieve if the beams were fixed on site from loose bar and not prefabricated by OneSteel Reinforcing,” Alex said. “The finished product is excellent. They followed the shop drawings precisely and the spacing is exact,” he added.

Made from N16 and N28 500PLUS[®] REBAR, each floor incorporates three to four large 15 metre PREFAB beams and smaller intermediate beams, which run at right angles to the large beams. Up to 24 beams, weighing as much as one tonne each are utilised on each floor.

The PREFAB columns, made from N28 500PLUS[®] REBAR were also fabricated in the OneSteel Reinforcing Revesby factory and weigh up to three tonnes each.

Alex explained that, “Having the site located in the centre of Sydney’s busiest street came with a range of logistic and access difficulties. This is compounded as council is very strict on delivery times so as not to disrupt peak hour traffic, plus there’s no storage area on site.





"Prefabricating the columns and beams off site helps negate delivery problems and site congestion."

Alex Cooney - Project Engineer, Bovis Lend Lease

"OneSteel Reinforcing load the trucks in a specific order so when the beams and columns are delivered they can be craned from the truck and dropped immediately into the framework sequentially."

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"Prefabricating the columns and beams off site helps negate delivery problems and site congestion," he said.

"OneSteel Reinforcing load the trucks in a specific order so when the beams and columns are delivered they can be craned from the truck and dropped immediately into the formwork sequentially. This kept the whole project moving forward so we didn't lose days on the critical path," Alex said.

"This often prevents the need for double handling which would be the case if the columns were unloaded to a storage area and then moved into place at a later stage.

"OneSteel Reinforcing engineer Veera Nagarajah was on site regularly and available whenever we needed him to resolve any issue immediately to minimise site downtime."

In addition to time, there were other savings such as labour. With fewer men needed, on-site congestion was also reduced creating a safer and cleaner work site.

"This is significant as OH&S is paramount to Bovis Lend Lease. We have extremely high workplace safety standards and we're proud of our safety record," Alex said.

Each floor also incorporates the REIDBOX™ construction joint system. The REIDBOX™ is cast into the core wall concrete and allows the REIDBAR to be screwed directly into the couplers within the box. This system provides shear connection between the core wall and floor slabs.

"The REIDBAR™ and REIDBOX™ systems are widely accepted in the construction industry. OneSteel Reinforcing work collaboratively with REID Construction Systems to continually refine the system to make it even easier to use on site and construct the structure," said OneSteel Reinforcing engineer Veera Nagarajah.

OneSteel Reinforcing's 500PLUS® PREFAB beams and columns, REIDBOX™ and REIDBAR™ provide construction companies with innovative and cost-effective solutions designed to streamline workflow and reduce overheads without compromising quality.

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