

Project:

Pinnacle Apartments,
Sydney



500PLUS REIDBAR helps shore up difficult site



500PLUS REIDBAR

500PLUS REIDBAR is a continuously threaded, steel reinforcing bar and coupler system, which can be cut and joined at any point, greatly improving steelfixing flexibility. The rugged threads are resistant to damage and permit rapid coupling on site.

500PLUS REIDBAR is available in most rebar diameters: 12, 16, 20, 25 & 32mm, with an extensive range of couplers and construction accessories such as nuts, threaded inserts, foot plates, grout sleeves and nailing plates, enabling the 500PLUS REIDBAR system to be used in a wide variety of applications.



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Piling, shoring and ground anchoring specialist Civil Foundations has utilised OneSteel Reinforcing's 500PLUS 32mm REIDBAR as a grout injected ground anchor, in its first sheet piling application in Australia.

Civil Foundations was responsible for the sheet piling of the three level basement car park for The Pinnacle, a new block of residential units being built by Sydney-based property developer Skyton.

Located at 151 O'Riordan Street in Mascot, the project presented an extreme

dewatering and shoring challenge for Civil Foundations, with a perched water table and a 100 year old sewer servicing more than 50,000 local homes running adjacent to the site.

Civil Foundations installed 12mm thick steel sacrificial sheet piling to a depth of 15m around the perimeter of the site to facilitate excavation and site works, until the basement car park slabs were in place.

The 750mm wide AU14 sheet piles overlap and interlock with each other and

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were retained by a series of 12m long, 32mm diameter, continuously screwed 500PLUS REIDBAR grout injected ground anchors at 1.5m centres.

Civil Foundations Principal, Tony Derham, said the project was the most challenging his company has been involved in.

"The water table was only a couple of metres below ground level and the ground conditions around the site were a mix of soft silt, sand and clay.

"The hydrostatic pressure on the sheet piles was so high, you could see the steel sheets were working hard between the ground anchors in some locations. And, because the hydrostatic pressure was so high, water would spray out at very high speed from even the smallest of holes, so efficient dewatering while installing the ground anchors was an absolute necessity," he said.

Installing the 12m long 500PLUS REIDBAR anchors required a specially modified auger, explained Tony Derham.

"To be able to drill to a depth of 12m required the use of some very high strength steel tube, normally only used in oil and gas exploration.

"We also custom made the drilling head from high strength plate steel," he said.

Once in place, the 12m lengths of 500PLUS REIDBAR were grouted and a large square steel base plate was secured into position by REIDBAR spherical washers and nuts, with the nuts tightened to around 350 Kn.

The edges of steel base plates were then sealed with bentonite, then welded to the sheet piles to provide a watertight seal.

"With the site located in what was historically an industrial area, the ground water contained a number of contaminants, which meant we had to install a filtration system to clean the water up before returning it to the ground," said Mr Derham.

The dewatering system comprised 6 metre well points connected to a 150mm header pipe around the perimeter.



Mr Derham explained: "The pump we chose was a BBA MP60 vacuum diaphragm pump. The pumps were connected by remote control and alerted us if the power or vacuum dropped, so we could react instantly. The flow rate was typically around six litres a second."

Civil Foundations used its new ABI 12/15 and Bauer RTG19T rig to install the 15m deep sheet piles.

The first of its type in Sydney, the rig works by using a telescopic mast with a narrow style of vibro hammer under high frequency. The new RTG is the most powerful unit imported by Civil Foundations into Australia and is capable of installing 19 metre sheet piles. Powered by a CAT C18 650HP engine, the unit also runs a rotary drive capable of installing CFA piles up to 750mm diameter to a depth of 20 metres.

Civil Foundations next project will see the rig being used in totally different ground conditions and in another challenging application.

"Our next job at Zetland will be on much firmer ground conditions, and will be innovative in that the sheet piles will actually form the internal wall of the basement levels. This approach, in which the sheet piles are given an applied finish to improve their appearance after installation, is very common in Europe," said Mr Derham.

"With the current growth in apartment construction, we expect this approach will become more commonplace in Australia over the next few years, as it offers significant economies compared to the cost of building a false wall in front of the sheet piles," he said.

"We've worked with OneSteel Reinforcing on a number of projects and their service has been excellent. A couple of times we ran short of materials and it could have delayed the project, however, OneSteel Reinforcing pulled out all the stops to make sure we got the materials when we needed them."

500PLUS REIDBAR is a hot-rolled, continuously threaded, steel reinforcing



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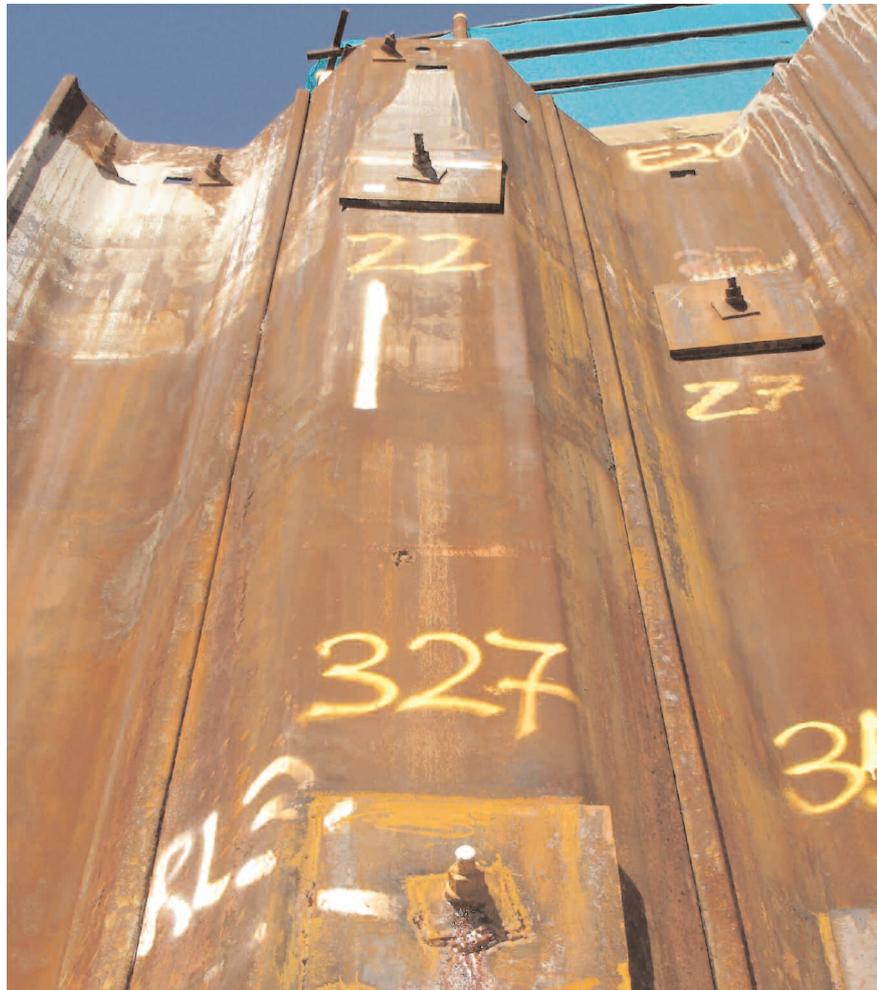
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500PLUS REIDBAR is available in most rebar diameters and offers an extensive range of couplers and accessories making

it suitable for a wide variety of construction applications including:

- Staged construction
- All wall, column, beam and slab connections
- Starter bars and penetrations
- Tilt-up/precast concrete
- Ground stabilisation applications.