

New-generation stainless steels crown the Sentinel



New Zealand's tallest apartment building, the Sentinel beside Takapuna Beach on Auckland's North Shore, is just receiving its final touches after a two-year construction period.

The 30-storey tower stands over 140m high and houses 117 apartments, as well as a 25m-long heated swimming pool, and a spa, sauna and gymnasium on the podium level.

The project was conceived by developer Rick Martin from Cornerstone Group, and designed by architect Jamie Simpkin of Walker Architects, with construction carried out by Multiplex.

The building's simple yet striking design is characterised by strong, regular linear forms with punched-in decks and windows that preserve the integrity of the lines and provide protection from offshore winds. This elegant tower is topped by a curved roof structure that evokes the iconic form of the Chrysler Building in New York.

'The aim was to design a building that had some references to the well-known skyscrapers of the New York skyline,' says architect Jamie Simpkin. 'Unlike the Chrysler building, though, the Sentinel stands alone on the skyline and is highly visible from all around. You'll see its silhouette from the motorway as the sun is rising behind it in the east. We wanted to make it tall, slim and elegant looking. The result was a sort of rocket shape with a curved roof and a needle at the top.'

Finished in new-generation ferritic stainless steel, the Sentinel's roof reflects the light and acts as a sort of beacon above the seaside suburb of Takapuna. It also provides a visually appealing solution to concealing the building's plant, which is entirely housed above the penthouse level.

'Rather than just having a flat roof with a couple of boxes on top to house the plant, we chose to finish off the building by making the fifth elevation complete as well,' says Simpkin. 'The roof is curved on two sides like a bishop's hat. It incorporates aluminium columns that taper as they curve out and disappear into the sloping wall. The stainless steel has a basket weave form that gives it a subtle Pacifica theme and creates a textured element on the 30m-high face. Uplighting highlights this texture at night.'

The open forms of the basket weave design also serve a practical purpose, allowing airflow through to the plant to cool it naturally. While the roof's design appears simple and clean looking, Simpkin says

Above: Like a shining beacon above Takapuna, the roof of the Sentinel apartment building on Auckland's North Shore, is finished in new-generation 445M2 ferritic marine-grade stainless steel supplied by Mico Metals.



the finished product is relatively complex to achieve. Auckland-based company Metal Design Solutions handcrafted and installed the standing-seam roof made from 445M2 ferritic marine-grade stainless steel supplied by Mico Metals. Jan Alberts from Metal Design Solutions says the company was delighted to be involved.

“This is a very special roof and we were very excited about this project. We measured it, made the roof off site and then installed it in pieces – there’s considerable finishing work done by hand.”

Paul Orsler from Mico Metals says 445M2 is made in Japan by Nisshin Stainless Steel, a mill renowned for the quality of its stainless steel products. 445M2 ferritic stainless steel is an ideal alternative to traditional 316 and 316L, because it offers several benefits over standard 316 marine-grade stainless steel. One of its key advantages is its superior corrosion resistance due to the high (22%) chromium content. This was one of the reasons Walker Architects specified the product.

“The concept we had in mind called for a shiny roofing material – something that had life to it – rather than a dull finish like zinc or a metal like copper that would weather and change colour,” says Jamie Simpkin. “We chose 445M2 marine-grade stainless steel because it gave us the right aesthetic and, when correctly maintained, it won’t rust or discolour like other products.”

Ease of fabrication due to its ferritic microstructure, is another major benefit of 445M2, says Paul Orsler. As well as the microstructure aiding fabrication, 445M2 also has a special embossed surface finish, he says, which helps to lower the reflectivity and avoid glare issue.

“This ferritic microstructure means it behaves like carbon steel and can be roll formed just as you would with any powder-coated steel, but it’s also fully weldable.”

As with all ferritic grades, 445M2 is less dense than standard 316 stainless steel, which gives 3.5% more area per unit of weight. It also has lower thermal expansion and higher thermal conductivity so is less prone to distortion on welding and expansion in the heat of the sun.

And another key advantage of 445M2, especially on large-scale projects such as the Sentinel Apartments, is the upfront cost savings this product offers. Because it contains no nickel, depending on the current nickel price, it can offer significant savings when compared to standard marine-grade stainless steel.

Above left: Due to its high chromium content, 445M2 offers superior corrosion resistance compared to standard 316 marine-grade stainless steel - an important consideration, given its beachfront location.

Above right: Resembling a bishop’s hat, the hand-crafted standing-seam roof serves both an aesthetic and a practical purpose, neatly concealing the plant and counterbalancing the building’s strong linear form.

PROJECT DETAILS

Location: Sentinel Apartments, Takapuna, Auckland

Architect: Jamie Simpkin, Walker Architects

Developer: Cornerstone Group

Main contractor: Multiplex Construction

Roofing supplier: Mico Metals

Roofing product: 445M2 ferritic marine-grade stainless steel

Roofing installer: Metal Design Solutions

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