

NEW ZEALAND

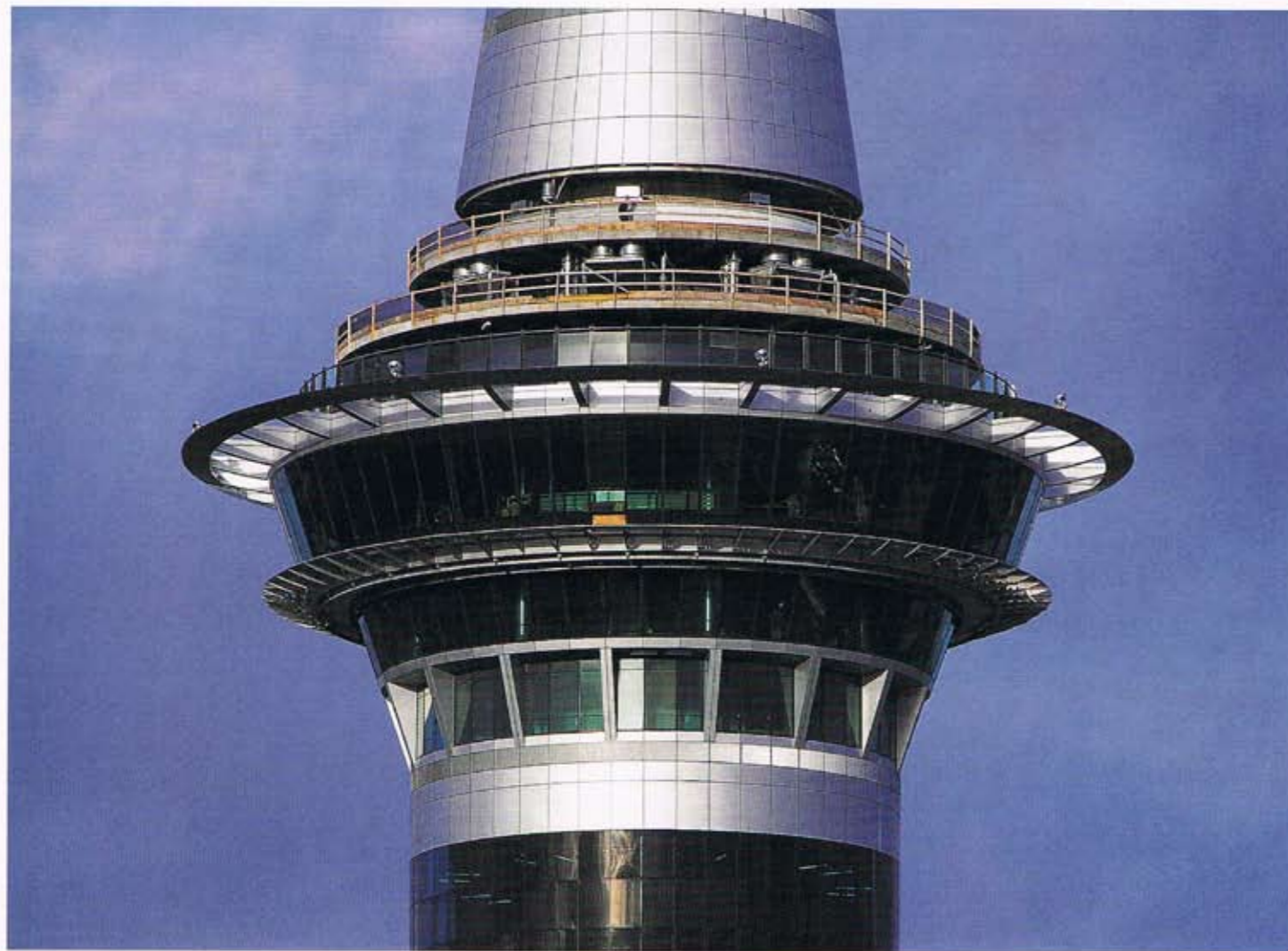
DESIGN

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# TRENDS





# World-class tower built by New Zealanders

*New Zealand has made an unprecedented architectural triumph with the completion of Sky Tower and Sky City, thanks to the work and co-operation of many companies*

**Above and facing page:** The space-age façade of Sky Tower features solid aluminium sheeting and laminated glass panels designed and installed by G James Glass and Aluminium. The widest part of the pod is the rim between the revolving restaurant and the outdoor deck above. There are also two observation decks below the restaurant and another lookout level, Sky Deck, on the upper pod.

**T**here's no need for any more rivalry between New Zealand and Australia. We know we're the best, and we have the tallest building in the southern hemisphere to prove it.

At 328m high, Auckland's Sky Tower is a certified 24m taller than Sydney's AMP Tower, and even surpasses the Eiffel Tower by 8m.

But Sky Tower has achieved much more than establishing New Zealand on the global architectural map. It's also given a large number of local companies the opportunity to showcase their design and

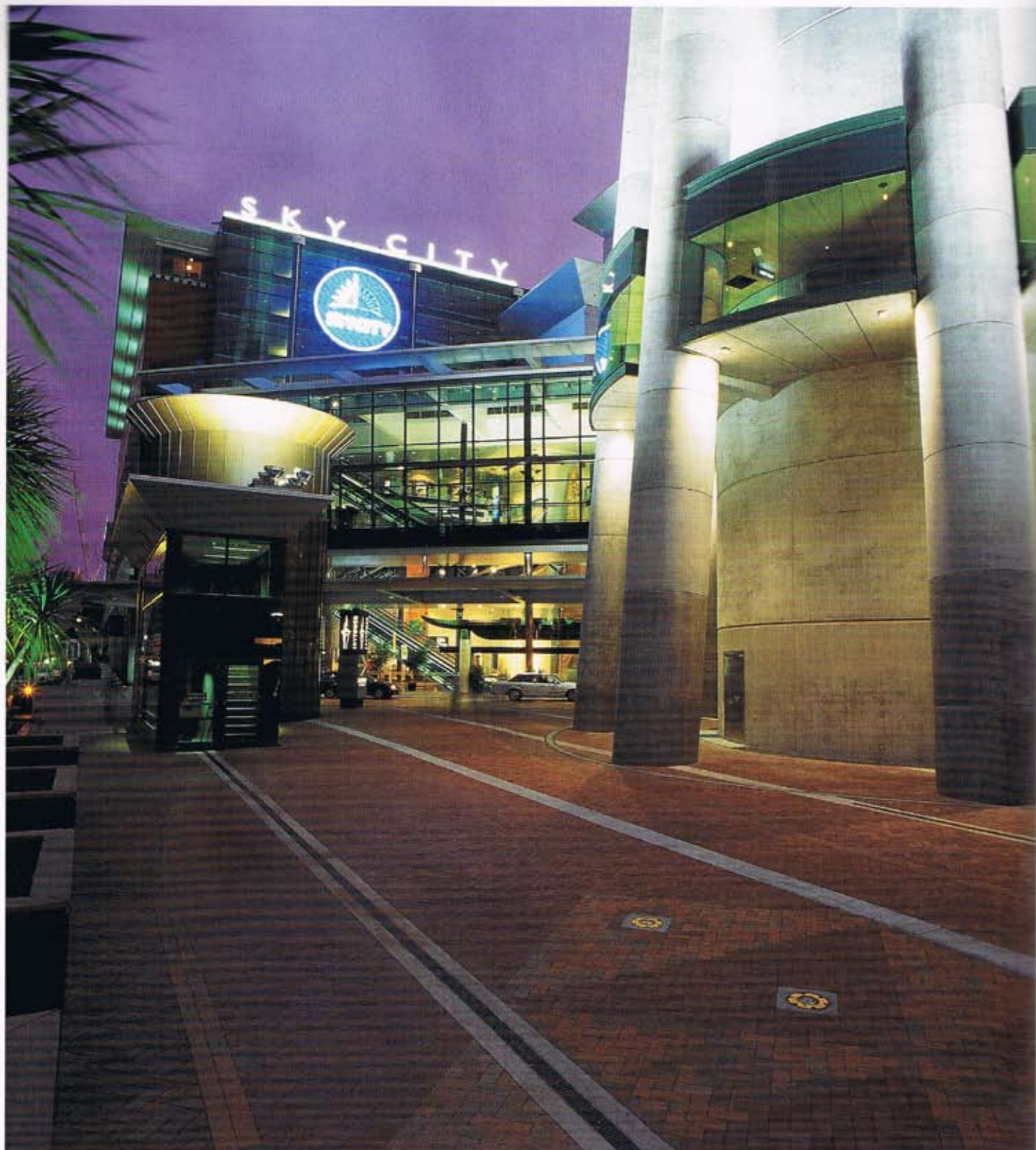
manufacturing talents which will be recognised locally and internationally.

The formwork for the concrete floors was carried out by Dominion Constructors. This included the base of the tower, the entrance gallery, plaza level and three in-situ floors above the outdoor observation deck and the base of the mast.

The waiting area to the Sky Tower lifts is known as the Interpretive Centre. A projector screen 37m long and 3m high runs a series of video and slide images about Auckland for waiting patrons.

With an 8m stud, considerable





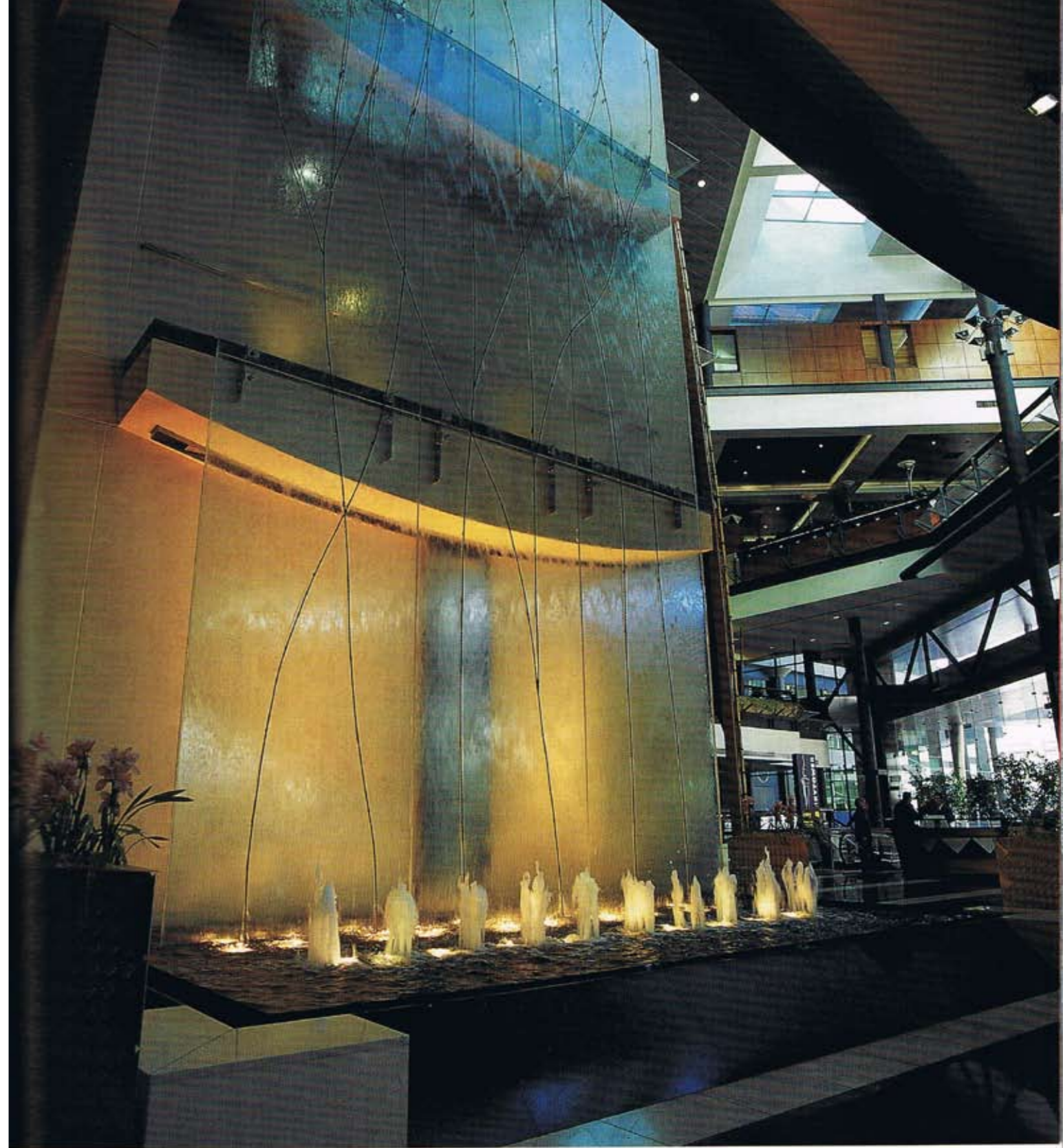
*Above:* The clay brick paving at the street level entrance features Nubrik pavers supplied by Horizon International and laid by Aotea Paving. Nubrik's Victorian Blue pavers were used for the pedestrian areas with Sandalwood-coloured inserts in a triangle design.

*Right:* The concrete base of the tower and floor of the gallery level were built by Dominion Constructors.

challenges were presented and overcome for the fitout of this high visibility area.

A purpose-built curved aluminium tray encircles the shaft carrying power and communications cables and other trays suspended from the ceiling support lights and speakers. Dominion Constructors also constructed the concrete support columns on this floor.

The formwork for the three in-situ floors were built off site and craned directly into position to save time and reduce the safety risks associated with working 200m above the ground. The forms for the base of the



mast, at 250m above ground, was the highest level at which concrete was poured.

Paving outside the Sky Tower and casino site was supplied by Horizon International. Architects Craig Craig Moller wanted a robust paving product with maximum depth of colour that would not fade over time.

Horizon supplied Nubrik clay pavers from the Victorian Classic range. The pavers have a pressed surface rather than a normal wire-cut surface. Nubrik is the only manufacturer to provide this surface texture which has been specifically

*Above and left:* Glass Design erected the full-height glass waterfall in the main foyer of Sky City. The structure is made from 12 glass panels weighing a total of 3000kg. The glass is 12mm-thick, toughened safety glass. Each panel was vacuum-lifted on its side, rotated into position and then bolted on to a steel subframe. Water is pumped continuously down the glass panels over the copper and brass piping.



**Above:** The entrance level to the Sky Tower lifts is called the Interpretive Centre. It features a 37m-long video screen showing images of Auckland. The concrete formwork and structural columns were built by Dominion Constructors.

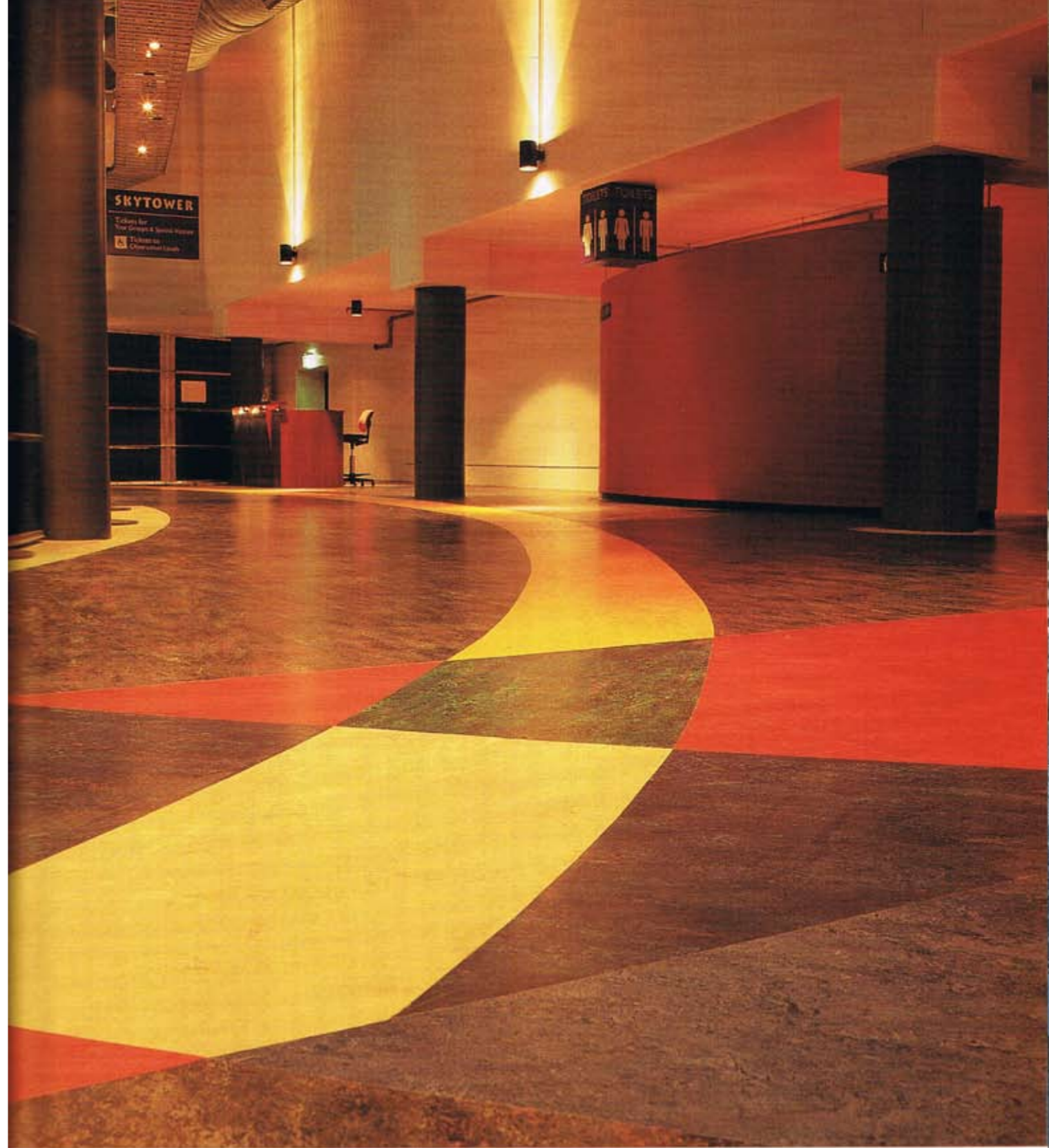
**Right:** Outside the level one communications floor, 240m above the ground. Dominion Constructors carried out the formwork.



developed for CBD projects, including the Darling Harbour redevelopment in Sydney.

Horizon provided three different coloured pavers – Victorian Blue for the main areas, Sandalwood for the decorative triangle designs and Rustic Red for the driveways. Pavers for the pedestrian walkways were 50mm- and 65mm-thick and the driveways were laid with commercial grade 76mm-thick pavers.

Paving was laid by Aotea Paving, a sister company of Dominion Constructors. G James Glass and Aluminium designed



manufactured and installed all the aluminium cladding and glazing to the tower. The lower pod has sections of powdercoated aluminium-framed panels glazed with curved coated PVF2 4mm solid aluminium sheets. A section above, which houses communications equipment, has aluminium-framed panels glazed with grey laminated glass. Each panel was curved to suit the various radii at each level.

Green laminated insulated glass panels manufactured by G James feature in the lower and main observation decks and revolving restaurant. The main observa-

tion deck also includes four 44mm-thick glass viewing ports in the floor, at the four compass points – north, south, east and west.

"This starphire glass used for these ports is the purest glass available and is designed to handle the heaviest foot traffic," says G James site supervisor, Andrew Rolfe.

The outdoor deck has 16.76mm-thick clear laminated glazing. This provides a safe glass barrier and protects visitors from strong wind gusts.

For uninterrupted views on Sky Deck, the highest viewing level, G James used

**Above:** The Interpretive Centre has marmoleum floors designed by architects Craig Craig Moller and installed by Hills Floorings. The design features a combination of solid colours and marble patterned marmoleum. Marmoleum is a hard-wearing flooring made from natural products such as resins and pigments, jute, limestone and cork.



**Above:** The bold marmoleum floor design, installed by Hills Floorings, helps to indicate the three passenger tower lifts.

glass fins instead of aluminium framing. G James also installed the glass viewing slots up the tower lift shaft. These are made of green laminate glass panels with steel grey aluminium frames.

The use of modern glass products helps create a futuristic look throughout the complex. The decorative glass waterfall in the main foyer of Sky City is an example. Glass Design supplied and erected the full atrium-height structure using 12 panels of 12mm-thick toughened safety glass. The glass panels weigh a total of 3000kg.

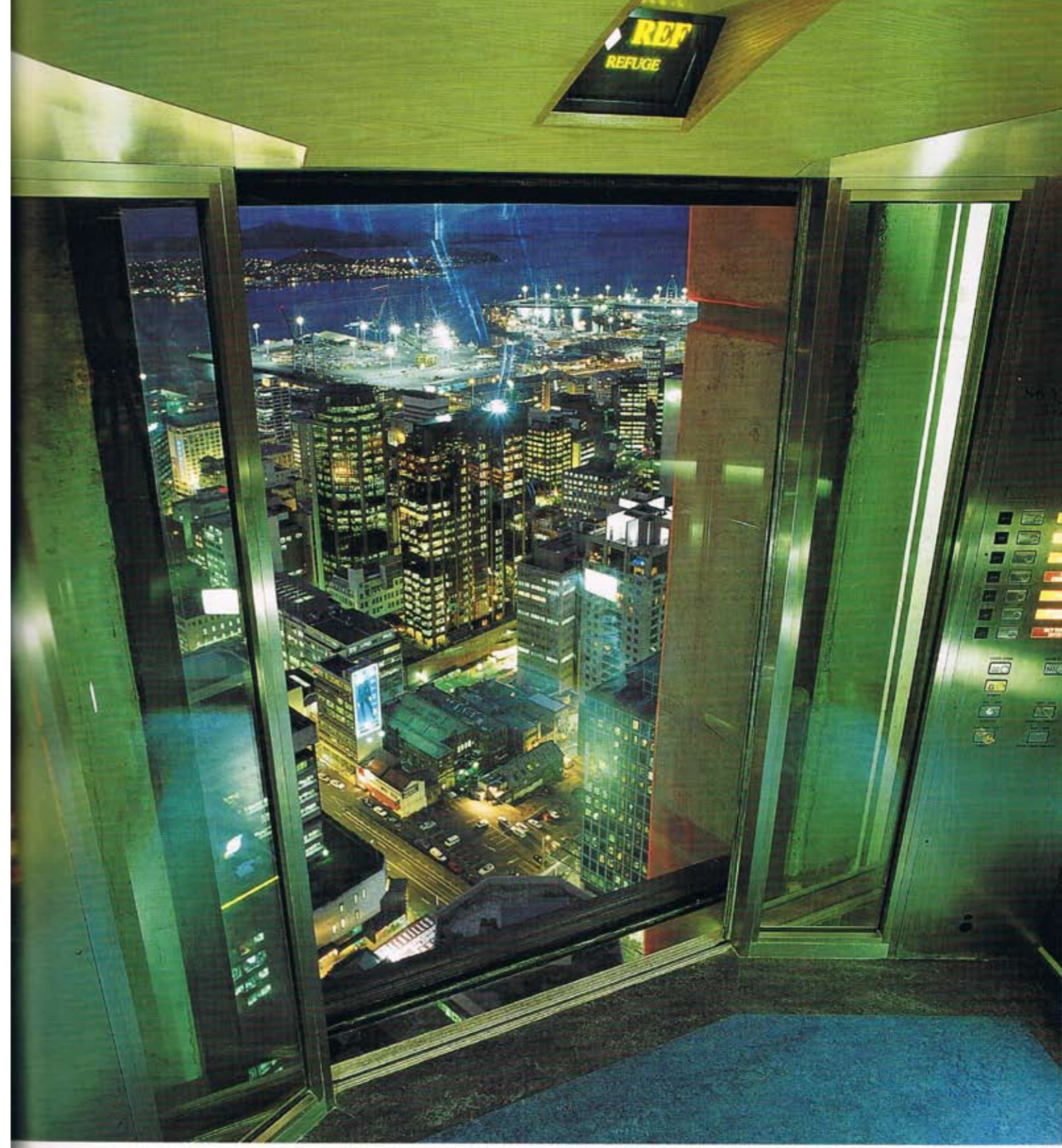
Each panel was hoisted on its side by a

vacuum lifter connected to two lifting points in the roof and carefully rotated into position. The panels are bolted to a steel subframe behind the glass with adjustable stainless steel bracket fixtures.

Copper and brass piping is fixed on top of the glass and rows of lights illuminate the waterfall from underneath. Water runs down the glass sheets creating continuously moving marble patterns.

Flooring in the Sky Tower includes 2000m<sup>2</sup> of marmoleum and carpet supplied and installed by Hills Floorings.

The Interpretive Centre and observa-



tion decks feature a bold, geometric floor in red, yellow and marbled charcoal-coloured marmoleum, designed by architect Craig Craig Moller. Marmoleum is produced from natural ingredients such as resins and pigments, woodflour, cork, limestone, linseed oil and jute. It is a highly durable, hygienic and practical flooring, suitable for heavy traffic areas.

The deep blue carpet on the floors and stands in the revolving restaurant is a custom-made pin dot commercial Axminster broadloom made by Feltex. It was installed by Hills Floorings using the

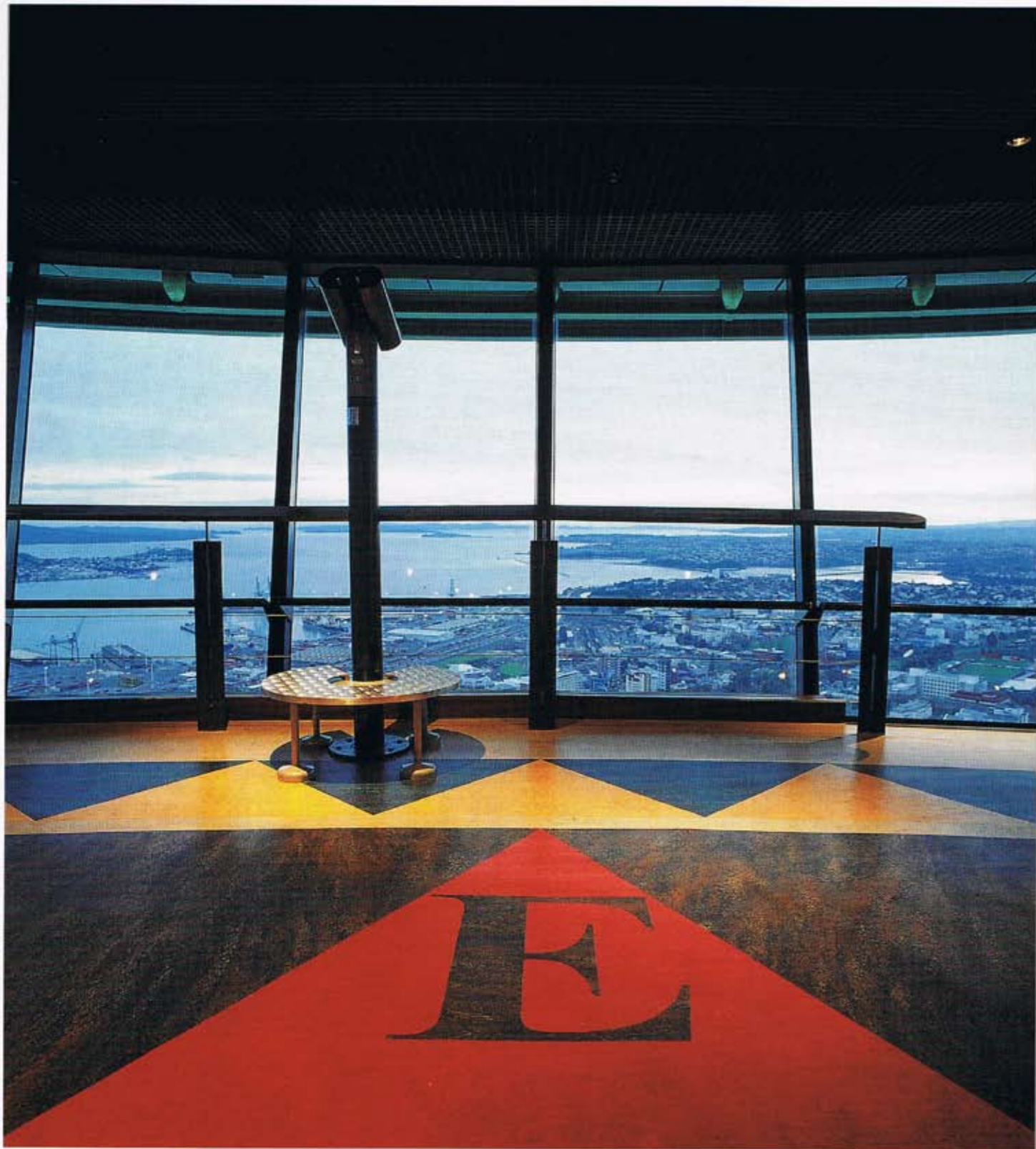
double-stick method. With this, the slab rubber is joined to the floor first and then the carpet is fixed to the underlay, providing extra strength.

Wilson Engineering Systems fabricated and installed the rotating floor in the revolving restaurant, Orbit.

The company, through its exclusive licence arrangements with Webb Conveyor Company of Australia, designed the floor structure following principles used in the design of Sydney's Centrepoint Tower and Australia Square's rotating floors.

The brief called for a smooth, surgeless

**Above:** Schindler Lifts installed three passenger and one service elevator in the Sky Tower which travel at five metres per second. Each passenger lift has glass doors providing views of Auckland city and harbour as you ride up the tower. The elevators are monitored by the Miconic V group control system which constantly checks elevator position, speed and acceleration rate which helps to reduce waiting times.



**Above:** The Sky Tower's main observation deck features marmoleum floors by Hills Floorings. The glazing consists of green laminated insulated glass panels with steel grey aluminium framing, designed and installed by G James.

and vibration-free ride, necessary for an installation of this calibre.

Wilson Engineering constructed the floor off site and completely pre-assembled it to ensure the accuracy of the components. It consists of fabricated steel pie sections and each section was match-marked to the adjacent sections during the off site assembly check.

The dual drive system rotates the floor on a series of castor wheels. It has seven speeds ranging from one revolution in half-an-hour to one revolution in one-and-a-half hours.

The latest building technology is also applied to the Sky Tower elevator system, installed by Schindler Lifts.

Schindler provided three passenger and one service elevator. These travel at speeds of 5m per second, making the total nonstop travelling time up to the observation decks a mere 40 seconds. Each passenger lift is fitted with glass doors, providing views of the Auckland sky line and harbour as you ride up the tower.

Elevators are equipped with the Miconic V elevator group control system. This system constantly learns and relearns the



**Above:** G James installed four glass viewing ports at each compass point in the floor of the main observation deck. The 44mm-thick starphire glass is specially made to handle heavy foot traffic.

steel finish, in keeping with the aesthetics of the overall Sky Tower design.

PlaceMakers Mt Wellington played a significant role in the Sky City complex, even though a majority of its work will remain unseen.

The company co-ordinated the supply of all the construction timber used throughout the casino, hotel, carparks and security areas, atrium, retail areas, restaurant and all back of house, as well as all the timber skirting and architraves.

The architects specified kiln-dried timber in either New Zealand ash or

traffic movements, simulates all possibilities of car-to-car stops between each floor and always selects the quickest solution.

The elevators continue to match real time performance against ideal projections and adapt to the building's changing requirements. Elevator position, speed, acceleration and jerk rate are also constantly checked.

Benefits of this system for elevator passengers include a smooth, quality ride, minimal waiting times and calls kept in sequence with call priority.

The elevator interiors have a stainless



*Above right and facing page:* The revolving restaurant runs on a highly-advanced rotating floor system designed and installed by Wilson Engineering. It was completely pre-assembled off site to ensure the accuracy of the components. Dominion Constructors built the fire-resistant floorboards for the rotating floor. The carpet and upholstered upstands were installed by Hills Floorings.



Tasmanian oak. Because these species can vary in colour from pale cream to pink, the timber was handpicked to ensure each board had a clear light grain and a clean, cream colour. The timber also had to be of a consistent size and moisture content.

To co-ordinate such a massive project, PlaceMakers set up a new holding bay for the large amounts of timber needed.

Nine on-site subcontractors were assigned to the different areas of the construction site and their timber was supplied in colour coded lots.

This helped to identify all the produc





**Above:** Grohe Eurodisc basin mixers and bath/shower mixers are used with Grohe Relaxa Plus Dual head showers throughout the Sky City complex. Villeroy & Boch sanitaryware was also used with Grohe tapware in the presidential suite. Grohe tapware has in-built water conservation technology which was necessary in a complex such as Sky City.

quickly and efficiently so the order was delivered to the site on time to meet the crane transportation.

From construction to the complete interior furnishings, Sky City is a fitout that meets international standards. This includes the 1200 Grohe Eurodisc basin mixers, bath/shower mixers and Dual shower heads, supplied by Paterson Trading.

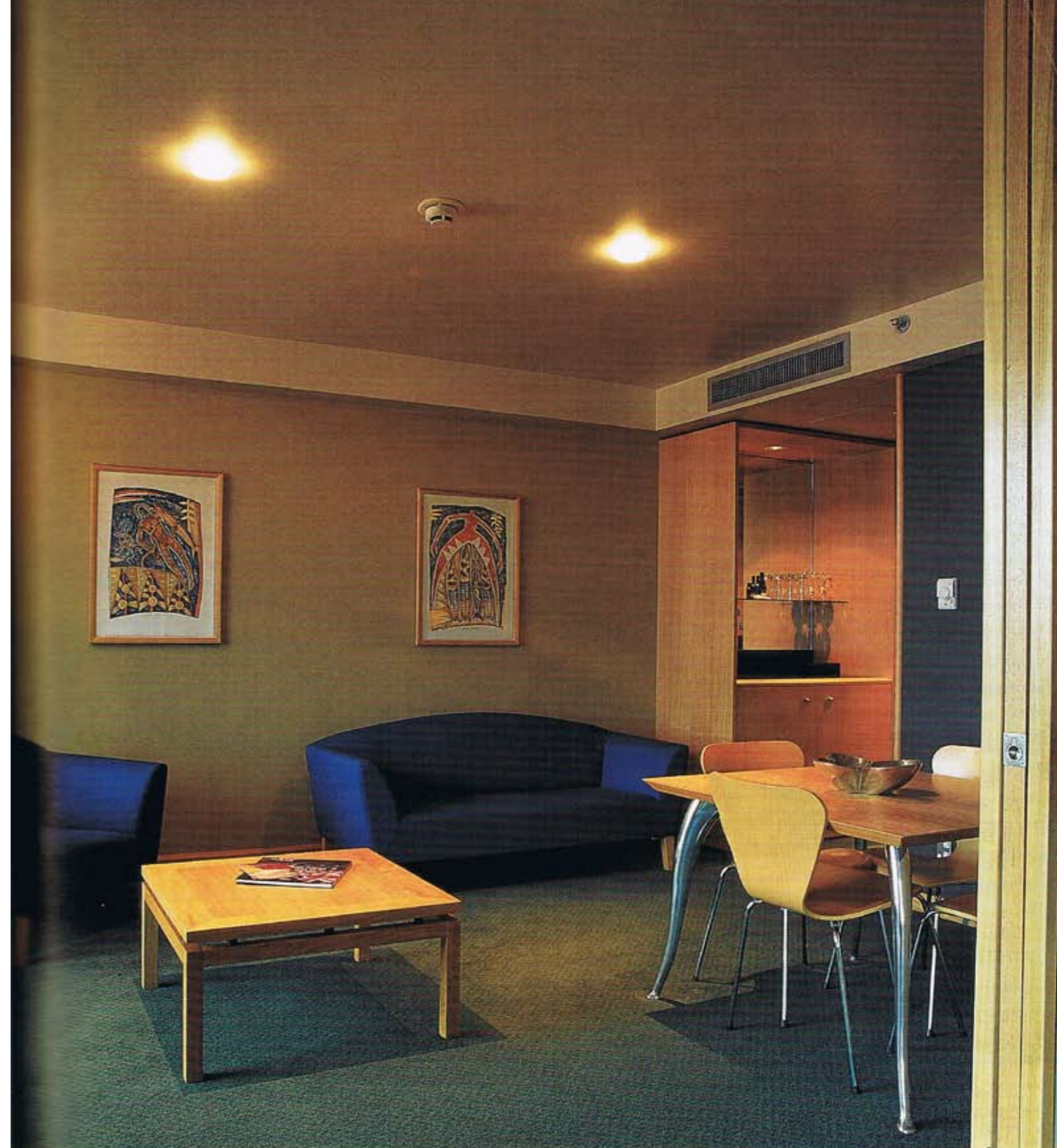
Paterson Trading has been a European bathroomware importer for the past 45 years, representing world-recognised brands such as Grohe and Villeroy & Boch.

Grohe's Eurodisc range offers smooth

single lever action, built-in temperature control, excellent water conservation capabilities and patented ceramic discs which help to minimise water hammer.

The German-made products have been tested in excess of 200,000 cycles to ensure a lasting, trouble-free performance. These testing standards are now being adopted by the American Society of Mechanical Engineers.

As well as Grohe tapware, Paterson Trading supplied Villeroy & Boch toilets and bidets for the Sky City hotel presidential suite.



**Location:** Sky Tower and Sky City, Auckland

**Concrete formwork floors and fitout/carpentry work:**

Dominion Constructors Ltd, PO Box 17-254, Greenlane, Auckland, phone 0-9-525 6353, fax 0-9-525 6482

**Exterior paving:** Horizon International Ltd, PO Box 38-522, Petone, phone 0-4-568 3438, fax 0-4-568 9410

**Exterior cladding and glazing:** G James Glass and Aluminium, PO Box 91-410, AMSC, phone 0-9-356 7390, fax 0-9-356 7392

**Glass water feature:** Glass Design Ltd, PO Box 15-166, New Lynn, Auckland, phone 0-9-827 1940, fax 0-9-827 1951

**Revolving restaurant floor:**

Wilson Engineering Systems Ltd, PO Box 12-878, Penrose, Auckland, phone 0-9-525 0817, fax 0-9-525 0818

**Flooring:** Hills Floorings Ltd, PO Box 22-156, Otahuhu,

Auckland, phone 0-9-276 3938, fax 0-9-276 9940

**Elevators:** Schindler Lifts NZ Ltd, PO Box 724, Auckland 1015, phone 0-9-379 9688, fax 0-9-309 1114

**Construction timber:** PlaceMakers Mt Wellington, PO Box 18-449, Glen Innes, Auckland phone 0-9-527 6054, fax 0-9-570 8308

**Taps and sanitaryware:** Paterson Trading Co, PO Box 511, Auckland, phone 0-9-309 3022, fax 0-9-377 4739

**Trendsfax:** For more details on these products and services, fax +64 9 373 2173

**Photography by Fraser Newman**

**Above:** Construction timber for the Sky City casino, hotel, restaurant, retail areas, carparks and back of house areas was supplied and co-ordinated by PlaceMakers Mt Wellington. The company also provided all the skirting and architraves in New Zealand ash or Tasmanian oak. Each board was handselected for its pure cream colour, clear, light grain, consistent size and moisture content.