

concrete

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+ SURFACE REGULARITY
GUIDANCE DEVELOPED
FOR CONCRETE FLOORS

+ NZ FOCUSED SCM RESEARCH
PROJECT WILL HELP REDUCE
EMISSIONS FROM CONCRETE



DECORATIVE PROJECTS REALISED THROUGH GRC

THE ARTISTIC VISION FOR TWO RECENTLY COMPLETED SCULPTURES IN AUCKLAND WAS REALISED THROUGH THE UNIQUE PROPERTIES OF GLASS FIBRE REINFORCED CONCRETE (GRC).

THE MATERIAL'S DURABILITY, LIGHT WEIGHT AND ABILITY TO PRESENT INTRICATE DETAIL HAS COME TO THE FORE IN THE WOMEN'S SUFFRAGE-THEMED 'SOAPBOX' IN TAKAPUNA'S KILLARNEY PARK, AS WELL AS AUCKLAND ZOO'S 'ORANGUTAN NEST' AND 'FIG POD' PUZZLES.

The interactive Fig Pod puzzles are a key part of the immersive experience at Auckland Zoo. Image: GRC New Zealand Ltd.



The Soapbox offers a platform for all voices. Image. Auckland Council, by Serena Stevenson.

KIRK RICKETTS, PROJECT MANAGER AT JACKSON INDUSTRIES, WHICH PLAYED A PIVOTAL ROLE IN BOTH PROJECTS, RECALLS BEING APPROACHED BY ARCHITECTS JASMAX TO BUILD THE “HIGHLY-INTRICATE” MOULDS THAT WOULD FORM THE CONCRETE STRUCTURE OF THE SOAPBOX.

“After initial discussions it was clear that site restrictions meant standard concrete could not be used due to weight restrictions on loading and placement, so Jackson Industries proposed the use of GRC instead,” says Kirk.

“The mould making process was very time consuming and consisted of crafting two primary components to form the sculpture’s base and the lid.

“Jackson Industries’ in-house moulding material, Caro-C, was used to create the seven separate pieces required for the two mould components, which were then computer numerical control-machined to the desired pattern layout.

“The mould components were assembled and transported as two complete parts to GRC New Zealand’s Henderson facility to manufacture the final sculptural elements.”

Kirk says *Soapbox*, which recognises the work of Kate Sheppard and other suffragettes in achieving women’s right to vote in 1893, a world-first, is

positioned to take in the “stunning” view of Lake Pupuke.

“Michael Ross and the team at concrete colour specialists Peter Fell Ltd produced the rustic red tone of the platform, which acknowledges the neighbouring Pumphouse Theatre and the volcanic origins of the lake,” says Kirk.

Situated in the heart of the northern suburbs’ creative arts hub, *Soapbox* offers the opportunity for people to interact with the platform in whatever way they are inspired to do so.

GRC New Zealand director Dan Carpenter notes that a “number of iterative loops” were run through to ultimately determine the project’s design and approach.

“One of the key challenges was dealing with the shape of *Soapbox* and how a steel frame could be incorporated to give the structure the strength and durability required,” he says.

“We knew that using GRC for this project would deliver on the key requirements of providing a

robust and lightweight platform. The lightweight benefits include reduced costs for transport and installation, along with some key environmental considerations regarding the minimal energy needed to produce the platform in GRC compared to alternative solutions. Another key benefit of using GRC is a reduced maintenance cost over time.

“Initially, the team thought they could solve the problem in one go, by using a single mould and frame, but it became apparent early on that two moulds and associated steel frames would be required.”

Praising the quality of the mould provided by Jackson Industries, Dan says his team ran through a series of “dry runs” to ensure it was possible to complete the spraying in one go as well as later perform demoulding “without a hitch”.

“There were a number of tests we completed, which included the form liner release agent, the oxide mix to achieve the required colour, ensuring we could get the consistent thickness needed across the mould, and dry fitting the frame to ensure we could easily complete the end-to-end GRC production activity.

“We also went through meticulous planning and walk throughs for the day of production to ensure there would be no hiccups. I’m glad to say that everything went smoothly.

“One of those unknowns with GRC is the demoulding activity, and we were somewhat nervous even with the level of planning and testing we did. However, to great relief across the team, it was surprisingly straight forward to demould and the sculpture looked amazing.

“The last step was to assemble the sculpture on site at GRC New Zealand’s facility to ensure it was a perfect fit, which it was. This meant transportation and installation went without incident.”

Soapbox was designed by a team of architects and designers including Olivia Collinson, Vanessa Coxhead, Stephanie Darlington, Prue Fea, Jayne Kersten and Madeleine Racz, in collaboration with Jasmax. They were commissioned by Auckland Council to create the sculpture in celebration of the 125th anniversary of women’s suffrage in Aotearoa/New Zealand. The sculpture was designed to be enjoyed and to be used; to be observed, stood on or sat upon by the public. For more information visit www.aucklandpublicart.com.





Image: Auckland Zoo

WHEN DISCUSSING THE AUCKLAND ZOO'S SOUTH EAST ASIA JUNGLE TRACK PROJECT, KIRK RICKETTS FROM JACKSON INDUSTRIES POINTS OUT THAT THE JOB DEMANDED INTENSIVE SURFACE DETAILING.

"From a mould-fabrication perspective, the detail of each piece required several days of fine machining due to the intricacy of the designs," says Kirk.

"Flexible mould material was vital to achieve a high spec result and safe demoulding of the completed parts."

Jon Parlby, senior designer at Formworks Ltd, which provided the project's sculptural elements, describes a collaborative venture involving Auckland Zoo, architects Studio Hanson Roberts, Jackson Industries and GRC New Zealand.

"The design brief was challenging," says Jon. "It required ornate sculptural elements that needed

to be interactive, extremely durable and in keeping with the architects' vision for the zoo.

"As designers we wanted to push the boundaries of the material capabilities yet maintain an authentic and durable product.

"The expertise and willingness to explore material opportunities of both manufacturing parties enabled us to design and deliver a truly unique set of objects that will stand in place for years to come."

Jon highlights the in-house machinery capabilities of Jackson Industries as being "extraordinary".

"Their engagement with us enabled smooth development and subsequent delivery. For Jackson

Industries, the design detail was shallow but extremely intense, which posed some challenges.

“Due to the elaborate perimeter shapes and intricacy level, rubber moulds were required. The seat in particular required a complex methodology and material skill level to achieve the mould at a thin enough layer to make demoulding achievable.”

Dan Carpenter highlights the sense of excitement felt around the GRC New Zealand facility when the rubber moulds for the special project were delivered.

“The Jacksons Industries moulds were an absolute work of art, and the team at GRC New Zealand stepped up to the task of ensuring they delivered some beautiful GRC pieces to match.

“The Peter Fell colours specified for the project were very different to what we had used previously, and so several test panels were completed to ensure we could produce the final look that the project required.

“When it came to the day of spraying the moulds, great care was taken to ensure everything was

right. Although each piece was quite small, we really took our time to ensure the end product was perfect.

“The quality of the moulds made the demoulding activity straight forward, and for multiple GRC pieces to be cast using the same mould without it degrading.

“The next phase required collaboration with the steel fabricators to connect the intricate GRC pieces to the frames that housed them. With no room for error, the installation was seamless - ultimately bringing the project to life,” says Dan proudly.

As part of the South East Asia Jungle Track visitor experience, the Orangutan Nest and interactive Fig Pod puzzles showcase how the properties of GRC can, in the hands of a dedicated and expert project team, help bring to life an intricate artistic vision as a durable hard-wearing object.



Auckland Zoo's Primate team leader, Amy Robbins in the orangutan nest.
Image: Auckland Zoo



Image: GRC New Zealand Ltd.



Image: GRC New Zealand Ltd.