

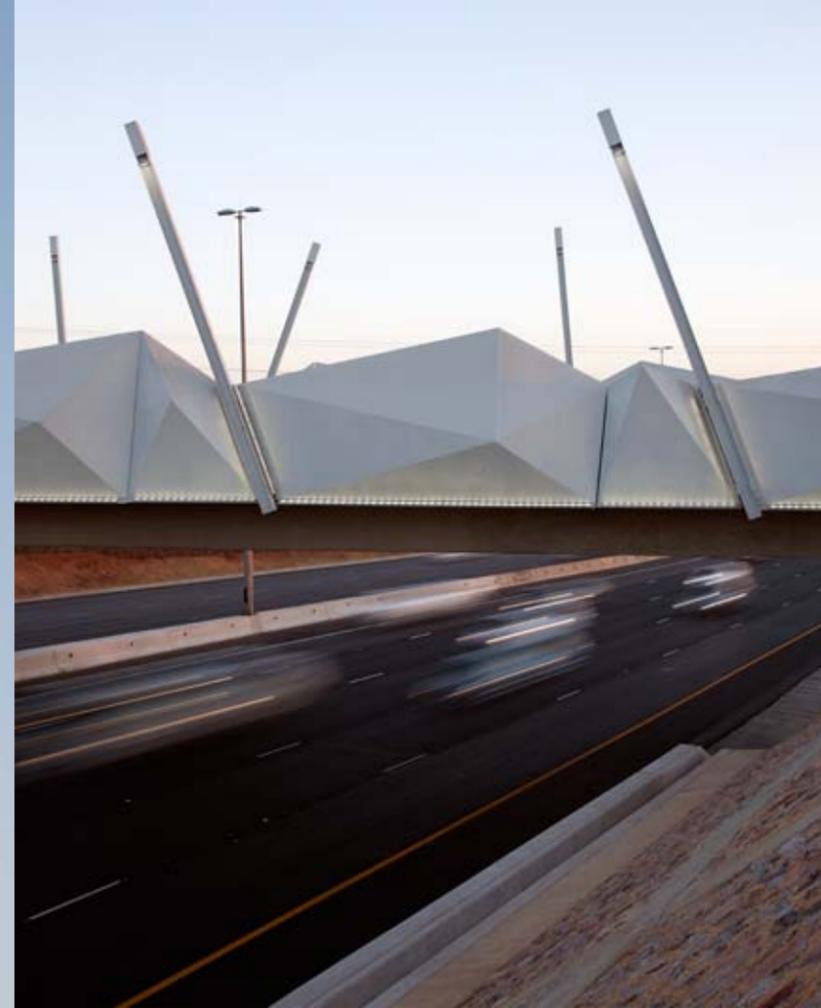
bridging the gap

The facade of the new Nellmapius Bridge brings a glimpse of drama and delight to the journey between Joburg and Pretoria

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The steel facade of the Nellmapius Bridge on the N1 forms a gateway between Midrand and Centurion. It was inspired by origami and developed using fractal geometry.



If you looked up while browsing the Palazzo Bembo Exhibition in Venice, Italy, between August and November this year, you'd have seen a glowing white wedge spanning two buildings in the courtyard. South African architect Pieter Mathews, of Mathews & Associates Architects, was invited to design the courtyard feature for this year's Venice Architecture Biennale and, as his contribution, he repurposed his original sketches for the facade of the city's new Nellmapius bridge.

To see the real thing, you can simply hit the N1 highway or catch the Gautrain between Midrand and Centurion. The bridge comes as a surprising and uplifting moment on the journey between the two cities: a configuration of apparently random geometric shapes above the motorway with irregularly spaced and angled I-beams for lights. At night it is lit from below with white LED lights, creating a glowing zigzag over the highway.

Commissioned by the South African National Roads Agency SOC Ltd (SANRAL), this construction is a part of the Gauteng Freeway Improvement Project, an initiative to upgrade freeways in the province. BKS (Pty) Ltd was appointed as the consulting structural and electrical engineers on the project, while Pieter, with the help of colleague Heinz Janz on the technical design side, was tasked with the architectural design.

Inspiration came on a rainy day at a bookshop while Pieter was on holiday with his family. His youngest son picked up a book on origami, which, Pieter says, 'sparked the metaphor of how to symbolise the multifaceted culture of [Gauteng]'. He developed the design by researching fractal geometry to help create the tension between what appears to be a random pattern and the perfection with which the faceted forms interlock. The contrast leaves the impression of 'an ordered disorder': what Pieter calls the 'magic' of fractal geometry. 'At night, this becomes an analogy and reference to the heartbeat and hustle and bustle of Gauteng's cities,' says Pieter.

A series of steel panels on the exterior are quite obviously bolted onto the bridge – Pieter didn't want it to look as if it was pretending to be 'structurally integral to the bridge design'. It's a facade treatment – a 'civic sculpture', as he calls it. It does, however, serve a number of practical requirements. 'The origami-derived shapes also help to deflect sound, creating a more pleasant environment for pedestrians on the bridge,' says Pieter, 'while their solidity and height ensure that all objects stay on the bridge, making it safer for motorists passing below.'

This unexpected, fleeting glimpse of beauty on the highway, adds to Mathews and Associates Architects' growing portfolio of sculptural architectural landmarks. A number of their designs for civic structures – including the Baobab Toll plaza between Musina and Makhado in Limpopo and the Diamond Hill plaza on the N4 between Mpumalanga and Gauteng – bring significance to transitional spaces and borders with the power of metaphor and the beauty of abstract shape. □

Mathews and Associates Architects, maaa.co.za;
SANRAL, nra.co.za; BKS (Pty) Ltd, bks.co.za