Expression of a journey

A striking new bridge on the Nancefield Interchange north of Musina, Limpopo, designed by Mathews and Associates Architects, unfolds cinematically as a gesture of welcome into South Africa.

PHOTOGRAPHS: MIKE BENNET AND RIKUS POTGIETER COURTESY OF RAUBEX CONSTRUCTION

The new bridge on the recently completed N1 ring road that now bypasses the border town of Musina in Limpopo, marks the arrival into and departure from South Africa. It is the first bridge commuters encounter in South Africa after the Beit Bridge border post between Zimbabwe and South Africa (and the last as they leave). The bridge, designed by KBK Engineers and architect Pieter Mathews of Mathews and Associates Architects, appears to be held up by a pair of gigantic sculptural hands.

The bridge forms part of a larger project initiated by the South African National Roads Agency (SOC) Limited (Sanral), which involved adding eight kilometres of new roadway and interchanges to alleviate the traffic congestion in Musina's CBD.

"The aim of the ring road is to remove the N1 through traffic – i.e. traffic that travels on the N1 to and from destinations beyond Musina – from the town CBD," explains Sanral project engineer Hennie Kotze. The CBD, he notes, was becoming highly congested with heavy vehicles passing through the centre of the town, even though much of the traffic had no business in Musina and it was not their destination. "They can now use the ring road to avoid the CBD," says Kotze, which means the town centre is safer, less congested and the roads are preserved from the wear and tear caused by heavy vehicles. Transportation around Musina will also be more efficient.

Mathews, however, notes that the bridge also represented the opportunity to harness the power of civil engineering to function as civic sculpture and create a memorable landmark – a significant symbolic gesture (or even a moment of delight) for commuters as they enter or depart from SA.

The concept for the bridge, he says, was a direct and accessible symbolic gesture of welcome: two hands, representing South Africa and her neighbour, coming together to support the bridge.

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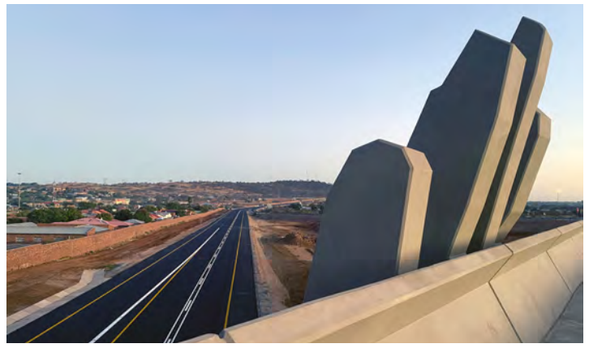

The design was pared down to five abstracted reinforced concrete columns, which, together, read as a pair of hands. Barry Schlebusch, director at KBK Engineers, says that the design did pose certain challenges from an engineering point of view, including the "purpose-made shutters the were required for the abutments, support "hands", and the deck".

"This required extensive 3D modelling of the bridge and numerous design meetings between the consultant, contractor and the formwork supplier," he says.

Similarly, while it was good fortune from an aesthetic point of view that the bridge is approached at a slight angle, so the form of the hand is clear to commuters approaching by road, this also posed challenges to the engineers. Schlebusch notes, "The excessive skew angle of the bridge, the deck cross-section, and the orientation of the "hands" in relation to the abutments yielded design challenges with respect to the transverse forces in the deck." He explains that this was overcome "by manipulating the stiffness of the deck in the transverse direction."

The bed and parapets of the bridge form a pared down, minimalist monolithic element free of distracting detail, resulting in "simplified form, heightened impact", as Mathews puts it, for the hand sculpture. The simplified elegance of the abutments, where the bridge touches the side supports, allow the bridge to appear as continuous with the landscape, similarly adding drama to the hands while quietening the other elements.

Mathews explains that the symmetrical design of the hands allowed for the efficient reuse of the specialist shuttering used to cast the components, which saved on costs. In addition, various trial castings could be used to add a narrative dimension on the approach to the bridge to pique curiosity and prime the commuter, eventually culminating in the seven-metre hands holding up the bridge.

On the road leading to the bridge, from either side, a series of hand sculptures identical to those that eventually hold up the bridge appear to rise from the earth: each a little taller and more exposed than the one before. Rather than discrete sculptures, however, they are experienced as a continuous, animated stream, as if the hands were rising from beneath the ground to lift the bridge.

Mathews refers to the motorist or passenger's encounter with the bridge being defined by "the embodied experience of being in a car or bus". As such, it was specifically designed to be experienced framed by a windscreen, and while in motion. The sculptures rising from the ground in the approach to the bridge form a narrative, and, says Mathews, more specifically a cinematic experience. The term he has coined for the approach is "cinematic architectural choreography".

Thus, not only does the new Musina Hand Bridge, as it has been dubbed, extend the possibilities of architecture to function as civic sculpture, but also, through its dynamic, cinematic approach, to express something of the meaning of the journey from South Africa to Zimbabwe, or vice versa.

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