

# UPGRADING OF THE N2/M41 MNT EDGECOMBE INTERCHANGE

TEXT: NICHOLAS CARROLL IMAGES: NICHOLAS CARROLL & SUPPLIERS

*With the summit at 23m, you may have felt a little uneasy on your first pass over the fresh asphalt. Its an impressive and thrilling structure.*

THE MULTIPLE ENGINEERING ACHIEVEMENTS BEHIND THIS MAMMOTH PROJECT ARE TESTIMONY TO EXCEPTIONAL SKILL AND ABILITIES OF SOUTH AFRICAN ENGINEERS. A PREREQUISITE FOR THE CHIEF ON SITE ENGINEER JOB WAS "A MINIMUM OF 35 YEARS EXPERIENCE".



The site office adjacent to the M41 on the Cornubia side has played host to over 1200 visiting students, eager to align themselves with this world class project that has drawn so much attention.

SANRAL commissioned SMEC South Africa to undertake the design and oversee the implementation for the upgrade of the Mount Edgecombe Interchange. The result, a Four Level Full Free Flow Interchange. CMC Di Ravenna South Africa was awarded the construction contract.

THIS WAS CERTAINLY NO 'LOOK WHAT WE CAN DO' UNDERTAKING ON THE PART OF THE ENGINEERS. THE INTERCHANGE UPGRADE HAD TO FIT IN WITH THE SURROUNDINGS AND TAKE FUTURE DEVELOPMENT OF THE AREA INTO ACCOUNT.

Some of the numerous challenges they had to overcome included: physical space available; future developments; road reserve boundaries; congestion; future development and traffic demands; existing storm-water attenuation areas and future access and capacity. The project engaged 80 designers at the high point of the design phase. Not a single road was closed permanently during construction.

The Incrementally Launched Method (ILM) of bridge building was used, so as to create as little disruption to existing road infrastructure. Considering that uMhlanga is one of the fastest developing areas in the country, this was a very forward thinking project. (ILM) is a term used to describe a bridge that is built in sections that are pushed out piece by piece.



# 01

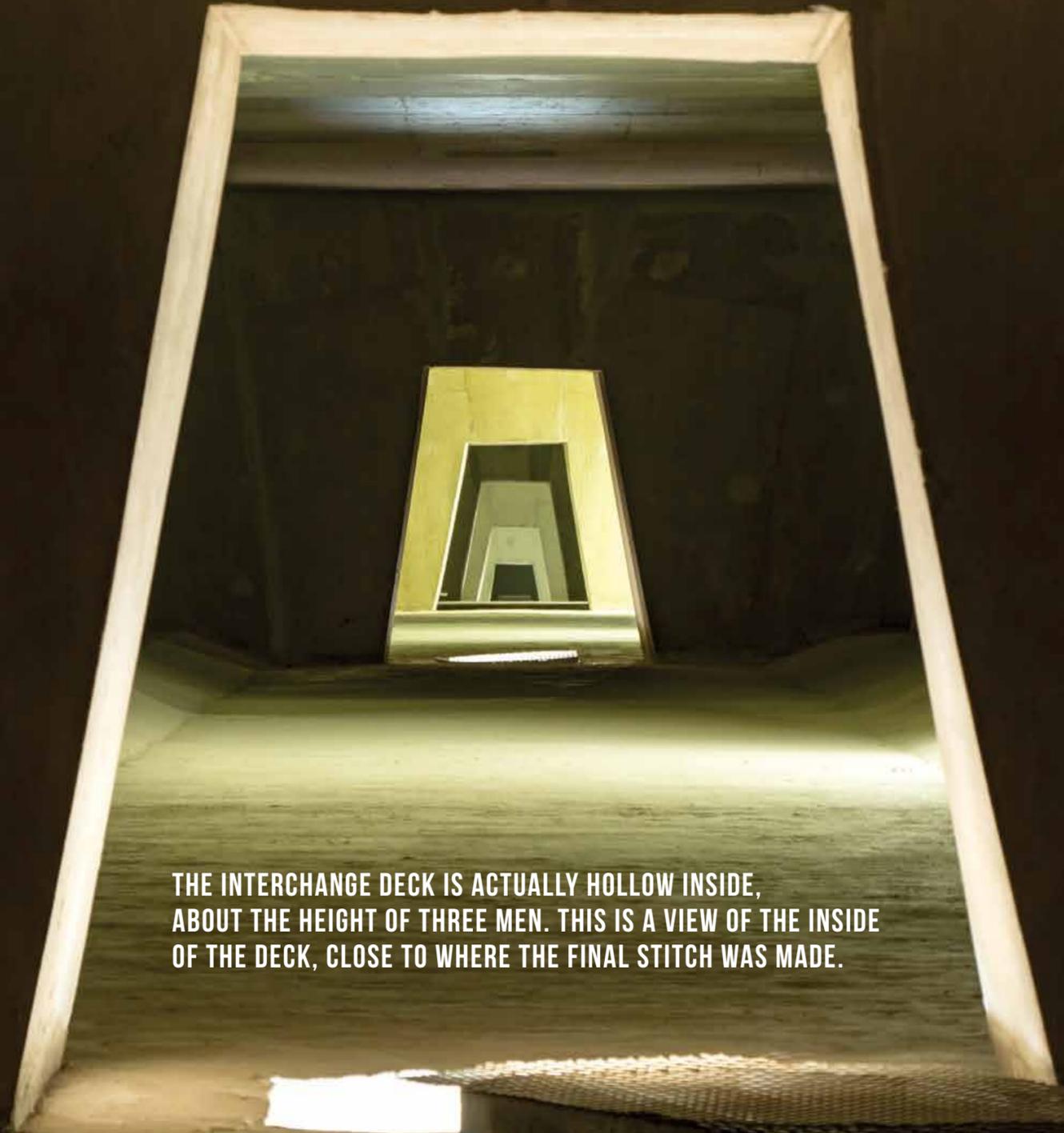
**XOLANI ZULU**  
Safety Officer for the contractors CMC gazes across the interchange just before rush hour

Multiple unique procedures were adopted in the construction of this project, presenting a technical challenge, the likes of which South Africa has never seen. Many of these procedures were not new to construction. The uniqueness of their adoption is in the fact that these collective technologies and techniques were used simultaneously for the first time, on the same project.

A defining feature of this project is that it has the longest section of 2 incrementally launched viaducts ever attempted in South Africa. The longest section referred to as B0215 has a deck length of 947 metres, which also makes it the longest incrementally launched bridge in the Southern hemisphere.

B0215 was built from opposite ends, designed to stop a short distance from each other for the final "stitch". The question on everyone's lips: "Are the two ends going to meet in the middle as designed?" The end result was 7mm from the design position on the horizontal (left to right) and 0mm out on the vertical - zero error. Amazing! To give you some idea of what 7mm looks like in reality:





THE INTERCHANGE DECK IS ACTUALLY HOLLOW INSIDE, ABOUT THE HEIGHT OF THREE MEN. THIS IS A VIEW OF THE INSIDE OF THE DECK, CLOSE TO WHERE THE FINAL STITCH WAS MADE.

Many of us will remember waking up to the news that “a section of the bridge has collapsed”. In fact, this “collapsed” section was the dismantlement of the casting shed which was no longer required as all sections of the bridge had been cast and slid into place. The casting shed created the bridge sections quite literally up in the air.

This upgrade has forever changed the landscape and will no doubt become a recognisable landmark from land and air. A truly watershed moment in South African design and civil works.



02

OSAKA CITY  
Kansai, Japan

FREWAY INTERCHANGES AROUND THE WORLD



03

DUBAI, UAE



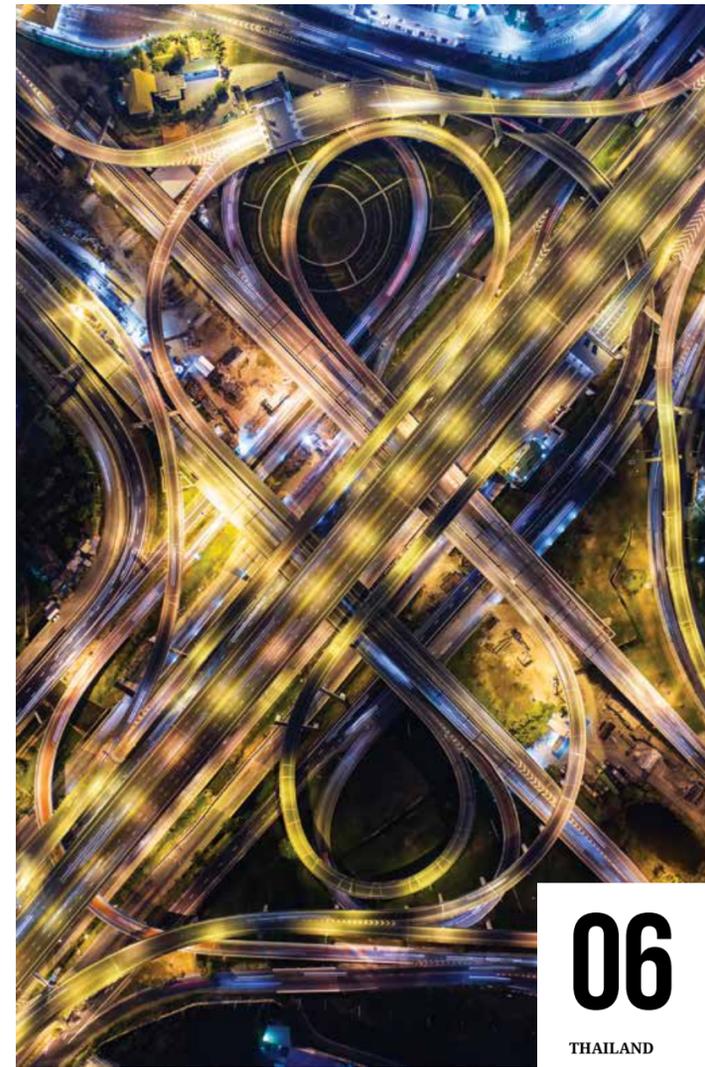
04

AUSTIN TEXAS



05

LOS ANGELES



06

THAILAND