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Project Image: Polokwane Bridge

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ROADS INFRASTRUCTURE

DINESH CHAITHOO – Associate Infrastructure: Highways and Bridges – ARUP



How has Arup been involved in building South Africa's road infrastructure over the years?

DC Arup is involved throughout South Africa on different types of roads infrastructure projects, ranging from access roads to highway upgrades. We work with all the major district municipalities in South Africa, delivering services including road and bridge design, economic and financial appraisal, transport planning and traffic engineering, intelligent transport systems, environmental consulting, procurement, contract administration and construction supervision. As a multi-disciplinary firm, these services vary from province to province, and these projects may be situated in both rural and urban areas.

What have been Arup's top five projects over the years?

- As one of the host cities for the 2010 FIFA Soccer World Cup, the Polokwane Municipality required an efficient road network for transporting fans to the soccer games. Arup was appointed to lead the planning, development and implementation of a 400 m road-over-rail bridge, with associated infrastructure and approaches.
- Arup was involved in the design and construction supervision of the new bridge and geometric improvements to the N14/R512 interchange. This included the new dual carriageway, rehabilitation, strengthening, reconstruction and widening of the existing single lane for doubling, geometric improvements to the existing interchange, and provision of a new post-tensioned voided deck bridge.
- The company provided technical, procurement, programme

and project management services for the Coega Industrial Development Zone and deep water port.

- Arup was appointed by SANRAL to conduct an economic analysis of the implications of upgrading the existing Gauteng freeway network, adding capacity, adding new roads and tolling the entire network. Three methods of economic analysis were applied:
 1. Cost benefit analysis
 2. Micro-economic analysis
 3. Macro-economic analysis.
- Century City Viaduct, Cape Town. The viaduct is a bridge taking traffic directly off the N1 Cape Town-Paarl highway onto the rooftop parking of the Canal Walk Shopping Centre. The bridge was conceived primarily to avert congestion of traffic leading out of the extensive corporate building complexes that have been established on Century Boulevard – a ring road that circles the shopping centre, with nine feeder points.

Awards

- Winner Bridges Category, South African
- Institute of Steel Construction Awards

The age-old debate over concrete versus bitumen continues to persist. As engineers, which material do you opt for when it comes to road construction and why? This debate has been continuing for decades and will probably continue for many years to come. Concrete and bitumen products provide excellent road building materials, provided they are used in the correct application. As both products are continuously in use, neither will become redundant in the foreseeable future.

There is still a long way to go before South Africa can fix its entire road network. What projects are lined up for the company in this regard? Arup is continuously involved in the process of bidding and expressing interest for various roads infrastructure projects in South Africa. It should be noted that Arup sees roads in the context of integrated networks of people and goods; the N3, for example, is already under severe pressure from freight traffic between Durban and Johannesburg, and is set to come under even more pressure if Transnet's plans for a new Dig out Port at Durban go ahead. Thus a key enabler for the proposed Dig out Port will be enhanced multi-modal connections to its hinterland. The government has placed renewed emphasis on this issue by prioritising interventions to enhance the Durban-Johannesburg freight corridor. Arup is involved in this process.

What is your opinion of the state of the road network and what advice would you offer local government? The state of South Africa's roads is on the decline. If we continue transporting freight by road and do not improve the rail services, things can only get worse. SANRAL undertook some research in understanding the overall state of the roads and the findings represent a shocking statistic of poorly constructed or maintained roads. It was found

that 80% of the road network has reached its original design life. Local government is only involved primarily in urbanised areas, but the overwhelming majority of roads are provincial. The structural gap in infrastructure constitutes a very serious handicap to economic growth and subsequent poverty reduction. Transportation has a direct relationship with the level of poverty. If poverty is to tackle serious socio-economic challenges, transportation should be in the forefront of the fight against poverty. The purpose is singular and that is to address the backlog in the roads and related infrastructure development in South Africa. This will, by



Century City Viaduct, Cape Town

default, promote strategic investments in productive areas aimed at diversifying the economy. There is a need to attract foreign businesses and increase industrial enterprises. Roads and related infrastructure act as an enabler for social activities and should be prioritised in current and future budgetary considerations. **35**

Arup is a global firm of designers, engineers, planners and business consultants providing a diverse range of professional services to clients around the world. Arup is the creative force behind many of the world's most innovative and sustainable designs. It has more than 90 offices in over 35 countries. Arup has a number of specialist engineers across all disciplines. Dinesh Chaithoo (Arup Associate, Infrastructure: Highways and Bridges) delivers integrated transport solutions for a sustainable future with a focus on best-value and technical integrity.