

The best in municipal engineering

The 2018 IMESA/CESA Excellence Awards recognised municipal infrastructure projects that demonstrated significant achievement through innovation, design or construction.

Presented at the 82nd IMESA Conference, the 2018 awards recognised outstanding achievements in municipal infrastructure, demonstrating the best of civil engineering as a science and how engineering enhances the lives of local communities. Awards were presented across three categories:

1. Engineering Excellence in Structures & Civils
2. Community Upliftment & Job Creation
3. Environment & Climate Change.

A total of 20 projects were entered this year. The following were recognised as the best in municipal infrastructure.

Category 1: Engineering Excellence in Structures & Civils

WINNER:

Western Aqueduct Phase 2 – Inchanga to Hillcrest Comprising Contracts WS6190 and WS6191

Client: eThekweni Municipality

Consulting engineers: Western Aqueduct JV
– Knight Piésold Consulting,
Royal HaskoningDHV and
Naidu Consulting

Conceived in the mid-1990s to address water shortages in the northern and western parts of Durban, the Western Aqueduct Bulk Water Conveyance Project eclipses all other water distribution systems within eThekweni Municipality, being the area's single biggest project in terms of size, complexity and cost.

Phase 2 of the project consists of 56 km of steel pipeline ranging between DN 1 600 and DN 500. This phase runs from Inchanga to Ntuzuma and has been constructed under six different contracts. For the WS6190 and WS6191 contracts, advance work was required in road reserves and private properties to prepare the required working corridor. Road rehabilitation and reinstatement was also undertaken.

Innovation was required from both the consultants and contractors for this complex project. This included modified scour chambers that significantly reduced the drowning risk to maintenance workers while speeding up pipeline repairs, as well as the use of the historical Durban-to-Johannesburg railway line and the 'Inchanga Choo Choo' to move a large proportion of the pipes during construction, saving both time and costs, protecting the environment, creating employment, and

upholding the heritage of the area. One of the immediate benefits of this pipeline was that its higher residual pressure is presently being used to supply water under gravity to Botha's Hill Reservoir, effectively replacing a pumped supply that was originally commissioned in the 1970s.

2ND PLACE:

M25-C9 Underpass Interchange

Client: eThekweni Transport Authority

Design engineer: eThekweni Municipality Roads Provision Department

Contractor: Inanda JV (Main contractor WBHO, with Qanza Construction, Lakeshore Trading, Ethos Transport, Phakama Construction and Thekwane Logistics)

The M25-C9 Underpass connects to Bridge City, a mixed-use private-public 'town centre' development in the north of Durban. The link, for vehicles and pedestrians, plays an important role in integrating Bridge City developments into the surrounding area.

Space for the new interchange was severely limited by neighbouring properties, as well as the C3 route, which travels alongside the M25 highway. The interchange needed to include two bus corridor ramps that would allow



Western Aqueduct
Phase 2 –
Inchanga to
Hillcrest Comprising
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and WS6191





M25-C9 Underpass Interchange



the C9 route to split away smoothly from the C3 route and loop back on itself, a viaduct for the continuing C3 route, realignment of an existing highway off-ramp and creation of a matching on-ramp, and, of course, the underpass itself, which connected the two highway ramps in a half-diamond configuration.

eThekweni's M25-C9 Underpass uses integral piers and abutments to test the limits of reinforced concrete bridge deck skewness and slenderness, a necessity for the ultra-compact multimodal transport interchange designed around it. The deck is not pre-stressed and its shallow depth is maintained across the span, creating an aesthetically refreshing, low-maintenance structure that is also materially efficient and rapidly constructed.

By carefully negotiating space and level constraints, the interchange provides an essential connection between a cluster of new Bridge City developments and a neighbouring industrial area, while threading an entirely new transport system through the city's existing infrastructure.

3RD PLACE:

Rehabilitation of Main Road between Atlantic Road, Muizenberg, and Clovelly Road, Clovelly – Phase 3

Client: City of Cape Town

Consulting engineer:

Knight Piésold Consulting

Contractor: Martin & East

The scenic 4.5 km stretch of coastal road between Muizenberg and Clovelly, one of only three routes linking the Cape Town metropolitan area with the far south, had last been resurfaced in 1994 and was designed to last approximately 10 years.

In 2006, Knight Piésold was appointed by the City of Cape Town to rehabilitate Main Road from Muizenberg to Clovelly, as well as repair or replace the municipal services including, inter

alia, water, sewerage and stormwater. Due to the complexity of the route, the project was undertaken in three phases, of which the Atlantic Road to Casa Labia and Kalk Bay Harbour to Clovelly Road is Phase 3. A key factor in the design of this project was that all services had to remain fully functional and that Main Road had to be able to accommodate traffic at all times during construction. This required the utilisation of very innovative techniques, as all components had to be constructed in an extremely confined space.

A critical aspect for the City of Cape Town was that the end product be aesthetically pleasing due to the scenic nature of the area. The road itself is part of a historical route that passes through a number of historical villages that attract tourists from across the world.

Phase 3 commenced in February 2014 and was completed in January 2018, in accordance with the contract programme. This was revised to



Rehabilitation of Main Road between Atlantic Road, Muizenberg, and Clovelly Road, Clovelly – Phase 3



take account of delays in receiving approvals from Prasa, as well as the inclusion of additional works such as the upgrading of the Point parking area at Kalk Bay and the demolition of the old Clovelly Station railway platform.

OTHER ENTRIES:

• **Installation of Municipal Engineering Services (Bulk and Internal) for the Watervalspruit Mega Housing**

Development: Phases 1 & 2

Client: City of Ekurhuleni

Consulting engineer: Infraconsult Engineering

Contractor: Sikhumba Construction

• **BRT Cable-stayed Bridge**

Client: City of Johannesburg

Consulting engineer: Hatch

Contractor: WBHO

Subcontractor: Form-Scaff

• **Lower Thukela Bulk Water Supply Scheme**

Client: Umgeni Water

Main consultant: Aurecon

Consultants:

Bigen Africa & Madan Singh

Contractors: Group Five Coastal, Stefanutti

Stocks & Esorfranki

Subcontractors: Veolia Water Solutions, Consolidated Power Projects and Strategic Environmental Focus

• **Cape Flats 3 Bulk Sewer – Phase 2**

Client: City of Cape Town

Consulting engineer: AECOM

Contractor: CSV Construction

• **Special Maintenance of N2 Section 11 between Bramlin and Soutwerke**

Client: Sanral

Consulting engineer: Bosch Projects

Contractor: Roadmac Surfacing Cape