

## THE UPGRADING OF KOEBERG INTERCHANGE CAPE TOWN, SOUTH AFRICA

The Provincial Department of Transport & Public Works appointed HHO Africa as the lead consultant for the upgrading of the Koeberg Interchange, as part of FIFA Soccer World Cup priority infrastructure transportation plan.

Koeberg Interchange is a major systems interchange with over 200 000 vehicles passing through the interchange on a daily basis. The project's preliminary design and contract documentation process had to be fast-tracked into a 6 month period, in order for the interchange improvements to be substantially complete for the Soccer World Event – which was achieved!



Ramp A completed and operational in time for the World Cup July 2010



40m long precast beams launched at night to minimise traffic disruption

Key elements of the project can be summarized as :

- ◆ ***The design and construction of two “third tier” elevated directional ramps between the N1 & M5 freeways over a very busy and complex existing systems interchange***
- ◆ ***The widening of selected sections of the N1 carriageways and the rehabilitation of all existing interchange roads and ramps***
- ◆ ***The lateral re-alignment of the Salt River Canal by 15m to provide space for the widening of the M5 viaduct and the new roadworks***
- ◆ ***Innovative pre-cast U-beams were selected as the preferred structural solution, because of their excellent aesthetic qualities and that they could be placed with minimal accommodation of traffic problems. An in-situ box girder solution was implemented for the larger skew spans over the N1, the M5 and the main rail lines***
- ◆ ***Because of pre-tender time constraints the project was successfully detail designed on a “just-in-time” (JIT) basis, ahead of the contractors programme***
- ◆ ***To achieve maximum job creation and empowerment targets the project was ‘unbundled’ into six sub-contracts which HHO Africa project managed and coordinated***
- ◆ ***The relocation and protection of major urban services. Pioneer services contracts were used to relocated critical services ahead of the main contract***
- ◆ ***Landscaping to the interchange, its approaches and the banks of the Salt River***

# ROAD ENGINEERING

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### FAST FACTS

- ◆ *The largest single road infrastructure project ever undertaken by Provincial Government Western Cape (PGWC) with a capex value of R800 million*
- ◆ *Combined length of directional ramps and widening of M5 viaduct : 2 700 m*
- ◆ *Total volume of concrete : 20 000 m<sup>3</sup>*
- ◆ *Total number of U-beams : 120 No*
- ◆ *4.3 km of piling*
- ◆ *Required one of the largest mobile cranes in South Africa (maximum lifting capacity 800 tonnes) to lift precast beams into position : mainly done at night to minimize impact on traffic*
- ◆ *Total length of pre-cast concrete balustrades : 4,5 km with innovative connections to in-situ deck*
- ◆ *Completed ahead of schedule and empowerment contract targets exceeded*



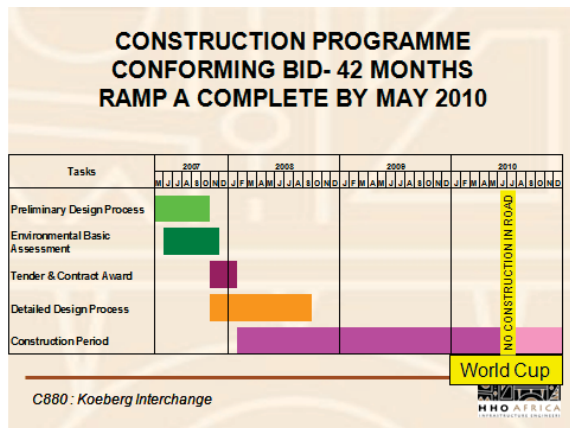
Computer simulations assisted in visualisation and planning



Huge trusses temporarily support the 67 m span across the 8 rail reserve



Innovative precast balustrades with linking system, essential to delivery on schedule



Design Programme condensed into 6 months to meet deadlines