...und

...he town of Umhlanga in Kwazulu-Natal needed growth. Moreland Developments
...f the Tongaat group) owns about 140 ha in this area and thus began developing a
...own centre and a nearby regional shopping centre on Umhlanga Rocks Drive. They
...issioned GAPP Architects and BCP Engineers to design the bridge to link the two
... separated by the M41. The idea was for it to serve as a true landmark upon entering
...and's developments in the area. This resulted in an urban sculpture formed out of a
...ete base structure with a steel superstructure imposed upon it.
... April 2000 the project went out on tender and was awarded to Grinaker LTA in May.
...cember of that year the basic concrete structure was completed and on 6th April
...ll the civil works were practically completed within the budget.

...tectural solution

...on the ledges, a deck 21 meter wide and 68 meter long was required. Instead of
...g for the usual simply supported slab, the architects created a bridge with smooth,
...st hi-tech lines; reminiscent of a modern ship in the design of the tapering ellipse
...ed center pier and the handrails together with the masts connecting with the pipe
...es. The slab is suggestive of a reversed aeroplane wing, with the soffit tapered to a fine
...edge where it meets the top surface of the bridge. It adds to the feeling of the bridge
...st floating above the ground; and to ensure the integrity of the rubbed finish, a colour-
...silicone was applied to the soffit of the deck.
...t glance the bridge appears to be of a suspension type, but the masts and arches fulfil
...ely aesthetic purposes, as it serves to support the lighting fixtures that illuminate the arch
...roadway at night. The design is completed with the decorative skirt walls enclosing the
...ments.

...tural solution

...bridge's structure is based on the principal of a simply supported beam; on the one side
...orted between the ridge and the center pier and on the other side between the other
... and center pier. The deck spanning the distance featured a hollow core with webs
...ning the top surface and soffit running the length of the bridge.
...deck proved very tricky as it was at a skew of 25 degrees and also the curved soffit re-
... the outer ribs having significantly more prestressing than the inner ribs. It was cast
...ously in six separate pours consisting of soffit and side walks, webs and finally the top
... each span.
...ructure was to be founded in Berea Red Sands (of highly variable nature) and thus re-
...d grout injected augur piles. The abutments were designed as conventional counterfo
...ures incorporating a front "skirt" to conceal the abutments. The skirt and wing walls
... cladded with reconstituted granite slabs (granite aggregate cast in a 50mPa mix and
... a flat surface by diamond saw).
...nly the aesthetics but also the wind pressure effects influenced the design of the struc-
...steel masts and pipe arches; keeping in mind appropriate factors such as the exposure
...itions, the maximum estimated wind speeds in a 50 year period, the possibility of reso-
...e and wind induced oscillations. To ensure composite flexural stiffness and avoid buck-
...nd fatigue, the plate thickness of the triangular mast section was adjusted at various
...nces from the top and the flexural, shear and torsional stresses were kept to compara
... low levels under the combination of wind, self weight and imposed dead load forces.
...rding to BCP's website "Sleeved expansion joints have been incorporated into the pip
...es at the springings and at third points to accommodate the combination of thermal
...ements and the effects induced in the steelwork by long term shrinkage and creep of
...prestressed concrete deck." The support for the masts has been achieved by grouting
...m diameter stainless steel hanger bolts into the underside of the bridge deck.
...wo arches were constructed with 45 tons of grade 3CR12 and 240 metres of grade 304
...less steel tube with a thickness of 3.5 mm and a diameter of 150 mm, manufactured by
...mbus Stainless. The material was chosen for its aesthetic appeal as well as corrosion re-
...nt properties that makes it a cost-effective choice for coastal climates. All stainless steel
...ated with epoxy coatings and a final recoatable polyurethane system as complemen-
... corrosion-protection for the structure. It was designed and implemented by Corrosion



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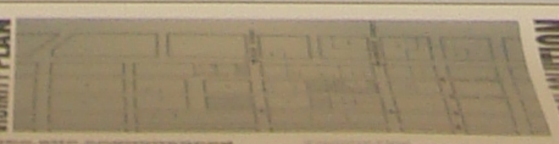
DIALTA

THE SITE

VICINITY PLAN



ADMINISTRATION BUILDING

As already mentioned, the feasibility studies indicated that a high-rise tower would be the best answer in regard to the clients brief. The financial centre was up that date an area without any open spaces or plazas.