Lovemore Bros.
MACHINE MOVING AND RIGGING CONTRACTORS

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Simply getting on with it.

Ellis Brown Viaduct widened for cycle traffic

Hauling huge prefabricated spans over demanding terrain and installing them on piers

Lovemore Bros extendable trailers which were specially imported from Germany, had their work cut out for them recently when the first of 15 arched spans were lowered onto piers to widen the Ellis Brown Viaduct crossing the Umgeni River in Durban.

The arched precast spans will make additional space available for a long-awaited three metre wide dedicated cycle lane for Durban's cycling enthusiasts.

What made the project so precarious was the fact that the 31 metre long spans are only two metres wide. Whilst they are extremely strong in the upright position in order to carry traffic across the bridge, they will snap like wafers if buckled or twisted.

According to Jerome Kieser from Afristruct Projects which built the arches and contracted Lovemore Bros to transport and install them, the precast 55 ton arches contain three ducts through which cables have been pulled and tensioned giving the arches extra strength. It also maked it even more imperative that they are kept perfectly upright at all times.

"We had no hesitation in contracting Lovemore Bros who are the leading rigging and big lift moving company in KwaZulu-Natal to take on the transportation and rigging work," said Kieser.

However, it was not a simple matter of resting the arch on the extendable trailer and driving off. The unruly terrain where they were fabricated at the end of Riverside Road next to the mouth of Umgeni River meant that the variance of the front of the trailer and the dolly at the rear would in all probability cause the arch to twist and break.

Purpose-made cradles had to be fabricated locally which were placed on either end of the extendable trailer and the arch lowered onto them so that they were suspended from the cradle thus giving the arch some room to swing sideways.

Bruce Lovemore, MD at Lovemore Bros which was contracted by Afristruct to transport the 55 ton concrete arches from where they were fabricated on the vacant land at the end of Riverside Drive said the project presented some complex challenges.

"We had to do some adjustments to the cradles on site which included welding spacers to prevent the arch from swaying too much. There were also some tense moments as the extendible trailer negotiated the relatively steep cross-fall of the highway's glide-off but the homework had been done properly and the engineering feat was achieved without incident."

On the Ellis Brown Bridge two 220 ton cranes lifted the arch off its cradle and positioned it on the piers piled into the river bed. This called for some intense rigging work as the arch had to be lowered between the bridge and a concrete column barely wide enough for the arch to fit.

When the R11 million project is completed, cyclists can ride from the Bird Park on Riverside Drive, cycle to the highway, safely cross the river mouth and continue on the Snell Parade through to Ushaka Marine World.

Also in this edition:

Lovemore Bros builds green temple for COP 17 delegates to chill

Three weeks to complete a natural structure that provides shelter and moves 'naturally'

Lovemore Bros was commissioned to construct a "Green Temple" for the COP 17 Conference in December to create a space where people could relax, unwind and be entertained.

The natural marquee was lined by a border of 8.5m tall exotic tree trunks that make up the base of the natural tent like shade structure. The Green Temple was constructed from natural materials such as sisal and manila rope, untreated poles, saligna tree trunks with a 2400 square metre canopy of cargo netting with strelitzia (wild banana) leaves creating the mottled shade seating area.

The clean space with neat lines had a practical function bringing nature into the city with the exotic plants used and the leaves turning brown over the duration of the conference added to the main topic of discussion of the conference.

According to Jonathan Langley from Lovemore Bros "The whole structure moves, with oversized hinges under each tree trunk. The natural properties of the rope expanding and contracting in the dry and wet conditions making it move in and out, up and down give life to the structure. Wind is another factor that keeps the structure moving, with rain adding weight and sunshine drying it out and lifting it up again"

Langley said Lovemore was given three weeks to take the concept from implementation to completion. Week one was spent ordering materials and transporting items to the site from KZN providers and further afield.

"We knew we would be under pressure, but Lovemore has a good reputation when it comes to reaching an achievable deadline with the resources we have available to us."

The "Cathedral" consisted of nine solid inner bays and two cantilever end bays with a shaded roof covering a total of 2400 square metres, and five joined trees in line with one end of the bays for signage purposes.

The building of each bay making up the base of the 'Temple' was systematic, with each crew allocated a task including measuring up, cutting, drilling, bolting, rope work, rigging and anchoring back. Over the two weeks on site workers toiled through the weekends at time in heavy rain to complete the task.

There were a total of 25 trees, about 14 tonnes of gum poles, a few kilometres of natural rope, more than 100 m threaded rod, 2400 square metres of cargo netting and about 7000 leaves that made up the structure. A mobile crane lifted in excess of thirty lifts. Two forklifts, man cages and scissor lifts with many power tools, a chain saw and other rigging gear were used to achieve the end result.

Langley adds that with cooperation from everybody involved in the project, the result that was achieved given the tight deadline was highly successful and one they could all be proud of. ■

COP17/CMP7
UNITED NATIONS
CLIMATE CHANGE CONFERENCE 2011
DURBAN, SOUTH AFRICA

Wild banana leaves provided the shade

Half a rugby field long and 100 tons heavy? – no problem, Lovemore Bros will move it

"Lovemore Bros were a big help in moving the pontoons into position for the trial assembly as well as weighing them and finally moving them to the wharf."
– Richard von Brandis, SA Shipyards

One of the most unusual tasks ever undertaken by Lovemore Bros. was moving 21 pontoons to the quayside of Durban Harbour to be loaded onto vessels and shipped to the Moma Titanium Oxide Mine located on the coast of Northern Mozambique.

Fabricated by SA Shipyards, each of the floats is approximately 50 metres long, weighs between 90 and 100 tons and is five metres wide and about 2.5 metres deep. On arrival at the Moma Mine they will be positioned alongside each other forming a massive platform from which the sand dunes will be mined.

The mine is operated by Kenmare Resources a mining and exploration company whose principal activity is the operation on the north coast of Mozambique.

According to Org de Wet, Project Engineer at Engineering & Projects Company (E+PC) part of the Aveng Group, the Moma Mine contains reserves of heavy minerals which include titanium minerals ilmenite and rutile used as feedstocks to produce titanium dioxide pigment as well as the relatively high-value zirconium silicate mineral, zircon.

"The mining operation consists of a dredge, mining the sand dunes and feeding to a wet concentrating plant. The wet concentrating plant consists of a screening and spiral circuit built on top of the platform constructed from pontoons which float on an artificial pond excavated amid the sand dunes.

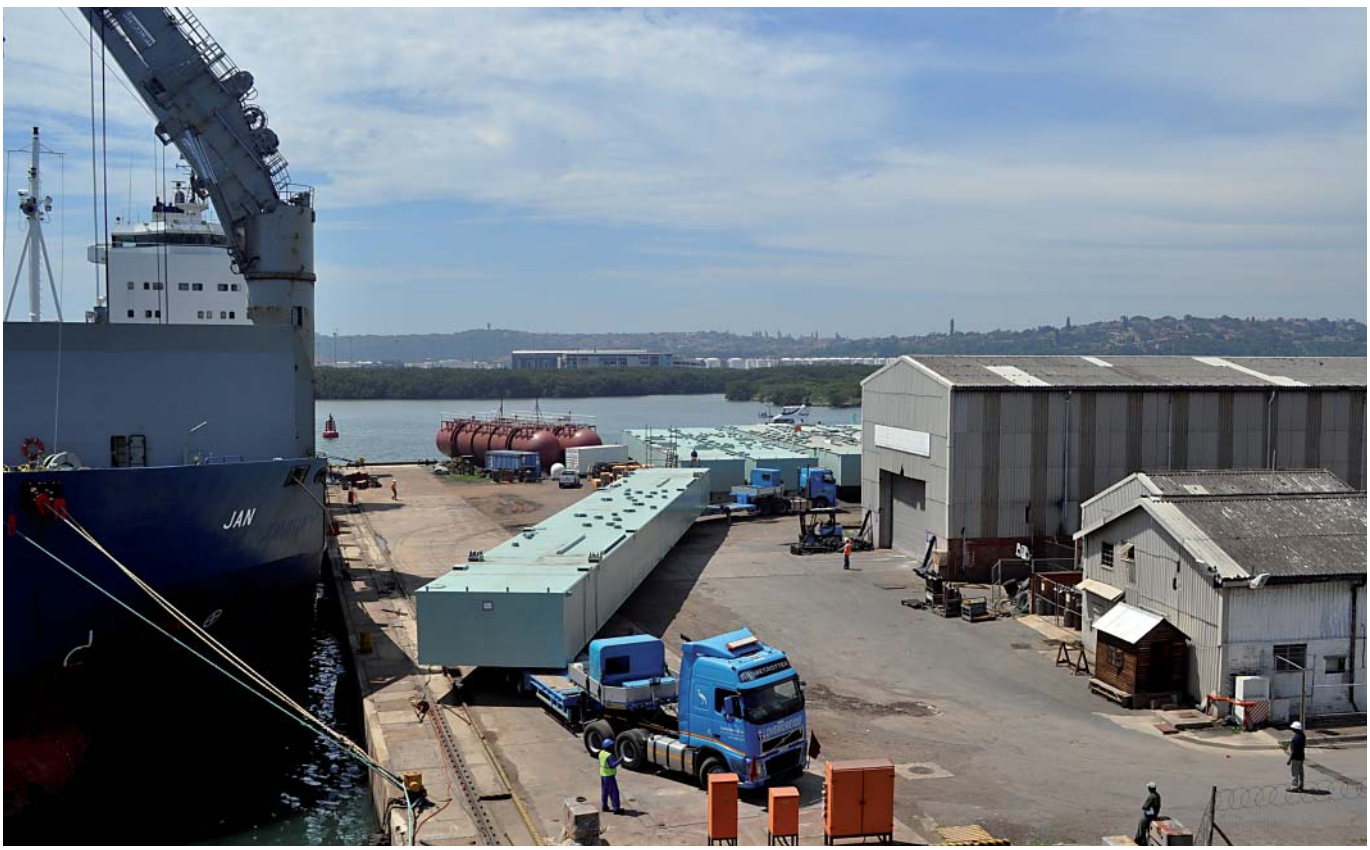
There will be a total of 17 x 45 meter pontoons and four 15 meter pontoons held together by strongbacks (trusses). From the mining platform the mineral is pumped to the mainland for processing. The plant is scheduled for completion by mid July 2012."

Peter Heyns from Lovemore Bros' Lowbed Division, said because of their sheer size only five pontoons could be loaded onto each vessel. "We were appointed by SA Shipyards to firstly position the pontoons in a trial assembly to make sure the strongbacks would fit and that the boltholes aligned".

Lovemore Bros' next task was to move the pontoons over a distance of about 100 metres to the quayside. This involved the use of its two *Goldhofer* four and six-axle trailers positioned at either end of the pontoons.

"Because of the tight space we had to work in, we manufactured purpose built turntables which the pontoons were jacked onto allowing us to negotiate the tight corners. The pontoons were raised off the concrete slabs they were built on using the powerful hydraulics of the trailers. Then, using a push-pull method, the trucks transported the ungainly pontoons to the quayside."

SA Shipyards' Senior Project Manager Richard von Brandis, said this was another "excellent job" from Lovemore Bros. "They were a big help in moving the pontoons into position for the trial assembly as well as weighing them and finally moving them to wharf. ■



Lovemore Bros is preferred rigging specialist at shopping malls

Over the years Lovemore Bros has built a reputation for providing a high level of expertise in the shopping mall sector especially where out-of-the-ordinary engineering challenges have presented themselves.

For example, heading the list of challenges, is Musgrave Centre where the erection of the dome on the rooftop required an innovative solution to rig in the individual timber arches before they were clad with glass.

This involved hoisting a crane truck onto the shopping centre's roof. This was necessary because back in 1994 there were no cranes big enough to perform the task from road level. Craning a truck to the rooftop therefore, whilst sounding extraordinary was the most cost effective method.

Before craning the truck to the rooftop the upper slabs had to be back-propped to cater for the imposed load and creating a "track" for the truck to manoeuvre on a predetermined route.

Using the truck's rear-mounted hydraulic crane with manual extensions for additional height, the individual arches were lifted and gently rigged into position.

"Whilst we were on site we also installed the escalators at Musgrave which may sound simple enough," said MD Bruce Lovemore, "But was actually very intricate because the task had to carried out in extremely restricted conditions. Making matters more complex, the job had to be done whilst the centre was open".

"Customers at Circus Circus were treated to some free entertainment," Lovemore quipped.

An equally daunting task was the positioning of the dome at La Lucia Mall in September 2002. As with the Musgrave Centre job the structure – which is about 20 metres in diameter – was built off site on an adjacent roof top. This was done to speed up the fabrication process, but posed the problem of installing it 50 metres away.

"To accomplish this we designed a purpose built jack which allowed us to rig the 25 ton structure across the roofs before raising it six metres higher and positioning it in its correct location."

At all times the cumbersome dome had to be securely tethered to prevent it from being buffeted by high winds or gusts. This was achieved using a "lift and lock" operation.

Lovemore Bros was commended for engineering a solution that had been perplexing the mall's consultants and contractors for some time.

Other shopping mall projects included installing the escalators at the Pavilion whilst the centre was under construction and at The Wheel in Point Road where the middle atrium escalator had to be turned 180 degrees.

At the Gateway Theatre of Shopping Lovemore Bros was contracted to hang the huge moulded figures that are suspended from the roof in the main atrium. They had to be transported to the centre from the manufacturer, carefully manoeuvred inside and erected by hand. The figures were bulky, but light to transport and hang.

"Having done a wide variety of projects at shopping malls in and around Durban has positioned Lovemore Bros as a preferred mover of equipment, big and small, fragile and robust," says MD Bruce Lovemore. "We have the expertise and equipment at our disposal and where necessary we manufacture bespoke solutions to enable us to move intricate machinery or infrastructure.

Craning a truck to the rooftop of Musgrave Shopping Centre, whilst sounding extraordinary, was the most cost effective method