ALEXANDRA ARCH AND FOREST WALK SOUTHERN RIDGES

Text by Elaine Lee Photography by Jeremy San

From time to time, strategies shift. More than four decades ago, a strong political will, with Minister Mentor (then Prime Minister) Lee Kuan Yew at its helm, was the driving force behind Singapore's development into a Garden City. The visionaries were convinced that a greening programme would offer the competitive edge that would attract foreign investments to Singapore, on top of softening the harshness of urban living. Four decades of sustainable development involving strategic cultivation, infrastructural provisions, urban lungs, and a lot of preening and pruning later, the Garden City is phased out, or rather enters its next phase. to be built. By 2004, the concept by LOOK Archi-Prime Minister Lee Hsien Loong's speech in tects (Singapore) was selected for Alexandra 2008, at the opening of the pedestrian bridges Arch, a bridge that spans Alexandra Road, and and HortPark gardening hub at the Southern Ridges, heralded a shift. Not a paradigm shift, but the beginning of a new era in greening programme-a City of Gardens and Water. It has grown into an exercise that works on the adjectives. The City of Gardens and Water is a sustainable development promoting strategic "skyrise" cultivation, "seamless" infrastructural provisions, "recreational" urban lungs, and Consultancy works for the connectors started perhaps more preening and pruning.

started with the vision of the Urban Redevelop- ment in check. Although there was a need to ment Authority (URA) to link up the nine-kilome-tre rolling expanse of the Southern Ridges— the rustic character of the natural landscape consisting of the chain of hills including Mount a unique to the Ridges and respected the terrain Faber, Telok Blangah Hill and Kent Ridge. The surroundings, the completed connecaim was to form an uninterrupted network tors were nowhere near rustic in expression. In of linkages for the public to enjoy conven- a fact both bridges and their corresponding park

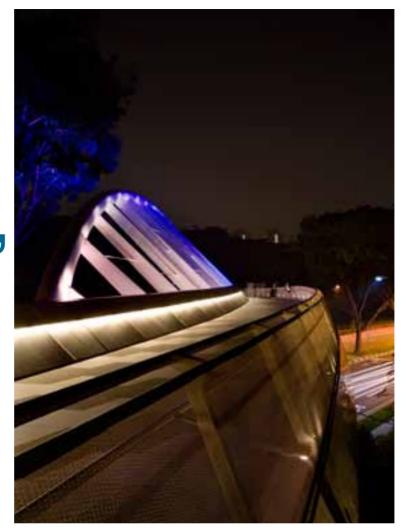
Ridge Park. The formidable feat started in July 2002, when URA first announced its plans to link the Southern Ridges as part of the Master Plan 2003 Review. At that time, the popular hill parks at Mount Faber, Telok Blangah Hill and Kent Ridge were separated by either major roads or wooded vegetation.

In 2003, URA, in collaboration with the National Parks Board (NParks) and the Singapore Institute of Architects (SIA), organised an international design competition to select outstanding design concepts for the connections that were Forest Walk, the adjacent elevated walkway, The design by IJP Corporation Ltd (UK) and RSP Architects Planners & Engineers (Pte) Ltd (Singapore) was selected for Henderson Waves, which spans Henderson Road. These two bridges form the main connectors to link up the hill parks.

as early as 2005, when a series of monthly Design Review meetings were organised with The seamless recreational infrastructure the consultants to keep the design developient access to nature. Today, that seamless connectors are bold gestures that certainly connection enables an undisrupted stroll from complemented and are more often than not, HarbourFront MRT station all the way to Kent customised to the terrain.



WINNER OF THE 2009 CHICAGO ATHENAEUM—INTERNATIONAL ARCHITECTURE AWARD, THE TILTED ARCH BRIDGE RESEMBLES AN OPENED LEAF, WITH ITS FOUR-METRE-WIDE CURVED DECK INTERSECTING AN ARCH THAT IS TILTED AT A 70-DEGREE ANGLE.



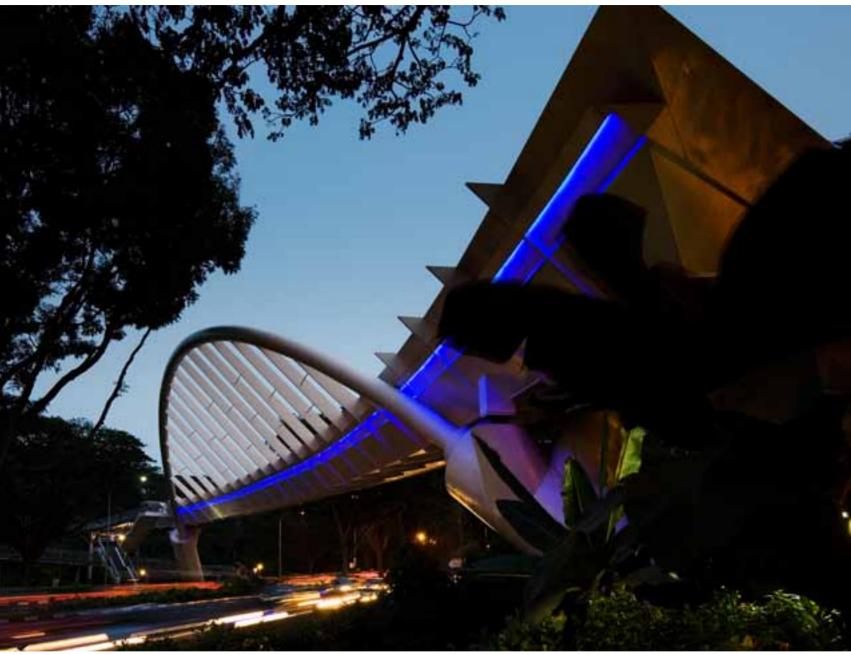
ALEXANDRA ARCH

Construction works for the Alexandra Arch and Forest Walk connectors commenced in the middle of 2006 and was finally completed in mid-2008. Spanning 80 metres across the busy six-lane Alexandra Road, Alexandra Arch is flanked by the two hilly areas of Telok Blangah Hill and Kent Ridge. Tracing westwards from the bridge leads to the Horticulture Park (HortPark) at Hyderabad Road and the park land at Gillman Village and eastwards leads to Forest Walk, an elevated walkway that skirts around the reservoir and eventually links to Telok Blangah Hill Park.

Winner of the 2009 Chicago Athenaeum—International Architecture Award, the tilted arch bridge resembles an opened leaf, with its four-metre-wide curved deck intersecting an arch that is tilted at a 70-degree angle. The pedestrian and cycle bridge is an asymmetric structure, comprising a single leaning arch supported by means of hanger fins. The imposing feature, an arching steel rib armature, rises 17 metres above ground level with 60 metres between springing points. The four-metre-wide granite-surfaced deck, profiled in cross section and curved in plan, is designed by the engineers to act as a torsion box. The bridge's arch, deck and fins are all fabricated from steel and the whole assembly is supported by raking concrete piers which in turn are supported on piled foundations. To add to the challenge, the footings of the bridge and ramp were sited in between 230 KV High Tension cables and sewer mains. The deck is paved with 40-millimetre trapezoidal-shaped granite pavers, each weighing approximately 90 kilograms and supported on telescopic pedestals, which eliminates the need for heavy sand and mortar beds. Lifting the pavers also reduces problems associated with drainage, efflorescence and differential expansion between the steel bridge and pavers. It also conceals electrical services, which is essential as lighting forms part of the appeal of the Alexandra Arch. The pyrotechnic display of LED lighting changes colour at intervals from evening till midnight daily, displaying varying shades from the colour spectrum of dusk.









OPPOSITE & THIS PAGE The pyrotechnic display of LED lighting changes colour at intervals from evening till midnight daily.





PREFABRICATED STEEL COLUMNS, BEAMS, GRATINGS, BALUSTRADES, RAILINGS, AND EVEN RAIN SHELTERS WERE ASSEMBLED ON SITE WITH MINIMUM EQUIPMENT AND SMALL MACHINERY TO MINIMISE DISTURBANCE TO THE SITE.



FOREST WALK

Connected to the Alexandra Arch is Forest Walk, which offers a varied range of experiences from raised walkways to earth trails through the secondary rainforest floor of Telok Blangah Hill. The feature of the Forest Walk is a 1.6-kilometre elevated walkway.

According to Mr. Look Boon Gee, Managing Partner of LOOK Architects, the walkway was conceived metaphorically as a vigorous weed, the Mile-a-minute, which attaches itself to the surrounding landscape. Designed to take advantage of the hilly and forested topography, the walkway offers views of lush forest ground and tree canopies, distant harbour views, even colonial houses. It was first conceived on paper with expectations to make adjustments on-site to accommodate rare species of trees or plants, such as the Grasshopper Tree, Squirrel Mango (Otak Udang), the Mousedeer Fern (Paku Pelanduk]. Fortunately, the architect was able to adopt most of the original scheme with a few minor diversions at the dense forested area.

The 1.8-metre-wide elevated walkway, with heights ranging from 3 to 18 metres, is pedestrian-friendly with very negligible incline planes. It mitigates what would have been a climb of 70 metres and meanders in a zigzag fashion to hug the steep slopes. The design strategy of a kit-of-parts concept, worked out to be highly flexible and appropriate in the dense forest context. Prefabricated steel columns, beams, gratings, balustrades, railings, and even rain shelters were assembled on site with minimum equipment and small machinery to minimise disturbance to the site.

Metal decking with fine grating gives a heightened sensation when walking through the forest, such that one is constantly aware of the elevated positions. Again, the decking is of triangulated modules inspired by the geometric leaf shape of the fast-growing Mile-aminute plant. The hot-dipped galvanised mild steel grating, prefabricated with closer gaps, is wheel-chair and pram safe, so that it can be enjoyed by all.

> OPPOSITE The elevated walkway has a height ranging from 3 to 18 metres. TOP View of a shelter.

BOTTOM The decking is of triangulated modules inspired by the geometric leaf shape of the Mile-a-minute plant. The completion of the Southern Ridges, demonstrates a new level of sophistication in the local greening programme. In the pipeline, is the completion of a seamless connection between Southern Ridges and the Keppel Waterfront Park. Branching out from Alexandra Arch, a new connector would run along Alexandra Road to convene at Labrador Park, which in turn would link to a mangrove boardwalk at Berlaver Creek. Eventually this leg would connect to a waterfront boardwalk from Bukit Chermin all the way to VivoCity, featuring waterfront views along the Keppel Bay stretch. The City of Gardens and Water offers an unprecedented accessibility to nature where the new recreational playground is a showcase of the distinct biodiversity of nature at its best. What started as an economic strategy and health standard consideration has emerged as one of the most successful branding exercises of this island. The success of the green programmes lies in their transcendence of regulations to define the character and soul of our city-a mean feat achieved through consistency of creating simple joys that is appreciated unanimously.

For more information, visit www.nparks.gov.sg.





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Alexandra Arch and Forest Walk: Southern Ridges



ALEXANDRA ARCH

length 80m width 4m height Average height of 6m above Alexandra Road finishes Granite slabs on pedestal supports

ELEVATED WALKWAY AT FOREST WALK length 1.3km (1.6km inclusive of circular ramps and lookout points) width 2m (1.8m clear) height 3-18m above the ground climb 58m finishes Hot dipped galvanised mild steel columns and gratings

project cost Approx. S\$13 million year of completion May 2008 master planner & developer Urban Redevelopment Authority owner National Parks Board architect LOOK ARCHITECTS Pte Ltd project team Mr Look Boon Gee civil & structural engineer Ecas-EJ Consultants Pte Ltd, Buro Happold (Singapore) Pte Ltd mechanical & electrical Engineer HY M&E Consultancy Services Pte Ltd quantity surveyor JIA Quantity Surveyors & Project Managers Pte Ltd main contractor CKT Thomas Pte Ltd steel specialist Yong Nam Engineering & Construction Pte Ltd lighting specialist Lighting Planners Associates Inc.



TOP, BOTTOM Night view of the Forest Walk.