

Raising green skyscrapers

Masterplan articulates vision for sustainable city centre where

On a teardrop shaped plot just north of Riyadh, Saudi Arabia, the King Abdullah Financial District is on the fast track to becoming a world-class business centre for banks, financial institutions, and professional services. The massive project, which broke ground in 2008, will provide more than three million square metres of floor space in 40 green buildings, as well as entertainment, recreational, and cultural attractions.

This \$10 billion development was inspired by King Abdullah bin Abdulaziz al-Saud's vision for the Middle East's first global financial centre. That vision is expected to be realised by 2012.

After winning the international design competition in 2006, Denmark's Henning Larsen Architects finalised the masterplan for developing the 1.6 million sq m plot. It was also project architect for three of the district's signature buildings: Crystal Towers, Villas in the Sky, and The Gem.

These buildings are part of the four mixed-use parcels awarded to design-build contractor Saudi Binladin Group. Three other contractors are developing seven parcels in stage-one construction expected to be completed in 2011. Stage-two construction will see another 30 parcels under development with a 2012 deadline.

On a global scale

If building a new business district in less than four years was not challenging enough, then adding a mandate for every building to be LEED-silver or LEED-gold certifiable would make this project noteworthy on a global scale. Indeed, the LEED-certified master plan will produce the first LEED-certified buildings in Riyadh.

"For our client, it's important to get a distinct and sustainable Class A architecture, which means a design that is not only thought of as a 'fantastic and amazing building', but a concept that can communicate on all levels yet is durable and flexible for the future," said Birte Baek, Henning Larsen's CAD manager and 3D specialist.

The \$151 million Crystal Towers, for example, are centrally located between the Financial Plaza and a verdant pedestrian thoroughfare called the Wadi. Housing 93,000 square metres of prime office and retail space, the 18- and 25-storey buildings are connected by a dramatic skywalk that not only welcomes through-traffic from the adjacent green spaces, but also provides shade for an outdoor meeting area. The towers themselves will shade much of the Wadi, where people may gather to socialise.

"Our projects are characterised by a high degree of social responsibility, not only in relation



to materials and production, but also as regards good, social spaces encouraging intimacy and community," Mr Baek said.

In fact, much of the district features communal outdoor spaces, as well as a network of skywalks between buildings, allowing pedestrians to stroll from one end of the city to another without leaving the comfort of air-conditioning.

Indoor spaces are energy-efficient, thanks to designs that minimise solar heat gain in the desert climate. The Crystal Towers feature recessed, scaled, crystalline apertures that optimise views of the plaza and landscaping while shielding the interior from the intense sunlight. The building facades of light stone cladding, in combination with lush vegetation and water features in the surrounding landscapes, lowers ambient air temperature around the towers by six to eight degrees Celsius.

Above and right: the district features communal outdoor spaces, as well as a network of skywalks between buildings. Images courtesy of Henning Larsen Architects and Bentley Systems

Using MicroStation and Bentley Architecture enabled the Henning Larsen project team to quickly and effectively achieve high quality and consistency from preliminary sketches through to detailed design. The 3D modelling, renderings, and visualisation were key to communicating the master plan vision to all stakeholders. During the early stages, a presentation video with vivid interior close-ups and exterior flyovers was particularly effectively at displaying the richly detailed design concepts.

"Flythroughs are a very good way to explore and communicate designs, especially in master planning, as it then takes you through the public realm at eye level," Mr Baek said. "The detailed flythrough [presents] early design ideas that provide a better understanding of our vision and a clear understanding of the masterplan's complexity."

in Riyadh financial district

Arab tradition meets urban metropolis, writes **Cathy Chatfield-Taylor**.



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To meet the fast-track schedule, Henning Larsen used the 3D design tools to communicate and collaborate with more than 200 professionals from multiple disciplines in the United Kingdom, United Arab Emirates, Saudi Arabia, Austria, and Denmark.

“MicroStation has been an invaluable tool and instrument for Henning Larsen Architects to manage and deliver the project on time,” Mr Baek said. “Across disciplines, different companies were working with different software.

“The Bentley software gave us the high degree of certainty that we were delivering high-quality, co-ordinated project material. The combination of our internal considerable experience in the use of Bentley software and the knowledge of design checking assured precise delivery.”

These tools also assisted the team in following the sustainability guidelines that Henning Larsen devised for the district as a whole. The architects are serving as consultants during construction to ensure the design schemes submitted by other builders conform with the world-class standards King Abdullah expects. The 3D models and construction simulation help in working with contractors on site to evaluate the consequences of any changes.

Setting a new standard

When the project is fully realised, the King Abdullah Financial District will set a new standard for sustainable urban development in cities around the world. As a vibrant city centre with green buildings shading green spaces, the district will become an active hub of urban activity. It will not only be a place of commerce but also an entertainment destination and desirable residential neighbourhood.

Apartments, shops, restaurants, sports facilities, hotels, and conference venues are expected to draw an international clientele. The district will employ a projected 50,000 people and house approximately 8,000 residents. A monorail connecting various areas of the district will provide public transportation throughout.

The financial district’s predominantly green features will contribute to achieving the kingdom’s overriding objective: To provide an attractive working environment for the growing workforce in the financial sector — which is the largest in the region, with the 11th largest stock exchange in the world and the largest banking sector in the Middle East.

This ambitious undertaking may indeed fulfill King Abdullah’s vision of transforming Saudi Arabia, already the world’s oil capital, into the Middle East’s financial capital.

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