

Leighton Contracting (Abu Dhabi) LLC

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CLIENT: Abu Dhabi Port Company
COST: AED 2.4 billion
SCOPE:

Onshore civil and building package for the Khalifa Port and Industrial Zone. As a design and construction project, the works included around 40 buildings ranging from single guard houses to the 80,000 square metre central facilities, to civil engineering infrastructure works such as 18km of 4 - and 6-lane expressway, 38 RCC culverts, 2 interchanges with entry and exit ramps, 2 railway bridges, and 11kV/33kV networking.

12d DIMENSIONS:

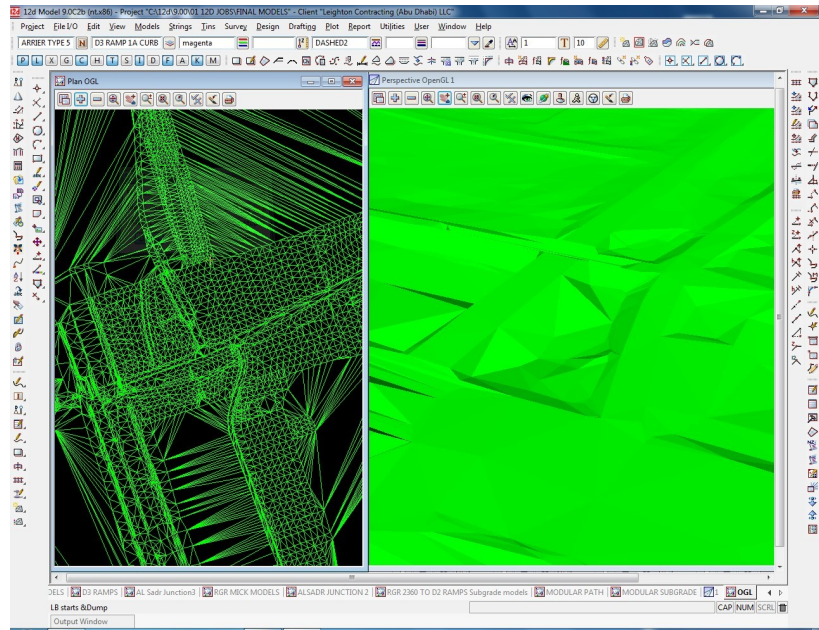
- Design
- Construction
- Water

Project Summary

Khalifa Port and Industrial Zone Abu Dhabi is one of the world's largest greenfield development projects as well as one of the world's largest combined port and industrial zone developments. It is an integral part of Abu Dhabi's vision of sustainable economic growth in the United Arab Emirates (UAE).

Habtoor Leighton Group was proud to secure the project. Scope of work includes the onshore civil and building package for the Khalifa Port and Industrial Zone. As a design and construction project, the works included around 40 buildings ranging from single guard houses to the 80,000

Khalifa Ports and Industrial Zone



square metre central facilities, to civil engineering infrastructure works such as 18km of 4 -and 6-lane expressway, 38 RCC culverts, 2 interchanges with entry and exit ramps, 2 railway bridges, and 11kV/33kV networking. Other utilities such as combined waste water, potable water, groundwater, stormwater, process water and services are also included, as are associated infrastructure works consisting of a series of road networks, bridges, utility installations, containment structures, reinforced earth embankments, patrol roads, an exterior maintenance system, MEP works, building detailing, signage, hard and soft landscaping, and maintenance.

The Challenge

This complex project involved design issues such as road top level clashes with existing utilities, bridges, culverts, and the deck top level. Most of the road profiles the team used were revised as per site condition. At the project's outset, it seemed there would not even be enough time for them to design profiles and work out these issues before the milestone.

The Solution

With the help of 12d Model software, though, the Leighton team did achieve success in this project.

They raised the levels on the profile as necessary, edited super alignments by string, and changed the vertical intersection points from the vertical IP properties. They also input all the data

such as IP chainages, vertical curve length, and 'click to set', by which 12d Model automatically regenerated the vertical profile and automatically set the k values and radius as required, giving the ability to change the profile of roads as per the control line.

Next, they edited their design models and retriangulates TINs as per the new controls, then uploaded to the millimetre GPS in asphalt paver, by which they were able to smoothly pave asphalt with the required thickness above the concrete deck.

In addition to assisting design, 12d Model helped the team to minimise their required survey crew, as they did not need to fix any Line/Levels on the pavement work. Once they created models, they were able to upload these to the machines (graders, bull dozers, etc.) so that a single operator could finished the grading work both quantitatively and qualitatively.

12d Model also helped the team to prepare conformance reports, plotting the topographic survey in a short time and with attractive presentation.

Result

The Leighton team found 12d Model to be a very efficient and useful software product to help them save a great deal of money by reducing manpower and time, and helping them finish their project ahead of schedule.

For more information

To find out more about how you can create better designs faster with the 12d Model solution for civil engineering design, visit www.12d.com.



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Roads and Highways

12d Model's design option is the smarter solution for the design, modification and maintenance of Road and Highway projects.

Enjoy advanced 3D tools to design local and major roads, intersections, roundabouts, highways, interchanges and much more.



Ports and Dredging

12d Model is the solution for port infrastructure and dredging, easily managing the very large datasets and complex volume calculations often required by these projects.

A complete range of flexible and customisable volume calculation tools allow teams to extract and present the information quickly and easily.



Land Development

12d Model is the most versatile solution for the creation of sustainable land development projects, including residential, commercial and industrial developments, recreational areas, landfills, and agriculture projects.

Easily manage all aspects of your land development project from earthwork quantities, road design utilities and drainage design.



Airport Infrastructure

12d Model provides a solution for the design, construction and analysis of new airports, as well as the upgrade and maintenance of existing runways and airport infrastructure.

Easily manage large airport infrastructure projects and share data across multi-disciplinary teams.



Rail

12d Track has been specifically designed for the survey, design and construction of light, heavy and high speed rail projects.

Extensive railway tools in 12d Track allow the rail designer to quickly and easily design their projects. These options are built on the existing 3D modelling and design tools available in 12d Model.



Mining Infrastructure

12d Model's powerful set of exploration, site investigation, survey and analysis tools are crucial for the initial design, construction and ongoing operation of mining projects.

Comprehensive tools for the survey, design and construction of access roads, railways, earthworks and services allow for the coordinated design and management of mining infrastructure from within 12d Model.



Drainage, Sewer and Utilities

12d Model provides comprehensive tools for the design, analysis and optimisation of stormwater and sewer projects using rational, dynamic (hydrograph) and 2d drainage methods.

Powerful clash detection management allows for efficient 3D modelling of service networks such as gas, electricity, telecommunications and water prior to construction.



Surveying

12d Model is a complete surveying package providing the tools to manage all facets of surveyed data including LIDAR, topographical, as-built, conformance, traversing, geodetics, data mapping, labelling and much more.

The 12d Field option runs on a ruggedized tablet and gives the user access to full 12d Model functionality, allowing you to take the entire project into the field with the most comprehensive pick-up and set-out tools.



Oil and Gas

12d Model assists with the design, construction and mapping of oil and gas pipelines, original site exploration and the wide range of infrastructure required for oil and gas projects.

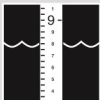
Accurate 3D modelling and the ability to share data between users allow teams to quickly and easily coordinate designs.



Construction

12d Model is the ultimate software for construction with powerful set-out options, direct interfaces to machine control and detailed conformance reporting and auditing.

Manage 3D data and control volumes, quantities and progress claims with 12d Model. Set-out your project and undertake conformance and as-built surveys live on-site using 12d Field.



Rivers, Dams and Hydrology

12d Model handles very large datasets and interfaces with a wide range of analysis packages, making it perfect for flood studies and the management of rivers and dams.

12d has partnered with industry leading analysis software, allowing users to apply 2D drainage analysis from within 12d Model.



Environmental

12d Model's ability to handle very large datasets combined with flexible and comprehensive 3D analysis and modeling tools make it perfect for a wide variety of environmental projects.

Existing workflows can adopt 12d Model easily as it allows users to directly interface with GIS systems and most software packages and file formats.

Why Choose 12d?

- Powerful data processing & intelligent functionality.
- Modular, easy to update & completely customisable.
- Seamless integration with major industry software and hardware.
- Used in over 55 countries worldwide.
- Friendly support & training from industry experts.

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