KEO International Consultants Ensures Site Logistics Run Smoothly for a Sustainable Landmark in Diriyah

SYNCHRO™ Helps Save 272 Days in Potential Delays and Project Costs

CREATING A UNIQUE EXPERIENCE FOR VISITORS
Once home to the Saudi royal family, Diriyah is rich in history, culture, and tradition. The town is only about 12 miles northwest of the capital city Riyadh, and one of its districts was declared a UNESCO World Heritage Site in 2010. With Diriyah's history and beauty, the Kingdom of Saudi Arabia decided to include it as part of its Saudi Vision 2030, a government program to increase economic, social, and cultural diversification. Arabia decided to include it as part of its Saudi Vision 2030, a government program to increase economic, social, and cultural diversification. For Diriyah, that goal means meeting a target of 27 million local and international visitors by 2030. Diriyah Gate, a mixed-use project to attract those visitors, will be a one-of-a-kind destination with the goal of becoming one of the world's greatest gathering places.

One of the largest globally ranked consultancies, KEO International Consultants was tasked with supervising the logistics of this vast project. "For over 60 years, KEO has led with vision, contributing to many of the world's most ambitious projects, iconic places, remarkable experiences, and prosperous communities," said Juan Tena Florez, digital services director at KEO. With an estimated budget of USD 63 billion, Diriyah Gate will include extensive green spaces, parks, and gardens that not only provide recreational areas, but also contribute to improving air quality. It will also include educational institutions, and research centers. The team was tasked with managing construction for all these assets, which would be enough of a challenge. In addition, the project site is vast, spanning over 9.3 square kilometers with room to expand to 14 square kilometers in the future.

SEARCHING FOR THE RIGHT CONSTRUCTION SOFTWARE
For this project, KEO was responsible for providing safe, uninterrupted site access, as well as traffic and construction planning. They faced coordination and technical challenges to deliver over 66 assets in a short timeframe, all while managing public transport during construction. Given the project's scale and volume of information, they knew that leveraging the best-in-class digital delivery solutions and workflows would be critical for project success.

Clash detection was a priority because it would ensure that the design did not have overlapping components, saving time and avoiding errors during construction. However, when searching for the right software, they quickly encountered a problem. "Most of the available software options did not account for the timing aspect of clashes, rendering them unsuitable for our needs," said Florez. KEO needed software to not only handle clash detection, but also provide 4D construction simulations to ensure safe and timely project delivery.

LEVERAGING BENTLEY’S DIGITAL CONSTRUCTION SOLUTION
KEO chose Bentley’s SYNCHRO applications to meet their simulation and clash detection needs. With this software, they were able to implement 4D digital workflows, which provided the efficiency and credibility needed to detect potential planning issues, discover better logistics opportunities, and more efficiently relay project plans to stakeholders. KEO began by using SYNCHRO’s model-based schedule feature to create tasks from the models, then automating processes to save time during the initiation stage. Once the 4D model was complete, the team used the dynamic clash detection feature to see the project over time and export a clash detection report. "We exported the report in many formats to be shared with the clients and stakeholders," said Florez. "We also shared the 4D model with the project team on a monthly basis so they could benefit from navigating the model and understanding the site’s forecasting.”

PROJECT SUMMARY
ORGANIZATION
KEO International Consultants

SOLUTION
Construction

LOCATION
Riyadh, Saudi Arabia

PROJECT OBJECTIVES
• To manage logistics on a mixed-use construction site covering 9.3 square kilometers.
• To ensure safe, uninterrupted access to the site.

PROJECT PLAYBOOK
SYNCHRO

FAST FACTS
• Diriyah Gate will deliver a one-of-a-kind heritage experience, including hospitality, retail, and education spaces.
• KEO chose Bentley’s SYNCHRO applications to meet their simulation, planning, and clash detection needs.
• By using SYNCHRO, KEO was able to provide safe, uninterrupted access for the whole development by coordinating between the project stakeholders.

ROI
• KEO reduced the number of logistics resources by approximately 66% and the time needed to identify and resolve issues by over 50%.
• Overall, they saved 272 days in potential delays along with associated costs.
• By going digital, the team saved 1,992 hours.
The team was also able to create dashboards using the Power BI connector in SYNCHRO Control. "Data from resources, tasks, and user fields was displayed in a beautiful dashboard," said Florez. Team members could even adjust and slice 3D elements using SYNCHRO Modeler. But perhaps most importantly, SYNCHRO helped validate logistics proposals by running them through the 4D model. "We could create videos that helped explain many complex on-site situations, as well as create time slices to show the overall project’s forecast for many years to come," said Florez. KEO was able to implement a robust planning workflow encompassing a comprehensive dynamic clash detection matrix, periodic coordination meetings, and regular site surveys. These elements collectively contributed to enhancing project efficiency, minimizing conflicts, and ensuring seamless coordination throughout the project lifecycle.

**SYNCHRO DRIVES STRONG ROI FOR KEO**

With SYNCHRO, KEO can provide safe, uninterrupted access to the project site by coordinating between project teams and stakeholders. They were able to reduce the number of logistics resources by approximately 66% and the time needed to identify and resolve issues by over 50%. The 4D model facilitated a mobility study to optimize logistics and traffic planning, eliminating the need for a temporary bridge that would have cost USD 2 million, all while reducing fuel consumption and carbon emissions. Overall, they saved 272 days in potential delays along with associated costs.

By implementing digital delivery workflows, the team saved 1,992 hours and is expected to meet their project completion goal of 2027. But more than that, they have created a safe and secure site. By incorporating health and safety considerations into the 4D planning process, KEO identified and mitigated potential hazards before construction began, resulting in fewer accidents and injuries on the job site. “SYNCHRO played a pivotal role in the successful execution of the Diriyah Gate project,” said Florez. “By integrating 4D modeling and scheduling capabilities, SYNCHRO empowered our team to optimize project planning, enhance communication, and efficiently manage resources, resulting in improved project outcomes and timely delivery.”

Diriyah Gate will deliver a one-of-a-kind heritage experience, including hospitality, retail, and education spaces.

KEO reduced the number of logistics resources by approximately 66% and the time needed to identify and resolve issues by over 50%.