MRT Jakarta Develops Sustainable Transport to Reduce Congestion and Carbon Emissions in Jakarta

Using Bentley’s Digital Twin Applications Saved 10% in Working Time and Reduced Hard Copy Submissions by 90%.

A SUSTAINABLE RAPID RAILWAY INITIATIVE
To address severe traffic congestion along with carbon emissions in densely populated Jakarta, Indonesia, the provincial government Daerah Khusus Ibukota (DKI) Jakarta initiated construction of the city’s first mass rapid transit system as a sustainable transport solution. The first 16 kilometers of the expansive railway line were completed in 2019. The project is now in its first part of the second phase and will add 5.7 kilometers of track and a total of seven underground stations to the existing public transport infrastructure. Focused on urban regeneration, it aims to raise public transport use from approximately 30% to 60%, strategically locating energy-efficient stations across the city for convenient passenger access.

PT MRT Jakarta is responsible for construction, operations, and maintenance of the entire MRT infrastructure, as well as business development and transit oriented development around the stations. The sustainable urban transit system will connect all corners of the greater metropolitan area, creating new opportunities for economic growth. “We plan to achieve sustainable excellence by developing safe, reliable, and comfortable public transportation network,” said Imam Detriana, head of project management office division at PT MRT Jakarta. Upon completion, the railway is expected to increase mobility, improve the city’s air quality, and provide a solution to the capital’s serious traffic congestion problem while transforming people’s life habits as they gradually switch from the use of private vehicles to public transportation.

A NEED TO STREAMLINE WORKFLOWS
Located in a congested urban environment amid a national heritage site and canal, the project posed significant technical difficulties, compounded by multiple contract packages and a large number of deliverables requiring coordination during COVID-19. In addition, due to the global pandemic that initially postponed this phase of the project, PT MRT Jakarta was asked to accelerate the schedule, which meant ensuring that there were no delays caused by data inaccuracies, inconsistencies in design reviews, or miscommunication. They previously tried manually coordinating the contractors and implementing various document management systems during the first phase of the MRT project, but these methods proved time-consuming and inefficient, resulting in information silos. “In Phase I of the project, we utilized other document management systems; however, these lacked collaboration and work sharing capabilities and created information silos,” said Detriana. The scattered information also added challenges during railway operations. Based on lessons learned during Phase I—where contractors used various servers, project approval processes were not automated, and asset data was dispersed—PT MRT Jakarta sought to improve execution during Phase II, streamlining communication among the contractors, stakeholders, and the project team. They wanted to ensure timely and high-quality deliverables, enhancing project information management and implementing coordinated design development and reviews. To achieve these goals, PT MRT Jakarta realized that they needed an integrated technology platform to streamline information management and engineering workflows.

PROJECT SUMMARY

ORGANIZATION
PT MRT Jakarta (Persero-da)

SOLUTION
Rail and Transit

LOCATION
Jakarta, Indonesia

PROJECT OBJECTIVES
• To develop a safe, reliable, and sustainable public transportation network.
• To improve asset performance and optimize railway operations through digitized asset data and 3D models.

PROJECT PLAYBOOK
AssetWise®, iTwin® Design Review, ProjectWise® 365, SYNCHRO™ 4D

FAST FACTS
• MRT Jakarta Phase II A is adding 5.7 kilometers to the city’s first mass rapid transport system aimed at reducing congestion and carbon emissions.
• PT MRT Jakarta is responsible for construction, operations, and maintenance of the railway infrastructure amid a complex urban environment.
• They established a connected data environment to streamline information management and engineering workflows.

ROI
• Using ProjectWise and the Bentley iTwin platform provided real-time access to trusted information, saving 10% in working time.
• The digital solution helped maintain the review of and approval for contractor submissions within a contractual obligation of 30 days.
• Working in a connected data environment reduced hardcopy submissions by 90%.
• The 3D models and as-built data will be used to help optimize railway operations and maintenance.
"The adoption of [Bentley’s] digital technologies improves project performance and seamless collaboration among project stakeholders while maintaining the quality of deliverables."

– Imam Detriana, Head of Project Management Office Division, PT MRT Jakarta