



## Case Study

Turner International is utilizing HoloBuilder to record and mitigate project delays, optimize design solutions and provide stakeholders with updated progress tracking tools by implementing 360° photo capture.



Turner International is using HoloBuilder to mitigate limitations imposed by COVID-19, inform the Design Consultants about site conditions, record and reduce project delays, and provide site transparency. In addition, the technology is helping Turner International position themselves as Malaysia's technology leader for on-site construction services and project management services.



*Tenaga Nasional Berhad (TNB) Platinum Project*

## Background

Turner Construction Company was founded in 1902 and today is an industry-leading construction services company with approximately 10,000 employees worldwide. Based in the US with an office network that spans the globe, Turner works in a diverse number of industries, with an emphasis on Building Information Modeling and lean construction. Their Malaysian office is part of their presence in the Southeast Asia market where they operate as Turner International and provide services to Malaysia, Vietnam, and Thailand.

### Turner International

Outside the United States and Canada, Turner International is the business unit responsible for Turner's activities, maintaining a regional and country-focused management structure. Since 1965, Turner International has worked in more than 60 countries on some of the world's most complex, sophisticated, and recognizable buildings. With a worldwide network of offices, they are able to offer their clients the accessibility and flexibility of a local firm with all the stability, strength, and resources of a global organization—providing consultancy, project management, and construction management services.

### Turner International Malaysia

Turner started up in Malaysia with the commencement of the PNB Merdeka 118 Development in 2011. The Malaysian office acts as the regional headquarters for the Southeast Asia region, offering operation support for offices in Vietnam and Thailand. Malaysia is now home to 78 Turner employees and are expanding their presence in the country.

## Tenaga Nasional Berhad (TNB) Platinum Project

Turner is providing project and construction management services for Tenaga Nasional Berhad – Malaysia's primary electric utility provider.

An integrated design connects buildings of different functions with covered walkways and serene landscaping, to encourage productivity and creativity through chance encounters across the campus-style development. The campus has nine development components: four office blocks, a central plaza, a 1,200-capacity conference centre, a mosque, Pelitawanis (the TNB women's association), and childcare facilities. All buildings incorporate sustainable design elements such as self-shading facades and high-performance glazing, topped with green roofs and solar panels. The office blocks accommodate 3,000 staff and have 1,105 parking bays, in the form of four interconnected low to mid rise buildings that fan outwards from the central plaza, which serves as the new heart of the campus connecting pedestrian routes to all departments. TNB Headquarters Campus is being constructed in two phases and is scheduled for completion in 2023.

## Permodalan Nasional Berhad (PNB) Project

Merdeka 118 is a geometrically intricate 118 storey office and hotel tower that will be home to the headquarters for Permodalan Nasional Berhad (PNB), one of Malaysia's leading investment firms. Merdeka 118 tower will rank as the second-tallest building in the world and the tallest in Malaysia and Southeast Asia upon completion. In its entirety, the Merdeka 118 Development will be one of the largest projects ever undertaken in Malaysia.

## Challenge

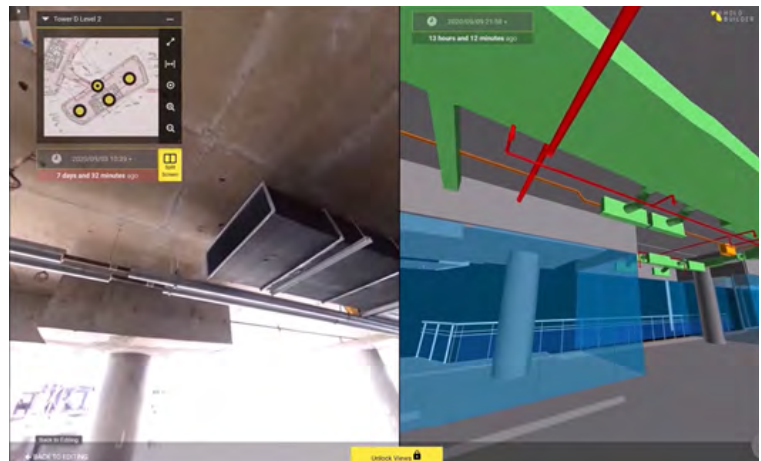
With the exception of large developments and mega projects, the adoption of technology in Malaysia's construction industry is still at its infancy. Yet Turner is working hard to position itself as a leader in construction technology. 360° photos have become part of their technology stack, replacing traditional 2D photos and streamlining how they communicate across the team, share updates with clients, resolve disputes, and track progress.

The COVID-19 pandemic changed their approach towards site visits. In order to comply with the physical distancing requirements and protocols, Turner had to find ways to restrict the number of personnel at the job site.

## Solutions

Turner first used HoloBuilder on the TNB Platinum Project—an expansion of the existing TNB headquarters. This project is in Kuala Lumpur and includes the construction of 4 office towers ranging from 7 to 19 stories, a convention center, club and society building, and childcare space.

The value that 360° photography brought to the TNB Platinum project eventually led to the adoption of HoloBuilder on several other projects. Among them is the high-profile Merdeka 118 tower and surrounding mixed-use precinct.



*Screenshot of the HoloBuilder Web Editor – Showing a SplitScreen comparison of construction progress vs. BIM model*

With limitations on who can be on-site, virtual collaboration has become critical to moving projects forward. Capturing a site in 360° doesn't add any additional time to the site walk or require additional people, but it does create huge value. Clients and consultants rely on the 360° photos in place of their own routine site visits, and the photos are used across the entire team.

Once the project reaches the close-out phase, stakeholders can download the documentation and save it as a view-only deliverable to keep throughout the lifetime of the building. And as valuable as that data is at the end of the project, during construction, the 360° photos add tremendous value to existing workflows without creating new ones.

## Results

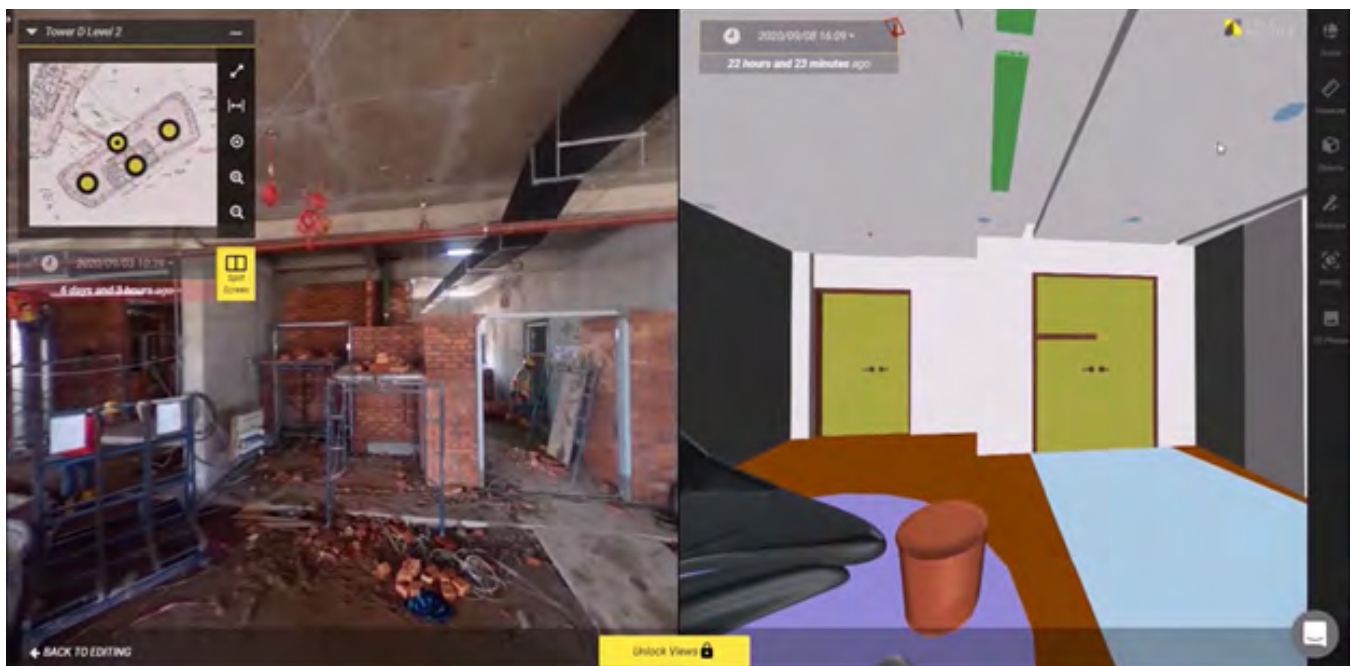
By implementing 360° photo capture technology, the Turner team was able to coordinate site activities more efficiently, keep clients up-to-date, compare the design to the as-built and more.

### 360° Photos Resolving Disputes 3 Days Faster

Turner uses 360° photos captured on-site to resolve design clashes between designers and contractors. When necessary, they can compare site conditions to BIM models or review historical photos to pinpoint when an issue emerged and make it simple to get everyone on the same page. This approach helps them avoid disagreements on-site and creates a more transparent and cooperative environment for the team.

"The alternative is to debate about the issue on-site without any historical photographic evidence," said Adib, Turner Project Engineer on the TNB Platinum Project. "Instead, we just project the captured conditions and resolve it over a conference call."

Adib estimates that historically it would take as many as three days to coordinate a time to get everyone on site to resolve an issue. With access to current and historical 360° photos, the issues can be resolved expeditiously over a call, with fewer resources, and less debate.



*Screenshot of the HoloBuilder Web Editor – Showing a SplitScreen comparison of construction progress vs. BIM model*



## Reviewing Projects Using 360° and Drone Photography

During the construction of Tenaga Nasional Berhad's (TNB) headquarters campus project, a combination of 360° and drone photography was used to track workforce, machinery, components and construction processes. The innovative technology helped the teams track site progress effectively as it provided the access to overhead views accurately. This was ideal for monitoring timescales to ensure that the project milestones were achieved.

Drones were deployed on a weekly basis or as needed to capture the progress from pre-determined angles and altitudes. The detailed images captured by the drones were extremely beneficial for—among other things—verifying and overlaying actual conditions with construction drawings, visual documentation or aerial photography of as-builts, progress update comparison, coordination purposes, as well as safety and environmental control.



While drone technology is able to capture the external elements of the development, it is unable to capture internal progress. To overcome this, 360° photography was used to compare the current conditions against architectural plans and previous images. As such, progress could be measured and areas in need of action could be identified. This timeline allowed project teams to review 'what is there' against 'what should be there' in the past, present and future of the project.

The need for the use of technology like this has never been emphasised more than the past 1.5 years since the virus outbreak. The conventional way of verifying and resolving problems face-to-face at the jobsite was no longer feasible. With the use of 360° photos, Turner is now able to discuss and resolve issues online to maintain safety and save time, all while spanning various geographical locations.

## Providing Site Perspective and Validation

360° photos provide the client and the design team with instant insight into conditions on-site. Turner uses the SplitScreen function of HoloBuilder to provide side-by-side comparisons of BIM models and actual site photos to help all stakeholders understand what is happening on-site.

Designers use HoloBuilder to validate actual site conditions, which helps them identify any issues and resolve them quickly. The platform is also an important tool to respond to RFIs, create markups, and communicate with the team about the design. Turner, the design team, and other consultants are able to discuss the progress and coordinate the project without sending teams of people to the site, as is commonly practiced.

## Coordination of Site Activities

The size and complexity of large projects like the TNB Platinum project require a lot of individual contract packages, each with its own team. Turner uses HoloBuilder to help different contract teams stay on top of what's happening with other contract packages, to coordinate site logistics, and to avoid incidences on-site.

Updated site photos give managers insight into site access and conditions, so they know how to coordinate material and equipment deliveries and locations. This has been especially important during COVID-19 restrictions, when the 360° photos are the only way for stakeholders to monitor real time site coordination.

## Keeping Clients “Close to the Job” for Peace of Mind

Senior client executives want the ability to be “close to the job” and be well informed on the key activities progressing on-site. Turner encourages clients to use the HoloBuilder app on their mobile phone or tablet for instant access to the site at any time. “HoloBuilder gives our clients a sense of security by bringing the job closer to them,” said Chen Sern Wee, Business Development Manager for Turner International Malaysia. “They now have the ability to view their projects at their finger tips.”

Clients are shown how to use the HoloBuilder platform early on, and for some it has become part of their internal meetings. For the TNB Platinum Project, Turner captures the site once a week, so that the client will be able to use current photos for internal meetings. Alongside the updated photos, Turner provides the client with progress highlights, so they know what locations to focus on in their meeting.



HoloBuilder gives our clients a sense of security by bringing the job closer to them. They now have the ability to view their projects at their finger tips.

**Chen Sern Wee**  
Business Development Manager for Turner International Malaysia

## Gaining an Edge as a Technology Leader

Turner sees a bright future where technology like 360° photos can differentiate them in the market. It has become an important part of their early meetings with prospective clients, helping them understand the possibilities and benefits of using HoloBuilder on their projects.

They want potential clients to see first-hand what value 360° photos bring and how easy it is to access and use the technology. Features like SplitScreen comparing onsite conditions with the design in particular impresses clients. Clients also recognize the value in fast dispute resolution, especially for large, complex projects.

Turner has made it a priority to adopt innovations that add value for their clients. In early 2020 they added HoloBuilder to their tech stack. They're using the technology to do more than just capture 360° photos. The tool has become an important part of how they track progress, how they communicate across the teams of designers and consultants, and it provides the client with instant access to the project. HoloBuilder is a new technology for Malaysia, but solutions that save time and resources while improving outcomes quickly become mainstream. And in Malaysia, Turner is playing a leading role.