

## Sisk Constructs Modern Mixed-use Building on Tight Project Site in Dublin City Centre

SYNCHRO™ 4D Ensures Efficient Collaboration among Stakeholders while Saving Construction Time

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### REVITALIZING DUBLIN CITY CENTRE

60 Dawson Street is one of the largest retail and office development projects currently underway in Dublin City Centre. Located between Dawson and Nassau streets, a short walk from the popular shopping district Grafton Street, construction on the site had little room for maneuvering or error.

Constrained by the city's Luas tram line that runs adjacent to the main roads, space was at a premium. The tight site provided many challenges that needed to be addressed before work could begin. Starting in 2019 with a completion date of late 2023, this high-profile project had to consider multiple stakeholders—not just planners, contractors, and subcontractors, but also neighboring businesses and council officials. The public also needed to be considered, due to demolition of the old building and the construction of a modern retail center and offices.

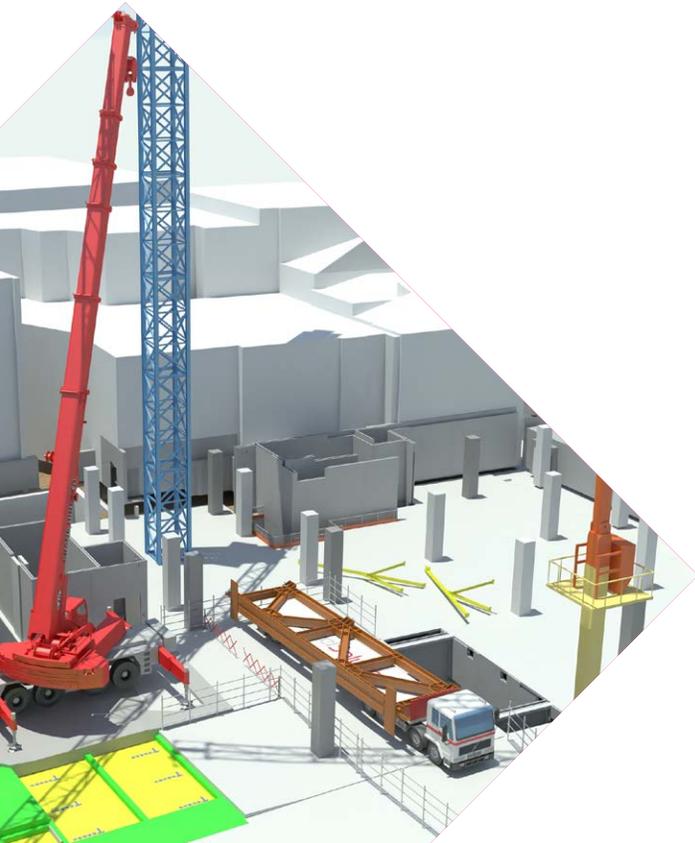
Sisk knew that the use of 4D modeling and planning would be crucial to increase collaboration, coordination, and program certainty between all major stakeholders. Therefore, the team set about creating a 4D construction model that would be used as the driving force in their project planning and performance.

## DEDICATED TO THE CAUSE

When the project got underway, it was supported by a team of consultants in the United Kingdom to build the 4D model. In 2020, as progress was being made and the site challenges understood, Sisk agreed that the project required dedicated resources from an experienced 4D consultant, turning to Mike Hinchliffe, the 4D planning manager for Ireland.

With over 13 years of 4D planning experience, Hinchliffe was tasked with taking the project from the initial pre-construction tender stage and managing it as the live build progressed.

“On this project, there were key aims for using a 4D model,” said Hinchliffe. “[We had to] confirm the overall sequence was correct and that there are no gaps in the agreed scope, [as well as] manage the logistics so that the project caused minimal disruption to public services surrounding the site. First, we used the model to see



whether we could create a bus corridor—but we soon discovered we wouldn't have the space,” said Hinchliffe. “So then, we looked at creating a temporary platform, which would work, and so we designed a whole platform with our temporary works team. This was only possible because we had the 3D models and mapped them into a 4D sequence so that we could see the potential impact.”

## GREATER ENGAGEMENT THROUGH 4D MODELING

Site restrictions were unique because of its location. Not only was the project a high-profile and prominent building in Dublin, but the building site was also the whole footprint of the development, which ends on the roadside. Without extra room along the two roadsides and both sides off the public highway tied into the surrounding buildings, there was a small 5-meter-wide area that could be used for construction site cabins.

There was also no room for a lay down area or to create a laneway to enter or exit the site on the existing road network. The only way to bring materials on site was to use the building footprint itself. This situation required a highly coordinated plan that was devised between contractors and subcontractors to make sure that each party knew exactly when and how supplies would be delivered to the site. The detailed plan included the timing of large deliveries that coincided with the Luas tram timetable, which ensured that passengers were not disrupted.

With a tight project site and community interest in this project, the Sisk team chose Bentley's SYNCHRO 4D application to meet their needs and challenges. They chose the solution because the Sisk team knew that it would result in greater team unification, ensuring all stakeholders and project members were aware of the construction workflow. The team also wanted to keep the public updated with construction plans.

“With it being such a high-profile site, we understood that we needed to make sure people using the Luas had an insight into what was happening,” said Hinchliffe. “Outside the site, on the Luas platform, we had a TV that displayed the 4D model to passengers so they could see how the site was going to be developed and

the work that was taking place. This helped to create greater public buy-in to the project. With any city center project, there are lots of stakeholders, and using a 4D model can help foster that buy-in far sooner.”

Using the 4D model also helped to secure permit approval for the development from Dublin City Council. Rather than write a detailed description of how deliveries would be received on site, the team shared a video of the 4D model that displayed different scenarios. This showed the transport department how the process would work, allowing a council official who might not be knowledgeable in construction to quickly grasp exactly how the project would perform and what it was trying to achieve.

## APPLYING 4D FOR STAKEHOLDER BUY-IN

Collaboration between all major stakeholders ensured that the project was highly coordinated from the outset, with everyone understanding their job ahead of time. “Ninety percent of cost overrun in construction jobs is because of rework,” said Hinchliffe. “What 4D allows us to do is to negate as much of that rework as we can. By having a visual representation, you can get contractors up to speed quickly, even those that might only be on a site for one day to perform a specific task. It massively reduces downtime and any misunderstanding that could cause risk or errors—and even gives people flexibility to make slight changes on the day that could improve a plan further.”

Using 4D models fostered greater buy-in from subcontractors, while providing them with more involvement and sense of ownership. It also removed any perceived barriers between contractors and subcontractors, creating better working relationships.

“4D models are not just pretty videos used for promotional purposes,” said Hinchliffe. “[They are] about getting as much stakeholder input, getting everyone [on board], and making a highly accurate 4D model that has been built to identify all potential problems or challenges from all stakeholders, getting us all to an end product we're happy with. It's about the process of using 4D models, rather than the actual output—it's not about 'doing' 4D, it's about 'applying' 4D.”

## CALCULATING THE BENEFITS

With the project nearing completion, Hinchliffe can reflect on the benefits of using SYNCHRO 4D. "Subcontractor engagement was a massive benefit that we experienced on this project. For example, on a 'normal' site where space is not as precious, you're less restricted as to where you can position a crane to unload large structural supports, like steel trusses, because there's enough space to maneuver. But with how tight this site was, we had to speak to subcontractors early and show them the limitations that they faced. We did this using the 4D model. This was really beneficial as they could then quickly highlight what was going to work and what wasn't, and we could alter the model and processes accordingly before a crane gets anywhere near the site."

Another benefit that the team at Sisk has gained is calculating the preventative costs of using 4D models, but as Hinchliffe explains, this can be difficult. "Nailing down an exact figure is extremely hard, but we estimate the savings to be significant," said Hinchliffe. "The problems that we capture probably would still be captured, but we can capture them a lot earlier. So, it's whether you capture the full cost of that incident earlier or further down the line when more progress has been made."

Hinchliffe continued, "For example, a glazing subcontractor might only focus on their portion of the project because that's relevant to them and then integrate that into a model. That's fine, but when they get on site to install the glazing, only then might they realize that there is no floor in place, so they can't install the glass. Then, the materials are on site, and the contractor has to find suitable storage until the floors are ready, which could be months. Examples like these are identified much earlier and alterations can be made so that the workflow runs much smoother."

## ADVANCING DIGITAL CONSTRUCTION WITH 4D MODELS

Constructive collaboration allowed planners, project managers, and subcontractors to assess the site's unique challenges, using the 4D model as a reference to run different scenarios before construction got underway. Running these sequences and what-if scenarios avoided delays and disruptions to traffic and the public, which would not have been identified without using a 4D model.

"Bentley's SYNCHRO is the greatest 4D tool there is," said Hinchliffe. "I've not come across another that competes anywhere near the capability it provides. The difference between other products is that they're animation tools, whereas SYNCHRO is a 4D planning tool. That's the big difference for me. You actually do things how you would create a program and do it the correct way."

