

COMPANY OVERVIEW



COMPANY WEBSITE
www.johnsiskandson.com

John Sisk & Son Ltd. (“SISK”) is an innovative international engineering and construction company employing over 1300 people across its operations in Ireland, the UK, and Europe. Sisk has the track record, scale, and capacity to successfully undertake large, complex, multi-disciplinary programmes, and is recognised by our global customers as world leaders in safe delivery. Operating since 1859, Sisk is a progressive business with long-term vision and is Ireland’s No.1 ranked provider of construction services.

Sisk’s strategy is to create value for customers, partners, and people through technical knowledge, ability, and

experience:

- We collaborate with our customers and supply chain to provide technical and delivery solutions in an open and can-do way to meet aligned objectives.
- We offer a full range of solutions where safety, innovation, quality, efficiency, and value are integral to everything we do.
- We deliver projects and programmes in key sectors such as Data and Technology, Pharmaceutical and Life Sciences, Infrastructure, Transportation, Healthcare, Commercial, Residential, Retail, Industrial, Leisure, Education, Water, and Energy.

OVERVIEW & BACKGROUND TO THE LEAN INITIATIVE

AUTHOR



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This project was a large-scale leisure development in Ireland involving the design and construction of accommodation and ancillary facilities to a new Holiday Village located within mixed species woodland of approx. 400acres. The project comprised 466 accommodation units ranging from 2-bed units of 80m² up to exclusive 4-bed detached units of 190m² floor area. The overall programme period for the project was 68 weeks.



Figure 1. Overview of the Project Site

The project involved a fast-track schedule on an extremely large site. Due to its location within the woodland environment, the site was extremely restricted with only 4-metres of working space around each cluster of lodges. Owing to the scale of the

project (if the units were constructed in a single terrace it would be over 4.2km long) there was an enormous volume of materials to manage, including:

- 300km of cladding panel.
- 600000 roof tiles.
- 4500 Doors.
- 3500 Windows.
- 160000m² of timber frame wall panel.
- 466 Kitchens.

The following parameters were critical to the project:

- Exemplary safety record.
- Highest quality standards with zero or minimum rework.
- On or ahead of schedule.
- On or under budget.
- Visibly demonstrating respect for all involved in the project.
- Delivering job satisfaction.
- Ensuring material availability at all times to the site craft.
- Equalising outputs across all trades to ensure production continuity.
- Ensuring a common understanding of project status through accurate, visually clear, and fully shared reporting.

LEAN INITIATIVE UNDERTAKEN – LEAN THINKING, TOOLS, TECHNIQUES

It was clear from the outset that in order to ensure continuity and flow of work through the various trades, we would require a collaborative workshop-type approach to scheduling, sequencing and handoffs. “People and collaboration” rather than “systems and schedules” were going to deliver this project. The confined working environment over such an extensive area would also require a bespoke

streamlined approach to logistics and materials management. Finally, the repetitive nature of much of the works demanded a Lean Programme.

From the outset, we committed with the client, design team and supply chain to collaboratively deliver the project. The following initiatives subsequently formed the basis of the Lean Programme for the project. Some were strategically

planned from the outset, and others were established or developed “opportunistically”.

Understand what Value Means to Our Customer

During the procurement and pre-construction phase of the project, the Sisk team invested significant time in defining, understanding, and communicating precisely what “value” meant to our client. We carried out numerous visits to existing facilities both in operation and under construction. We also engaged with the existing client supply chain to understand exactly how the previous projects were constructed, what challenges were encountered, and what worked best. We also gained an understanding of the level of detail and expected quality of the finished lodges. We in turn were able to convey these standards to the entire supply chain so as that the entire team had full alignment when the project moved to the construction stage. This initial phase of the project proved invaluable. One of the most beneficial outcomes was the relationships that developed as we transitioned from a “client -contractor” relationship into a “single delivery team”. We were very conscious during this procurement phase to ensure that we selected contractors that would buy into our vision of success and actively partake in this “one team” approach.

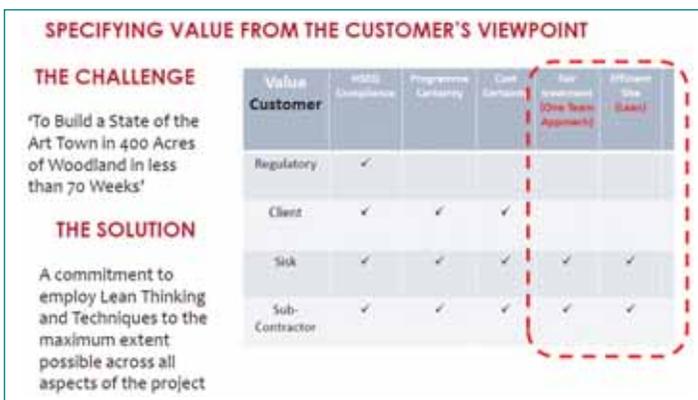


Figure 2. Customer Defined Value

Constructability Enhancement

Following the site visits to similar projects which had been delivered for the same customer, we undertook a series of workshops both internally and with our design and supply chain partners in order to streamline the actual construction process compared with previous projects. The team continually challenged and tweaked the design, detailing and construction sequence to find the optimum solution both from an installation sequence perspective and finished product quality. During this phase we worked with the supply chain to develop the best sequences both for an individual lodge and for the entire project. All parties bought into the process and were prepared to make some sacrifices for the greater good of the project – in order for the project to succeed, the team had to acknowledge that we were all dependent on each other and would either succeed or fail together. We also acknowledged that for each contractor to be efficient we needed to ensure that outputs were equalised across all trades each day. We could not have a scenario where there was a need for peaks and troughs in the labour requirement.

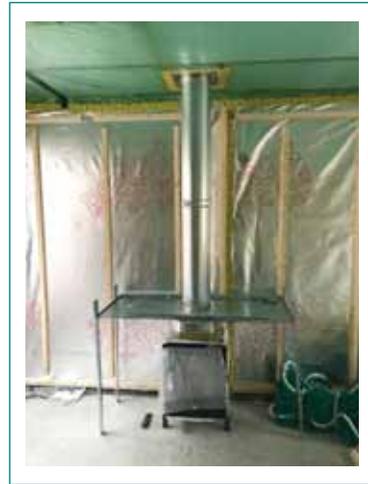


Figure 3. Pre-Assembled Stove

Establish Pull and Flow

We actively engaged our subcontractors to set out the optimum construction process from their point of view, and devised a work sequence and materials breakdown to minimise the extent of material handling and wastage on site. The aim of this exercise was to limit the steps in the construction process allowing us to fully define exactly what task should be carried out by each tradesperson every time

they entered a work zone. This in turn allowed us to define exactly what materials were required to carry out each step. With this information, we were in a position to develop a robust construction programme that set out to equalise the outputs across all trades to ensure there was continuity of work for each trade in a production line type process. We set the required output at three lodges per day – this meant that every step in the construction process must complete three units every day, from timber frame roof trusses to silicone sealing in bathrooms, every trade must complete three per day. By adopting this approach, every trades person was guaranteed that the trade both in front and behind them were producing the same quantity and therefore they were guaranteed a productive day’s work every day.

Pursuing Perfection

With the large workforce on site and the numerous customer stakeholders, we needed to develop a procedure to consistently deliver a product to the required quality standard. Rework resulting from inconsistent installation and defects was seen as a major risk to the project due to the high volume of small construction units – one unchecked mistake in every lodge would result in 450 mistakes. To mitigate against this risk, we agreed with all parties at the outset to construct 4 units to various stages in the construction process, this allowed us to agree with all stakeholders exactly what detailing and quality was required at all stages of the process, not just the finished product. Each task in the construction process was carried out by a dedicated work crew who knew exactly what standard was required of them – this also allowed us to identify and eliminate any residual defects due to damage to installed works.

Activity Sampling

As each crew was accountable for each element of the works, we had complete transparency on exactly what outputs were being achieved daily and exactly what task every person was carrying out. Activity sampling and productivity tracking enabled us to improve efficiency at every step in the construction process. We quickly identified a number of areas where we were expending excessive effort to achieve our required outputs. Obviously over the scale of a project like this, we could not afford to expend this additional effort and so we had to devise a means to identify where exactly the issues were and minimise them. We began to employ a method of activity sampling, or direct observation, to try to understand where the issues lay. This involved monitoring works ongoing for predefined periods of time over the course of a day or week. From this monitoring we

could understand where large quantities of time were being spent on non-value-add (NVA) activities, that is, where there is nothing being produced. Armed with this data we were able to target and eliminate the primary areas of waste. Examples included adjusting gang sizes, how we managed materials and accessories, and revising both construction details and even products used.



Figure 4. Work Sampling

Materials Control, Standardisation and Off-Site Fabrication

All opportunities were explored to maximise off-site fabrication from timber frame panelling and roof trusses to metal frame partitioning for chimney breasts. Materials management was identified as a key item due to the vast quantities required. The project actively set out to eliminate waste both in transport and

inventory management at every opportunity. The layout and space restrictions on the site required site material storage to be minimised whilst ensuring that adequate supply was available for installation. Control of materials was achieved by various techniques including standardisation of materials required and batching of bulk materials by our suppliers for delivery to the correct locations in the correct quantity at the right time to eliminate double handling. We batched smaller and high-value items in purpose-built warehouses onsite, and M&E items, sanitary-ware, windows, doors, and patio paving were batched “per lodge”.



Figure 5. Materials Control & Standardisation

LEAN INITIATIVE IMPROVEMENTS & IMPACT

This project was a success for our customer, for Sisk, and for the supply chain, as evidenced both by the metrics provided and in the outline of the various aspects of the project, safety, quality, and respect. Schedule control was delivered firstly by constructability improvements, secondly by early engagement with the client and key specialist trades, and thirdly by intensive challenge and improvement of the process. Intensive engagement at field level allowed us to hold these gains.

The intentional application of a Lean Programme was a highly significant contributor to the success of this project. We set out to strip back waste, to stop taking unnecessary steps, to spend less time in meetings, and to eliminate NVA correspondence. We also set out to do a highly efficient project by providing a shared infrastructure, logistics, a 3D model, and a common data environment for all project information. All of these achieved solid improvements.

The greatest benefit to the project accrued, however, in a manner which we did not clearly foresee – it manifested itself in the collaborative mindset that developed, the lack of conflict, the minimalist approach to correspondence of any kind, the absolute ownership of the project, and in the co-operation and camaraderie received from and amongst the client and trades who have collectively delivered first-class safety and first-class quality.

Some initiative outcomes include:

- Safety – 270000 man-hours worked accident-free.
- Schedule – 466 units delivered on schedule.
- Cost – Project delivered within budget.
- Cost – Zero claims from contractors and supply chain.
- Cost & Quality – Less than 1% rework.
- Quality – Each unit handed over snag-free.
- Efficiency – Actual labour approx. 15% below planned.
- Satisfaction and Engagement – Two of the most senior supply chain supervisors on the project summarise the impact as follows:

“At FastHouse, we are all delighted to have had the opportunity to be a part of this exceptional project. Great work was carried out by the FastHouse teams. Early client engagement and collaboration were essential in accomplishing the project within budget and schedule – and, as such, our collaborative relationship with John Sisk & Son played a key role in the overall delivery of this large-scale timber frame package.” (Sean Fox, Sales Director at FastHouse)

“We at Treysta knew from an early stage with a project on the scale of Centre Parcs, that preplanning and collaboration were essential in order to streamline the sequence of each trade in the lodges. SISK’s approach was very refreshing to this challenge which ensured Lean Construction targets were exceeded by having constructive design and construction workshops.” (Kevin Kelly, Managing Director, Treysta)

