

COMPANY OVERVIEW



COMPANY WEBSITE

<https://clancy.ie/>

Our mission is to provide comprehensive construction and design solutions for what our clients desire in terms of service, quality, safety, and budgetary requirements. As a result, our company has grown in recent years and now employs 90 people directly. Clancy continually invest in new technologies that raise our profile within the industry and allow us to compete at the highest level. Innovations such as BIM and Lean Construction are key aspects that help

us to continuously improve, and this has resulted in significant increases in turnover.

We have worked on sites all over Ireland in sectors including:

- Education
- Healthcare
- Commercial
- Industrial
- Retail
- Refurbishment
- Residential
- Fit Out

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OVERVIEW OF THE LEAN INITIATIVE

This project was the Church Road Social Housing Development in Blackrock, Cork. The budget was €8M; the programme was 60 weeks duration, and due for completion July 2018. The works comprised of the construction of a 28 Unit Apartment Block over a

reinforced concrete underground car park to accommodate 54 spaces, an additional 15 by 2 & 3 bed houses, and associated site works.

BACKGROUND TO THE LEAN INITIATIVE

Historically, many involved in the construction sector are fixated on improving profits, and Clancy was pricing work on a competitive basis and with very tight profit margins. While in discussions with the directors and senior management on what approach to adapt to, it was clear that reducing costs as opposed to raising profits was more important in the long-term. This conclusion came about when analysing some of the estimating department's tenders and a pattern began to emerge. The higher the percentage added to preliminaries the further we were pushed out in competitive tendering. Through analysis we found that margins were being compromised due to excessive costs on site which were not

accounted for in submitted tenders. These costs ranged from excessive waste of materials, lack of personnel or resources, and unrealistic lead-in times for sub-contractors. Time was another issue that was difficult to foresee for project planning. We would always incorporate a contingency into the works programme for unforeseeable circumstances, but design issues, design variations, and general lack of information – leading to lots of requests for further information (RFIs) – invariably led to programme overruns. Another issue we have with many subcontractors is snagging and defects, which put the reputation of the company on the line.

LEAN INITIATIVE UNDERTAKEN – LEAN THINKING, TOOLS, TECHNIQUES

Based on general observations and gathering data through interviews with established staff members, a pattern was beginning to develop. The priority of most members of our company was to be involved in the successful completion of a project on time, within budget, and to a high-quality standard. This was universal amongst the directors, right down to site managers, engineers, and quantity surveyors. It was becoming apparent to us that many obstacles were preventing team members from achieving this goal, including:

- The flow of information from Client to contractor (Clancy) to subcontractor led to program overruns and resulted in unnecessary delays on site that cost money.
- The number of snags/defects that occur during the construction phase of a project and the impact they have on the ability to release retention within the contracted time.
- Over-purchasing of materials that are unnecessarily wasted or damaged on sites.

Lean thinking and practice, in the traditional sense, was mostly involved in construction through the manufacturing element. The goal of Lean thinking is to maximise performance in a highly competitive sector. The Clancy motto, 'Built on Partnership', served as the platform for selecting snagging, information, and waste management as areas of focus on this project as we strove to change the mindset within the company

and proceed through a collaborative effort. This involved improving communications between the design team and the construction team on possible upcoming difficulties. It also ensured that the Client placed desired changes as soon as possible in the early stages of the project to minimise chances of disputes or variations down the line. A reduction in defects and snags undertaken in the later stages of the project was deemed high priority. This was achieved through thorough investigation and analysis by the sub-contractor and the main contractor of work carried out during the build and not prior to handover – the goal being to have zero defects upon handover.



Figure 1. Collaboration Between Trades.

On a project of this scale many risks present themselves that can hinder its successful implementation, including:

- Fall in customer satisfaction due to rigorous questioning to achieve total transparency.
- Dissatisfaction from team members due to increased meetings and rigorous information gathering.
- In order for successful implementation, management officials must be able to guide employees directly and efficiently.

Other obstacles include time, scheduling, appropriate training, and sourcing budgets and resources. An unwillingness of cooperation from Clancy staff members or sub-contractors will always be an issue. To counteract this issue, it was proposed that Lean practices be introduced as a performance KPI for staff and sub-contractors. At present our company, like so many others, is divided into separate departments, and, like so many companies, when a mistake is made or information gets lost it leads to finger pointing. The idea behind this collaboration was to incorporate all the departments within Clancy with the design team to act as one team. With adequate delegation of roles and responsibilities prior to commencement of a trade, all information is transparent and readily available. Before all of this can be achieved, the integration of a Lean Department in Clancy was vital to create an open and friendly environment wherein information and best practices are shared. This enabled an ethos within the company that any new ideas or changes to the quality management system would be looked into promptly. Tools and techniques were developed within the Lean Department for defect prevention, which ultimately leads to many cost saving measures. It is the goal to use the Lean Department to investigate areas in the company where we can reduce costs and increase cash flow.

The 8 Wastes

Examining the Eight Wastes, waiting and defects were identified as being the worst offenders in generating wasteful processes within our organisation for this project. When each of the worst-offending wastes was broken down it was found that awaiting responses to RFIs was the worst offender within the waiting category; whilst poor workmanship and damage by other trades were the main causes of waste within the defects category.

Defects/Snags

The presence of defects on a project, whether by way of poor quality workmanship or damage caused by other trades, has the ability to cause severe problems for any construction company given the nature of the sector. When one whittles-down all of the side effects, they will all lead back to the same end result, namely that defects cost construction companies money. Consuming valuable resources and delays in securing revenue are the two main effects that defects/snags had on such a project and for the company.

The focus of solving the knock-on effects and wastes caused by defects on the project should be to reduce the number of defects to begin with and to efficiently get all defects and snags resolved in a timely manner so as not to delay handover and/or receipt of final retentions.

We believe that the prevalence of defects is costing our company a lot of money, for example:

- Defects have the ability to delay handover of the project – some clients and architects will not accept a building with excessive snags/defects.
- It can lead to delayed payment certificates being issued.
- It leads to additional preliminary resources being required on site for an extended period of time, thus reducing the profitability of the project.
- Quality and Reputation – excessive snags and defects have the ability to damage our reputation with a client or design team, and potentially lead to friction between design team

and construction team. Damage to reputation can lead to future works being lost with clients.

Where there are significant defects in terms of contentious defects as opposed to quantity of defects, we have seen in the past that this causes a major delay in securing our retention, which in turn affects our cash flow. Revisiting snags and defects after the end of the 12-month defects liability period has significant costs attached to it due to supervision of snags, co-ordination of snags between design teams and sub-contractors, and potentially the main contractor carrying out snags which should be actioned by a sub-contractor. The co-ordination of defects is also distracting for site teams, especially where projects are handed over and a site team is concentrating on a new project. Therefore, the goal on this project was to have zero defects upon handover.

So, how did we go about solving the issues?

Following consultations with site management, the following are processes we changed and/or implemented to improve efficiencies:

- Beginning the snagging process ourselves as early as possible. This should be done with each sub-contractor as close to their finish date as possible, and not necessarily when we are close to getting Substantial Completion/Practical Completion. Efficiencies are created the earlier snags are highlighted and tended to. By adopting the latest BIM 360 software, report generating is carried out with ease.
- Nominating the Site Manager as the person responsible for carrying out trade snag lists – a process which needs to be straightforward and efficient to carry out. It is advisable to suggest the use of software, such as BIM 360, for either smart phone or tablet and which also has the capability of generating a report complete with marked-up drawings showing the locations of the particular snags and along with detailed descriptions and photos which can also be marked-up. The use of the app is far more efficient than pen and paper, and it allows for an instant report to be generated so the list can be reviewed.

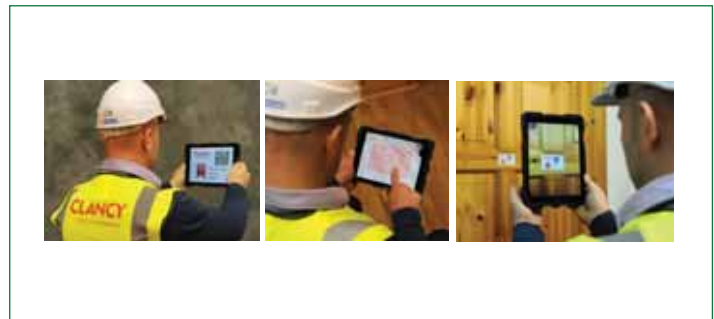


Figure 2. BIM 360 Implementation.

Information

The waste of waiting in this regard includes the site team waiting for information. It is this waiting for information that has resulted in project programme overruns for the organisation in the past. More often than not, the delay is as a result of waiting for design teams to make a decision. However, we cannot simply blame design teams for delays without being proactive ourselves in determining a possible solution. As a company we sat down and asked ourselves “Are RFIs being submitted early enough to the design team; and are they detailed enough to warrant a prompt response?”. When an RFI is issued to the site management from a sub-contractor, it is studied; and if an answer cannot be provided by us as the main contractor, the RFI is in turn issued to the architect or the client’s representative, which leads to further delay. On this project we proposed bringing sub-contractors to the table to highlight possible areas that may delay the

progress of the project. By bringing sub-contractors, who are experts in their trades, together around the table before work commences we have dramatically reduced the response time of RFIs.

A significant measure taken to reduce waiting times was for us as the contractor to input into the design processes to ensure continuous flow of information from architect, main contractor, and sub-contractor. This reduced the number of RFIs arising on a job. On standard Public Works Contracts, this can transfer the risk to the main contractor. However, as this project was Design & Build, we as the main contractor already assumed such a risk. The concept involves the inclusion of the sub-contractor as an expert in the design

stage. They would have vast experience and knowledge with the design item in question, and be able to give valid and vital recommendations to the architect.

Examples of Waiting wastes include:

- Waiting for information on incomplete drawings.
- Waiting for clarification (RFI).
- Waiting for key personnel to show up for meetings.
- Waiting for materials to be delivered to site.
- Waiting for the other work to be completed before the next sub-contractor can begin.

By highlighting these possible delays, we have control over the job programme and thus reduce the risk of the project being completed late.

LEAN INITIATIVE IMPROVEMENTS & IMPACT

Based on site manager feedback, the need to reduce delays and waiting times and to eliminate defects from each project seems to be the main issue when projects run over-programme. Our Lean Department has ensured that the Lean methodology is adhered to throughout the organisation of the project by reducing waiting times and defects, thus improving quality of the project for the company. The Lean Department functions in compliance with the Lean methodology regarding waste reduction/removal, per TIMWOODS; it complies with company standards (ISO 9001, ISO 14000, BCAR); it complies with calibration standards; and it complies with HR regulations.

The development of a continuous improvement plan outlining, for example, the requirements, deliverables, scope, time schedule, and costs, allowed the stakeholders to assess, review, and minimise changes late in the schedule. Systems needed to be put in place to monitor performance, control changes, and schedule projects in line with the Lean methodology – all part of the Lean process regarding the pursuit of perfection. Senior quality management carried out frequent audits and assessments on processes to ensure compliance to company policy. At the end of each stage when a milestone was achieved, acceptance was sought from the Lean Facilitator for the objectives before progressing to the next project.

From early analysis, we found major improvements on this project in terms of Health & Safety, reduction in day works, early identification of snags, and in the reduction of snags:

- Achieved 92% on internal Health & Safety audit, which is up on the 2016 average of 89% across the company. This was achieved with the use of the BIM 360 software as a tool for identifying health hazards on site and ensuring the safety of all involved.
- The identification of snags occurred earlier and they were being resolved as they occurred. Again BIM 360 assists in this process.
- Due to the collaboration between the site team, sub-contractors, and the design team, the flow of information from top to bottom is continuous. As a result, the average waiting time for an RFI response on this project was 7 days, whereas the company average response to RFIs was 10 days.
- AT the time of writing, the project was running on programme and was projected to be completed well before the handover date.
- There have been extensive Value Engineering exercises undertaken with the site team, sub-contractors, and design teams; and as a result there have been significant savings in cost and time due to this collaboration.



Figure 3. Health & Safety Focus.