

CLIP



# PROFIT TOGETHER FROM PROCESS IMPROVEMENTS



dti

## CONSTRUCTION LEAN IMPROVEMENT PROGRAMME

Eleven case studies

bre

# INTRODUCTION TO CLIP

## the Construction Lean Improvement Programme

The Construction Lean Improvement Programme, or CLIP for short, is a new approach that aims to boost performance and profitability. This is achieved by improving efficiencies on site, in the factory and on other related activities. Over the last three years, CLIP has been adapting lean tools and techniques for use in the construction industry.

CLIP has worked successfully with over 80 construction companies, across the construction supply chain. After realising tangible improvements in productivity and profitability, many are now embarking on a journey to embed the concept of lean construction into their long term plans. Some companies are now starting to work together in 'strategic' groups to deliver continuous improvements of benefit to everyone.

CLIP works by focusing companies on improving the quality, cost, efficiency and delivery of a product or service, to achieve higher levels of customer satisfaction. It provides the knowledge and practical skills needed to take the highly theoretical topic of lean construction, and turn it into a practical tool that they can implement effectively. Those companies involved are bringing about real business benefits by making change happen, both on site, and in the board room.

'Lean thinking' is about working smarter not harder. It is not about making cuts and squeezing more out of what's left. The lean approach minimises activities that don't add value to the customer, leaving more time for those that do. By balancing the use of people, materials and resources, businesses can improve quality, reduce costs and deliver on time.

CLIP gets companies to focus on three key concepts, which appear throughout the eleven CLIP case studies in this booklet and will ultimately improve profitability:

- **Processes** – these transform the form, fit and function of the material or information to meet the customers requirements. Processes can be one off or repeats, but they all have costs attached to them
- **Value** – something is only valuable if the client cares that it is being done
- **Waste** – if it's not valuable to the client it's called waste, and should be reduced.

For companies new to CLIP, the process begins with two start-up activities: input diagnostics and a management awareness workshop. The knowledge developed from this stage is then put into action in a structured way to devise and apply tools to evaluate progress.

A CLIP Engineer, with world class expertise in lean construction methods, works with the team at every level to make practical improvements and to train them by example; it is not learning in the classroom. Results are immediate and directly related to needs.

The heart of each company's CLIP programme consists of a tailored improvement activity built up of four core Masterclass modules. The programme is designed so that a company can pick and choose the range of tools and expertise available in the modules that it needs.

The four modules are:

**The Lean Processes Masterclass** improves quality, cost and delivery by looking in detail at key processes during a 3-9 month programme of intensive improvement activities. Plans are then put in place to roll out improvements through the company

**The Lean Relationships Masterclass** establishes a supplier team and collaborative working principles. Companies take part in workshop days over a 3-9 month period, and learn to use effective planning and scheduling tools to improve performance

**The Leadership Masterclass** builds effective teams and communicates the vision and strategy across the company. Senior managers take part in a series of intensive workshop days spread over 2-3 months, followed up with tailored sessions.

**The Communications, Teamwork & Team Leader Training Masterclass** develops the company vision and values, and improves leadership skills over 12 days of workshops. Performance and continuous improvement measures for teams are then put in place.

The results of these eleven case studies from real construction projects and initiatives around the UK have been excellent, with most achieving productivity improvements of up to 50% in key processes. Those companies focusing on the strategic side of their businesses noticed significant improvements in the way they managed their own businesses and partnered with their supply chain. CLIP really does work for construction, and can improve your business too.

# FOREWORD

The primary focus of world class companies in all industries is to achieve high levels of customer satisfaction, by improving quality, cost and delivery. The construction industry is starting to make these improvements, but has recognised that greater efficiencies are possible.

Lean Production was identified in the Egan report 'Rethinking Construction' as a transferable approach, to improve the project process and deliver target outcomes in key areas.

The Construction Lean Improvement Programme (CLIP) is sponsored by the Department for Trade & Industry (DTI) and takes the principles of lean thinking from the aerospace, automotive and petrochemical industries and adapts them to construction.

CLIP takes the principles of working smarter, not harder to construction projects and strategic partnerships between supply chain members. The process is kept deliberately straightforward and has proved to be hugely successful for the participants. The results of eleven recent case studies are presented in this booklet.

The findings from these diverse situations show how focusing on processes and the productivity of the work force can deliver significant cost savings and efficiencies, and how collaboration across the supply chain can deliver improvements for all parties.

CLIP works through specialised masterclasses with a common approach, and the DTI is now committed to five years funding support for the programme. The undoubted success of the original pilot projects shows the value of CLIP to the industry, and it is very encouraging to see the concept of 'lean' construction now being rolled out across entire companies.

I commend these case studies and the learning points that arise from them. They will help any organisation in the construction supply chain to see how they can work towards achieving similar gains.

I am delighted that CLIP is continuing to help such a diverse and ever increasing number of organisations throughout the construction industry supply chain to make significant, tangible business improvements.



Nigel Griffiths MP  
Minister for Construction



# SUMMARY OF THE FINDINGS

This is a study of eleven case studies in construction where contractors, product manufacturers and suppliers used the Construction Lean Improvement Programme (CLIP).

Each case study has a different set of circumstances surrounding it, and each company used 'lean construction' in a different way. They show the common improvements, process changes and best practice ideas that have emerged; enabling others to learn from their success.

Using CLIP allowed these companies to make improvements to their business processes, partnerships or overall strategy. Any benefits, such as cost savings, better quality or a reduction in waste could then be shared with the client and other supply chain members.

The simple, yet effective improvements made during the projects have produced a number of common benefits. These allowed the companies to offer their customers cost and time savings, fewer defects, and a more effective working environment. To put it simply, greater customer satisfaction.

**Changing to an effective 'lean' culture.** As in the previous publication, *Profit from Process Improvement* (available from BRE), the success of CLIP relies heavily upon the support of top management. All the companies had directors who were striving to develop a culture of business improvement in one form or another.

The Southern Electric Contracting case study shows how a 'working party' at director level oversaw a complete transformation of the way the company approached a street lighting maintenance contract. This change produced significant cost savings for all the parties involved.

**Sharing improvements by partnering effectively.** A number of companies improved the way they partner with their suppliers and customers, which enabled them to become more profitable. They realised that by working together in an open and honest way enabled them to streamline their processes, and deliver a better product or service.

The Shepherd case study tells how using CLIP helped them and their suppliers to re-define their company's vision and objectives. Through this strategy network, the suppliers are improving their own productivity and their working relationship with Shepherd.

**Getting it right from the start.** These projects were so successful because the project teams focused on a select number of processes, and had clearly defined their aims and objectives. However, many companies realised that they could have made even bigger savings had they used CLIP right from the start of their project.

The FI Systems & Taylor Maxwell case study highlights how embedding the 'lean' approach into the development of a new product has helped reduce waste for them and their customers, and will ensure profitability.

**Reducing waste through standardisation.** The companies involved focused on their key processes, and went through them carefully to remove any wasteful activities. They maximised gains by picking repetitious processes that are used regularly within the company.

By pulling apart their core processes, and re-organising themselves to cut out waste, the doors and windows manufacturer KAT UK improved their productivity by 33%. A similar approach

of focusing on a particular process on construction projects, also yielded savings of up to 81%.

**Maximising productivity gains through visual management.**

The best way to manage the process is to monitor your success. The companies used visual management boards to provide their teams with a focal point for communication. This ensured everyone was involved and focused, and created an environment where communication and regular discussions drove the process forward.

The Warings case study shows how they used visual charts and graphs to help them reduce costs, by keeping tighter control on the sequence of works and their sub-contractors. They are now using the boards on all their projects.

**Sharing best practice to drive future improvements.** All the companies realised that recording best practice as 'blue prints' for success was the best way to drive future improvements. They are now setting up working groups or appointing individuals that are responsible for making sure that they are sharing the valuable lessons learned from CLIP.

The NG Bailey case study shows how CLIP gave them the perfect framework to capture and share the productivity improvements of 15% that they made on their pilot project. This framework is now ensuring that the principles of 'lean methodology' are being spread effectively across the company.

Other specific learning points from the case studies are covered in the checklist for success.

# CHECKLIST FOR SUCCESS



**Maximising your gains:** choose processes that are used regularly on your projects. This will give you the biggest productivity improvements. Sit down and identify the areas producing most waste. Go through the process step by step, and look at ways to remove it.

**Commitment from the top:** be prepared to spend time encouraging senior managers to understand, and buy into the philosophy of 'lean construction'. Be quick to continuously feedback information on any improvements you make. CLIP can produce significant savings if its principles become part of your company's long term strategy.

**The project team:** CLIP can place an extra burden on staff, so you need to appoint a 'champion' who understands and is actively involved in the project. Keep the core CLIP team small, around 10-15 people, and keep them continuously communicating with the rest of the workforce.

## **Getting the team together**

**early:** hold a CLIP workshop before you start work on site to identify the key areas where you can make the biggest improvements. Bring your sub-contractors in at this point to offer their advice, and to spot areas where they can remove waste from the construction process.

**Setting achievable aims:** set targets that are achievable, but don't be afraid to try a 'radical' approach to a familiar process. Don't try to fix everything at once. Begin by focusing on one or two processes and then go from there. These targets will also give you a benchmark to measure yourself against.

**Changing the team mindset:** you may meet with scepticism from both office and site personnel. Use the CLIP workshops to introduce the team to 'lean' tools and techniques, and to get them actively involved with developing improvements. If people can see the advantages, then they will start to respond.

**Engaging the supply chain:** your sub-contractors have a big impact on the success of the project. Get them involved in the workshops and communicating effectively with each other. This will free up your own time, allowing you to focus on adding value in other areas of the project.

## **Visual communication**

**& teamwork:** develop a visual management board that everyone has access to, especially at meetings. The board helps improve the project planning process because it ensures that all the team members are aware of what resources they require in the coming weeks. Feedback and reviews can also be placed on the board as a way of prompting improvements.

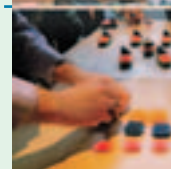
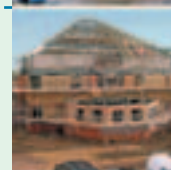
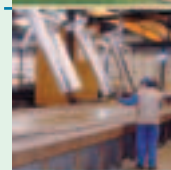
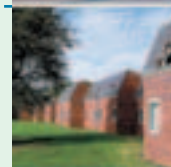
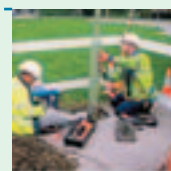
**Closing the loop:** when you improve a process, allocate responsibility to team members, and make sure that they close the loop. This ensures that the action points raised are put into place, and that the whole organisation learns from it. CLIP workshops can help control and improve the flow of information.

**Recording & spreading best practice:** to make the process worthwhile you need to put the ideas and improvements you make back into your business. Set out a clear process for spreading the principles of 'lean construction'. Developing a best practice guide on how to effectively implement CLIP, and appointing a 'lean champion' to oversee the process can help.



# THE PROJECTS

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## A national M&E contractor used CLIP to make significant cost savings by improving the efficiency of their processes



*‘We have been extremely impressed with the CLIP project and what mutual benefits it can bring to SEC as our contractor, and ourselves in refocusing our staff on the way we approach this contract and ultimately reducing wastage in line with our corporate strategy. We were delighted to take an active part and look forward to seeing the results’*

*Alan Mills (left) of Hampshire County Council  
with Bob Hall of Southern Electric Contracting*

### THE PROJECT

Street lighting maintenance contract  
2002-2007 – Hampshire

#### CLIENT:

Hampshire County Council

#### CONTRACTOR:

Southern Electric Contracting

Andy Rhind-Tutt of Southern Electric Contracting (SEC) tells us how CLIP helped them to identify significant cost savings, and create a ‘working together’ partnership with Hampshire County Council (HCC).

### VIEW FROM THE CONTRACTOR

#### Background to the project

SEC is a mechanical & electrical contractor, and forms part of Scottish and Southern Energy. The company is the largest public street lighting maintenance contractor in the UK.

We have a strong quality and safety focus, and like to partner closely with our clients across every aspect of the business.

#### What attracted us to the CLIP programme

Our Chief Executive, Bob Hall had made contact with CLIP after hearing the benefits of using the programme. He then invited a CLIP engineer to

*By using CLIP...*

*‘It now only takes nine man hours to replace a column, instead of up to 22 hours. The savings are massive when you consider the number of columns we are responsible for maintaining’*

introduce the concept of ‘lean construction’ to the senior management team working on the Hampshire contract.

As a result, we held a partnering workshop with the CLIP engineer where we logically analysed the way we undertook our contracts. We quickly realised we could make big improvements by adopting ‘lean working’ through this new approach.

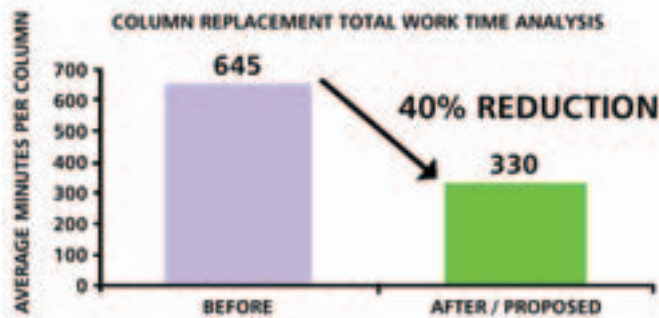
## What our aims & expectations were

Our five year contract with HCC is one of the largest street lighting maintenance contracts in the UK. It involves maintaining around 144,000 lighting units. We felt that using CLIP could really benefit both SEC and HCC through the contract, as it would allow us to improve the way we work together, and make mutual efficiency savings.

Our main aim was to develop a new ‘radical approach’ to street lighting maintenance, where we would look at every activity and see how it could be streamlined.

*“Through ‘working together’ with HCC and using the CLIP project we have been able to develop a ‘radical approach’ to street lighting maintenance. We took an open mind and a fresh look at every activity to see what changes could be made, and how efficient we could become. I am delighted with the progress to date”*

Bob Hall of Southern Electric Contracting



### **We also expected CLIP to allow us to:**

- Reduce the number of visits and amount of manpower required to replace a lighting unit
- Encourage a partnership with the client, so we always work as one team rather than two
- Reduce the overall cost of replacing a lighting unit and deliver better value to the client.

## How the CLIP process worked for us

To embrace the CLIP project, the Partnering Board at director level, which had been formed initially to move the contract into a partnership, created a ‘Working Party’. It is made up of myself, our Partnering and CLIP Champion, Charles Stephens and Jim Pendrey, the Assistant Lighting Engineer from HCC. An experienced CLIP engineer joined the group to assist with implementing the whole process.

We started by looking in detail at each work type, and broke down the processes involved. We then identified which activities were wasteful, which were non-value adding, and which actually added value. We found a lot of waste, through travel to and from site, particularly during the replacement of a column and its associated fittings. Initially we agreed to focus just on this area, so we sat down and ‘process mapped’ each stage of the process, which we call ‘ordered works’.

Between the client and us, we identified that we were making up to 10 visits to site. This meant the street light was often out of order for 25 days, and that we were digging up the same area of pavement on up to four different occasions.

Now, instead of having three specialist teams all going to site at different times, we have created a ‘multi tasking’ team made up of three operatives who all attend site at the same time. They take specialised vehicles and all the gear they need to get the job done quickly, in a minimum number of visits. We now track the improvements we make on each phase of the work using KPI graphs, which the whole team can view on a board at the main office.

By altering our processes we have improved the quality of the work, reduced the amount of waste and the impact we make on the environment, because we make fewer visits to site. By working closely with HCC we can also plan ahead so that their site visits coincide with ours.

We held regular workshops with the CLIP engineer to ensure everyone understood what we were trying to achieve. Thanks to the workshops the whole process has gone smoothly, improvements have been achieved and the CLIP process is now very much a part of the way we do things on this contract.

‘You need to approach CLIP with an open mind, and start by using it on just one job. I guarantee you will be impressed by the results. We were’

Andy Rhind-Tutt  
of Southern Electric Contracting



First CLIP workshop held at Potters Heron

## How we benefited from this initiative

As an example, on the ‘Ordered Works’ programme, we are able to reduce the site visits required to replace a street column from as many as 10 to two. So, it now only takes nine man hours to replace a column, instead of up to 22 hours. The savings are massive when you consider the number of columns we are responsible for maintaining. Because of this, we can now offer HCC more column replacements per annum for less cost.

We are in the process of moving both teams into one office to reduce duplication of work and improve communication. HCC have commented on the time savings this move will make for them as decisions will be made far quicker, and the relationship between the teams will improve. By forming the sub-groups, ownership of the improved ways of working has been grown within both organisations. This has also helped identify the best way HCC and SEC can work together.

It is still early days, but we foresee CLIP bringing significant cost savings for both parties for the remaining two years of the contract.

## How we plan to use the skills & lessons learned

Using our experience from the HCC contract, we can now ‘process map’ each activity on similar contracts that are already running. We have developed a spreadsheet that automatically works out what percentage of the work is waste, and what percentage is adding value for the client. We can then re-organise ourselves so that the work is completed more efficiently.

Getting CLIP set-up was a slow process, but now we know what big improvements are possible, we are planning to roll it out quicker onto other contracts.

You need to approach CLIP with an open mind, and start by using it on just one job. I guarantee you will be impressed by the results. We were.



SEC street lighting engineers working to repair a column

## LEARNING POINTS

- Set-up a working group involving senior directors, and appoint a ‘CLIP Champion’ who is committed to the initiative. This shows the rest of the team that CLIP is worth while, and helps communicate the benefits across the company.
- Get the client involved in the process. They can make valuable contributions and will appreciate the savings you can pass onto them.
- Make sure you record the lessons and knowledge learned from one project, and turn it into a practical system that can be used to benefit future contracts.
- Sit down and look at every process on a contract to see what adds value to the client and what doesn’t. Take the area with the most waste, and step by step look at ways to remove it from the process.
- Hold regular workshops with the CLIP engineer to ensure everyone understands what you are trying to achieve. This will help ensure CLIP becomes a part of the way you do things on a contract.
- Approach CLIP with an open mind, and don’t be afraid to develop a new ‘radical approach’ to a familiar process.

# A regional building contractor used CLIP to develop a company wide approach to improving productivity



Kingsmead Leisure Development in Bath



The Kingsmead site project control board

By using CLIP...

*“We developed a visual production board, which has been a very big success. We are now putting one up on every project across the company, and this will help us to reduce costs even more”*

## THE PROJECT

Kingsmead Leisure Development

### CLIENT:

Deeley Freed Estates

### CONTRACTOR:

Warings Group

Chris Ames of Warings Group tells how using CLIP is helping them to improve productivity by developing new methods of measuring and improving their key processes.

## VIEW FROM THE CONTRACTOR

### Background to the project

We are a building contractor mainly operating through the South of England. We specialise in design and build contracts, and have a number of long standing partnerships with clients in both the public and private sectors.

We have an exemplary safety record and a pro-active, open approach to working with our clients on projects.

### What attracted us to the CLIP programme

At the time, our ‘lean improvement’ manager was tasked with improving productivity in the group. With a manufacturing background he was aware of the gains made there by adopting the concept of ‘lean’ working.

He heard about CLIP through an industry conference, and invited a CLIP engineer to meet us to see if they could be of benefit to us. We recognised that the CLIP approach was the ideal way to further improve productivity throughout our business.

### What our aims & expectations were

I was very keen to give CLIP a go, so we choose the Kingsmead project to see what we could achieve. The development contains a multiplex cinema with eight screens, a health club, five restaurants and a cafe. The complex is steel framed above the first floor, and has a reconstituted stone front façade that blends in with Bath’s unique architecture.

Our main aim was to look at ways of improving productivity, and then to spread these across the rest of the company.

### **We also expected CLIP to enable us:**

- To improve our planning processes and communication with subcontractors
- To minimise delays and disruptions on site.

### How the CLIP process worked for us

We wanted to look at the sequence of works, and find ways to improve productivity on each section. We started by holding a ‘pre-diagnostic’ workshop with the CLIP engineer and the project team. We decided to focus on the building’s envelope, as it was the key area both in terms of construction time and cost.

We held a number of workshops with the CLIP engineer throughout the

*“We now have a dedicated productivity ‘champion’ who visits each site and monitors our key processes”*

Chris Ames of Warings Group

project. Some of the guys on site were reluctant to get involved at first, but the workshops gave us the chance to talk through the new ideas with them. They soon saw the benefits and got pro-actively involved.

We carried out a '7-wastes' analysis of the site to identify the waste in our processes, and to improve our house keeping. The CLIP engineer showed us how to spot waste by filming the trades working on site.

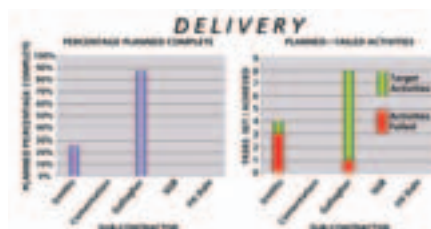
Setting up a 'production board' was the most important change we made. We also developed a 'collaborative' plan, which we placed on the board. The team placed post-it notes on the plan that showed the sequence of works over the next five to six weeks. We found that if we fell behind the programme, then the team could quickly discuss the best ways of making it up. The new plan was then displayed on the 'production board'.

Using the board meant the sub-contractors were always up to date, and able to organise their resources in line with the programmed sequence of works. Their progress was reviewed weekly at site meetings. We also set-up KPIs to monitor the progress of each sub-contractor in terms of productivity, quality and health & safety.

To improve health & safety on site, we also ran mini-workshops with the sub-contractors. The trades 'brainstormed' each sequence of works for risk, and then developed a standardised work instruction document to cover it. This document and the information captured in it can now be used on other sites.

### How we benefited from this initiative

Despite changes being made to the materials used for the cladding, we finished on time. CLIP got everyone communicating more frequently and



Summary of subcontractor's delivery performance

certainly benefited us when we were planning and managing the sequence of works for the façade.

This new approach gave us the tools and techniques to help us monitor productivity on site more effectively. We now have a dedicated productivity 'champion' who visits each site and monitors our key processes. He records what productivity improvements we make, and how we made them.

The visual production board was a very big success, and we are now putting one up on every project across the company. The board enables us to effectively plan the sequence of works on a project, and manage our sub-contractors better. This will help us to reduce costs further.

### How we plan to use the skills & lessons learned

Looking back, it would have been better to use CLIP from the start to maximise the benefits on other parts of the project. I am 100% sure we will see even bigger gains on projects where there are more repetitive, simplistic construction processes.

We are now working closely with our sub-contractors to continuously deliver improvements. At the start of each project we now identify the key processes where we can make significant productivity gains.

Our board of directors, with the help of CLIP, is currently in the process of developing a new action plan to ensure the valuable lessons learned from this project are taken forward in the future.

*"I am 100% sure we will see even bigger gains on projects where there are more repetitive, simplistic construction processes"*

Chris Ames of Warings Group

### LEARNING POINTS

- Identify the key processes where we can make the greatest productivity gains at the start of the project. These can then be analysed to reduce waste and improve efficiency.
- Involve your sub-contractors in any CLIP activities as they have a big impact on the success of a project. Run CLIP workshops to explain the new initiative and get the teams buy in.
- Develop a visual board that the whole team can refer to. This will help communication and ensure that all the trades have the right amount of resources for the weeks ahead.
- Start by using CLIP on projects that have repetitive work sequences, and implement it from the start of the works to maximise productivity gains.
- Employ a 'champion' to monitor and spread any improvements made across the company.
- Ensure that the senior management team is made aware of any gains, and buys into the CLIP philosophy, so that it can become a vital part of your company's long term strategy.

# A specialist window & door manufacturer used CLIP to meet increased customer demand by improving the productivity of their workforce



View of the improved workplace in preparation for a trial run



The operational management team watching a video of the manufacturing process to spot waste

## THE PROJECT

Implementing process improvements at a window and door manufacturer

### MANUFACTURER:

KAT UK

Paul Balfe of KAT UK tells how CLIP helped them move from a batch manufacturing process to a more productive one-piece flow system.

## MANUFACTURER'S VIEW

### Background to the project

We are a privately owned company that manufactures specialist sash windows and patio doors. We are a growing business, and supply our products throughout Britain.

We have a strong focus on continuous improvement, customer service and quality.

## What attracted us to the CLIP programme

Our Managing Director, David Richards, is very pro-active and is always looking for new ways to improve the business. He heard about CLIP after attending a one-day 'Real Time' workshop on lean manufacturing.

Like many manufacturing companies, we have peaks and troughs in order patterns and sometimes experience problems meeting customer demand. The management team recognised the need to change the way we manufacture our products and make our processes more effective and efficient. CLIP appeared the ideal framework for organising and managing this change.

## What our aims & expectations were

The aim of using CLIP was to improve the productivity of our manufacturing process. At the start of the programme we produced around 60-70 windows a week. We decided to work towards a target of 150 a week. We felt that

By using CLIP...

“Our revenue will increase as it now takes around 33% less time to get the window or door through the factory, to the assembly area”

*“By doing a simple exercise the workforce instantly realised the advantages of CLIP and bought into it”*

Paul Balfe of KAT UK

this was achievable, and gave us a benchmark to measure any improvements against.

**From using CLIP to improve our processes we expected to be able to:**

- Reduce the time taken to complete each stage of the manufacturing process
- Meet our customers' increasing demand for our products
- Improve quality and reduce waste.

## How the CLIP process worked for us

The operational management team met with the CLIP engineer and discussed the CLIP process in more detail. We held a one-day 'pre-diagnostic' workshop to look at our cost, quality and productivity data to see where we were performing well, and where we were falling down.

We started by watching a video of the windows and doors being manufactured. It quickly became clear where inefficiencies were occurring in our processes. This led to materials and operator's time being wasted. After reviewing our processes we developed an action plan, and a programme for achieving our goals and targets. We then introduced CLIP to the factory workforce.

Initially the workforce seemed resistant to our idea of changing from a batch process, to a one-piece flow production system. This means an operator now only prepares one component of the window and then sends it down the production line, rather than doing a batch of say 10 before sending them on to the next stage. The work force was

sceptical about the changes, and what we could really achieve by using CLIP. It was a big culture shock for them.

To overcome this problem, the CLIP engineer held a 'Masterclass' workshop where everyone got involved in a series of simulation exercises using electrical plugs. It was a real eye opener. The team suddenly realised that CLIP was a worthwhile exercise. The simulation exercise demonstrated the different ways of approaching a task, and how you could save time by doing something differently. We definitely got 'buy-in' at this stage. Without this workshop we would have struggled to implement 'lean' working methods.

This was followed by three days of diagnostic workshops. By looking at the data we had collected, we quickly realised that the layout of the machines was not helping the flow of materials through the factory. We discussed how we could change the factory to make it more productive, and reduce waste. The changes were then carried out over a one-week improvement programme.

One of the issues was that we didn't really want to totally stop production while we re-organised. But we realised that we had to take this risk to get the factory working more productively, so we did shut down production for a short period to make the changes.

After we re-organised the factory the CLIP engineer helped us to do a '5C' check on our workbenches to improve working conditions, and to identify any health & safety issues with the equipment. We brought in the idea of using red tags to mark items that needed urgent attention. These issues are logged on a form, and a specific person is assigned to fix the problem and record the outcome.

Throughout the project we had weekly meetings to review our progress and suggest areas for further improvements. We made sure we involved the

*“I knew we would have to take a financial hit in the first*



*few weeks but felt we would win in the long term. I think the one-day workshop was great because it showed me personally what could be achieved. It was vital that our production team completed the 'plug game' before we embarked upon 'lean' because I don't think we could have sold the idea without it. Because of the plug game we got real buy-in with no resistance and they all had great fun. As a result of the changes we have made we are already seeing profitability improve after four weeks. I am very keen to keep up the momentum”*

David Richards, Managing Director of KAT UK

operators in these meetings to get their valuable input. By posting the latest quality, cost and productivity KPIs on the wall each week, we let everyone see what progress was being made.

We found that we needed to keep a careful eye on the team so that they did not slip back to their old methods of batch working. It was also important to brief the line managers about CLIP, and to keep them up to date with the progress we were making. We did this by revisiting the new working practices

*‘It is all about making time to improve, and understanding that it is an on-going development process’*

*Paul Balfe of KAT UK*

and routines, and explaining the benefits of using them. We have also introduced flip charts in the factory so any employee can write their issues down on an on-going basis. It is all about making time to improve, and understanding that it is an on-going development process.

Since the re-organisation we have had a further three visits from the CLIP engineer to check on our progress, and to ensure that the new processes and improvements are bedded into our new way of working. These visits are vital in maintaining momentum. The team have now fully embraced the new working practices, and dedicate 15 minutes at the end of a shift for looking at, or closing off a ‘5C’ activity.

### **How we benefited from this initiative**

Since we moved to a one-piece flow production line four weeks ago, we can now manufacture 120 windows a week, which will lead to higher revenue. It now takes around 33% less time to get the window or door through the factory, to the assembly area. We have not quite hit our main target yet, but we realise there are still many more areas where we can make improvements.

The one-piece system still enables us to bespoke each product for our customers, but enables us to get it to them quicker. It also improved quality as problems are identified sooner, and immediately rectified as materials flow down the production line. This has significantly reduced waste.



*The workforce re-organising the factory floor*

We have also noticed a big improvement in the way we work with our suppliers. Now we work more closely with them to improve product quality, along with the speed and accuracy of delivery. This is because CLIP has allowed us to manage our resources more efficiently, and plan each stage of production more effectively. It has definitely improved our relationships.

The management team has changed many of its approaches as well. For example, we have now moved the suggestion box onto the factory floor, so that the workforce can put forward ideas on how to improve production more easily. We have received a number of excellent suggestions, and reward staff based on the impact of the suggested improvement. For example, individual rewards of £250 have recently been paid to operators.

### **How we plan to use the skills & lessons learned**

We are now transferring the skills and lessons learned from CLIP into the second part of the factory, where we assemble the windows and doors. We recognised that similar improvements made in the area where we prepare the individual elements of the products could be applied there as well. We are developing a five-week action plan to carry this out. The first step is to develop a ‘5C’ check on all the areas of the factory.

The whole process has required everyone to make a big change to the way they work. People have been amazed by the difference it makes switching

from a batch to a one-piece flow production line. Using a one-piece flow system highlights inefficiencies in your production processes, but you have to be brave and find the root of the problem to make improvements.

The key to making this change was to get everyone on the shop floor to do an up-front workshop. You need to explain what you are trying to achieve, and why they need to get involved. By doing a simple exercise the workforce instantly realised the advantages of CLIP, and bought into it.

### **LEARNING POINTS**

- Set targets at the start of the CLIP activity that are achievable. This will also give you a benchmark to measure any improvements against.
- Be prepared to try something new, but be prepared to take risks to get it right. There are costs associated with this activity, particularly in the early weeks.
- It is vital to explain what you are trying to achieve, and why everybody needs to get involved on the shop floor. Use an up front workshop to do this.
- Look at processes with a fresh pair of eyes. Develop cross-functional teams and get them doing this on a regular basis. Hold weekly meetings to review your progress.
- Let everyone see what progress is being made, by posting the latest quality, cost and productivity KPIs on the wall weekly.
- Get your team to dedicate a set amount of time each day or week to look at CLIP activities. This will keep everyone focused on making improvements.

# A national contractor used CLIP to define their company's corporate strategy & then drive improvements down their supply chain

The senior management teams attending a CLIP workshop



By using CLIP...  
‘We developed a focused business plan that has helped us improve profitability across the entire business. The visions and values we developed from this exercise are at the core of our business today’

## THE PROJECT

Setting up a strategy network to improve supply chain performance

### CONTRACTOR:

Shepherd Construction

### SUPPLIERS:

Roofdec Ltd, Airedale Glass and Glazing Company Ltd, MWS Joinery Ltd & Landscape Contract Designs Ltd

Robin Davies of Shepherd Construction tells how CLIP helped them to re-define their long term corporate strategy, and how they then engaged their key supply chain partners in the same activity.

## VIEW FROM THE CONTRACTOR

### Background to the project

Shepherd Construction is part of the Shepherd Building Group. We are a family-owned private company operating throughout the UK. We work in a number of key sectors for both public and private clients.

We put a strong emphasis on quality, and work closely with our clients and suppliers on every project.

### What attracted us to the CLIP programme

In 2000 our new Chief Executive Vaughan Burnand decided to refocus the business. The first step was to clearly re-define our vision and strategy. We realised this process would require a significant change in the company's direction and priorities.

We needed a set of tools to help us effectively make this change, and then manage it. We heard about the programme through an industry contact, and got in touch with them.

Their team explained the details and the management tools involved. We knew instantly it was the right path to follow, and that it would help us to deliver our new strategic plan.

### What our aims & expectations were

The whole management team worked with the mentoring team, who delivered a series of workshops and meetings. We conducted a comprehensive review of our activities, covering both internal and external areas. This enabled us to define the critical areas for improvement within the business.

We then developed a focused business plan. This helped to improve profitability across the entire business. The visions and values we developed from this exercise are at the core of our business today.

Given the success of using the programme, we decided to bring our suppliers on board. Our main aim was to help support them, and to ensure that their business strategies would keep them profitable in the long run. This would ensure their future, and allow us to benefit from their improved performance.

**■ We also expected the CLIP 'leadership' module would help our suppliers to:**

- Develop some tangible plans for the year ahead and to define 'where they want to be'
- Set the best possible leadership processes in place for the future
- Determine how best they can manage our expectations of them during projects.

### How the CLIP process worked for us

We set up a strategy network to raise awareness of our proposed changes to the supply chain. A number of our approved supply chain members quickly expressed an interest in joining the new network.

We needed to ensure the senior management team (SMT) at each



company was fully involved in the process. We did this by organising a workshop with them, through CLIP.

At these workshops we got the SMTs to scan the business environment, and to define where they saw their business in three years time. CLIP then challenged the teams about how their business objectives, leadership processes and tactical plans could deliver their vision.

As the CLIP workshops progressed we could see all the companies starting to get more involved. They found that the tools and techniques used at the workshops allowed them to spot weaknesses in their own businesses. Four of our suppliers started to undertake individual workshops with the CLIP team, when they saw the advantages of participating.

One of the most powerful tools the teams used was the 'Hoshin' single page planning process. This involves condensing the strategy of the business into a single page. It aligns strategic imperatives to specific implementation activities. This focuses the management team on the critical parts of the business, where the greatest improvements can be made.

All our suppliers undertook CLIP workshops that focused on analysing their management processes. As an example, Landscape Contract Design's SMT worked carefully to review past business data and the profiles of their key customers. This allowed them to separate out the critical business activities they needed to address and guide them in the future.

Effective leadership is a big part of the CLIP workshops. Roofdec's SMT review of their business processes led them to look at ways of evolving their management structure to reflect the type, and volume of work the company undertook. The key leadership skills to deliver their new plan were then defined and implemented.

Another of the CLIP workshops focuses on developing a clear vision for the company. Airedale Glass's SMT carried out an appraisal of their business's internal operating structures and a critical examination of how it operates in its selected markets. The workshops revealed that they needed to improve the internal barriers between the office, factory and site personnel if they were to achieve their vision.

*“We see our CLIP strategy network as a bow wave that will spread down our supply chain and ensure that everyone benefits from it in the long run”*

*Robin Davies of Shepherd Construction*

MWS joinery also identified the key business areas to focus on. The SMT were introduced to benchmarking tools to help measure and manage these key areas more effectively.

Another benefit of the workshops was that they enabled us to see how the way we do business impacts on our suppliers. We realised just how important it is to pay suppliers regularly and on time. We are now even more focused on their needs in this area.

We are encouraged that all our suppliers have each built a new vision for their company, and now have a detailed plan of what needs to be done to achieve this. The workshops also helped build a sense of urgency about how best to develop a business strategy.

### How we benefited from this initiative

Since our suppliers got involved with CLIP we have noticed that we all are collaborating more effectively on projects. The level and type of communication has improved, and we are working closely together to solve common issues. This in turn is leading to improved productivity and a better quality of work on projects where these suppliers are involved.

The strategy network gives us the confidence that our supply chain is working on a calculated well thought out track, and that they are operating in a way that will bring benefits to all parties. We can also be certain that their long term plans involve working with Shepherd.

Each of the suppliers involved has also benefited from going through the CLIP process. Roofdec has developed a set of KPIs to help keep the management team focused on their new strategy, which is also helping to drive out waste from their processes. MWS Joinery's management team now has a better

mechanism for prioritising and making critical decisions. This has helped their projects run more smoothly.

Landscape Contract Designs has developed their understanding of which customers they are most suited to partnering with in the long term, which is leading to increased growth and collaboration. Airedale Glass and Glazing has now developed a number of strategic partnering arrangements with key customers and suppliers as a result of going through the CLIP process.

### How we plan to use the skills & lessons learned

The lessons we learned from CLIP are now very much part of the company, and the tools we were introduced to are used on a day to day basis to help keep us on course. We are now in the process of developing a set of tangible measures that will allow everyone to stay focused on the 'right things', when delivering their plans.

The process has definitely helped to build and strengthen the relationships between our suppliers and us. All the companies involved have been appreciative of the help they have received in getting their strategies right. Two of them have even invited the CLIP team back to give more advice on how to effectively implement the strategies they have developed.

We are going to keep working more closely with our suppliers who are part of the strategy network, to drive further improvements and savings. We are also looking to get another 18 suppliers involved with CLIP, as the potential benefits of using their 'leadership' module are so great.

We see our CLIP strategy network as a bow wave that will spread down our supply chain and ensure that everyone benefits from it in the long run.

*‘We have seen clear benefits from using the CLIP approach, and we are increasingly finding that clients are actively wanting to partner with us on projects’*

*Simon Prince of Landscape Contract Design*

### LEARNING POINTS

- Get as many companies involved as possible to maximise the potential improvements for all parties. Develop a network so you can share improvements and productivity gains.
- Get the whole management team involved in the workshops to ensure everyone buys into the CLIP process.
- Be prepared to make some big changes to your corporate strategy and to try and look at your business in new ways to spot where improvements can be made.
- Scan the whole business environment, and write down where you see your business in three years time. Challenge how your business objectives, leadership processes and tactical plans can deliver your vision.
- Determine a core set of activities to focus on and then ensure the management team develops a set of KPIs to help keep them focused on the new strategy.
- Effective leadership is a big part of the CLIP workshops. Get the management team to define and discuss what key skills are required to deliver your strategy.

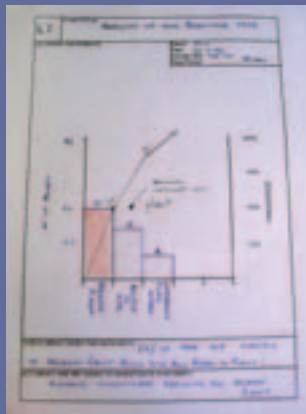
# A main contractor used CLIP to improve their efficiency & working methods on two projects



Works progressing on the Bentley Hotel



above: visual management boards on the Carholme Road project showing pictures of progress on site, below: Pareto chart used to analyse the amount of non-productive time spent on the Bentley Hotel project



By using CLIP...

“On the Carholme Road project we reduced the amount of non-productive time from 19.5% at the start of the project, to 2.5% by the end”

## THE PROJECTS

Carholme Road, Lincoln –  
New build block of 22 student flats  
and Bentley Hotel, Lincoln –  
30-room extension

### CLIENTS:

Sunny Properties (Lincoln) Ltd &  
Bentley Hotel

### CONTRACTOR:

Lindum Construction

Warren Glover of Lindum Construction tells how CLIP helped them to improve their site management methods and efficiency on two projects at the same time, in Lincoln.

## VIEW FROM THE CONTRACTOR

### Background to the project

Lindum is a national contractor, although the majority of our work is carried out in the East Midlands and East Anglia. The company specialises in challenging, ‘one-stop-shop’ construction, be it a ‘traditional’, or ‘design & build’ contract.

We have a strong focus on delivering real value to our clients, and 70% of our work is repeat business.

### What attracted us to the CLIP programme

The CLIP team got in touch with us, and asked if they could meet our management team. As we are familiar with the concept of ‘lean working’ and the major efficiency improvements it has produced in the manufacturing industry, we readily agreed.

Lindum has already introduced some of the principles championed by both the ‘Egan’ and ‘Latham’ reports. But, we felt that CLIP would be a good vehicle for initiating further improvements in the way we do things.

### What our aims & expectations were

We chose to use CLIP on two different projects that had similar construction techniques and construction periods. By being able to compare and contrast the results, we could better evaluate their effectiveness, and their potential for incorporation on other projects.

Both projects are ‘design & build’ contracts with a value of between £1m – £2m. The buildings are both steel framed, with a Metztec external walling system.

Our main aim was to make the sites more efficient and effective. We wanted to improve our margins, without increasing our turnover.

### We also expected the CLIP project to help us:

- Improve quality, and reduce the number of defects
- Provide a method for collecting project data, so that we can monitor, record, improve and maintain our performance on site.

### How the CLIP process worked for us

Initially, we focused on improving quality and reducing defects. Each site manager, with the aid of a CLIP engineer, collected and recorded data on site activities, such as how long it took the different trades to complete their work. We soon discovered that team members were not communicating effectively, and the quality of the sub-contractors’ work was not always being properly managed. This was amounting to a considerable loss of time, money and productivity.

We set up visual management boards on both sites, to help improve communication. These included site maps, photos, planned sequences of work,

*“Our vision is to have all our sites deliver these improvements by introducing these new systems, measures and reporting structures on all our projects”*

*Warren Glover of Lindum Construction*

and safety reports. This also allowed the clients to see easily how far the work had progressed. Pareto and pie charts were displayed to quantify and highlight to the teams, the areas that were causing delays and disruptions.

Once they were introduced to the scheme’s aims and objectives, everyone soon became committed to the changes. This commitment was reinforced by displaying the actual improvements we were making on the visual boards. To maintain what were both tight build programmes, we had to make sure that everyone involved knew what was happening on their site. The foremen used the information on the visual boards at the weekly site meetings with all the sub-contractors, to review the next two weeks programme.

We held regular half day workshops involving the CLIP engineer on both sites, to teach the teams about ‘lean tools and techniques’ and how to put them into practice.

One problem we identified on both sites was the lack of space for storing materials. The CLIP engineer helped resolve this by introducing the teams to the ‘5Cs’ tool, to develop a plan to manage the sites. For example, on the Bentley Hotel project we started co-ordinating our deliveries with the hotel, so that they never clashed. Greater care was also taken to order materials in manageable quantities to arrive just as we needed them, saving valuable space.

The CLIP programme builds the discipline needed to collect and review data regularly, which means you can get to the route of a problem quickly.

### **How we benefited from this initiative**

Both projects finished on budget, and on time. On the Carholme Road project the amount of non-productive time was reduced from 19.5% at the start of the project, to 2.5% by the end.

The construction periods could have been shortened further if we had used all the lessons learned on the CLIP programme from the start. The advantage of having clearer site management roles and the benefits this brings, in terms of making our sites more productive, is also understood better now.

Bringing sub-contractors in early during the planning stage of our projects enables us to use their expertise and experience to programme their on-site activities better. A contractors’ league table has been established and maintained to continuously monitor our suppliers’ performance, particularly in the key areas of quality and reliability.

### **How we plan to use the skills & lessons learned**

We are in the process of putting together a ‘site best practice guide’ to spread the lessons and ideas captured from the CLIP project. Our vision is to have all our sites deliver these improvements by introducing these new systems, measures and reporting structures on all our projects.

On-site build time is the end of the process and the wrong time to be looking for major improvements. The best time to look for efficiencies is at the design and planning phase, when you can make the biggest savings. Involving sub-contractors early is a vital part of this.

*“The advantage of having clearer site management roles and the benefits this brings, in terms of making our sites more productive, is also understood better now”*

*Chris Conroy of Lindum Construction*

The construction industry has to recognise that it needs to become more efficient, not just on site, but throughout the process. CLIP helps to initiate this change by focusing you on what is really critical to a project’s success.

#### **LEARNING POINTS**

- Collate, record and analyse data on all your site activities to discover where you can make improvements.
- Involve the CLIP engineer through regular workshops so that the key team members can learn about ‘lean tools and techniques’, and how to put them into practice on site.
- Set up a visual management board on-site to improve communication and efficiency. This will help the whole team, especially the client, to see exactly how the project is progressing and what interactions are to take place.
- Bring your sub-contractors in early, during the planning stage if possible, so that they can understand exactly what work needs to be done, and provide their advice on the best way to carry out the work.
- Put together a ‘site best practice guide’ to spread the lessons and ideas captured from your CLIP projects.

# A building contractor used CLIP to become more efficient by improving their management processes



Sneinton Day Care Nursery, Nottingham



The Baggaley team discuss information on the visual management boards



Using a flow diagram to map out the pre-site processes on the project

By using CLIP...

“Everyone on site now spends more time adding value into the project, and less time behind a desk doing paperwork”

## THE PROJECT

Sneinton Day Care Nursery, Nottingham

### CLIENT:

Sure Start Programme – Nottingham City Council

### CONTRACTOR:

Herbert Baggaley Construction Limited

Mike Shires of Baggaley Construction tells how CLIP helped them to improve the efficiency of their management processes, so that employees can spend more time adding value to their client's projects.

## VIEW FROM THE CONTRACTOR

### Background to the project

We are a regional building contractor operating throughout the Midlands and South Yorkshire. The company specialises in many types of building projects, and we have a large number of clients in both the private and public sectors.

We take a pro-active approach to a number of industry initiatives, including best practice and partnering.

### What attracted us to the CLIP programme

Our Chairman, Howard Baggaley, heard about the principles of lean construction through the Construction Confederation network. We got in contact with Martin Watson of BRE, who presented the benefits of CLIP to us.

We are committed to partnering with our clients on the principles of the Egan Report, 'Rethinking Construction'. We recognised that CLIP fitted in with this vision, and could help us make further improvements to our business.

### What our aims & expectations were

We realised that CLIP would give us the quality time needed to sit back and reflect on the way we work. We decided to start using it on this new £1.2m day care nursery, which is a traditional build contract. It has a steel frame, with a traditional brick finish.

The aim was to map our business processes throughout the lifetime of the project, so we could understand how these impacted on the construction phase of the work. We wanted to remove any processes that did not add value to us, or the client.

### We also expected to have:

- Developed a best practice method for running a project
- Improved the way information is communicated across the whole team
- Developed better partnerships with our suppliers.

### How the CLIP process worked for us

The first phase involved 'process-mapping' our procedures with the CLIP engineer, and looking in detail at how we worked on each phase of the project. We studied who was doing what at different phases, and if they were doing the right things. Other project teams gave us their data so we could pin-point areas for improvement.

We had to spend a great deal of time encouraging managers to review and then change the way we work. There was a feeling that we were already very process orientated, and that we could not make any further improvements. We overcame this by having regular meetings, and feeding back the results to senior managers and other project teams.



*“Having participated over the years in many training & development*

*initiatives, with varying degrees of success, I was very impressed by the way that our project teams took to the CLIP project. The way that relatively new and sometimes complex management tools were condensed into readily understandable and usable techniques, not only appealed, but generated an immediate confidence in the programme”*

Howard Baggailey,

Executive Chairman of Baggailey Construction

When we looked at all the documents we use to support the site, we found that senior team members were spending up to a third of their day filling them out. For example, we produce activity reports for every phase of work we do, and a separate summary report. But, we found different people were completing them. This is duplication, so we combined the two documents to reduce the amount of administration required.

In contrast, snagging is an issue across the company, but was not well documented. Our revised snagging sheet now ensures that a specific person is responsible for resolving a snag, and that they record what the solution is. This way it can then be communicated to other project teams.

Further improvement in communication across the project teams is now being facilitated by the introduction of two

visual management boards to keep a track of labour and materials. These record everything that will happen on site for the next two weeks. We also now analyse the potential risks at the start of a project with the client, so we can plan and manage them more effectively.

### How we benefited from this initiative

By reducing the amount of administration that needs completing on a project, we have allowed everyone on site to spend more time adding value into the project, and less time behind a desk doing paperwork.

Aftercare is a big issue, so we now bring in our defects team six weeks before a project is handed over. They use their knowledge from other projects, to pick up on areas where snags might occur. This way we can reduce the number of defects and deliver a better quality building to the client.

We realised that we needed to focus on creating better partnerships with key suppliers, especially where we have opportunities to do repeat work and create further cost savings. We have reviewed our supplier database, and our aim is to create teams who share the same goals, and work in an environment of trust.

### How we plan to use the skills & lessons learned

We are now rolling out the improvements we have made so far across the rest of the company, including our joinery division. The process also allows us to benchmark ourselves using the ‘Business Excellence’ model, so we can see how we are performing in different areas.

We are also going to implement an enterprise resource planning knowledge system next year, which will also help to minimise duplications in our management systems.

My advice for others using CLIP is simple. However well you think your company is doing there are always opportunities to improve, just as we have done by using CLIP. If you can measure something then you can improve it.

### LEARNING POINTS

- Set up visual management boards, and use them to record everything that will happen on site for the next two weeks. This way you can plan ahead and manage your resources more effectively.
- Be prepared to spend time encouraging senior and site managers to review and then change the way they work. Have regular meetings to feedback the changes and improvements you have made.
- Communicate what you are doing to your client and supplier, and involve them in the process.
- Take a holistic look at your processes and how they impact on the way you perform at every stage of the project. Ask yourself if each process is benefiting the client, or is it just waste?
- Focus on creating better partnerships with your key suppliers, especially where you have opportunities to do repeat work. Teams will work more productively if they share the same goals, and work in an environment of trust.

*“However well you think your company is doing there are always opportunities to improve, just as we have done by using CLIP”*

Mike Shires of Baggailey Construction

# A regional building contractor used CLIP to improve productivity by altering the way they approached a project



New student accommodation at  
Keele University



Newly installed kitchen unit in block 5



Programme and progress chart  
for the Keele site

By using CLIP...

“We have reduced the time it takes to refurbish a room by 12%, and all snagging by 69%. The overall quality of work is of a higher standard”

## THE PROJECT

Refurbishing student accommodation,  
Keele

### CLIENT:

Keele University

### CONTRACTOR:

J & S Seddon (Building) Limited

Barry Thompson of J & S Seddon (Building) Limited tells how using CLIP helped them to improve productivity and reduce defects, by changing the way they planned and managed their projects.

## VIEW FROM THE CONTRACTOR

### Background to the project

We are part of the Seddon Group, operating throughout the West Country, Midlands and Wales. We undertake anything from multi-million pound design and build projects through to long term maintenance contracts.

We place a big emphasis on partnering with our clients on all our projects. This enables us to meet their needs more effectively and build long term partnerships.

### What attracted us to the CLIP programme

I heard about CLIP when I attended a Best Practice Club meeting in Wolverhampton. Another contractor talked about the productivity improvements they had made, so we invited the CLIP team up to give us a presentation.

Seddon is involved with a number of long term partnering contracts, and we recognised that CLIP could become a real benefit to the company. We decided to run a pilot project to see what gains we could make.

### What our aims & expectations were

We are involved in a long-term partnership with Keele University, where we are refurbishing their student accommodation. The rooms are in blocks of between two and 10 storeys, and are of a traditional brick & block construction.

The main aim was to save costs, and improve our level of service to the University. We also wanted to reduce the amount of overtime that we worked on the project.

### Other expectations included:

- Generating a detailed programme of activities covering phases of the project
- Improving communication by developing a visual management board to track progress
- Including sub contractors in the programme early on, and improving team work.

### How the CLIP process worked for us

We started by involving the whole management team in a one-day ‘pre-diagnostic’ workshop with the CLIP engineer. This involved discussing the problems of snagging and delays encountered on the previous phase of the work.

The majority of the team were positive about CLIP from the start, as they could see the benefits, but we needed to work harder to convince some of the site team. The problem was that no-one was planning up-front the sequence in which each activity should happen, and how the work should flow through the block of rooms. The team ‘process-mapped’ each part of the refurbishment programme, and it quickly became obvious that we needed to rethink how and when we carried out each activity.

*‘The first thing we do now is to ask ourselves; is there anything we have learned from the CLIP ‘Masterclass’ that we can use to benefit this contract’*

Barry Thompson  
of J & S Seddon (Building) Limited

Another issue was a lack of communication between the client and the rest of the team. On the last project we lost five weeks, because we did not know about asbestos in one of the blocks.

Our CLIP engineer ran 15 ‘Masterclass’ days, where we looked at new ways of working. We involved the trade sub-contractors who all made positive contributions. The whole project team now meet together on site once a week, to communicate the next four weeks plan, and to discuss in detail the tasks for the week ahead. This ensures everyone on site knows what everyone else is doing, and allows the communication of health & safety issues. This meeting is held around our visual management board in the site office, which displays all this information.

We filmed one of the floor layers in action to see where we could spot inefficiencies. We did this by performing a ‘7 Waste analysis’ on each part of the process. As an example of the detail this could show – we noticed that there was a danger of the floor layers’ fingers getting trapped when they were

*‘The biggest benefit is that CLIP makes everyone ask if there is a more efficient way of doing a piece of work’*

Barry Thompson  
of J & S Seddon (Building) Limited

working near the doors. So, we immediately put up signs outside the doors reminding people to knock before opening them.

The video allowed us to come up with a best practice routine for floor laying. We followed this with a half day training session with the team to introduce the new method of working.

### How we benefited from this initiative

By changing the way we plan our work at Keele, we have reduced the time it takes to refurbish a room by 12%. Also, no-one on this phase of the work has worked any overtime.

We have reduced floor snags by 80% per room, by ensuring everyone follows best practice methods when laying floors. We have reduced all snagging by 69%, and the overall quality of work is of a higher standard. We expect to make further improvements in productivity throughout the remaining five years of the contract, by continuing to analyse our processes.

The biggest benefit is that CLIP makes everyone ask if there is a more efficient way of doing a piece of work. This helps drive improvements, and encourages a ‘zero defects’ culture.

### How we plan to use the skills & lessons learned

The whole Stoke office is now using the tools and techniques applied at Keele University on other projects, and we are introducing the ideas to our other management teams.

We now involve the client early on in our projects, as it gets them more involved with the whole process. This will help to improve our partnering arrangements.

Our mindset towards our projects has changed too. The first thing we do now

### LEARNING POINTS

- Involve the whole project team in a weekly site meeting to communicate the plan for the next month, and to discuss in detail the tasks for the week ahead.
- Use a video to film site processes and come up with a best practice routine for carrying out an activity. Follow this with a training session with the team, to introduce the new method of working.
- Develop a way of capturing tools and techniques used on a project so that they can be used elsewhere in the company. Start by introducing these ideas to other management teams to get their buy in.
- Develop a visual management board at the site office, which tells everyone what is happening on site and what improvements are being made.
- You may need to work hard to communicate the benefits of CLIP to the whole team. Get them involved from the start, so that they can see the benefits early on in the process.



The team maps out the project sequence

is to ask ourselves if there is anything we have learned from the CLIP ‘Masterclass’ that we can use to benefit this project. I would encourage anyone to give CLIP a go.

# A galvanising company used CLIP to improve efficiency & increase profitability



Hot dip galvanising tank in action



The team creating standard operation sheets for the tank operators

*By using CLIP...  
‘We have increased the weight of metal on each dip by 7%. This has led to a significant increase in turnover’*

## What attracted us to the CLIP programme

The Wedge Group board heard about the CLIP approach, and how it could make any process more productive. They asked the CLIP team to give us a presentation explaining how ‘lean’ working could benefit the factory.

We realised that the ‘lean’ approach to working would fit in nicely with the other initiatives that our management team was bringing in. It was time for a change, and we knew CLIP could help us improve.

## What our aims & expectations were

The main aim of using CLIP was to improve the efficiency of the factory and increase turnover by working smarter. We wanted to focus on increasing the throughput of jigs though the galvanising tanks without hiring extra staff, or compromising quality.

We saw CLIP as a chance to look in detail at every process in the factory. We would then be in a better position to understand how each process impacted on our overall efficiency.

### ■ We also expected to:

- Improve job satisfaction and security at the factory
- Continuously improve our safety record.

## How the CLIP process worked for us

Our best opportunity to become more efficient was to increase the weight on the jig per dip. This became clear at the ‘pre-diagnostic’ workshop, where we reviewed the data collected from the factory floor with the CLIP engineer.

We spent a lot of time looking at the ‘root’ cause of any problems in the

## THE PROJECT

Increasing turnover by improving efficiency at a galvanising company

### MANUFACTURER:

Pillar Wedge

Chris Boardman of Pillar Wedge tells how CLIP helped them to increase turnover by working smarter and making their key processes more efficient.

## MANUFACTURER’S VIEW

### Background to the project

The company is based in Heywood and is part of the Wedge Group. The group as a whole offers a national galvanising service, and we specialise in ‘hot dip galvanising’.

We have a strong focus on service and quality, and delivering a fast turnaround time for our customers.



Fishbone 'Cause and Effect' diagram of problems in the factory

factory. The team 'brainstormed' all the possible causes and wrote them on post-it notes. These were stuck on a 'fishbone' diagram, which is now displayed in the factory. We refer to this when a problem emerges, and it makes us consider all the possibilities. The diagram can be added to, so we can rule out certain causes by looking back at our past experiences.

At first the workforce was sceptical of the new CLIP approach and how it could benefit them. We overcame this by filming them working, and doing a '7 wastes analysis' with the CLIP engineer. The team realised how simple it was to make their lives easier, and by getting more work done per day, they could improve their bonus payments.

After seeing himself on tape, one of the factory workers commented that he could not believe how far he walked in one day. By going through this process, we were able to start removing any wasted time from their day.

Work no longer gets bottled-up in the factory, because we have introduced better documentation procedures. One example is our new 'process route

cards'. By recording more accurate information, it is easier to manage the different orders as they pass through the factory. White tags are tied on the orders so they don't get mixed up when more than one order is placed on a jig.

We also set up another team to look at ways of improving the number of jigs put through the tank per hour. We videoed the dipping process and the team used what they had learned from it to develop a new standard operating procedure. We tested it in the factory and videoed the process again, before the final operating sheet was developed. This video is now used to train all tank operators.

### How we benefited from this initiative

By using the CLIP approach we have now increased the weight of metal on each dip by 7%, which has led to a significant increase in turnover with no extra labour required. Increasing the number of dips we can do per hour by 3%, to 3.3 an hour has also helped to improve throughput.

We have reduced the number of defects by 63%, and so more of our deliveries are reaching our customers on time.

The whole culture has changed on the factory floor. People are now far more aware of which jig will be the best for a particular job, and how they can increase the weight of metal on each drop. It is all about making life easier for those actually carrying out your processes.

### How we plan to use the skills & lessons learned

There is now more communication between the senior management and the factory floor, which had led to a better working relationship. The factory team is now feeding back their ideas

*"I would say that the 'lean' manufacturing route is definitely the one to go down. We have improved quality, efficiency and now offer our customers a better service"*

Chris Boardman of Pillar Wedge

for improvements to the senior management on a more regular basis, which is helping to drive further improvements.

I would say that the 'lean' manufacturing route is definitely the one to go down. We have improved quality, efficiency and now offer our customers a better service. On top of all this, we are now making more money.

### LEARNING POINTS

- Use CLIP as a chance to look in detail at all your processes. You will then be in a better position to understand how each process impacts on your overall efficiency.
- Spend time up front looking at the 'root' cause of any problems. Get the whole team to 'brainstorm' all the possible causes, and display the solutions on a board that everyone has access to.
- Film your workforce to get them to see how they can become more efficient.
- If you can make life easier for those actually carrying out your processes then they will buy into any changes.
- Get your team to feedback their ideas for improvements on a more regular basis. This will keep you continuously improving.

*"We have reduced the number of defects by 63%, and more of our deliveries are reaching our customers on time"*

Chris Boardman of Pillar Wedge

# An M&E contractor is using CLIP to improve productivity across the whole company and the supply chain



Transportation trolley developed for IPS panels on Ormskirk Hospital project

## THE PROJECTS

Westoe School, Sunderland  
Cloth Hall Street Residential  
Development, Leeds  
and Ormskirk Hospital, Ormskirk

### CLIENTS:

South Tyneside Council, Welfield Ltd,  
Ormskirk & Southport Trust

### CONTRACTOR:

NG Bailey & Co

## What our aims & expectations were

We chose these three projects to concentrate on, because they covered the sectors where we currently do the majority of our work. These are education, residential developments and health. This way we could quickly spread the improvements from these projects onto similar ones elsewhere, to maximise the benefits.

Our main objective was to ensure that the concept of 'lean working' is spread as quickly as possible throughout the company. We want 'lean' to become part of the 'Bailey Way'.

On the second phase of the CLIP pilot we aimed to broaden the way we approached our projects, and explore new ways of doing things.

### For each project we also had the following expectations:

- Westoe School – to improve the 'pre-commencement' planning stage of a project to reduce the amount of re-work on the design
- Cloth Hall Street – to improve the sequencing of the works, and remove any waste from the process
- Ormskirk Hospital – to find a best practice method for fitting the plumbing services and plastic conduits.

## VIEW FROM THE CONTRACTOR

### Background to the project

NG Bailey is one of the largest mechanical and electrical contractors in the UK, and we directly employ the majority of our electrical labour. We have a large number of clients in both the public and private sectors.

We offer a 'one-stop-shop' solution to our client's needs, and the company has a strong focus on business improvement.

### What attracted us to the CLIP programme

Having achieved a 13.8% improvement in productivity during the first CLIP pilot project at Wolverhampton last year, I knew we could make further improvements. I spoke to the NG Bailey Board. When they looked at what we had achieved on the pilot, they were enthusiastic about integrating CLIP across all 13 of our business units.

We asked a CLIP Engineer back to help us on three specific projects, but we also worked to implement 'lean working' on a number of other projects internally.



By using CLIP...  
“We have improved productivity on the pilot projects by 15%. We expend seven million labour hours a year, so there is a massive potential for improvements”

*‘It is an exciting time of change at N G Bailey, and BLIS is an important part of our future vision’*

*Terry Billsbrough of NG Bailey & Co*

## How the CLIP process worked for us

We have now developed the ‘Bailey Lean Implementation Strategy’, or BLIS for short. This is allowing us to spread ‘lean methodology’ effectively throughout the company, and to build on the lessons learned from the pilot projects.

We started by appointing a ‘lean champion’ in each of our 13 business units, to oversee the process, and to ensure that their team buys into the new way of working. Another senior manager and myself are also committed to visiting each project at least three times during its lifetime, to lend our support and experience.

To help everyone in the company implement ‘lean’, we have also developed a BLIS handbook. This offers guidance and advice on the ‘lean tools and techniques’, and how they can be implemented to improve productivity on a project. We have also developed a variation of the CLIP, Plan – Do – Check – Act (PDCA) tool, to help us implement ‘lean working’ on projects.



*Process improvement workshop team on Cloth Hall residential project*



*Process improvement workshop team on the Westoe School project*

Now at the start of every project, we look at how we can remove waste and non-value added activities, and carefully plan exactly how we are going to approach the work. On the Westoe School project, the team held a ‘pre-diagnostic’ workshop with the CLIP engineer where they mapped out the project ‘pre-commencement’ planning stage. This allowed them to spot areas where improvements could be made.

We realised that there was sometimes a lack of communication between the architect, the designer and ourselves. By logging and analysing the comments between us, we have now refined the room data sheets and technical drawings. This has made them easier to understand, and highlighted technical areas to which the site team needed to pay extra attention.

We now video our processes on site, and go through each activity with the supervisor and workforce on screen. People will buy into an idea and use it, particularly if they came up with it. This is a vital step in the way we intend to approach all our projects, and helps us to maximise our productivity gains.

On the Cloth Hall Street project we found that 42% of the fixers’ work time was being wasted. We discovered this when the CLIP engineer filmed them installing the electrical fittings. It turned out that the majority of this waste was caused by the way the fittings were marked and measured on

site. The team then developed a template so that each fitting could be marked easily and correctly measured on the walls.

We want all our teams to contribute ideas. At one improvement workshop, a painter commented that this was the first time in 20 years of working that someone had asked him how he thought a job should be done. This is just what we are trying to encourage. By continually observing the way we do things on a project we can analyse our processes, and present the findings at our ‘improvement’ workshops. This always involves all the trades on site.

We are also focusing on activities that are repetitive. For example, on the Ormskirk Hospital we are installing a large number of our pre-fabricated ‘Integrated Plumbing Services’ (IPS) units. They are designed to reduce the amount of installation work on site, but when we analysed the way we handled and fitted them, we found a lot of wasted effort. The team created a trolley that the IPS could be transported on. This reduced the time spent handling it, and the risk of damage. A new method of fitting the units was also developed and tested.

Having reviewed a process, we then develop a ‘best practice’ methodology and implement it on site. Then we go back and film it again to see if it can be improved further. The final ‘best practice’ working method is then put

*“Our main objective was to ensure that the concept of ‘lean working’ is spread as quickly as possible throughout the company. We want ‘lean’ to become part of the ‘Bailey Way’”*

*Terry Bilsbrough of NG Bailey & Co*

onto CD-ROM, so that anyone can access it. We found this to be a practical and informative way of distributing ‘best practice’ throughout the company, as it allows teams to share each other’s ideas and experiences.



*Visual management board developed for the Cloth Hall residential project*

## How we benefited from this initiative

We have improved productivity on the pilot projects by 15%. We expend seven million labour hours a year, so there is a massive potential for improvements. These improvements can then be passed onto the client, allowing us to provide them with a better service.

Creating templates and adding measurements to the drawings on the Cloth Hall Street project enabled us to complete this part of the work in 81% less time. From the improvements made on the Ormskirk Hospital, we can now fit our standardised IPS units in

48% less time. This will allow significant improvements to be made, particularly on large projects.

Our ‘strategic alliance’ partnership with Taylor Woodrow, where we do a lot of residential work, has also improved. Having seen the benefits of ‘lean’, we are now helping them to develop innovative working methods to improve productivity on future projects.

We are also ensuring that we involve our sub-contractors and suppliers in our ‘lean’ workshops, to get their valuable input at the start of the project. We find they can add extra value to a project by working more closely with them.

## How we plan to use the skills & lessons learned

Our future strategy is to spread ‘lean tools and techniques’ across as many projects as possible. Each business unit has between three and five engineering teams, and we are aiming for each team to be using BLIS on at least one project by the end of the year. We are hoping to cover between 80 to 100 projects in all.

We will also be looking to use ‘lean’ to improve the way we store materials and tools on site. We have developed and piloted a mobile storage rack, so that we can reduce the amount of wasted time our labour force spends walking to, and locating the right materials and tools for a job. We will also be using our new skills to reduce the amount of time we spend erecting and moving scaffolding, which can be considerable on a large site.

The construction industry often lags behind in the way that it spreads best practice, but CLIP has given us the perfect framework for ensuring the gains we make are passed onto future projects. It is an exciting time of change at NG Bailey, and BLIS is an important part of our future vision.

## LEARNING POINTS

- Start by appointing a ‘lean champion’, who is willing to try something new to oversee the process. Having director support and their commitment to CLIP will also make the transition to ‘lean working’ methods easier.
- Ensure that you involve your sub-contractors and suppliers at the workshops to get their valuable input at the start of the project. By working more closely with them you can add extra value to the project.
- Video your processes, and go through each activity with the supervisor and workforce on screen. Getting them involved is a vital step as people will buy into an idea and use it if they came up with it.
- Develop a practical and informative way of distributing best practice throughout your company, as it allows teams to share each other’s ideas and experiences.
- Use CLIP on activities that are labour intensive and repetitive. This way you can quickly spread the improvements from these projects onto similar ones elsewhere, to maximise the benefits.
- Have a clear strategy for spreading ‘lean methodology’ around your company and give it a meaningful name. You can support this by providing guidance and advice on the ‘lean tools and methodologies’, and how they can be implemented to improve productivity on a project.

# A regional building contractor used CLIP to reduce the amount of waste & improve productivity on site



*“CLIP offered us the tools and methodologies to help us make the improvements in productivity on site that we wanted”*

*Ken Rawe of Shaylor Construction*

initiative called ‘Achieving Construction Excellence’ (ACE). However, we soon realised that applying best practice initiatives on site could potentially bring large benefits as well.

We found out about CLIP from the internet, and invited the team to give a presentation. CLIP offered us the tools and methodologies to help us make the improvements in productivity on site that we wanted.

## What our aims & expectations were

We decided to use CLIP on a project big enough to allow us to analyse our processes and then make improvements. Our Contracts Manager Chris Brown was keen to introduce it onto one of his projects to see what could be achieved.

This project involves the construction of a community facility to serve the local area. It contains a primary care centre, offices, library and other facilities all linked by a central atrium. There is a mix of construction methods used, from steel frame to traditional brickwork.

The main aims of the CLIP programme were to reduce waste, and increase efficiency throughout the construction process.

### **The team expected to:**

- Reduce the fit out time by around 10%
- Make improvements that could be spread to other projects.

above: blockwork and roof going up on site  
below: contract manager and project team discussing the project plan on the visual management board



## THE PROJECT

Blakenall Village Centre

**CLIENT:**  
New Deal for Communities

**CONTRACTOR:**  
Shaylor Construction Ltd

Ken Rawe of Shaylor Construction tells how CLIP helped them to reduce the amount of re-work, and improve site management on a large project involving a wide range of sub-contractors.

## VIEW FROM THE CONTRACTOR

### Background to the project

We are a new build and refurbishment contractor, operating in the West Midlands area. We undertake a wide variety of works, within both the private and public sectors.

We put a strong emphasis on quality, and we have adopted the ‘Egan’ principles to partnering which is proving successful with our current clients.

### What attracted us to the CLIP programme

At Shaylor we have recognised the benefits of a modern approach to the construction process. To drive this culture through the company we developed and implemented an

*By using CLIP...  
“We are still on course to finish four weeks ahead of the original schedule, and we calculated that by changing their approach the fitters could have reduced the time it took to fit one conduit by 25%”*

## How the CLIP process worked for us

At our 'pre-diagnostic' workshop with the CLIP engineer we looked at all the site activities. We realised we could make the biggest savings by focusing on the 1st and 2nd mechanical fix, and the building's finishes. We collected data on the trades working on these areas by viewing and measuring site processes.

With the help of the CLIP engineer, we videoed each of the trades in action. Then we reviewed the film and suggested how working methods could change to become more productive. Some teams were sceptical of this process, and did not react positively to the feedback. Those that did change instantly started to become more productive.

The CLIP workshops throughout the project gave our team the tools and the techniques to go away and look for improvements.

For example, we held a number of detailed meetings with the M&E sub-contractors to discuss how we could remove waste from the sequence of works. One of the early meetings realised a saving in time and labour by the M&E subcontractors developing shared bracketry for the services.

We developed a visual management board that showed the next week's plan to improve communication. The trades could then organise themselves more effectively to meet it. They also marked off the work they had completed on the site drawings, so we always knew where we were.

To save more time we started to standardise many of our routine processes. For example, we have developed a new best method for marking out the chasing for conduits from ideas put forward by the workforce. These were captured by sticking post-it notes on the site boards.

We are now taking the lessons we have learned here across to a project refurbishing student accommodation for Birmingham University. We want to get everyone involved on the project to develop the CLIP mindset.

## How we benefited from this initiative

Despite an eight week weather delay, we are still on course to finish four weeks ahead of the original schedule. We will just miss our target to reduce the fit out time by 10%, but the savings we have made were down to using CLIP.

All of the mechanical and electrical works finished ahead of target. We calculated that by changing their approach the fitters could have reduced the time it took to fit one conduit from 10 minutes to 7.5 minutes, a time saving of 25%. We are also going to set up visual management boards on other projects, as the concept was so successful on this one.

Our contracts manager found that he was able to spend more time focusing on important decisions during the construction works, rather than overseeing re-works. He was delighted by how much easier the job becomes when you don't have to spend any of your time managing conflict.

## How we plan to use the skills & lessons learned

Further improvements could have been picked up if we had run a CLIP workshop before we started on site. It just proves how vital it is to get the right people together at the right times, to discuss how best to tackle a project. This is where you can make real savings and remove waste.

To embed CLIP into the way you work get everyone on site participating. As an introduction, all of our contract managers have been briefed on the successes at Blakenall.

*“It just proves how vital it is to get the right people together at the right times, to discuss how best to tackle a project. This is where you can make real savings and remove waste”*

*Chris Brown of Shaylor Construction*

My advice is to start by using CLIP on a suitably sized project, where there are trades and services that you use regularly on other sites. Be committed, and investigate up front where you can produce the biggest benefits.

## LEARNING POINTS

- Run a CLIP workshop before you start work on-site, and get your sub-contractors involved early on. This will allow you to make the biggest improvements possible.
- To save time and reduce waste see how many of your processes you can standardise. Ask your workforce for their comments, and spread any improvements you make across your company.
- Get your sub-contractors together to prevent duplication of work and conflict on site. This leaves your management team with more time to focus on running the project more effectively.
- Appoint a manager who recognises the benefits of CLIP and is willing to put the effort in to get the results.
- You will get the best results from CLIP on a project that is big enough to allow you to analyse your processes and make improvements.
- To improve communication between the trades, develop a visual management board that shows the exact position of the project and the plan for the weeks ahead.

## Two companies used CLIP to create a virtual team that delivers fast track off-site manufactured solutions



*A completed cladding panel being stored at the factory*



*Using stickle-bricks for a building simulation exercise at a CLIP workshop*

### THE PROJECT

Developing a strategy to set up a virtual team

#### MANUFACTURER:

FI Systems

#### DISTRIBUTOR:

Taylor Maxwell & Co Ltd

Andrew Carpenter of FI Systems and Paul Richards of Taylor Maxwell together tell how CLIP helped them to get the two companies working together as a virtual team, to deliver an off-site manufactured cladding system that assists lean, fast-track, construction processes.

### VIEW FROM THE TEAM

#### Background to the project

FI Systems is a new business unit within CRH, a major building materials group. It was set up to provide a new solution for cladding buildings using off-site construction. Pre-assembly is growing as the industry embraces the 'lean construction' movement.

FI Systems was deliberately kept separate from other group businesses to distinguish its cladding solutions from traditional brickwork.

But the best route to market for this new business was to harness an existing channel – brick distributors. These have existing relationships with specifiers. But the new cladding solution required a completely different approach to selling the product.

#### What attracted us to the CLIP programme

FI Systems was set up to deliver 'lean solutions' to the industry. So, it was logical to use 'lean principles' to develop the partnership with Taylor Maxwell, the only truly national brick distributor, to get the product to market throughout the UK. CLIP was the sensible route to take, because it matched our ideals.

In particular, we knew that we had to change the ingrained way that brick salespeople do things. They are used to

*By using CLIP...  
“We have seen the level of enquiries increasing and we actually started generating income from the system in 2005”*



Cladding panel being fitted on site

a market where the designer and the contractor understand the product. But the new cladding system needed a different approach involving the whole construction process.

We had heard of CLIP through Martin Watson at BRE. So, we knew that CLIP's focus on change management and in particular reducing waste, not just on site but in the whole construction process, would be right for us.

*“Look outside the box, think big. Lean construction impacts on the designers as well as the contractors, and affects your internal processes as a supplier”*

Andrew Carpenter of FI Systems

## What our aims & expectations were

We wanted to accelerate the development of an open and honest partnership between FI Systems and Taylor Maxwell. We also wanted this to be based on a good level of understanding of ‘lean thinking’. We could then use this partnership approach to bring benefits to the supply chain. We also decided that we should use the latest thinking on ‘lean construction’ to develop a new ‘lean proposition’ for the cladding system.

### Overall, we wanted to:

- Define how we would work together and create an action plan
- Agree a partnership framework and achieve the buy-in of our staff
- Explain ‘lean’ practice and change behaviours
- Be able to demonstrate savings to other supply chain members.

## How the CLIP process worked for us

From the outset, we had agreed that we would have an open mutually-supportive relationship. This means open books and honesty about our issues. From this we had decided that a new approach to selling and delivering the product was required.

So, we held two workshops run by a CLIP facilitator. These were attended by the Taylor Maxwell cladding sales team and we involved their directors to create buy-in from the top.

The first workshop used a simple questionnaire and feedback to build a list of values and cultural elements on a flip chart. This was to define how the virtual team would work. This was subsequently used to create the partnership agreement.

We weren't surprised to find that the salesmen were cynical about the process. And it's probably true to say that a third of them still are. This is going to be a slow process and it will be seeing the success of others that will change their minds.

The CLIP facilitator got everyone to join in a building simulation exercise to demonstrate the inherent waste in the traditional approach to construction. It was quite a bit of fun because it used stickle-bricks to build a specific shape. These require an accurate specification and can't just be ‘lobbed together’. It focused people on the process and the financial constraints of the virtual team.

This exercise illustrated perfectly that off-site fabrication can eliminate significant waste all through the supply chain. It showed the need to understand the drivers and where the ‘value-added’ lies for the client and designer in making fundamental design decisions and for the contractor on-site.

*‘The way forward is to improve profitability – waste anywhere has a cost. CLIP helps you to identify this – it doesn’t mean that you have to increase turnover to be more profitable’*

*Paul Richards of Taylor Maxwell*

These are the areas where our sales team has got to be able to discuss the wastes that can be eliminated.

In the second workshop we brought in a client, an architect and a contractor to endorse the ‘lean approach’ to construction. Their message was to think big and look further up the supply chain – not just what happens on site. They helped to convince everyone that this was the way forward and that things have to change, especially when they identified the role of ‘middlemen’ (like brick distributors) as a potential waste!

The whole point of the workshops is that the team members have to become evangelists for ‘lean construction’. With the savings we expect to create for others, we can both improve our profits without pushing down margins to sell more.

### How we benefited from this initiative

We now get the sales team to put over the CLIP values early enough to designers, so that they see the benefits that can be achieved with the FI Systems product. We have seen the level of enquiries increasing and we actually started generating income from the system in 2005.

As a virtual team, it has helped us achieve better control over our actions and to cut out anything wasteful. We continue to meet regularly and to spend time with the salesmen more on a ‘one-to-one’ basis, to reinforce the message individually. It is a drip-drip process with constant reminders.

### How we plan to use the skills & lessons learned

We have only run two workshops, although there have been a lot of meetings in between. We felt constrained about taking the people ‘off the road’. But it might have been better to have more workshop time – purely because we started from scratch.

Over time we hope to distinguish Taylor Maxwell as a specialist lean solution provider for cladding in the construction industry, rather than as simply a brick distributor, where margins are traditionally low. We are taking a long term view and are prepared to be open with each other on this journey. There will be problems to be solved as we keep going round the continuous improvement cycle. It’s a team development process of forming, storming and performing.



*The cladding system in use on a Tesco superstore extension*

### LEARNING POINTS

- Don’t be too ambitious in what can be achieved in a given time. Prioritise the messages and the things that you want to get out of a CLIP workshop. Focus on what’s important.
- Look at the whole supply chain and not just at the site processes, particularly to influence the early design decisions.
- Involve senior people in the business to get their buy-in and support.
- Use practical simulations in the CLIP workshops to demonstrate the benefits.
- Make sure that the improvement cycle never stops.

## JARGON BUSTING BOX

### ■ **7Ws – look for seven wastes that can never be added value:**

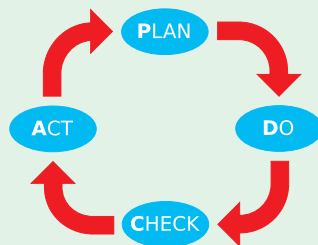
- Motion    ■ Transport
- Waiting    ■ Overproduction
- Defects    ■ Unnecessary inventory
- Inappropriate work or processing.

### ■ **5Cs – check these to lay the foundations for continuous improvement:**

- **Clear out** – separate the essential from the non-essential
- **Configure** – a place for everything, and everything in its place
- **Clean & check** – assess the current condition of the environment
- **Conformity** – ensure standard easily maintained
- **Custom & Practice** – ensure everyone follows the rules.

### ■ **THE PLAN-DO-CHECK-ACT (PDCA) CYCLE –**

a way of thinking which encourages continuous improvement



### ■ **THE CLIP – ‘standard structured approach’ – which is made up of four main stages:**

- **Pre-diagnostic** – setting the aims and training the team in lean tools and techniques
- **Diagnostic** – practically applying the tools to analyse the situation
- **Improvement activity** – looking at the data for opportunities to improve processes
- **Follow up** – identify barriers to success and set improvement actions in place.

### ■ **VISUAL CONTROL –**

a major part of the CLIP process is to use visual tools to display data, highlight improvements and record ideas. These include:

- **Key Performance Indicators** – are the measure of performance of activities that are critical to the success of an organisation
- **Pareto Chart** – a comparative bar chart that shows the number of defects for each chosen area of work, and the cumulative total of defects over the whole project
- **Fishbone Diagrams** – are used to identify the possible causes of problems. Start by defining the problem to be investigated and write it down. Then draw lines (bones) to represent each cause that runs into it. Finally you can brainstorm what is actually the cause of the problem
- **Priority Matrix** – a quadrant chart used to prioritise which improvement areas to focus on first. For example, you can place activities that will have a high impact at a low cost in one quadrant and focus on these first.

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# ELEVEN CASE STUDIES

Profit together from process improvements



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## Construction Lean Improvement Programme

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