

DESIGN AND CONSTRUCTION OF SIX PRIMARY SETTLEMENT TANKS AT THE ESHOLT WASTE WATER TREATMENT WORKS IN YORKSHIRE.

THE CLIENT: YORKSHIRE WATER

THE CONTRACTOR: MOTT MACDONALD BENTLEY LTD.

MOTT MACDONALD BENTLEY USED CLIP TO IMPROVE PROJECT DELIVERY, WHILE MAKING VERY SIGNIFICANT TIME AND COST SAVINGS ON A MAJOR CIVIL ENGINEERING PROJECT.



Terry Sadler, General Manager – YWS Large Schemes, Mott MacDonald Bentley, explains how CLIP helped the company to achieve a right-first-time approach to design and construction, while building a strong, committed and well informed team.

BACKGROUND TO THE PROJECT

Mott MacDonald Bentley (MMB) is a joint venture – set up to provide innovative services to Yorkshire Water – between the Mott MacDonald Group, an international management, engineering and development consultancy, and North Yorkshire based civil engineering contractor, J N Bentley.

WHAT ATTRACTED US TO THE CLIP PROGRAMME

With Yorkshire Water we met CLIP programme director Martin Watson to find out more about the programme. CLIP appeared to be a good way of helping us to meet our improvement goals so we decided to try it out.

WHAT OUR AIMS AND EXPECTATIONS WERE

We wanted to change the way we traditionally delivered this type of project, to ensure that commissioning would lead the design, and that the design would be tailored to suit the preferred construction methods and conditions. This meant that the construction manager, the designer and the end user all had to be involved in the design and planning of the primary settlement tanks (PSTs) – we felt that the CLIP approach would help to make this happen.

HOW THE CLIP PROCESS WORKED FOR US

All those commissioning, designing, constructing and operating the waste water treatment tanks were represented at a series of CLIP sessions (the Lean Processes Masterclass). These were facilitated by a CLIP engineer who gave hands-on advice and worked with us to make practical improvements.

The CLIP engineer guided the team through detailed examinations of the delivery processes, using process diagnostic, sequence mapping, collaborative planning, risk assessment and other CLIP tools. These enabled us to plan the design of the tanks with a complete understanding of their construction and commissioning in mind.

CLIP sessions to carry out construction sequence mapping from first principles, for example, helped us to identify and challenge people's assumptions about the project, establish the most efficient path to deliver it, and ensure a common understanding of the processes involved. These and other sessions gave all of us a greater understanding of the project's constraints and each other's issues, and fostered good relationships among the team. The building of relationships between all parties is a key aspect of the CLIP approach, and helped us to discuss and resolve issues in an efficient and amicable manner.

HOW WE BENEFITED FROM THIS INITIATIVE

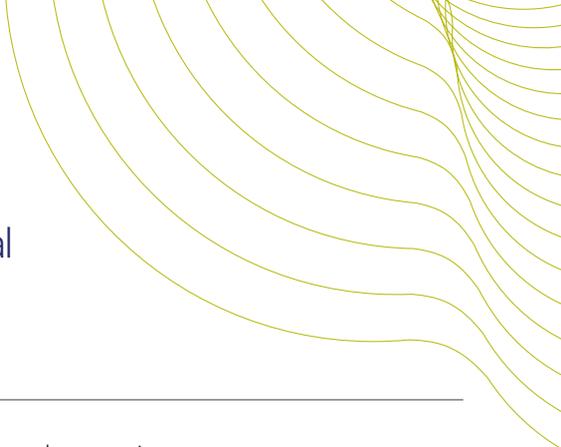
CLIP helped us to co-ordinate and prioritise design activities so that they meshed smoothly with the construction programme, while fully meeting the client's requirements. It fostered a right-first-time approach, facilitated decision making and helped to ensure that the project was delivered on time and on budget. Having the site information fully understood and the construction sequence known allowed the design team to be less risk adverse.

The CLIP sessions led to some very important savings throughout the course of the project. Perhaps most importantly, the civil construction of the primary tanks at Esholt was delivered four weeks ahead of the original programme, with a very substantial saving on the budget for this element of the work.

Another one of the biggest savings associated with the CLIP process involved a significant reduction in the amount of concrete used. After careful analysis, base thicknesses were reduced from 700mm to 400mm in all of the six tanks, saving approximately 1800m³ of ready mixed concrete.

FUTURE USE OF CLIP

Following the success of the CLIP approach at Esholt, J N Bentley has taken the collaborative planning and visual mapping tools onto other areas of the business. These are used now for both strategic and project planning in our framework contracts and also at project level.

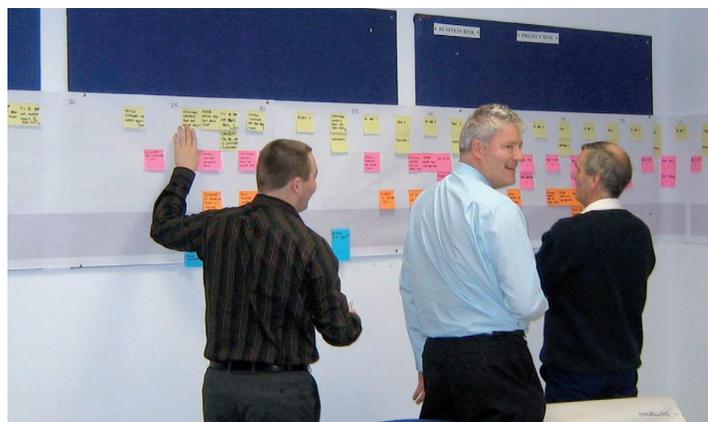


'The CLIP process helped us to forge a strong team with a complete understanding of the construction and commissioning issues involved in the project. This directly contributed to very important time, material and cost savings, and to a high level of customer satisfaction.'

Terry Sadler, General Manager – YWS Large Schemes, MMB

Detailed CLIP analysis allowed significant savings on the use of ready mixed concrete

CLIP sequence mapping of the tank construction



KEY SAVING

The civil construction of six water treatment tanks was delivered four weeks ahead of an already tight original programme, giving a 10% saving on the budget.

KEY LEARNING POINT

It is well worth putting the necessary effort into collaborative planning and detailed construction process reviews, because these allow savings to be identified at points in the programme when they can actually be made, rather than being spotted later on when it is too late.

AN INTRODUCTION TO CLIP

The Construction Lean Improvement Programme, or CLIP for short, is a new approach that aims to boost performance and profitability.

Over the last four years CLIP has been adapting lean tools and techniques for use in the construction industry. CLIP has worked successfully with more than 100 construction companies across the construction supply chain, with most achieving productivity improvements of up to 50% in key processes.

"CLIP was very beneficial in building relationships, helping everyone to understand the issues and constraints, facilitating decision making, ensuring the design suited the construction process, and fostering confidence in the design and construction."

Matthew Caudwell, MMB Design Manager

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.

The heart of each company's CLIP programme consists of a tailored improvement activity built up of our 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.

In this case study we feature the use of the 'Lean Processes Masterclass'. This looks at ways of improving 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.