

Importance of effective communication in construction



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Introduction

Civil engineering works are not just the building of structures, but they provide a livable and safe environment for society. To make it all work, the disciplines involved must be in constant communication. They cannot work in isolation and must communicate with other civil engineers and professions and also be able to communicate with society. When communication fails it will have a negative effect on the works.

Defining communication

In the Oxford Dictionary the word 'communication' is defined as "to share or exchange information", and the word 'effective' is defined as "producing an intended result". For a civil project, effective communication can be defined as 'communication between inter-disciplines, which produces a structure that is designed to be safe, serviceable and economic, and constructed to be on budget, time and to the customer's satisfaction'.

In order for communication to be effective a common language must be used which is understood well by the various disciplines. In communication between two parties, there are four key components involved:

Transmitter: person with information

Receiver: person to whom information is directed

Medium (nature of information): words (written and spoken), drawings, figures, symbols, codes, graphs, diagrams, charts, etc

Channel (method of communicating information): meetings, documents, email, telephone, video link, projector slides, etc

For communication to be effective, information should flow in both directions because the receiver may not be listening to or reading what is being communicated. There must be a response from them to know that the person has both received the message and understood it².

The nature of Civil Engineering works

Compared with products manufactured in factories, where most if not all the design and production stages are carried out by a single company and the end products are the same, civil engineering works are manufactured on site with a number of different disciplines involved in the process at different stages of design and construction. These works are always made to the customer's specifications, making them unique for each project.

With so many different disciplines³ involved, there is an important need for effective communication between them for any project to be successful. For example, the customer must communicate their needs to the consultant engineers. The consultant engineers must understand the customer's needs and interpret them into a design. Then, once the plans have been developed and a bid has been taken, the contractor must understand the plans and communicate the plans to the sub-contractors.

The importance of effective communication during civil works

As said by Peter Rogers " How many projects go wrong because somebody has a vision at the top and the people beneath destroy it because they either

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do not believe in what is being created or the ambition has not been communicated to them?" 4

Effective communication is a means to an end, which is fundamentally a project delivered on time, on budget and to an agreed quality. So, where there is a breakdown in communication the opposite is likely to occur. In the UK this has left a bad reputation of the construction industry with the client and as has lead to an increase in disputes with many of cases ending up in court.

In 1992 this increasing trend prompted the Conservative government to assign Sir Michael Latham, a former MP with experience of the construction industry to investigate. In 1994 he published his report called ' Constructing the Team'5. One of the recommendations he made was the need for improved team-working, which highlights a need for improved communication between team members.

A few years later when the Labour government came into office in 1997 they set up ' The Construction Task Force'. It was made up of a team of ten industry clients6 who were to advise on ways of improving the quality and efficiency of housebuilding. They mentioned seeing the industry " typically dealing with the project process as a series of sequential and largely separate operations undertaken by individual designers..." 7.

In 1998 the Construction Task Force presented their report (commonly known as The Egan Report). Based on their findings they recommended five key changes that were needed for improvement in the construction industry:

- Committed leadership
- A focus on the customer
- Integrated processes and teams
- A quality driven agenda
- Commitment to people

It can be seen from their recommendations that a crucial element for any of them to be successful is the ability to communicate and listen effectively and although the Task Force looked specifically at housebuilding, their findings can be applied to civil works as well.

It has been over ten years (currently 2009) since the Construction Task Force's recommendations. Looking at the performance of the construction industry in last 5 years, it can be seen that there has been improvement but a lot is still needed. A summary of the performance of the construction industry from 2004 to 2008 is shown in Table 1. 1. Client product satisfaction has been at 80% or above for the last five years, but this also means that 1 in 5 clients have not been mostly satisfied with the final outcome of their project. Also the figures for defects last year show that approximately one third of defects had a negative impact on the client.

Case Study 1: Wembley Stadium

The Wembley stadium project is an example of how clients, contractors and sub-contractors can fall out due to poor communication or the lack thereof, which can cause the project to go over budget and time. The client who is Wembley National Stadium Ltd originally selected Bovis Lend Lease and Multiplex to both design and construct the stadium, but negotiations broke

down over costs. Multiplex then independently offered a cheaper tender to the client for a fixed price of £326 million, which in September 2000 was accepted by the client¹⁰. However, the price gradually increased to £445 million after detailed specifications were made.

Bovis believed the client had broken the public sector procurement guidelines and that the project should have been retendered.

The government commissioned a report to investigate the issue and concluded that retendering would have harmed the project even further in respect to time and money and believed it was not practical to have retendered. But the report also stated that the client:

- Failed to follow a formal procurement process, including creating proper documentation
- Carried out two procurement processes at the same time, making it difficult to have competitive procurement
- Had meetings and conversations with Multiplex before a formal procurement process

There were also other problems. Multiplex complained that the client had made 600 design changes to the contract and there were disputes such as the definition of practical completion. There were delays with the raising into position of the arch. Multiplex said that the delays and other troubles were the result of the subcontractor Cleveland Bridge's late and defective design of fabrication work. Cleveland Bridge said that the delays and other troubles were because of too many variations or the late supply of information by Multiplex or by the structural engineer, Mott MacDonald Limited.

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Case study 2: Heathrow Airport Terminal 5

On 27 March 2008 BAA opened Terminal 5 after six years of work, costing £4.3 billion. The project was a success in terms of being built on time and within budget. However, on the first day of opening there were problems with the baggage system. The baggage system failed and so over 23,000 pieces of luggage needed to be sorted manually. At a press conference just two weeks earlier, BAA's strategy director said "We have a world-class baggage system that is going to work perfectly on day one".

An investigation into why these problems occurred was undertaken by the House of Commons Transport committee. They found that most of these problems were caused by two main factors:

- Insufficient communication between owner and operator, and
- Poor staff training and system testing

During their inquiry the national secretary for aviation, told the committee: "members and shop stewards locally had been raising concerns both within BAA and BA for a considerable period in relation to the opening of Terminal 5", but that "no consideration was given to the response from the trade union side". 11

A shop steward working for BAA said that union representatives: "said to the company that the way it was going would not work. Based on our own experience having worked there for years no technology can take that away. we said that they must listen to what we said and do it this way, but we were told that, no, it was a state-of-the-art building and everything would work and be all right". 12 The Chief executive of Heathrow BAA said that if he

could rewind time, he “ would focus resolutely and determinedly on keeping British Airways and BAA in the same room tightly together”. 13

Methods to achieve effective communication

According to research carried out by Court, Culley and McMahon¹⁴, the method of communication has an effect on the richness of the information received and processed. Table 1. 2 shows the various methods of communication and the levels of richness of each.

Table 1. 2 shows that the best method of communication is verbal, such as in meetings. With verbal communication immediate feedback is received. Information flows in both directions and new issues may be introduced by either party. Meetings are an essential part of effective teamwork and are probably the most important time where designers and constructors work together. They can be said to have two main functions:

A social purpose – where team members become familiar with one another and one another’s ways of working,

A business purpose – for communicating information and agreeing actions.

For meetings to be successful each must take time to listen to the other, and remove prejudices. We are all individuals and have our own ways of working and communicating with others. What is needed is the desire to communicate and the passion to build something that is good. By sharing information between members, a team is able to make best use of its combined knowledge.

Good communication in meetings also depends on individual's being able to understand what is being said. The use of terminology which is not understood by others outside the profession risks poor communication and misunderstanding. A language must be found which is understood well by all parties.

Integrated teams

An integrated team which was one of the recommendations of the Construction Task Force is another effective method of having team members talking to each other. Multidisciplinary companies like Arup or Amec have the advantage of the different disciplines working for the same company and in the same building. Typically the members of the project work on the same floor in an open plan office making it easy for communication and ideas to be exchanged between the different team members.

Computer programmes

As the old saying goes 'A picture is worth a thousand words', in the same way computer programmes such as CAD can be used to produce 2D and 3D drawings, which can then be communicated to other project members. There is industry standards in terms of symbols and legends used on drawings so that everyone is able to understand what is being communicated. CAD drawings can also be sent electronically to the other team members so that they are able to view the same information and develop their information onto the design. They are also able to analyse the structure and its connection with other structural elements and make any adjustments if necessary.

Case Study 3: MidCity Place, London

MidCity Place, an office development in London took 57 weeks to construct, which according to the developers Stanhope Plc is half the industry average build time and at a cost 20% lower than the market average for a building of its quality¹⁵. The project was completed in December 2001, eleven weeks ahead of schedule and within budget.

The contractors Bovis Lend Lease and Stanhope developed a logistics process based on experience in the car industry. The logistics programmes scheduled all the components in their sequence in the construction and put this information into 3D modelling software. The programme modelled the building and its assembly and also allowed them to find glitches in the delivery and construction sequence.

The techniques used on MidCity Place are now being used on other Stanhope/Bovis Lend Lease projects, where they are being developed further.

Education

Educating students at an early stage is important in order to allow them to enact the roles they will need to fill when entering the industry. From experience, this is currently being achieved by methods such as group projects, presentations and subjects such as Civil Engineering Management.

Although these methods do improve the personal skills of an individual there does not seem to be any formal subject in developing communication skills. It seems that communicating ideas is left more as an art that needs to be

developed individually by students, than something that can be learnt academically.

There are postgraduate courses such as Interdisciplinary Design for the Built Environment (IDBE) run at Cambridge University or the Project Team Leadership Programme run by Design Build Foundations and Henley Management College, which broaden the education of graduates to getting the industry communicating and working together.

Conclusions

Communicating information is just as important as the information that is being communicated, without which no progress can be made and ideas will remain just that.

A lot of time is spent communicating during civil projects. It is in the interest of all those participating in a project to develop effective forms of communication, as a breakdown in communication can have not only time delays and cost overruns, but also harm a company's reputation and/or even bring financial ruin.

References

1. Payne, A. C, Chelsom J. V and Reavill L. R. P (1996), Management for Engineers, John Wiley & Sons, England, Pg 192.
2. Ibid, Pg 193.
3. These professions are typically the Client, Civil Engineer, Contractor, Sub-contractor, Manufacturer, and also the general public.

4. Spence R, Macmillan S & Kirby P. (2001), Interdisciplinary design in practice, Thomas Telford, London, Pg 28.

5. Latham, M. (1994), Constructing the Team, HMSO, London.

6. The members of the Construction Task Force (circa 1998):

Sir John Egan (Chairman), Chief Executive, BAA plc,

Mike Raycraft, Property Services Director, Tesco Stores Ltd,

Ian Gibson, Managing Director, Nissan UK Ltd,

Sir Brian Moffatt, Chief Executive, British Steel plc,

Alan Parker, Managing Director, Whitbread Hotels,

Anthony Mayer, Chief Executive, Housing Corporation,

Sir Nigel Mobbs, Chairman, Slough Estates and Chief Executive, Bovis Homes,

Professor Daniel Jones, Director of the Lean Enterprise Centre, Cardiff Business School,

David Gye, Director, Morgan Stanley & Co Ltd,

David Warburton, GMB Union.

7. DETR (1998) Rethinking Construction: the report of the Construction Task Force July 1998, Pg 13.

8. Ibid, Pg 12.

9. Ibid, Pg 4.

10. Morton R, revised by Ross A (2008), Construction UK, Introduction to the Industry, Blackwell, Pg 145.

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12. Ibid.

13. Ibid.

14. Court AW, Culley SJ and McMahon CA. (1997), The Influence of information technology in new product development. International Journal of information Management, Vol. 17 N0. 5, Elsevier, Pg 359-379.

15. www.stanhopeplc.com, MidCity Place (2009).

16. Office for National statistics (2008), Construction Statistics Annual No. 9, Palgrave.