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Snatching Victory from the Jaws of Defeat

Can Lessons from the COVID-19 Crisis Help Reduce Design-Related Disputes in Construction?

Introduction

Recent advances in technology have brought about significant improvements in how we deliver construction projects. However, design-related failures remain stubbornly at the heart of construction disputes.

Despite numerous initiatives over the years, design errors, omissions, and late submissions continue to be a principal cause of disputes in construction.

But why should this be the case? And does technology have a further role in finding a solution? Might the changes in working practices brought about by Covid-19 lead to a long-term change in approach to design, and what impact might this have on the construction industry?

The CRUX reports and the insight they offer

In 2018, HKA issued its ground-breaking Crux Insight Report – “Claims and Dispute Causation – A Digital Perspective”. This provided detailed analysis of claims and disputes in major capital projects around the world. This was followed a year later by the second Crux report entitled “Claims and Dispute Causation - A Global Market Sector Analysis” which provided an updated and refined analysis based on a larger dataset.

Between them, the two reports provided a detailed insight into the complexities of dispute causation, identifying and ranking key causal factors and commenting on appropriate measures to address and reverse identified trends.

Analysis of the data identified that design issues ranked highly as matters which led to disputes between contracting parties. Three particular causation factors relating to design appeared time and again: incorrect designs, incomplete designs, and late design issue. Combined, they top the league table of dispute causation.

Why does design continue to be a primary cause of disputes?

The list of reasons why design issues are so often a cause of disputes is long and complex, and this makes it difficult to identify any correct primary cause. Furthermore, the way in which design is executed has changed considerably over time - solving some problems but creating others.

For example, the introduction of Building Information Modelling (BIM) has enabled better collaboration and communication, improved clash detection, more accurate programming, better project visualisation, and an ability to resolve issues before they reach site. In time, this will lead to improved accuracy and more timely delivery.

On the downside, procurement strategy has become increasingly fragmented in recent decades, with design services often re-tendered at each stage (concept, preliminary, detailed), resulting in a loss of continuity of personnel through the process. Furthermore, nowadays we all tend to change job much more frequently than our forebears. The days of working for one company from college to retirement are largely gone. This can lead to a significant loss of project knowledge by the time a project reaches site.

Focusing resource on design to reduce disputes

Typically, the cost of design is only a small part of the total cost of a construction project, and smaller still when the whole lifetime costs are

considered. But the impact of correcting errors may be disproportionately high, with some studies suggesting that a 20% increase in costs due to design errors is not unusual. This dwarfs the typical profit margins generated by the industry. So, if clients wish to identify where to target resources for the best outcomes, they need look no further than the design stage!

Design is invariably complex and involves the inputs of multiple parties and interests. Typical examples of the problems which occur repeatedly are:

- Clashes between technical disciplines.
- Clashes with existing infrastructure and services.
- Items omitted.
- Items designed but not transferred onto drawings.
- Calculation errors.
- Ground conditions not properly understood.
- Inexperienced designers.
- Insufficient checks.
- Insufficient time.
- Late changes.

Can digitisation reduce design as a primary cause of disputes?

The increased use of BIM in the construction industry has promised significant improvements in the design process. As a method for creating and managing information on a construction project throughout its lifecycle, the BIM model is the whole project in electronic form. It is not simply another tool - it is a different way of working. It is a database and a method of communicating. Its benefits extend to all users of the model and to all stakeholders.

Used correctly, BIM has the ability to reduce errors and clashes. These may be: hard clashes – for example, an elevator that doesn't fit in the shaft constructed for it; or soft clashes – such as permanent works that intrude into a maintenance zone, or clashes in time – perhaps the inability to install cladding because scaffolding is in the way. Such errors could be identified much earlier in the design process and certainly before they delay or disrupt progress on site. With a comprehensive digital model of the design, such problems should eventually be eliminated.

BIM also enables us to look at more options, obtain answers faster, coordinate between disciplines, share information effectively, and to give managers better control. All of these should help reduce errors.

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One significant advantage of BIM is the ability for designers to access the model from anywhere in the world at the touch of a few buttons. The need to assemble a design team in a project office is much reduced. The BIM model has become the project office!

Properly used, BIM should furnish the design manager with a greater level of control, and better control equals less mistakes. But care must be taken to ensure that increased use of BIM does not blur the lines of responsibility between the stakeholders, particularly the designer and the contractor.

In addition to BIM, other technologies are also driving change - increasingly complex scheduling software, virtual reality, centralised remote documentation management systems, drones for surveys and inspections,

etc. The use of enhanced systems for records production and retention, both for project management and archiving purposes, is tackling the construction industry's reputation for poor record-keeping, which has historically fuelled otherwise straightforward issues of dispute.

Many of these new technologies enable design to be progressed simultaneously by multi-disciplinary teams disbursed around the globe on an almost 24/7 basis. As the sun sets in the far east, it rises in Europe, followed by the Americas, and then back to the far east again, enabling design to be a continuous process.

Furthermore, technology enables all stakeholders to be brought together - not just different technical specialists, but contractors, suppliers, and end-users. Rather than each interested party developing its input independently, the process of design and reviews becomes collaborative and coordinated. It facilitates multi-disciplinary input from the outset by all parties rather than a design being prepared first and then circulated for comment. This encourages a 'right-first-time' approach and reduces the need for amendments and corrections.

Will the Covid-19 outbreak accelerate change?

The Covid-19 outbreak in the Spring of 2020 has had a greater impact upon contractors than designers. Social distancing rules forced the mothballing of many construction sites worldwide, but the traditional design offices of decades past have, thanks to the advance of technology, given way to a more flexible environment where remote working has temporarily replaced the company office, and 'Zoom' and 'Teams' have replaced conventional meetings. Many design consultancies have not only survived but thrived under this new method of working.

So, could this temporary situation become the new permanent? Although many currently home-based designers may be yearning for the social interaction of an office, few will miss their commute and its associated costs, or the discipline of office hours, business attire, etc. Furthermore, given the high cost of fixed office space, employers will be scrutinising productivity levels over this period of enforced isolation and asking whether the traditional working approach is now ripe for change? Location is no longer critical to many jobs. Those office-based staff who previously enjoyed working the occasional day from home may, in future, just work the occasional day in the office.

As to how extensively this occurs, as always in business, the answer will be determined by the economics. But the current crisis has demonstrated that alternative working methods are not only possible, but considerably advantageous - reduced costs, improved communications, and even happier staff.

Why should this reduce design-related disputes?

Covid-19 has revolutionised the way in which we work, with the use of technology for communications rising to new levels. In many cases, project design has continued undisrupted as the digital design model sitting on a central server may be worked on by anyone, anywhere, at any time. Ten years ago, most designers would have been furloughed! Digitisation through BIM combined with modern communications technology has saved many designers from this fate.

With Covid-19 a new era has dawned. Much of the technology that hitherto had just been useful is now essential to daily business. Teleconferences are now several per day rather than a few each week. With the right hardware

available, designers can now execute their trade from the kitchen table as easily as from the company office.

In the struggle to reduce design-related disputes in construction, this increased reliance on the technology can only have benefits. Technology provides the opportunity to document and record processes and procedures, check for mistakes, identify errors. BIM does more than just detect clashes in designs - it improves coordination, it reduces drafting errors, it encourages teamwork and cooperation, enables checks on practicability and constructability, and facilitates information sharing. All these factors collaborate to reduce error and delay – and hence to reduce disputes. The more commonplace they become in the construction industry, the greater the reduction in design as the cause of disputes.

It would be stretching matters to suggest that Covid-19 will lead to the elimination of errors in design, but history may yet credit it for accelerating progress by a decade or so.

Conclusions

Erroneous and late designs continue to be primary cause of construction disputes. Digital technology offers a way forward as it can eradicate many human errors and introduce processes directly focused on quality and timely delivery. In so doing it has the potential to considerably reduce industry's costs.

Currently there exists insufficient historical data to demonstrate the effectiveness of digital technologies in reducing construction disputes. However, in time, HKA's Crux database will have the potential to identify developing trends by applying year-by-year analyses and provide evidence-backed outputs to demonstrate the impact of technology on disputes.

Dispute reduction relies on change in working practices, and Covid-19 has forced the pace of such change. Remote working has demonstrated how communications technology can enhance delivery.

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