

driver THE DIGEST

Issue 10 | September 2015



Experts and expertise





Welcome to the Driver Group Digest

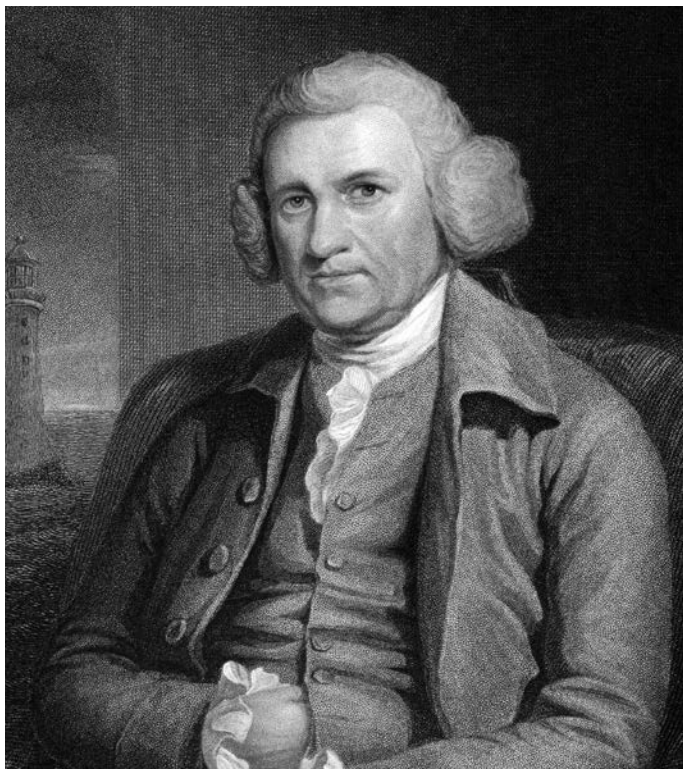
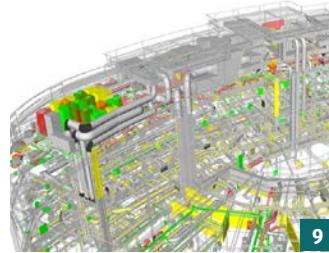
Welcome to this edition of the Digest, which has a particular focus on all things Expert. Those of you I have met, will hopefully have realised that current workload has not dramatically aged me and the image below this introductory paragraph is not in fact my photograph! The gentleman in question, is Mr John Smeaton. Well known as a pioneering Civil Engineer, Mr Smeaton is also distinguished as being the first expert witness, when he appeared in 1782 regarding the silting up of the harbour at Wells-next-the-Sea in Norfolk. Experts now provide essential support to courts and tribunals deciding matters that include complex and technical issues all over the world. This issue touches upon the high expectations the industry has of its experts, and the increasingly high number of standards that our experts must comply with, which vary from jurisdiction to jurisdiction.

Bob Breeze provides us of some good

and bad examples of experts in court, and David Bordoli makes the important case for the use of plain English and simple words, for which I offer him my sincere contrafibulations. Damian James looks at quantum expertise from our operation in South Africa and Philip Allington discusses the challenges in assessing the effect of variations. Our Architectural expert, Stuart Macdougald-Denton looks at the cutting edge topic of Building Information Modeling and its effect on construction costs. I wonder what John Smeaton would have made of that?

I hope you enjoy this edition, and would just like to remind you that we are always open to articles from external contributors. The digest is published to over 30,000 construction professionals across 17 countries. If you would like to contribute, please contact us.

Mark Wheeler - Head of DIALES



CONTENTS

■ Welcome to the Driver Group Digest	P1
■ The critical path of experts	P2
■ Word up...You know what I mean?	P3
■ Quantum jump - the lone ranger	P5
■ Assessing time effects of variations and change in quantities	P7
■ Realising BIM savings in D&B contracting	P9
■ Game of cranes	P11
■ Q&A: Ron Fernandez	P12

The critical path for experts

ROBERT BREEZE - DIALES EXPERT, EXPLORES THE POTENTIAL PITFALLS FOR AN EXPERT WITNESS WHO WILL NOT ADHERE TO CLEAR GUIDELINES FOR EXPERT BEHAVIOUR, OR WHO SUBMITS TO ONE OF THE ROLE'S VARIED PRESSURE POINTS.

Someone once described an expert to me as an 'Ex' or 'Has Been' and a '(S) purt' or 'Something under pressure'. In other words a 'Has Been under Pressure!' However, a more accurate definition might be, 'One who has made the subject upon which he speaks a matter of particular study, practice or observation: and (s)he must have a particular and special knowledge of the subject'¹.

There is no doubt that acting as an expert witness in a dispute brings with it considerable pressure, especially if appearing in a public hearing in court. Recently, some who chose to accept this challenge may now regret doing so, given the criticisms which were heaped upon them by the courts.

These days courts expect a higher standard from experts, whose primary duty is to assist the court and not the party paying them. It seems when some experts fall well short of achieving that

standard, some judges will not shy away from publicly criticising these experts in their awards. Such criticism can often be the end of a career as an expert for those who are on the receiving end.

In the UK, the role of an expert is clearly set out in the Civil Procedure Rules (CPR) Part 35 and Practice Direction (PD) 35 but, in addition, there are other factors which an expert must take into account such as professional bodies' guides and rules, case law, and other legal protocols, etc. These flow out of the "Ikarian Reefer" principles first established in 1993². However, in the examples below, an expert was found wanting in this role and the courts did not hold back on sharing their criticism of the experts in their awards.

So, when next tempted to embark down the path as an expert witness, it would be worthwhile bearing in mind the potential critical consequences of



"Perhaps you would like to rephrase your last answer."

failing to achieve the high standards now expected from experts by the courts and tribunals; and also to handle the pressure of the situation as calmly and even handed as possible. Good Luck. ■

¹ Stroud's Judicial Dictionary (7th edition) referring to the case of Dole v Johnson, 50 N Hamp 454.

² National Justice Compania Naviera SA v Prudential Assurance Company Limited [1993] 2 Lloyd's Rep 68.

Duty to the court

In the case *Gareth Pearce v Ove Arup* [2001] EWHC Ch 455, the Honourable Mr Justice Jacob stated of an expert that, "... [Mr X] said that he understood that [CPR] duty. I do not think he did. He came to argue a case. Any point which might support that case, however flimsy, he took. Nowhere did he stand back and take an objective view..."

Focus on the facts, don't exaggerate

The courts are, however, more than happy to praise an expert when (s)he does achieve the high standards now expected. As in the case of *Weatherford Global Products v Hydropath Holdings Ltd and Others* EWHC 2725 (TCC), where Mr Justice Akenhead said he preferred the claimant's expert as being, "...far more the qualified...with weighty academic backgrounds both as a physicist and an electrical engineer [and] specific experience over many years in the oil and gas industry ... impressive...quietly spoken but straightforward and down to earth" and that he gave evidence in "a very measured way, he was not prone to exaggeration... eminently credible".

Know your subject

In *SPE International Limited v Professional Preparation Contractors (UK) Ltd* [2002] EWHC 881 (Ch), Mr Justice Rimer said, "...with respect to [Mr Y], I doubt if there has often been an expert less expert than he... [His] main difficulty is that he has no relevant expertise... [Mr Y's] ignorance in what was required of him was compounded by that fact that, until he gave evidence, he had never heard of, let alone read, part 35 of the CPR. He...performed his task with manifest incompetence."

Incompetence is not an excuse

Finally, in *Hirtenstein v Hill Dickinson* (2014) EWHC 2711 (Comm), Mr Justice Leggatt criticised both experts but specifically stated "At the end of [Mr Z's] evidence, I offered him the opportunity to provide an explanation to the court before the end of the trial of how an appendix had come to be included as part of his report of which he claimed to have no knowledge. [Mr Z] did not take up that opportunity, and I can therefore only infer that there is no explanation which exonerates [Mr Z] of incompetence. On his showing in this case I do not consider that he is a fit person to act as an expert witness."



Word Up...You know what I mean?

DAVID BORDOLI – DIALES EXPERT, EXPLAINS THE IMPORTANCE OF THE USE OF CLEAR LANGUAGE AS AN EXPERT WITNESS AND WHY JARGON FILLED, OVERLY TECHNICAL REPORTS DO NOT FULFIL THE EXPERT'S ROLE.

The evidence of an expert witness is primarily that given in an expert report; for example, in England and Wales CPR 35.5 (1) says:

Expert evidence is to be given in a written report unless the court directs otherwise.

It follows that what is written is correct and unambiguous and that its 'understandability' is of prime importance. Horne and Mullen in 'The Expert Witness in Construction' emphasise this:

The importance of setting out a report in a form that is clearly understood by not only the tribunal but also the parties, their advisors and other expert witnesses is particularly crucial in highly technical matters where issues of complexity need to be simplified, so that the layman can quickly and clearly understand them. This is especially important,

for example, in the case of programming analysis or structural design.

One of the more obvious requirements is to explain technical terms or 'terms of art', the meaning of which itself is not always clear:

A word or phrase that has a specific or precise meaning within a given discipline or field and might have a different meaning in common usage.

Jargon commonly refers to vocabulary used by specific professions or groups of people. It can be a quick and efficient way of communicating within a group but is likely to cause confusion or alienation to those who are not familiar with a specific term, which can render text meaningless. Experts are often accused of using jargon to impress, rather than to inform, where

there is a common alternative.

In 1996 Lord Woolf published his final report 'Access to Justice', of which one of the aims was to make the justice system understandable to those who use it and to modernise the language and terminology of the UK legal system. Gone are such terms 'plaintiff' and 'affidavit' to be replaced with 'claimant' and 'witness statement'. The avoidance of legalese, a form of jargon, in expert reports should also be resisted and the use of flowery language: 'furtherance', 'aforesaid', 'thereafter', and the like can be replaced with plainer English.

David Crystal in 'Speak, in the Name of the Law' said:

It's not the obviously technical terms, which can be a pain to understand. It's the

less obvious terms, the ones which have developed everyday senses, which turn out to be so persuasive – terms like 'cause', 'answer', 'process', 'title' and all the others.

The 2008 FIDIC Gold book, at clause 1.2 'Interpretation', goes as far as defining 'shall' and 'may'; presumably to avoid such ambiguity:

e) "shall" means that the Party or person referred to has an obligation under the Contract to perform the duty referred to; and

(f) "may" means that the Party or person referred to has the choice of whether to act or not in the matter referred to.

Experts should bear in mind the ambiguity of words that may have a legal definition and perhaps use a more relaxed

CONTINUED ON PAGE 4 >>

◀ CONTINUED FROM PAGE 3

plain English definition.

Programming specialists are particularly prone to the use of jargon; for instance, their use of 'Gantt chart' when they mean 'bar chart' and 'PERT chart' when they mean 'network diagram'. Such use of jargon is particularly troublesome, usually referred to as a misnomer; a misapplied, inappropriate or erroneous name or designation – or for those who wish to impress or confuse their audience, a catachresis! What happens when one expert misuses the term 'Gantt chart' but the opposing expert thinks they used the word correctly? Pat Weaver in 'Where did Misuse of the names Gantt and PERT originate?' cites Robert McCloskey, a US State Department Spokesman in summing up this quandary:

I know that you believe that you understood what you think I said, but I am not sure you realise that what you heard is not what I meant!

Experts should also beware of typographical errors in their reports. Academics such as Graham Rawlinson in 'The significance of letter position in word recognition', anecdotal evidence, and the advertising slogans of the clothing company French Connection in the UK all suggest that, so long as the first and last letters of a word are in the right place the rest can be in any order without causing too much confusion. Although that may be true, Keith Rayner in 'Raeding Wrods With Jubmled Lettres There Is a Cost' showed an 11% slowing when people read words with reordered internal letters. Mistyped

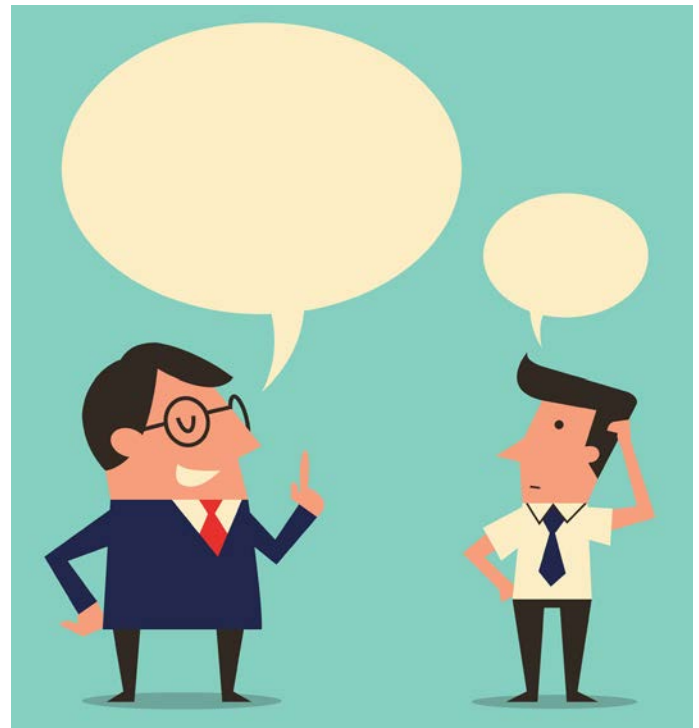
numbers though are a totally different matter, to the reader an incorrect number looks the same as a correct number.

Simplicity of language does not mean simplicity of thought or subject. Readers in the UK will not be surprised that The Sun newspaper's readability, assessed using the Flesch Reading Ease Test, was the highest of all the UK's newspapers (the higher the score, the easier to read) and The Guardian was scored as the least readable – perhaps in part due to its reputation for frequent typesetting errors in the era before computer typesetting. The Sun is not renowned for the complexity of its news presentation, but it is adept at simplifying items which are more complex for their readership. Simplifying complex concepts to aid understanding is one of the primary purposes of an expert's report.

Nathalie Kleinschmit¹ in 'The "Borderless English" Approach' says:

English is undeniably the main language of business worldwide. It is used for 75% of the world's mail, 80% of computer data and two-thirds of scientific documents. Mother-tongue English speakers number 300 million, a further 500 million use it daily.

Kleinschmit goes on to explain that the problem of understanding English by non-native speakers is not usually an issue until native English-speakers join the conversation and cause misunderstanding with their use of idioms and colourful expressions (such as 'up the creek without a paddle' and 'a Mickey Mouse operation') that, when taken out of the local context or literally, are meaningless. Similarly, a 'false friend' is a word that means



one thing in one language and has a slightly or completely different meaning in another. Phrasal verbs also cause misunderstanding to non-native speakers:

You can "look through a window" but also "look through a report". What are the differences between to "read over", "read through", and "read up"?

Driver Group's businesses operate globally, and many of us deal with lawyers, clients, and tribunals whose first language is not English. Kleinschmit's booklet 'Borderless English'¹ is essential reading for those who need to be aware of the language traps we can unintentionally fall into.

Abbreviations used in expert reports can also result in misunderstanding. Those familiar with a project and its terminology might know that PL2 refers to Penthouse Level 2; but, unless this is spelt out in the report, usually in the form PL2 [Penthouse Level 2], those not intimately involved in the project will not understand. Similarly, some common abbreviations are unknown in different countries. Almost everyone in the UK knows what a 'JCB' is; a small, wheeled excavator seen on every construction site, named after its manufacturer James C Bamford. However, in South Africa, JCBs do not exist; the equivalent is a TRB, a Tractor-Loader-Backhoe.

"I know that you believe that you understood what you think I said, but I am not sure you realise that what you heard is not what I meant!"

Robert McCloskey

The danger of using abbreviations, without knowing what they mean, was clearly illustrated in the 2012 Leveson Inquiry into, amongst other things, the culture, practices, and ethics of the UK press. Prime Minister David Cameron in his text messages to Rebekah Brooks, Chief Executive of News International, was wanted to sign them off 'LOL'. Cameron stopped this closing when Brooks explained it did not mean 'lots of love' but 'laugh out loud!' ■

¹ Nathalie Kleinschmit, 'Borderless English – A guide to speaking effective English Internationally' is available at http://www.global-ease.com/_pdf/GE_Speaking_Borderless_English.pdf.



Quantum jump - the lone ranger

DAMIAN JAMES – DIALES EXPERT, PROVIDES A SOUTH AFRICAN PERSPECTIVE, REVIEWS THE 'BALANCE OF PROBABILITIES' APPROACH TO QUANTUM ISSUES AND OUTLINES THE EXPERTS' OBLIGATION TO THE TRIBUNAL OR COURT.



The Interpretation of Quantum

Previously, this area of the law was predictable and would warrant a detailed analysis of submissions made to a tribunal. There has, however, been a significant shift in the approach to the interpretation of quantum; particularly where a tribunal has decided liability and where jurisdiction allows for a test on a 'balance of probabilities' basis.

Before, the test for determining all quantum issues was an audit trail of paperwork, diaries, invoices, certificates, bank statements, and the like; but the pragmatic nature of determining costs, following the attributing of liability to a particular party, is now in the hands and remit of

the experts representing the parties.

In this respect, the experts need to have regard to extrinsic evidence (i.e. surrounding circumstances) and avoid any ambiguous evidence, by considering the submissions and exchanges between the parties. The experts should conduct themselves and use all evidence available to determine a 'balance of probabilities' resolution on the quantum due. This would satisfy their duty to the tribunal.

The resolution and agreement of costs will very much rely on the experts' willingness to accept that 'a balance of probabilities' is the best method for resolution, with the tribunal having decided on liability and the method to be used, leaving the experts instructed to

resolve quantum.

The 'balance of probabilities' can be determined by a matrix weighting of the evidence by the experts; two pragmatic and experienced individuals should certainly be capable of such an interlocutory. The experts could give a weighting to particular records and evidence and, where the weighting exceeds 51%, the 'balance of probabilities' test can be said to have been satisfied. The experts can then agree a 'figure as a figure'¹ without having to consider their preferred method of substantiating the costs.

What would prevent the experts from agreeing? What is it that would make this task time consuming and laborious?

The experts have a role to fulfil and can make this process succeed or fail:

- a) Success is about the experts' willingness, their experience of such matters, the ability to sensibly interpret the evidence, and a desire to exercise their duty to the tribunal.
- b) Failure is about the experts' lack of cooperation and unwillingness to agree large or small issues; a desire for one up-manship by opening up unrelated areas to discussion, or a want to impress the tribunal and others with misleading answers on law or conjecture riddled statements; a reliance on pedantic observations and criticisms, a lack of commercial acumen, insecurity as to their own vanity, or the partisan approach of the experts represented as a hired gun or gunslinger referred to in this article.

The experts' duty is to the tribunal, they affirm such a statement in their reports, and they are not in the role:

- for vanity, notoriety, or stardom
- to impress the tribunal with their

THE BEST METHODS AND APPROACH FOR DETERMINING QUANTUM MATTERS ARE:

- a) The use of a sophisticated cost system that allows an audit trail of cause, effect, and entitlement.
- b) In the absence of a sophisticated system, the use of the records available should be the next alternative, for example invoices, payslips, diaries, etc. In a digital world it is sometimes difficult to understand the inability to satisfy the interrelation between records and costs, particularly when both parties understand the nature of the contract and how it will likely be performed.
- c) In the absence of either, and where the claiming party uses a global approach due to a genuine inability to extract cost information from its records, the parties should consider the background circumstances which explain the genesis and purpose of the contract, how records should have been collated, and what should probably have been in the minds of the parties when they contracted. If a genuine inability to produce the records to a satisfactory level exists and is accepted, the two experts need to act pragmatically.

CONTINUED ON PAGE 6 >>



CIVIL PROCEDURE RULES (CPR) AND PRACTICE DIRECTION (PD) FOR THE EXPERT WITNESS

- An expert's duties are set out in CPR 35 and PD 35.
- CPR 35.3 - An expert's overriding duties are to the tribunal.
- PD 35.3.1 - An expert's report should be addressed to the tribunal (and not to the party from whom the expert has received instructions).
- PD 35.2.2 - Experts must provide the tribunal with objective, unbiased opinions on matters within their expertise and should not assume the role of an advocate.
- PD 35.2.1 - A client's expert evidence must not be influenced by their legal advisors.
- PD 35.2.3 - The experts should consider all material facts including those which might detract from their opinions.
- The form and content of the expert's report is set out in full at PD 35.3.1.

« CONTINUED FROM PAGE 5

effusive love of the English language

- to detract from the tribunal's ambitions
- to maximise the benefit to their own client

In concluding the above, it is worth considering a number of cases, three from South Africa and two from the UK.

In South African law, there is a distinction between the admissibility and the probative value of an expert's opinion. Simply put, the tribunal has to decide whether the expert's submission is of any use to the issues before it. The procedural requirements of such submissions have been aligned and corrected by the requirements listed at law, but this issue of probative value remains undetermined.

In the Mashile 1993 (2) SACR 67 (A), an expert's opinion was found to be inadequate despite him providing an abundance of details on speeds, distances, and ranges of visibility.

Whereas in Nksatlala 1960 (3) SA 543 (A) 546, Schreiner JA provided the following insight:

"A court should not blindly accept and act upon the evidence of an expert witness, even of a fingerprint expert, but must decide for itself whether it can safely accept the expert's opinion."

In the matter between Vuyusile Eunice Lushaba and the MEC for health, Gauteng 2015, the defendant relied on an expert opinion that revealed no defence and had been made without the use of vital medical records. In an attempt to appeal the court's original decision the defendant asked the court to ignore its expert's evidence. In this instance the defendant maintained that it relied totally on the opinion of its expert. RM Robinson AJ saw the requirement to furnish the expert with records as the responsibility of the defendant, and they were responsible for the decision to proceed. Subsequently, the defendant's leave to appeal the decision on such grounds was refused with costs.

Recently in the UK, her Honour Mrs Justice Cox made some important observations about the role of an expert witness and the conduct of the defendant's expert in Sinclair -v- Joyner [2015] EWHC

Civ 1800 (QB).

Briefly, the claimant, a cyclist, sustained serious injuries following a collision with a car driven by the defendant in a rural location. Mrs Justice Cox was to determine liability only in the subsequent hearing.

The parties gave oral evidence and both obtained reports from accident reconstruction experts to present.

Mrs Justice Cox found that the evidence given by the defendant's expert was unsatisfactory in a number of respects and that the defendant's expert had put forward evidence, "exceeding its proper parameters".

As the trial concluded, the defendant's counsel no longer relied upon the evidence put forward by its expert; in this case the expert had alleged that there had been no contact between the car and the bike, when clearly there had.

Mrs Justice Cox confirmed that the role of the expert in this case was to provide accident reconstruction evidence.

Mrs Justice Cox referred to the Court of Appeal decision in Liddell v Middleton [1996] PIQR P 36 and Lord Justice Stuart Smith's definition of the expert's role:

"...to provide the judge with the necessary scientific criteria and assistance based upon his or her specific skills and experience, which the lay judge will not usually possess, to enable the judge to interpret the factual evidence."

Lord Justice Stuart Smith elaborated further, defining the role of such an expert was not:

"...to discover the facts and to use [their] expertise and experience to give an opinion as to what happened."

Conclusion

As discussed earlier in this Digest issue, the expert has a role to fulfil and an obligation to the tribunal (see the CPR and PD explanations box, left). To maximise this, the expert should be provided with clear, precise instructions by their legal team so as to avoid coming under fire from the tribunal in respect of 'exceeding their parameters' as per the findings of Mrs Justice Cox in this case.

The tribunals that quantum experts

The 'balance of probabilities' can be determined by a matrix weighting of the evidence by the experts; two pragmatic and experienced individuals should certainly be capable of such an interlocutory.

stand before do not want, or need, lone rangers making a leap from the evidential requirements of a quantum report. If the expert works within the parameters set by the tribunal and avoids putting on their own show, then they have fulfilled their obligations to the tribunal. If they don't, then the tribunal should 'pull the curtain down' on them, clients should recognise their gamesmanship and perhaps, next time, speak to the independent and experienced experts from DIALES.

In the final analysis perhaps we should draw on the words of George Orwell:

"The great enemy of clear language is insincerity. When there is a gap between one's real and one's declared aims, one turns as it were instinctively to long words and exhausted idioms, like a cuttlefish spurting out ink." ■

¹ Figures as figures – Term taken from a recent expert report written by John Mullen

"The great enemy of clear language is insincerity."

George Orwell

Assessing time effects of variations and change in quantities

PHILIP ALLINGTON – DIALES EXPERT, SUMMARISES A TALK DELIVERED IN OCTOBER 2014 TO THE LIGHTHOUSE CLUB CONFERENCE IN HONG KONG, WHICH CONSIDERED MANAGING CHANGE IN CONSTRUCTION.

The Nature of Change

Change affecting time in construction contracts may be in several forms. It commonly starts with changes in the quantity of described work or corrections to documents, bills, and drawings; and commonly results in effects on the contractor's methods and sequences, or the work and sequences of others. There may be change from imposed restrictions, altered works sections and dates, or from unexpected natural events. As a matter of organisation the contract should define the extent of work, the authority to impose change, and the process or remedy for dealing with disturbance to the programme.

Effects and Remedies

Programmes may be disturbed in one of three ways.

- Delay that results in overrun (where it is critical delay).

- Reduced working efficiency - disruption.
- Mitigation required to overcome the disturbance - acceleration.

For the contractor, all three generally result in additional cost as well as the effects on timing. The costs may be reimbursable if the disturbance can be established as a recognisable default by the employer. But, while contracts neatly parcel up defaults and remedies, the incremental nature of change on site can be difficult to fully account for¹.

Systems of Analysis

Many techniques have been developed for analysing programme disturbance. They differ in the focus of their output and complexity in use. Their selection may be considered relative to key criteria.

- Desired outcome - Whether the remedy is extension of time (EOT) or the costs of prolongation, disruption, mitigation, and acceleration; for example, different systems of analysis are more or less applicable.
- Availability of information - Information required for systems of analysis increases with complexity (which may affect the ability to complete the analysis).
- Dispute Process - Different dispute resolution processes have varying requirements for time, depth, and accuracy in analysis.

- Appetite - As systems vary in complexity they also vary in the time and costs to complete them. How far will you go?

Contracts

Contracts and commentaries tend to focus on delay and EOT. They may set out types of events and requirements for the contractor to give notice of likely, or actual, effects. There may be a requirement to provide event particulars - either complete or ongoing - and on receipt, the contract administrator will consider entitlement to EOT and give a decision. For all of this, timescales and systems may be specified.

Contracts and commentaries generally have less to say about disruption, which may be no more than an implied term whereby the employer is not to hinder the contractor's progress of the agreed works. The remedy tends to be for settlement through the cost clauses, either through adjustment of the bill of quantities (BOQ) rates or actual cost.

Advice on Methods of Assessment

From the turn of the century, a debate on systems of analysis has raged, but it is noticeable that it has been focused on the analysis of EOT entitlement. Considerably less has been said regarding disruption analysis. This is an odd situation, since many more contract variations will have disruptive effects than lead to critical delay.

A prime reference is the UK Society of Construction Law's (SCL) Delay and Disruption Protocol, an advisory document published in November 2002. The largest part of the Protocol concerns EOT-oriented delay, whereas only two pages relate to disruption. As Bailey says²:

What, however, is signally absent from the Protocol in relation to disruption is the type of detailed recommendations that the Protocol offers in relation to delay. So, insofar as delay is concerned, the Protocol recommends



CONTINUED ON PAGE 8 >>

« CONTINUED FROM PAGE 7

that the Contractor be required to submit to the Contract Administrator a "properly prepared programme" which, if kept updated during the course of a project, may be used as a basis for assessing any EOT applications that the Contractor may make. In relation to disruption, the Protocol makes no equivalent recommendation. It simply entreats contractors to keep adequate records to demonstrate the existence of disruption.

For disruption, the Protocol describes work carried out less efficiently, loss of rhythm, out of sequence work, congestion, stacking, etc. It entreats contractors to make prompt notices and keep good records to allow the contract administrator to make assessments. Compensation for disruption caused by variations should be agreed as soon as possible after completion of the variation – suggesting a retrospective analytical process.

For analysis, only the 'Measured Mile' technique is highlighted; whereby a period of relatively uninterrupted or efficient progress is compared to an interrupted and inefficient period and tied to disruptive events.

The New Engineering Contract (NEC) offers a different process and timing under the umbrella of 'Compensation Events'³.

- Clause 60.1.1 notes changes to the Works information through instruction.
- Clause 61.3 requires notification regarding changes in prices or dates and sets a time limit.

- Clause 63.6 discusses the assessment of the effects of the notified compensation events.

Kennedys⁴ advises that such events include disruption and that the contractor must show that issues have a good chance of occurring. Since, under NEC, assessment should be based on the current programme and earlier versions are disregarded, the analysis of disruption must be prospective (contrary to the scheme in the SCL Protocol).

A final piece of advice is given by Bailey² as follows:

If, at the outset of a project, a contractor were required to provide an indication of its anticipated productivity levels, and the basis upon which it had calculated or estimated those productivity levels, and if during the course of the project the contractor's actual productivity levels were then determined (to provide a "measured mile", of sorts), one would expect the incident of disputes over disruption to be reduced, as the contractor's productivity levels will be monitored by itself and the contract administrator throughout the course of the project. This could be expected to be a pro-active measure for managing disruption issues, just as the Protocol advocates the pro-active management of delay issues.

Considerations affecting assessment strategies

The high degree of certainty, assumed by complex systems of programming analysis, is often misplaced due to uncertainty commonly found in construction projects.

"...the contract should define the extent of work, the authority to impose change, and the process or remedy for dealing with disturbance to the programme."

This applies to disruption through variations as well as delay analysis.

Where change is through variations, contracts point to valuation starting with the bills of quantities. The prices in the bills should include rates for labour and equipment. However, Sims and Powell-Smith⁵ note that ease of change creates a lack of incentive to make firm design decisions before the work starts. This also relates to an ethical issue, described by Judge Thornton (after Uff QC)⁶, where information gaps at tender stage lead to delay, disruption, and a failure in risk identification and allocation.

The apparent certainty of a bill of quantities disguises the reality that it is actually an approximation. But that problem notwithstanding, the first challenge is to ensure that the programme explicitly relates to the bill items. In the event of change, the challenge is to be able to identify a measureable difference between the original and the varied programme. Also, in making a claim for loss of efficiency, one has to show that the programme represented the optimum and achievable efficiency, and that this is reduced by the changes (Pickavance 2000).

Considerations in activity planning and disruption analysis

A construction project planner seeks to define the work in terms of activities, their interrelationships, and durations. This may be through estimation considering scope and influence of several factors:

- Quantity of work broken down to work activities.
- Production rates (and their reliability).
- Resource/method practicality in the

project work situation.

- Environment at the actual location.
- Efficiency, motivation, and skill.
- Constraints on the organisation, methods, and working times.
- Competence of planners at different supply chain levels.

It is possible to compile programmes on limited information; for example, defining only activities and relationships with assumed durations. But this provides insufficient reference for making disruption claims, which rely on demonstration of productivity. Similarly, for a claim for disruption the records should match the plan, with the addition of records to show the cause of the variance in achievement.

Bar charts may be supplemented with process information in, for example, production S curves measuring effort or achievement against time. As-built bars may be treated in the same way. Comparison of the planned and as-built production information will show achievement ahead or behind the plan – the beginning of a disruption or acceleration claim⁷.

Summary

Programme disturbance through change and variation leads to disruption as well as delay. Debate and advice has been limited by focus on EOT entitlement analysis, while disruption has been left behind despite its prevalence in life on site. Notwithstanding uncertainties, construction project planning should fully address process and output as well as linear time measurement. Records are important and they should include evidence of production achievement and events affecting it. ■

¹ Readers wanting to investigate this further may consult Pickavance's chapter on variation and change including the section on constructive change: Pickavance, K. (2000) Delay and Disruption in Construction Contracts – second edition, Pub LLP.

² Bailey J (2014) The SCL Delay & Disruption Protocol: A Retrospective Analysis. – paper for the Construction Law International Conference, Kuala Lumpur Sep 2014.

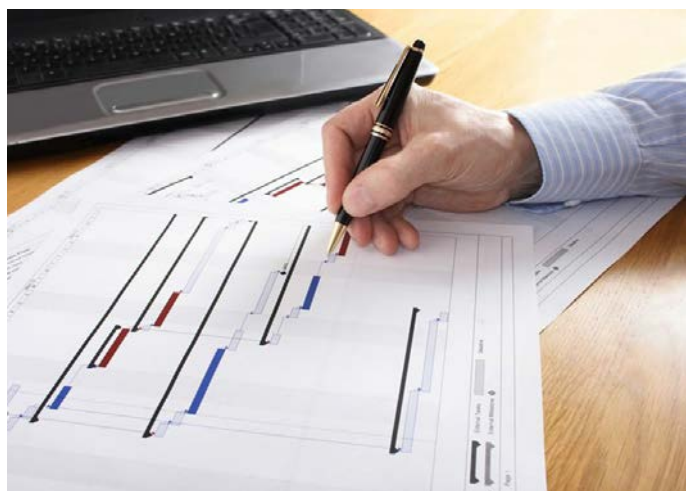
³ NEC3 Core Clauses April 2013 Section 6 – Compensation Events.

⁴ Kennedys Law LLP (2014) – Construction E-Update, NEC3: managing time and risk Jan 2013.

⁵ Sims J and Powell-Smith R (1988) Building Contract Claims 2nd edition, Chapter 3, Variations – Pub. BSP Professional Books.

⁶ His Honour Judge Thornton A (2003) Lessons in Civility, article in Building Magazine 28 November 2003.

⁷ See also Schumacher L (2012) Loss of Labor Productivity: Quantification Methods and Practical Considerations. Arcadis' Construction Claims Solutions Newsletter Spring 2012.



Realising BIM savings in D&B contracting

STUART MACDOUGALD-DENTON – DIALES EXPERT, LOOKS AT THE PREDICTION THAT BIM USAGE WOULD INTRODUCE COST SAVINGS TO DESIGN AND BUILD CONTRACTS; AND THE APPLICATION METHODS AND REALITIES THAT NEED TO BE MET TO ALLOW THIS TO HAPPEN.

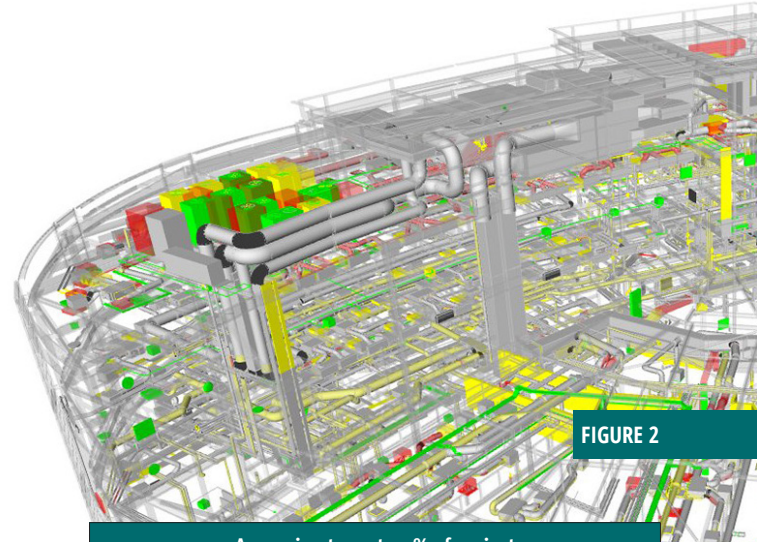
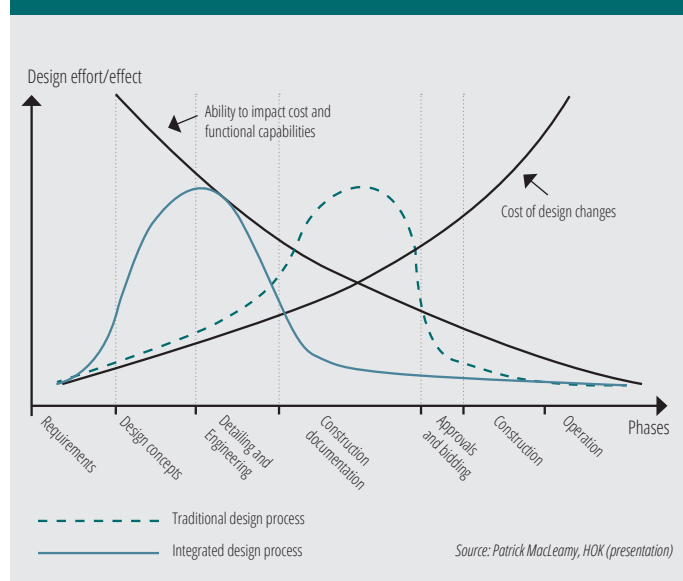


FIGURE 2

FIGURE 1	Approximate cost as % of project		
	Traditional D&B	BIM	Saving
Detailed Design Fees (Arch, SE & MEP post RIBA Stage 3)	5.0 – 6.0	4.0 – 4.5	1.0 – 1.5
Improved coordination, reduction in ambiguity, no clashes, less change, reduced rework	2.0 – 4.0	0.5	1.5 – 3.5
Contingency, quant risk, design development, claims and prolongation	4.0	2.0	2.0
MEP package costs (risk, contingency, quant, coordination allowance, improved value engineering [VE])	10.0 – 15.0	5.0 – 8.0	5.0 – 7.0
Programme Saving	4 – 6 weeks per year of programme		
	15.0	13.5	1.5
Reduced waste due to design discipline, rationalisation and prefabrication	15.0	10.0	5.0
Total	51.0 – 59.0	35.0 – 38.5	16.0 – 20.5

FIGURE 3 MACLEAMY CURVE



In the early days, BIM evangelists promised us savings (Fig. 1 above).

They said that the designing in BIM would result in the design being substantially complete earlier in the project process (Fig. 3 left).

But what happened?

Designs were produced in BIM, fully detailed and all inclusive, but we failed to recognise a key element of design and build (D&B) contracting: the subcontractor's design. For example, fully designing a curtain walling installation ties us down to one particular window system and means specialist input is needed to design the window sections, which will need to be bought in. For mechanical, electrical, and plumbing (MEP) systems; fully designed ductwork, pipework

and cabling routes, sizes, and hierarchy of installation leaves little for the MEP subcontractor to work with and deliver best value. Alternatively, if, like some, you failed to tie your subcontractors down properly in their subcontracts, they may well have gone away and value engineered their works without regard for the impact that might have on adjacent elements of work.

For example, Fig. 2 (top) shows part of a tender MEP BIM overlaid with the as-built MEP BIM model. The MEP items in red are those that were in the tender but have been deleted (8,376 in all), which have been replaced by the green coloured items (7,183 in all); and the yellow coloured items are ones where the size or technical data has been changed (12,204 in all).

CONTINUED ON PAGE 10 >>

« CONTINUED FROM PAGE 9

The most obvious end result of all these changes to the MEP systems was that holes that had been pre-formed in walls, floors, and some beams had to be partially or wholly sealed up and new openings made. Some other, less significant, modifications were needed too. However, what the MEP subcontractor had done was allowed under his non-BIM aligned subcontract. So who picked up the costs? – the main contractor. In reality, the work distribution curve now looked like Fig. 4 (below):

So what's the answer?

There is a significant amount of detailed design work that can happen early, but there are some items that need to be left to the

subcontract designers. The work package, or work elements where subcontract design is to be allowed, needs to be clearly defined at the outset, so the consultant designers (architects, structural engineers [SE], MEP, etc.) don't waste time on this element of the design. The selected items need to be easily substituted into the BIM model, so that the architect, for example, will simply design the curtain walling as a thin rectangular box, occupying the position where the curtain wall will sit. This should allow the curtain walling abutment design and details to be substantially completed before the subcontract is let; with the curtain walling designer swapping its specific system design into the BIM model, which meets the design intent and performance specification. In this way, we can hopefully get closer to a work distribution

curve like Fig. 5 (bottom right).

However, this means that the product from subcontract designers needs to be in BIM. This will also be important if the D&B requirements include the production of a BIM operation and maintenance (O&M) manual. But not all subcontract designers currently work in BIM, especially not at the smaller end of contract values. So a strategy needs to be adopted to create a level tendering playing field. Work package subcontracts will need to be let on an 'either/or' basis. Either the subcontractor prices for delivering the design in BIM, or the subcontractor prices for delivering the design in some other format and the D&B contractor has to add-on the cost of converting this information into BIM to create a like-for-like price.

Accordingly, with the right strategy defined at the outset, each part of the Works only gets

designed once, by the person best able to complete the design and mitigate the risks; and an all-inclusive price can be provided for working in BIM and delivering a BIM O&M manual. Ultimately, with the right strategy, some of the promised project savings can be realised, even if the D&B tender arrives in 2D CAD. Fig. 6 (below) is the tender strategy that was used to take a (mostly) 2D CAD, RIBA Stage 4, £90 million tender forward in BIM.

Despite the cost and delay incurred converting the 2D CAD information into BIM, the savings allowed a conservative £2 million (2.25%) reduction in the tender and a further £4 million (4.5%) realised by the end of construction. Whilst this was still short of the 16-20% saving mentioned at the start of this article, I now believe we'll get there, with the right strategy, of course! ■

FIGURE 4 UNPLANNED CONSEQUENCES (OVERLAID ON MACLEAMY CURVE)

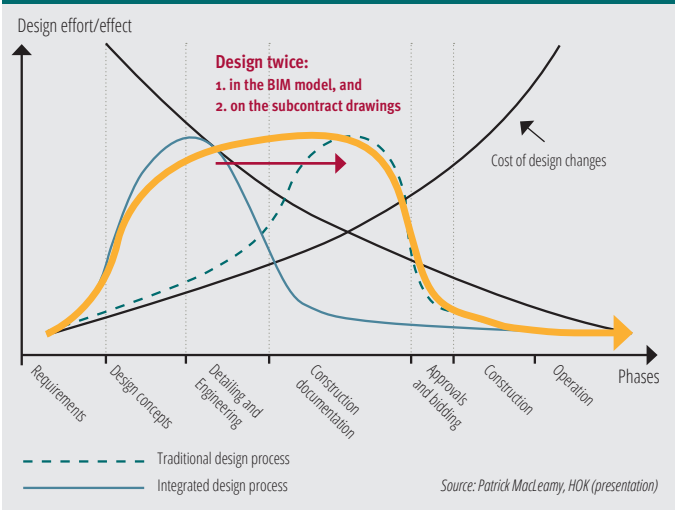


FIGURE 5 DESIGN TASKS SHARE (OVERLAID ON MACLEAMY CURVE)

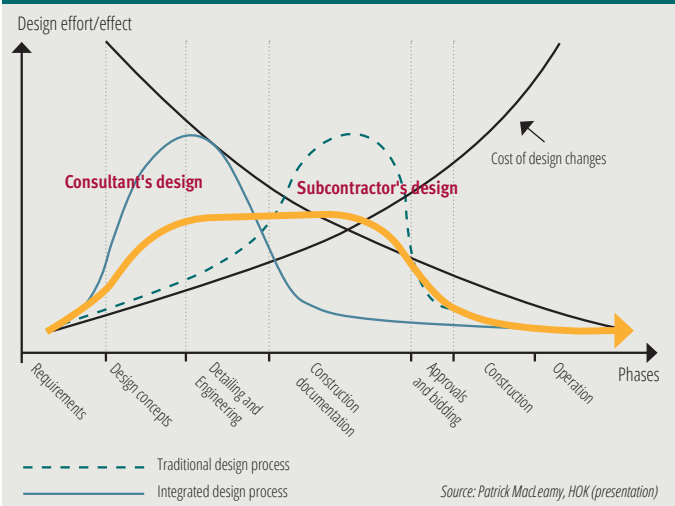
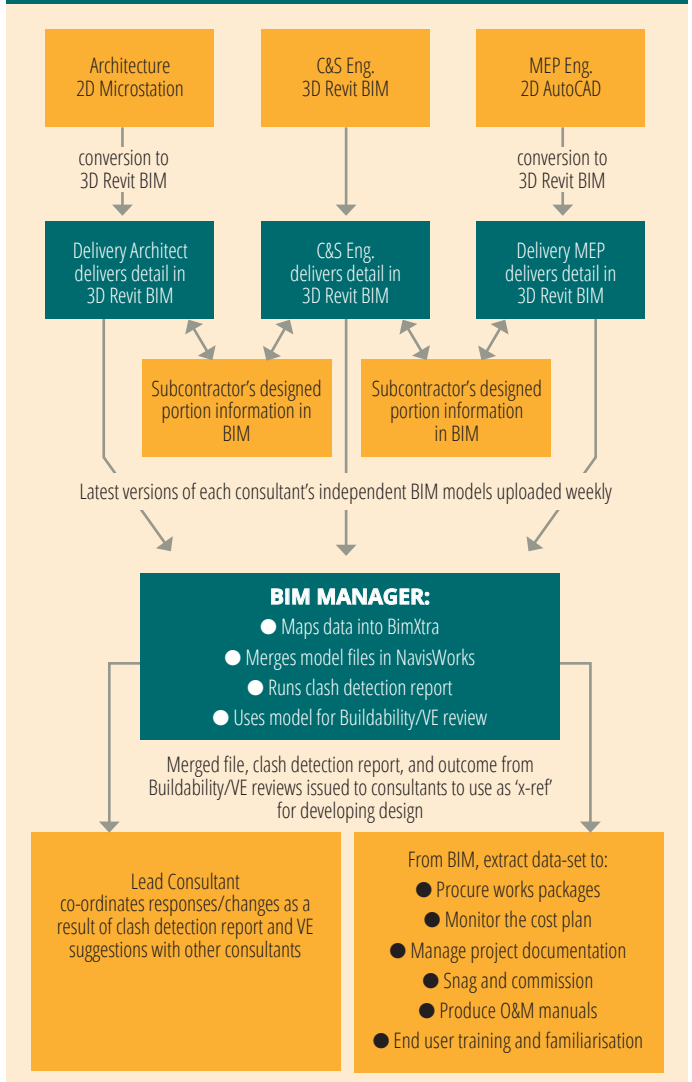


FIGURE 6 TENDER ROUTE MAP FROM 2D CAD TO BIM





The 2012 Gamification World Congress was attended by 150 people, this year's event will welcome 1,500.

Game of cranes?

MARK WHEELER – HEAD OF DIALES EXPLAINS AND EXPLORES THE POTENTIAL APPLICATION OF 'GAMIFICATION' TO THE CONSTRUCTION INDUSTRY.

'Gamification', is the name of the game. Apparently. It sounds like a made up word to me, but then all words were made up at some point. Put simply, gamification involves turning a situation into a game, in which the team, class, or other group of people view the tasks they are involved in in a different context. The term 'Gamification' was first coined in 2002, but this is certainly not a new concept, and its origins can be traced back into the seventies.

This involves using game thinking and game mechanics in a context outside of a game. A number of leading businesses are now using these techniques to train staff and improve performance, including Microsoft, SAP, Unilever, IBM, and the US military. These organisations have become convinced that training and productivity can be significantly enhanced by using a game based approach. There are a growing number of apps that employ the techniques, to engage individuals in both

learning and improved performance. Interest in these techniques is growing rapidly, the 2012 Gamification World Congress was attended by 150 people, this year's event will welcome 1,500.

Using game methodology in a business environment is not without risk, and the consequences of turning targets, for example, into simple reward based structures may have unintended consequences. E.g. motivating a group of people on one particular metric alone, sales perhaps, may mean that they become fiercely competitive with each other, rather than just in the marketplace. The best results are likely to flow from team based game mechanics, where the complex interaction of a number of key performance indicators interact to produce the right overall result and one which matches the corporate strategy. Theme based games, such as Monopoly probably have more business synergy than simple abstract task

games that are targeted at specific areas of learning or performance.

Can this gamification work in the construction industry? It seems that projects may be ideally suited to these techniques. Most projects are a one-off exercise in which a large number of people need to learn to work together. They will come from a wide range of separate organisations with complex and often competing commercial targets. They will come from a wide range of backgrounds and specialities. They will need to work together, as a team, to deliver the common goal of a successful project delivered to a good standard, on time, and to budget.

It does not take much imagination to join up these issues with the flow of information that exists in the project controls philosophy, applied to most major projects. The impact of their efforts is already measured by complex programming software, in BIM data and

project records. There are a wide number of measurable parameters in a project controls reporting matrix that measure, and forecast, the various key indicators for the project. What is currently missing, is linking the day to day actions of individuals to show the impact of their actions on the project outcomes. This might be quite dull, unless game mechanics and techniques are used to keep everyone engaged throughout the project. A number of software and app developers already apply these techniques to a widening sphere of industries. Perhaps the time has come to invent 'Game of Cranes'.

Everybody on the project engages in various tasks that contribute to the overall output, but with their own targets and roles focused on their skill sets; with personal and team rewards based on aiding others to deliver in their roles. External factors, such as weather, can never be controlled and there will be no prizes for gloomily predicting that "...winter is coming...".

The way in which such problems are mitigated would have a major impact on project outcome and should also be measurable. Perhaps gamification techniques have a role in construction, perhaps the wider project team can all win together? ■

Q&A: Ron Fernandez

RON FERNANDEZ – VICE PRESIDENT, DRIVER TRETT (CANADA) SPEAKS TO THE DIGEST ABOUT THE LAST 11 MONTHS SINCE LAUNCHING IN CANADA, THE CANADIAN CONSTRUCTION MARKET AND ITS CHALLENGES, AND HIS PLANS FOR DRIVER TRETT (CANADA) FOR THE COMING YEARS.

With over 35 years of construction industry experience, including eight years with another leading Canadian dispute resolution firm, Ron has been integral to the success of Driver's Canadian venture.

Driver Trett (Canada) Limited launched on October 6 2014, and has built a strong team and client following. This whirlwind first year has also been assisted by the Group's joint venture with MHPM Project Managers Inc., known as MHPM Driver, which has been instrumental in bringing the Driver Trett brand and services to the wider Canadian construction market.

Digest: How is the construction industry currently fairing in Canada?

Ron: In Canada, from coast to coast, construction infrastructure spending is at its highest. Federal infrastructure spending in the transportation sector alone is in the hundreds of billions. In the province of Ontario, the Provincial Government has planned to spend over \$50 billion in the next ten years in this sector. The industrial, residential, and commercial sectors are just as strong.

Despite global economic uncertainty, the construction market in the Greater Toronto area is filled with large commercial and infrastructure projects. Commuter rail, rapid transit, expressway and highway construction and refurbishment, airport expansion, waterworks, and other infrastructure projects are underway to support the expected population boom over the next 15 years. Toronto skyline is littered with tower cranes constructing new residential towers of up to 80 storeys and the high-rise condominium and apartment market has never been stronger.

Digest: Is the increase in construction activity effecting dispute resolution?

Ron: Canada's dispute resolution industry is in its infancy. The concept of dispute resolution boards (DRB / DAB) is fairly new in Canada but has been adopted on some major projects. Whilst alternative dispute resolution (ADR) strategy may have worked in other countries over the years, in Canada's infant market it has yet to be proven effective.

Contractors are likely to wait until the end of the project to submit a delay impact claim, relying on the Construction Lien Act process to ensure their position is at least heard by the owner. Contemporaneous resolution of extension of time claims is rare and, despite the requirements for owner's consultants to be neutral in assessing claims for contract schedule extensions of time, they are often dismissed by owners, consultants, and payment certifiers. This means the construction claim for additional costs, due to delay impacts and extension of time, is left until the completion of the project; with contractors often left to rely on simple negotiation and rarely with sufficient documentation to make the claims credible.

Digest: What can Driver Trett offer the Canadian construction market?

Ron: Driver Trett aims to provide dispute resolution and claims preparation services to the construction industry across Canada.

Some forward thinking contractors and owners see the benefits of integrating best practices of dispute avoidance into their day to day operations. Experience with claims on long term tunnelling and subway projects has educated the heavy-civil industry as to the necessity in quickly identifying and resolving claims.

Driver Trett (Canada) is well positioned

to assist these contractors and owners in the face of ongoing delays on existing projects and on newly awarded multi-billion dollar projects.

Digest: What are some of Canada's unique challenges?

Ron: Canada is the second largest country in the world, behind only Russia, it spans seven time zones and has the longest coastline in the world; alongside abundant natural resources from forests and fossil fuels to minerals and water and the development projects to support them.

Canada has a very short construction season with long and cold winters, and long distances to reach the sites. Disputes are generally thought of as something to be avoided, or simply dealt with at the end of the project. Combine this with the challenging conditions and the costs for delay, poor performance, and non-collaborative project teams and the need soon becomes apparent for disputes to be resolved as efficiently as possible.

Digest: What led you to join Driver Trett?

Ron: I have spent more than eight years with a Canada wide dispute resolution firm, authoring numerous claim and expert reports, delivering training courses on claims preparation and management, and rebutting other claims expert's reports. I have found that there are few dispute resolution firms which are recognised by the legal and construction communities as reputable, and across Canada there are none that can offer Driver Trett's complete package of services and a global pool of knowledgeable and experienced resources. This is why I joined the Driver team and why it is an excellent time for Driver Trett to expand client support and services across Canada.



Digest: Do you see any risks in the current construction industry boom?

Ron: Standard form contracts are being supplemented with unacceptable exculpatory language, which transfers the burden of risk to contractors and subcontractors. Contractors are taking huge risks by submitting a tender bid. Projects are being fast tracked, which leads to an abundance of contract changes. This leads to contract interpretation disputes, and invariably, disputes related to delay impacts and extension of contract duration. This is under a design-bid-build strategy, but also applies to other contract strategies.

Digest: As you approach the one year anniversary of Driver Trett in Canada, how has the experience measured up so far and what goals do you have for the future?

Ron: When we started the Driver Trett operation here it was a challenge to procure commissions, as Driver was not known by the Canadian construction community. Over the past year I have been able to procure commissions based on my reputation, and also marketing the reputation and global pool of resources of the Driver Group.

Driver's management team have been extremely supportive, as have all the back office support staff. I have assembled a core team of five senior consultants in Toronto, and will continue to grow this team, as needed, through this fiscal year.

My future plans for staffing will be in line with the Group's global plans however, by 2018, I would like to see Driver Trett staffed with senior claims consultants in major cities across Canada including Vancouver, Calgary, Toronto, Ottawa, Montreal, and Halifax. ■



BYTE 1: WHO'S PROGRAMME IS IT ANYWAY?

Paul Battrick explores the traditionalist viewpoint that the programme belongs to the contractor - but not everyone would always agree.



UK AUTUMN SEMINARS 2015 ADJUDICATION - THE EMPLOYER STRIKES BACK

Driver are pleased to announce the 2015 Autumn breakfast seminar series.

This seminar series will be a scenario based presentation that focuses on a mock adjudication. It takes a look at the tactics involved, and the perils that lie ahead for the unprepared, as Empire Rail have been giving New Hope Contracting a hard time

on the new station contract; and have gone on the offensive with a reverse adjudication, seeking to declare the Compensation Events in the contractor's account at NIL – or worse.

Further details can be found at <http://www.driver-group.com/europe/knowledge/events-and-seminars/uk-autumn-seminars/>

BYTE 2: THE BEST WAY TO ENGAGE EXPERTS IN THE MIDDLE EAST



Lee Barry discusses the various options when engaging an expert witness, and the advantages of an early appointment.

WHAT'S NEW WITH DRIVER GROUP

Keep up to date with our latest news and events. For more details of the services and solutions that Driver Group can deliver, please visit our website www.driver-group.com. Regular news and event updates are made to the website, so be sure to visit, or follow us on LinkedIn to keep up to date with our latest seminars and news.

CONTACT DRIVER GROUP WORLDWIDE

AFRICA

SOUTH AFRICA

Cape Town

Tel: +27 (21) 526 0438
Fax: +27 (21) 526 0311

Durban

Tel: +27 (31) 535 7218
Fax: +27 (31) 535 7001

Johannesburg

Tel: +27 (0) 11 315 9913
Fax: +27 (0) 86 641 7003

AMERICAS

CANADA

Tel: +1 905 247 0160

ASIA PACIFIC

AUSTRALIA

Brisbane

Tel: +61 (7) 3225 4801
Fax: +61 (0) 7 3012 6001

Perth

Tel: +61 (0) 8 6316 4573

Sydney

Tel: +61 (0) 2 8079 5255

HONG KONG

Tel: +852 3460 7900
Fax: +852 3462 2960

MALAYSIA

Tel: +603 (0) 2162 8098
Fax: +603 (0) 2162 9098

SINGAPORE

Tel: +65 6226 4317
Fax: +65 6226 4231

EUROPE

FRANCE

Paris

Tel: +33 (0) 1 73 79 58 68

GERMANY

Tel: +49 89 208 039 535

THE NETHERLANDS

Tel: +31 113 246 400
Fax: +31 113 246 409

UNITED KINGDOM

Bedford

Tel: +44 (0) 1234 248 940
Fax: +44 (0) 1234 351 186

Bristol

Tel: +44 (0) 1454 275 010
Fax: +44 (0) 1454 275 011

Coventry

Tel: +44 (0) 2476 697 977
Fax: +44 (0) 2476 697 871

Edinburgh

Tel: +44 (0) 131 200 6242
Fax: +44 (0) 131 226 3548

Haslingden

Tel: +44 (0) 1706 223 999
Fax: +44 (0) 1706 219 917

Liverpool

Tel: +44 (0)151 244 5464
Fax: +44 (0)151 244 5401

London

Tel: +44 (0) 20 7377 0005
Fax: +44 (0) 20 7377 0705

Reading

Tel: +44 (0) 1189 311 684
Fax: +44 (0) 1189 314 125

Teesside

Tel: +44 (0) 1740 665 466
Fax: +44 (0) 1740 644 860

MIDDLE EAST

KUWAIT

Tel: +965 (0) 5 056 0208

OMAN

Tel: +968 (0) 2 461 3361
Fax: +968 (0) 2 449 7912

QATAR

Tel: +974 (0) 4 435 8663
Fax: +974 (0) 4 462 2299

UNITED ARAB EMIRATES

Abu Dhabi

Tel: +971 (0) 2 441 0112
Fax: +971 (0) 2 441 0115

Dubai

Tel: +971 (0) 4 453 9031
Fax: +971 (0) 4 453 9059

FOR MORE INFORMATION VISIT WWW.DRIVER-GROUP.COM OR EMAIL INFO@DRIVER-GROUP.COM



FIND YOUR IDEAL CONSTRUCTION EXPERT WITNESS, FAST, WITH THE DIALES APP!

Search by expertise and then narrow your search by contract, region, sector or years of experience.

Download the free app by visiting our website **www.diales.com/app** or by scanning the QR code.



For more information about our experts and services visit **www.diales.com**
info@diales.com

EXPERT WITNESS SUPPORT
SERVICES FOR INTERNATIONAL
ENGINEERING AND CONSTRUCTION

a member of the Driver Group of companies