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"To change or not to change" ... a matter of choice!

This edition of *ConstructingNZ* carries a leading article on collaborative project management by Martin Barnes; in a later edition, Stewart Rix will give us his personal views. Both professionals always convey a similar, strong message: strive for win-win, follow the path of collaborative project management, and work together as a team to achieve positive results for all involved. The concept is not new; it has been practiced in the past by people who became actively involved in project development, seeking to optimise the final results, while retaining the parties' right to a fair return for their efforts.

But is not practised generally, and the 'them and us' culture is still alive and (unfortunately) still strong: on the one hand, owners and developers who wish to extract the maximum production from contractors, while minimising price; and, on the other, contractors who fight back from the trenches, cutting corners and trying to maximise their profits through skilful manipulation of contracts, subs and suppliers. Somewhere in the middle are engineers, architects, QS and lawyers who also seek to bring grist to their own mills, or feel they must sustain their positions, inflexibly applying rigid

procedures or traditional rules. They are all stakeholders in the construction game and, while this culture continues to guide some project management attitudes, the construction effort will continue to lead to complaints, disputes, litigation.

After many years in the Procurement function in the World Bank (issuing policy and practical application documents on bidding, contracts and project management for use of Bank borrowers and supervising their use) I was asked to take charge of supervision of construction of the new headquarters building, in the centre of Washington DC, one block away from the White House, occupying one whole city block. Work had started in 1989 as a fast-track project and, four years later, the contract had turned sour; costs had escalated considerably from the initial estimates, and the whole atmosphere of the project was acrimonious, clearly leading to confrontation between client and head contractor, with 'assistance' from the architects' representative and other antagonistic characters involved. Suffices to say that there were over 5,000 unresolved variations and a delay claim from the contractor amounting to USD13.5 million.

It was a highly visible project with a price tag of about USD320 million, politically loaded, in a business environment noted for its appetite for litigation.

December 1993: I was thrown in the deep end... through an offer from the top I could not refuse (or else?) Fortunately, it came with a decent carrot, and a free hand in terms of management and selection of my own team.

I was extremely lucky: a very experienced colleague, Peter Copplestone, a British civil engineer, was available and enthusiastically joined the team; he brought in Doug Hatch, a talented American architect. Frank McDonough's team joined us as programming consultant... and, after an intense search, we took on a legal firm specialising in construction contracts. Mike Loulakis thus came on board.

We went through a period of brainstorming by our in-house team, with the sage counsel of Frank and Mike, and came up with an action plan supported by fall-back precautions. Rather than encouraging litigation, Mike, our new American lawyer, recommended that we seek to defuse the situation, and work towards establishing collaborative, integrated management, by bringing all actors into a Partnering agreement. This became the action plan. Meantime, Frank and his team would analyse the delay claim and clearly establish where responsibility for delays belonged: they would prepare our fall-back forensic tools, in case we could not bring the project back to positive management.

There followed a period of intense negotiation: first, we tackled the contractor's and architect's project team leaderships – and succeeded in replacing two very controversial personalities with senior managers who came eager to work hard, within an integrated team. The next step was the introduction of a Partnering agreement. This was achieved through a gradual process: an experienced Facilitator was brought in, and top project staff from the owner, architect, contractor and principal subs met for three days in a hotel, leaving behind cell phones, secretaries and day-to-day chores.

The facilitator took us through a process which started with an analysis of what were the 'stones in the road', i.e., why was our project in trouble? Problems were analysed in frank and open discussion that slowly, but surely, led to agreements of how we could all work better together, under a Partnering Charter. At the end of the exercise, we all endorsed the Charter, which became the basis for our new approach at collaborative project management.

Meantime, Frank and his team had assembled an impressive amount of information on the development of the project, and the delays and their causes: they produced a set of charts (similar to those appearing at the end of Part 2 of Frank's Paper, see page 6) which gave us the moral strength of knowing what a fair apportionment of responsibility was, and the likely outcome that one could expect if forced to deal with a formal dispute.



World Bank from Pennsylvania Ave

But the dispute never escalated to a legal forum: in the new environment of open discussion, with all facts on the table, the potential delay dispute was resolved at close to 25% of the original claim, and all the outstanding variations were resolved fairly. Having successfully removed those obstacles, we continued to work as an integrated team until Substantial Completion was reached in 1996. Of course we encountered problems as the project moved forward. But they were resolved as they arose, following agreed procedures. For example, if the problem was found at foreman level, but could not be resolved with the counterparts in the architect's or owner's staff, it would be referred rapidly to the next management level, and so on until, if necessary, the top managers were involved. Very few cases reached the higher level of management.

All of us who took part in the project felt we had turned an important page in our professional lives – and learned to behave in a different cultural environment which had enabled us to pull together for the common good. Most importantly, on completing the project, we did not leave behind us a trail of unresolved problems nor disputes festering in legal forums.

Our in-house team received a very special reward. We were invited to a session of the Board of Executive Directors (24 'EDs', representing specific countries or groups of countries) at which, after a speech by the President of the Bank, the Team was given a standing round of applause by the EDs.

Such are the rewards of team work: enjoying the satisfaction of achieving successful completion, meeting or improving on quality, time and money criteria, together with personal moral rewards and, for those in the consulting or construction professions, the feeling of having developed a closer relationship with their clients and other stakeholders – leading to potential new business and excellent reputation in the market.

"To change or not to change" – it's up to you.

*Ernesto Henriod
(with no apologies for a 'first person' article by the Editor!)*

Do you have a personal story or case to tell us, comments, or construction issues to discuss? The deadline for material for our next Newsletter is 31 January 2007.

Project Management – a Best Practice Perspective

by Martin Barnes



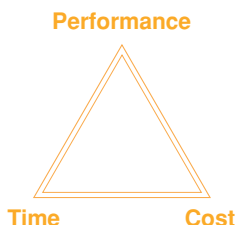
This article is based on a talk given by Dr Barnes as President of the Association for Project Management in the UK to its North West Branch at Pilkington's in Lancashire on 29 March 2006.

In a nutshell, Project Management is the discipline of defining and achieving targets. This is a precise and short definition of PM, but do ask yourself...

- what type of PM process will increase your chances of a successful outcome?
- are there examples of good practice and are they applicable to your type of project?

We all want to use best practice in managing our projects. But what is it? Is it the same across all sectors or even across all projects in the same sector?

Before we think about best practice, let's agree on what is best achievement. We can define this as achieving delivery of a completed project which does what the client wanted (performance), goes into use when he wanted it (time) and costs no more than he wanted it to (cost). This is the 'traditional' PM triangle which I first introduced over 35 years ago:



Best practice is, therefore, whatever we have to do to deliver best achievement, through meeting or improving on performance, cost and time targets. When I invented the triangle, I had 'quality' instead of 'performance' at the top corner, but I soon realised that 'performance' was much better.

As we get better at applying the principles of best practice in PM, we should get better at achievement – and over time be able to deliver projects which typically perform better, are finished earlier and cost less.

An essential feature for reducing the risk of failure is to make everything hang together. Integration is the key. In earlier times, all the bits of project management technique were carried out separately by each organisation contributing to the project. Everybody had people doing 'planning', people doing 'costing' and people doing 'quality'. And all the different organisations pursued their own objectives – not the same as

the client's. Now we go for integration so that, as far as possible, all the managers in all the organisations are aiming for the same goals.

Let us therefore review the process of integration and the principles that a project manager must follow to achieve it...

A thorough up-front analysis at the project development stage

Project managers used not to get involved until the project was fully designed - they just managed the implementation phase (such as construction) and often did not do any of the commissioning. The project managers were just in charge of delivering to a specification put together by others. They were prevented from managing or even influencing the first stage of identifying what the project was for and developing the specifications for that purpose. They took charge of the project after it had been defined by others on paper, and often left it before the new economic asset was put into effective use.

It is obvious that a project manager who is involved in deciding what the project is for, and stays with it until it is doing what it is meant to do, must have a better chance of success. This initial step of integration massively reduces the risk of specifying something which can't be produced or can't be made to work - as used to happen. There were lots of examples in earlier times. A lot of money was wasted and sometimes projects were aborted because things were specified which were just too difficult/risky to build and/or too difficult/risky to bring into use.

Many projects fail because the planning of the expected result is deficient. It is essential to have absolute clarity on what is the objective: we must know exactly where we want to get to before we embark on a journey. There are still awful problems with IT system projects because of lack of clarity about what the finished system is supposed to achieve.

A project should not start until the business case is clear and adopted by all concerned. If there is no business case, the PM must produce one for adoption. It must be realistic. I know of a large international chemical company which worked

There were many big disastrous defence projects in earlier times. In the UK, the first Nimrod project to build a new generation of radar warning aircraft was binned after many years. Recently a next generation of the aircraft has been designed and built successfully. Project management has improved!

for years sanctioning new chemical plants on business cases which were consistently over-optimistic. Inevitably the result was consistently disappointing at achieving levels of return on investment.

Involving the stakeholders to define the objective

If you don't involve all the stakeholders, some of them may kill your project later. In the UK, for example, the new National Health Service computer system for patient records, appointments, etc. was developed without full involvement of the doctors. Not surprisingly, few of them are now willing to use it. This is often a problem with IT projects – the detailed objectives are developed without participation of the end users.

The project objective must therefore be defined through a decision-making process involving the stakeholders... but not many of the "project communities" that I know do this well.

Making good decisions

Best practice in most aspects of project management is founded on best decision-making, and a good decision-making approach must always be used, starting with a process – formal or informal – of brainstorming over alternatives.

“ Every decision is a choice between alternatives. Pick the one which has the best chance of converging on achieving the project objectives ”

(Barnes' first law of project management)

To arrive at the best decisions, first think up lots of alternatives to be sure that the list includes the best. Then forecast each of their likely outcomes objectively. Choose the alternative which will best converge on the project objectives. Make sure you can implement the alternative chosen. Always involve the real project 'actors' in the process, in order to get buy-in. If the leader takes the decisions without group participation, nobody else feels obliged to make them turn out to have been good – and there may be one or two who will work hard to make sure they turn out badly!

Decisions are the building blocks of all management, and yet decision making is a severely neglected area. Why do so few project managers think about how to do it well?

Risk management

Risk management is a new entrant in the pursuit of best practice. But what a vigorous new entrant it is!

Ordinary management bumbles along in relative certainty. It is concerned with keeping the widget-making line going well by correcting tiny divergences from the target norm of output rate,

unit cost and quality acceptance rate. And they call that management! Hands-on Project Management is concerned with delivering a complicated, completed asset in a specified time, working against an outside world reluctant to change, with forecasts of what we have to do which we hope are something near right. There are huge uncertainties in every area whether we can get a site on which to put the facility, the unpredictability and irrationality of the planning committee, the unpredictability of the funders contributing unexpected reactions, irrational requirements and so on, and so on.

Project Management is management in uncertainty. So why did it take us so long to realise that risk management is something we should do? You don't even see it mentioned in the PM literature until fifteen years ago. There is no evidence of people doing risk management until recently. And still not much evidence of people who have really built it into their PM technique.

Risk management should be a key consideration in every decision. It should not be an add-on. Every decision you make is made in a background of uncertainty. Risk management is not part of PM – some people whose views I respect are now saying that PM is part of Risk Management.

And yet – there are still people saying, make a good plan (a programme or schedule) and detailed cost budget at the beginning of the project and stick to them what ever happens. This is the authoritative, fight it through, macho, Texas oilman approach to project management. It ruled for the first twenty years of modern PM. Now best practice is entirely different. If you are still working to the original programme and budget - you are doomed as a team and you personally, project manager, are living an illusion.

The only bit of the project we can manage is the bit we have not yet done. The best plan for completing it is the plan which takes account of where we are now, of what we now know about the people on the project, their skills and approach, the risks which could still affect us, the changes in what the client now wants, etc., etc. The original plan was so ill-informed. We would be mad to be still working to it. The same objectives of course – but not the same route to achieving them.

Working together

In 1890, the City of Birmingham had a megaproject to bring water to the city from Central Wales: the Elan Valley scheme. The PM was a man called Mansergh. He decided to do all the work of design, construction and commissioning of the dams, treatment works, pipelines, etc. by direct works – no contractors.

Mansergh persuaded the city authorities that this was the only way to minimise the risk of delays, cost overruns and defective performance. He reasoned on the simple principle that if he hired and paid everybody, he could tell them what the City of Birmingham wanted to achieve through their work, and they would not be motivated to

work towards any other goal. And if they did work towards any other objective, they knew he would sack them. The Birmingham megaproject was a great success.

Working together means collaboration, rather than imposition. Collaborative contracts, based on a unified, collegial aim to achieve well defined objectives are the key to success. Remember the Levene pendulum: on the one extreme, cost plus (or 'time and materials', in the USA), to unify motives. At the other extreme, fixed price to eliminate cost over runs. Both are extremes, and neither works all the time – hence the pendulum metaphor. Collaboration is the means for avoiding the swings of the pendulum..

Use collaborative contracts

An in-house project– when no other companies are involved – is very unusual. Normally there are several, or many other, companies taking part in the project. This is particularly true in major projects of nearly all types.. A good example was the Sizewell B Nuclear Power station in the UK, which was said to have involved 7000 companies.

The client contracted with designers and main contractors plus a few others. The main contractors had contracts with other contractors. Each of them had contracts with subcontractors plus a few others. Each of the subs had contracts with sub subs plus a few others. Each of them had contracts with material component suppliers.

The project started off with one party, the Central Electricity Generating Board, the Client. When another party was added there were two, with one interface. When they had assembled all 7000 there were 6999 interfaces – all regulated by agreements which defined the contract or subcontracted task with commitments to cost and time and details of the relationship across the interface.

Suppose, as in earlier times, all those contracts had been drafted by a Contracts Department concerned only with pushing all the risk possible onto the supplier, and away from the purchaser. Only one out of the 7000 would have been motivated to achieve the client's objective. All the others would be motivated to do their own thing – get the most profit out of their bit and, if they were asked to do something different, cry foul and claim much more money and much more time.

How did we ever get anything finished so that it worked and was finished on time and within budget? The truth is we seldom did.

Now we know we have to use contracts which motivate collaboration, joint consideration of how to deal with eventuating risks, joint risk management. Indeed, joint decision making. Everybody has to help everybody else. Progress meetings must be about moving forward in the new or changed situations, not about blaming somebody else for lack of progress since the last meeting.



Integration

All this leads to only one conclusion – integrate the project management and integrate the people. Integrating the project management means focusing on decision making so that cost, time and performance considerations dictate every decision. Integration means having only one decision making objective – what's good for achieving the client's objective.

Integration means using all the PM techniques to contribute to the overall effect. Making risk management, stakeholder management, time, cost, quality management and design management all part of the single decision-making process with the single objective.

Integration means having collaborative contracts so that everybody on the project can take part in the planing and decision making as one team, suppressing the hidden or partisan objectives.

It can be done, as one or two IT projects have shown and, in the UK, as Terminal 5 at Heathrow airport and the Channel Tunnel Rail Link in the engineering sector have shown. People are working towards this in formerly conflictive sectors such as Defence and Building. The best practitioners of collaboration and integration are now the most successful project managers, and still improving.

Once you know what best practice might achieve, best practice itself moves forward at quite a fast pace. If you had only one word to describe the way ahead, it must be INTEGRATION.

In New Zealand we have recent examples of very complex projects which have worked well in extremely difficult circumstances – the Grafton Gully project, in the centre of Auckland, built while maintaining the flow of traffic in a very congested part of the city; the Auckland Airport runway extension project, built with continuing heavy airline traffic, and the Papatoetoe Undergrounding Project – developing and maintaining the all services to users. They were all managed as collaborative efforts involving all stakeholders.

Further information can be found at:
www.caenz.com/infrastructure/BP/downloads/BPC.html

(Ed. note)

Analysing and Handling Delays in Construction (Part 2)

by Frank McDonough

What happens when we are at loggerheads over a delay dispute, and we end up in arbitration or litigation? This article continues Frank McDonough's views on expert witness analysis and presentation, drawn from his experience as forensic expert, and tribunal member and chairman. This article draws from Frank's paper presented at the Construction Super Conference, London, May 2004. Whilst written in the background of the ICC rules, the principles are valid in most other forums. [Editor's note]

Delay claims and defences are significant in construction industry arbitration, yet receive scant reference in the ICC (International Chamber of Commerce, Paris) rules and procedures. The ICC is not alone in this situation: it is rare to find a neutral forum providing direction in this respect. In fact, often no specific guidance is provided to the parties for the investigation, analysis and documentation required for the identification and proof of delay. The parties are left to their own devices to analyse and present their answers to the key questions:

- Who and what delayed the project?
- Was the delay critical to completion? And,
- Who is responsible for the additional costs under the contract?

This adds to the difficulty of determining, presenting and arbitrating both the delay, and the time-dependent compensation or liability. So— what should a programming expert do when faced with an assignment to present testimony to an ICC or other tribunal appointed to arbitrate a construction dispute?

“ ...the importance of complying with the contract requirements in preparing the programming analysis ”

It is obvious but easily overlooked that the expert must carefully follow the contract programming provisions, if any. For example, if the contract calls for CPM programming, the expert should conform to this requirement in his or her analysis, because the contract will most likely be the foundation for the Tribunal Award.

It is also important to include a detailed review and account of the programming procedures used by the parties during construction, including the joint acceptance of the baseline programme; frequency and accuracy of programme updates; progress measurement and documentation; their analysis of delays, variations and claims... and formal revisions of the Baseline. However, it should also be recognised that, in the sometimes

rough and ready world of construction, the documentation and updating of the progress programme is not always dependable. All actual progress information reported in the programme needs to be checked and verified/ corrected by detailed reference to the most accurate records available, usually the daily inspection or quality control records.

If a Baseline Programme was approved or accepted by the parties at the start of the project, this is the obvious starting point for the analysis of delays. Tribunals generally want to know “How did the contract get started and how did the parties programme the project before disputes arose?”

If a programme is updated accurately and the issues at stake clearly explained by reference to programme updates, and the parties agree to their use and application, it is unlikely that a programming dispute will go to arbitration. Conversely, if the contemporaneous updates are disputed, the matter may result in arbitration, and an independent expert programming analysis and presentation will then be necessary.

The project programme updates can rarely be the sole basis for a forensic analysis. It is usually necessary to dig deep into project records to determine the detailed as-built information, independent of the actual start and finish (AS, AF) data entered during construction. Essential steps in an independent analysis of construction delay generally include a thorough research and examination of the Baseline Programme, and checking for consistency with the contract requirements (for example, ambient conditions for concrete placement, curing times, etc.), inclusion of all the contract work, reasonable logic and durations, and accuracy of the computer runs.

It is always helpful to summarise the Baseline Programme in its essential detail while still reflecting the nature and difficulty of the project and, most importantly, the as-planned critical path. If the programme is resource-loaded, this can also be summarised to good effect, for example in the curves for the as-planned labour hours based on both early and late programmed starts.

Another essential step is the preparation of a programme which summarises the actual construction performance, the As-Built Programme. This is a summary of the actual activities, logic and durations, as confirmed by the project records. This step, usually the most time consuming of the programme analysis, is often the most important, because the identification of the As-Built Critical Path (CP), the longest path to project completion, is vital to

the analysis of delay and causation.

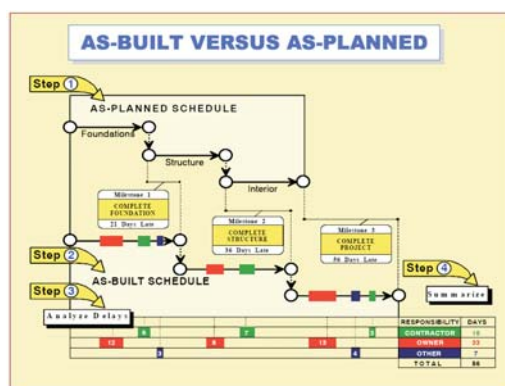
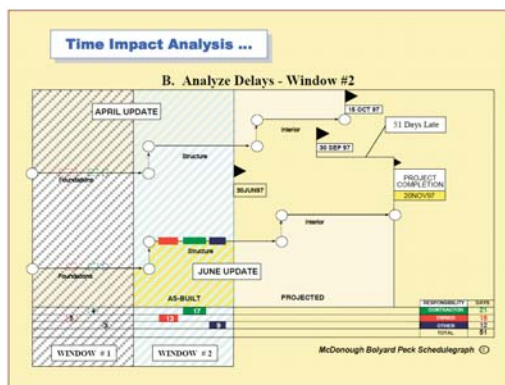
Not only must the start and finish dates of actual activities (both original and new), and periods of no-work be documented, but the actual logic (or sequence, or interdependency) of construction activities must also be determined. Actual logics or restraints that must be considered to determine the As-Built CP can include: physical restraints, design restraints, mandatory contract sequence, ambient weather restraints, equipment or crew resource needs, efficiency of work packaging, access or material handling needs, and preferential logic.

The detailed and careful research into the day-by-day construction activities must be performed by a team experienced in the relevant construction methods, and skilled in CPM programming, to identify and analyse the As-Built CP and pinpoint and evaluate delays.

There is a danger that simply preparing the As-Built CP and ignoring the dialogue and correspondence between the parties during construction, may neglect consideration of important matters such as notices of, or agreements about, delays, and when constructive acceleration (where time extension for excusable delay is requested but not granted) is an issue. In other words, the communications between the parties during construction may have a major bearing on the sequence, duration, and resources applied to specific activities and must therefore be thoroughly dealt with and presented in the testimony of the programming expert. For example, if the parties agreed on a critical path of activities during construction, the contractor would normally be excused contemporaneous delays in non-critical activities. Overlooking this type of agreement might cause a programming analyst to wrongly depict these latter delays as concurrent critical path delays.

The Witness Statement. For an ICC construction arbitration, the analytical purpose, approach, steps taken and conclusions must all be carefully explained and summarised in a clear and logical

way, avoiding unnecessary detail and technical jargon. The primary exhibit for the expert's testimony is the written statement and the Tribunal is likely to study it in detail. It must therefore include all the key supporting information and source documentation, as well as photographs, summary-level programmes, charts and other graphics which significantly help clarify the main programming concepts, methodology and conclusions. Given the complexity of construction delay disputes, the written testimony does not usually suffice to explain the sequencing of activities related to planned and actual time



In our next issue we will conclude the presentation of Frank McDonough's views on direct oral testimony and cross-examination, and his sample outlines of the expert witness statements and recommendations.

Up-and-coming Events

4th Annual PMI Houston Chapter 2006 Conference & Vendors Expo "Modern Project Management and Beyond."

Houston, Texas, USA (6-10 November 2006)

Includes keynote and guest speakers, workshops, training, and the vendors expo. Twelve workshop sessions will be conducted Thursday through Friday morning focusing on project management, real world experiences, and best practices. For more information visit: www.pmi-houstonconference.org

PMI-MG Project Management Conference Seminar sponsored by the PMI Minas Gerais Chapter

Belo Horizonte, Minas Gerais, Brazil (27-28 November 2006)

Theme: "Developing and Reporting Competences in Project Management—from theory to action". In addition to several keynote speakers, the conference features 30 speaker tracks, including panel discussions and case studies. For more information visit: www.pmimg.org.br/geral/encontro_anual/evento.asp

Risk Allocation – a pain in the NEC?

Some thoughts from Dave Jewell, Operations Manager, Fletcher Construction

Collaborative approaches in construction contracting are seen to deliver better value-for-money outcomes for all parties. So there has been much debate about how best to achieve this. When all parties to a contract are aligned to achieving such objectives then real benefits do accrue: cost and time certainty, and the meeting of quality, safety, environmental and social targets. The problem is that often there is no alignment – most contracts seek to assign risk to one party or the other, resulting in competing objectives and skewed outcomes when a risk event occurs. All might be well while the contract proceeds according to plan, but if one party suffers the consequence of a risk event as a result of ambiguity or poor contract drafting even when the risk was not clearly assigned to them then it will generally seek to mitigate that loss to the detriment of the other party.

Construction contracts can be procured in a fair, open and honest way that sets the scene for behaviour during the contract, or it can be one-sided - unfairly allocating risk so that the contractor carries a disproportionate risk burden; this of course only encourages dispute and litigation. The client (and advisers) holds all the cards during the procurement phase, and so should be aware the scene is being set.

Partnering, and more recently “alliancing” and “collaborative working arrangements” have received considerable publicity because of the perception that all parties can realise benefits by working with their interests aligned rather than competing. We should not however be deluded into thinking that partnering can make up for poor documentation or ambiguous risk allocation. It is not a panacea for all ills!

A construction contract is a commercial arrangement between parties – it only exists because each party is seeking to derive a benefit from the contract. We cannot ignore this fact, as it underlies most of the behaviour that is considered to be non-collaborative or divisive on a contract. “Feel-good” partnering goes out the window when the directors want to know why losses are occurring or why the budget is over-running. The problem is that the commercial arrangements that form the contract are clearly there to apportion risk, which inevitably means that the cost of risk events falls on a single party when they occur. In contrast, an alliance agreement specifically sets out to manage risk collectively so that one party can not benefit at the expense of another. Only then can true win/win or lose/lose outcomes occur.

Most construction contracts seek to apportion rather than share risk in the quest for what is believed to be cost certainty at the earliest time. So which form of contract is most likely to achieve that for a particular project? Options include our own NZS 3910 and other forms from overseas

(NEC, FIDIC, ICE are probably the best known). New Zealand has developed and uses extensively a standard form (NZS 3910) that is well-understood throughout the local industry. It has been updated several times (most recently 2003) with input from all sectors of the industry. Needless to say, a number of client organisations find it necessary to modify the general and special conditions to suit their own needs; this often adjusts the risk apportionment. Parties to a contract who are not contractually aware or astute, and who may be relying on their past experience and previous knowledge of the contract, may get caught out by such amendments. The legal fraternity may have little sympathy for such naivety, but surely as an industry we should be concerned when one party can be disadvantaged unwittingly, and thus where legal rather than engineering skills are most highly valued!

With all the current talk of “collaboration” achieving better outcomes, there has also been talk of the NEC from the UK. The NEC arose from the Latham & Egan Reports into endemic inefficiency and confrontation in the UK construction industry. Undoubtedly, the NEC has sparked a significant improvement in relationships and outcomes in a market that was deeply troubled. NEC offers a range of contract forms covering most scenarios, and is simple with plain language. However, is it the change in contract form that has resulted in the turnaround in the UK or is it a fundamental change in attitude driven from the top (i.e. by the client organisations)?

We need to consider whether in the New Zealand context a new form of contract is needed to change attitudes. I contend that the New Zealand market is already characterised by relatively good relationships and cooperation, and that the players in the market already understand the value that can be derived from a non-confrontational approach to contracting. Even if this was not the case, then a change of attitude would be required rather than a change of documentation.

Many believe that the prevailing contract procurement process (specifically, a culture of lowest cost procurement) exacerbated by poor documentation (drawings, specifications, etc.) is what fuels excessive claims rather than the contract drafting itself. Lowest cost procurement encourages risk-taking during tendering that seldom pays off for either party.

Against this background, is it likely that a risk-apportioning contract can ever achieve the utopia of effective partnering and true collaboration?

I am concerned that the proposed adoption and use of NEC in New Zealand might be viewed as a way of improving relationships and collaboration here. It achieved that in the UK where the environment was divisive and litigious,

and where it was fully supported by the leading government agencies. New Zealand is different. We have an inherently fair form of contract in NZS 3910, and we have much better industry relationships – probably as a result of the size of our market.

Certainly NEC is a useful form of contract for particular circumstances because it provides a range of options including measure & value, lump sum, target price, and cost reimbursable - all of which are suitable for design & build if required. All follow the same format for consistency; as a suite of documents it is possible that designer, constructor and subcontractor can all be engaged using related contract forms that better align project objectives. Also NEC clearly promotes management of the project by programme. However, before it could be used in New Zealand amendments would be required to account for our legislative environment.

We could of course cope with a change to NEC. New Zealand's major contractors are already well-used to dealing with a variety of forms of contract including those containing the quirks of individual clients and their lawyers who see fit to modify the so-called "standard forms" or to even write their own contract document. However, all of the industry players in New Zealand are now very familiar with NZS 3910. They know the risk allocation, the requirements for notification, the various processes to manage and administer the contract, and this familiarity gives confidence about fair treatment. There would be significant disruption for the industry players to grapple with a new contract form that requires a quite different approach. My argument is not that this

approach is wrong, just that we must weigh up the impact of the change.

NEC will have its place in the market for specific projects, but it should not be seen as a replacement for NZS 3910 for the thousands of civil engineering contracts that are currently using it very successfully. More importantly, it must not be seen as a replacement for addressing poor relationships. Effective collaboration requires a commitment to openness and honesty in all dealings, and real partnerships will only come from real alignment of objectives, including the critical commercial ones; and from my experience in contracting, that is best achieved through "pure alliances".

David Jewell's 'views from the trenches' are those of a practicing contractor – and we certainly hope that our readers will respond to the challenges he poses: are we, indeed, happy with 3910? Would the NEC improve contractual relationships in New Zealand? Is our contracting environment free from the problems that the UK had and motivated the drafting of the NEC? Please let us have your views! [Ed.]



David Jewell is Operations Manager for the Engineering division of Fletcher Construction and an executive councillor of the NZ Contractors Federation. A civil engineer with more than 25 years experience in the construction industry, both in NZ and Asia, he has broad knowledge of construction contracting from small to large scale, and both as main contractor and subcontractor. With a keen interest in relationship-based contracting, David was a board member on the freeflow alliance and has participated in numerous partnering agreements.

The Singapore Construction Industry Recent Trends and Developments

by Gordon Smith

Introduction

The Singapore construction industry has reduced significantly since its height in the late 1990s, when construction demand averaged S\$20 billion per year. In recent years, overcapacity, falling demand and lower contract volumes have led to consolidation in the construction sector, and demand for the years 2003 to 2005 has averaged approximately S\$10 to S\$11 billion per year, with 40% to 50% of this amount being for some major public sector works, including the Singapore Management University City Campus, the New National Library Building Project, the Ministry of Education Schools Project, the MRT Circle Line (S\$6.7 billion), and the Deep Tunnel Sewerage Project (S\$7 billion).

In response to reduction in demand in Singapore, Singapore firms have increasingly expanded into overseas markets, principally China, the Middle East and India. In 2005, Singapore construction and engineering firms secured a total of S\$2.2

billion worth of overseas construction contracts.

Property Market

The Singapore property market is showing encouraging signs of recovery from the economic shocks of the Asian Financial Crisis of 1997. Property prices reached a low during 2003 of about a 30% to 40% reduction on peak values achieved in 1997. However, the Singapore economy grew strongly by 9.4% in the first half of 2006, with 10.7% growth in the first quarter and 8.1% growth in the second quarter. Supported by growth in the commercial, residential and civil engineering segments, property price indices increased significantly across the board in 2005. The prices of private residential, office, retail space and industrial properties rose by 2.9%, 3.4%, 4.3% and 2.2% respectively in 2005.

Major Projects

Two Integrated Resorts (IRs) are planned for

development in Singapore, and this has given rise to considerable public debate on the desirability of casino gambling in Singapore. In addition to the casinos, the IRs will have other amenities including hotels, restaurants, shopping and convention centres, theatres, museums and theme parks. The first site on Marina Bay was awarded to Las Vegas Sands Corporation on 26 May 2006. With the land price and associated capital cost, its total investment is expected to exceed S\$5 billion, making the Marina Bay Sands one of the most expensive integrated resorts in the world. The IRs are expected to stimulate an additional S\$2.7 billion (or approximately 0.8%) to Singapore's GDP and generate some 30,000 jobs throughout the economy by 2015. Proposals for the second site on Sentosa Island will be accepted in October 2006, with a decision expected by the end of 2006.

The Singapore government also plans to develop The Downtown at Marina Bay. This is envisioned to be a "city in a garden", providing a business and financial hub, and complementary residential, hotel, leisure, park and cultural developments. The Downtown at Marina Bay will offer a variety of development options with magnificent views across the waterfront and the parks. The government has committed more than S\$300 million on infrastructure development at the Bay area, which will involve the construction of works to improve accessibility to the area and support new developments.

Investment by multi-national companies in sectors such as electronics, biomedicine, pharmaceutical and petro-chemical industries has contributed significantly to Singapore's construction sector. The stock of foreign direct investment (FDI) expanded by 8.1% to S\$272 billion as at end 2004, with top investor countries being United Kingdom (S\$46 billion), United States (S\$41 billion) and Japan (S\$37 billion).

Forms of Contract

The Singapore government and private developers have generally favoured the traditional contracting methods of engaging consultants to prepare documents for tender, followed by the award of a construction only contract to the successful bidder. Two standard contracts often used are the Singapore Institute of Architects main contract form (6th edition) for private developments, and the Public Sector Standard Conditions of Contract (4th edition) for public works. It is fair to say that both of these forms are balanced in favour of the owner. The SIA standard form was drafted by a well known London construction lawyer, Ian Duncan Wallace QC, and has many unique features.

In recent years, there has been more interest in awarding construction contracts on a design-build basis, although private developers are reluctant to transfer complete control of design elements to the contractor. The Singapore government has also initiated a series of public private partnership projects where private

developers build and operate infrastructure facilities in return for a regular stream of payments. The planning for three of these projects, in the sports and education areas, is under way.

Recent Legal Developments

On the legal aspect, efforts have been made to address poor payment practice which is a prevalent problem in the construction industry. With the coming into effect of the Building and Construction Industry Security of Payment Act (the "Act") on 1 April 2005, more protection is now given to contractors, subcontractors and suppliers to receive and recover payment promptly and to avoid standstill situations in construction projects. The Act, which derived its roots from the UK Housing Grants, Construction and Regeneration Act 1996 and the New South Wales Building and Construction Industry Security of Payment Act 1999, also introduced the concept of adjudication to Singapore legislation for the first time.

The Singapore courts, as a common law country, closely follow English court decisions on most construction law issues. However, the courts are also willing to depart from English legal principles and follow conflicting commonwealth courts on some leading edge issues such as the liability of contractors and engineers to third parties for defective design, and some issues involving equitable principles.

Singapore as a Regional Arbitration Centre

The Singapore government has actively promoted Singapore as a regional centre for international arbitrations over the last 20 years. These measures include removing restrictions on foreign lawyers acting in arbitrations in Singapore, the setting up of the Singapore International Arbitration Centre in 1991 as an independent non-profit organisation, and the adoption of the UNCITRAL Model Law. Other factors such as the quality and independence of the Singapore judiciary, a pool of competent arbitrators and counsel, and supported by good infrastructure, has assisted in developing Singapore's reputation as the preferred seat for arbitration in Asia. Some 70%-80% of arbitrations involve disputes arising from construction and engineering projects located in Singapore, China, Philippines, Indonesia and Thailand.



Gordon Smith graduated from the University of Canterbury with a BE (Civil) in 1982, and worked for engineering consultancy firms in New Zealand and Australia for 12 years before completing a law degree at the University of Canterbury in 1994. He has been resident in Singapore since 1998, and was a partner at a major international firm in Singapore, until April 2004. He joined DLA Piper Singapore as a partner in April 2004 and now leads the Asian construction practice in the firm. His principal area of practice is construction and engineering law. Gordon is named in Asia Pacific Legal 500 as a leading individual in construction law in Singapore.

When a Contract goes awry...Part II 'cherchez la speci'!

Conclusion of the saga of the Bruggerton Hospital ventilation ducts (see our previous issue for the background).

Remember 'cherchez la femme', the old French cliché? In construction work, problems and potential disputes can often be traced back to incomplete, ambiguous or erroneous specifications.

As several of our readers correctly noted, the imprecise specification for the ventilation ducts – which should 'conform to HVAC Association Standards', without indicating the particular strength or duty to be used – was the start of the problem, compounded by poor supervision. When preparing the tender, the mechanical subcontractor took the path of least cost, and priced the duct according to light commercial specifications, i.e., a duct to cope purely with ventilation, without the heavy draw necessary to exhaust smoke, steam and other cooking fumes, with the added resistance to air flow caused by grease filters. The duct should have been built to heavy industrial standards, and should have been able to handle the exhaust fumes from the Hospital kitchens without problems.

A dispute had arisen at project management level, and each of the three parties blamed the other two for the failure of the ducts: the Contractor was blamed, for providing ducts not suited to heavy industrial operation; the Consultant, for not providing a precise specification, failing to note that the ducts were not built to the standard required for the Hospital kitchens, and providing a certificate of Substantial Completion; and the Owner, whose engineers had installed exhaust fans with 50% more capacity, and failed to re-connect the damper cut-off switch – the end cause of the collapse – without consulting the E&M engineers or the specialist subcontractor. The meetings called to resolve the problem came to a standstill, with the parties hinting that the matter would have to be referred to their legal counselors.

In fact, this particular contract was developed under a Partnering Agreement and, while the discussions had broken down at contract management level, the agreement required contentious matters to be escalated to top management in each of the principal participating organisations: owner, consultant and contractor.

The Head of the Hospital Board convened a meeting with the Senior Partner of the Architect's firm and the Managing Director of the Head Contractors. As a point of principle, they all agreed that the problem should be resolved in the spirit of the Partnering Agreement; they also agreed that the three parties had played a role in creating the problem and, if escalated to a major dispute involving arbitration or court proceedings,

the legal costs would be high – possibly exceeding the cost of strengthening the ducts – and the chances of recovering expenditure and legal costs would be doubtful.

In frank and open discussion, the parties agreed that:

- The Contractor had priced on the lowest commercial specification of the HVAC Association Standards, knowing full well that the kitchens would require heavier plate and supports; had not tagged the tender accordingly, and proceeded to build following the lighter specification. Nevertheless, it was also noted that their work had been certified as Substantially Complete after a final inspection by the supervising Architects and M&E Engineers;
- The M&E Consultant had not issued a precise specification for the ducts, and failed to properly supervise construction and compliance with the heavy duty requirements of the kitchen exhaust ducts; and
- The Hospital engineers had carried out modifications to the system without referring to the M&E Consulting Engineers or the Contractor.

The three parties carried insurance protecting them against the specific risks that each had incurred, and the three top managers agreed to refer the problem to their insurers:

- The Owner, whose policy for the Hospital Facilities included clauses covering the risk of accidental damage or destruction to all or part of the facilities caused by its servants;
- The Consultant, whose professional liability insurance cover included errors and omissions in the discharge of their duties; and
- The Contractor, also covered by professional liability insurance.

The three Insurers sorted out the whole matter in the end. The three main parties were major clients of their respective insurers, who valued their business and also were aware of the complexity of the case and the heavy legal costs surrounding arbitration or litigation of a case with a somewhat indeterminate liability.

The actual apportionment of costs among the insurers was never revealed—but the Contractor did assist by carrying out the repairs and strengthening at cost. Perhaps the Contractor was paid a sum equivalent to its profit for this work? Did the other two insurers share the actual cost? We will never know: insurers operate in mysterious ways!

BUT – we do know that an imprecise Specification was the origin of the problem.

Recent Abstracts

The following is a selection of a few of the papers on construction industry issues currently available on the web. Further abstracts will be published in later editions of this Newsletter.

Factors influencing project delivery within construction clients' multi-project environments

[Nick G. Blismas, William D Sher, Anthony Thorpe, Andrew N. Baldwin (2004) *Journal: Engineering, Construction and Architectural Management* Vol. 11 Issue: 2 Page: 113-125]

The single project paradigm which dominates the literature of both project and construction management research does not accurately reflect the reality of many construction clients, who have large ongoing construction portfolios rather than one-off construction projects. Although several concepts of multi-project environments (MPEs) exist, an investigation of the form and dynamic interactions of components within MPEs of construction clients was lacking. This paper presents the factors identified as exerting greatest influence on project delivery within construction clients' MPEs.

Keywords: Case Studies, Construction Operations, and Project Management

Benchmarking Initiatives in the Construction Industry: Lessons Learned and Improvement Opportunities.

[Costa, Dayana B, Formoso, Carlos T, Kagioglou, Michail, Alarcon, Luis F, Caldas, Carlos H (2006) *Journal of Management in Engineering*; Vol. 22 Issue 4, p158-167]

Benchmarking is a systematic process of measuring and comparing an organization's performance against that of other similar organizations in key business activities. The lessons learned from other companies can be used to establish improvement targets and to promote changes in the organization. The benchmarking process can create a fertile ground for ideas, but only in a receptive environment; companies that share good practices and compare their performance against others benefit most. Recently, industry groups in several different countries have initiated benchmarking programs focused mainly on construction

Disclaimer

While every care is taken to present articles discussing current trends and techniques in contracting and construction, CAE emphasizes that the information contained in this Newsletter is not a substitute for experience and expertise, which must be sought by the readers where deemed necessary. Note also that some articles may propose matters for discussion based on the authors' opinions, drawing on their own experience or theories and, as such, may be subject to further testing, and should therefore not be taken as proven or approved practice.

performance measures. This paper describes the scope of these initiatives and discusses the lessons learned and improvement opportunities that were identified in their design and implementation. This investigation is focused on four initiatives, carried out in Brazil, Chile, the United Kingdom, and the United States. This paper concludes by recommending some further directions on this research topic.

[ABSTRACT FROM AUTHOR]

Keywords: Construction Industry, Evaluation, and Organizations.

Drivers for dynamic brief development in construction

[Ayman, A. E. Othman, Tarek M. Hssan, Christine L. Pasquire (2004) *Journal: Engineering, Construction, and Architectural Management*; Vol. 11 Issue: 4 Page: 248-258]

Confining the development of the project brief to a certain stage hinders the interaction between the client and the designer. In addition, it inhibits the incorporation of the influential internal and external factors that may affect the project. In spite of the frequently adverse impact of change orders on project cost, time and quality, literature review and case studies showed that client organisations continue to use change orders to achieve their expectations and enhance their projects' performance principally because current construction management process instils an expectation that, change after a specified point is somehow outside the project brief rather than part of the ongoing development of that brief. This paper introduces the concept of dynamic brief development (DBD), a process that facilitates client satisfaction, meets the need to adapt to the brief developing factors for the benefit of the project and fulfils the desire to manage project change orders. In this paper, the need, aims and principles of the concept of DBD are explained and the factors driving brief development are identified. In addition, the rationale behind each factor is given and the case study sampling method is described.

Keywords: Construction Industry, Project Management

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