



AN ANALYSIS OF THE ALLIANCING PROCUREMENT METHOD FOR RECONSTRUCTION FOLLOWING AN EARTHQUAKE

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ABSTRACT

Reconstruction following an earthquake disaster requires a different response to ordinary construction. One of the key factors to consider is the development of a fast and efficient contractual framework for rebuilding following a disaster event. The objective of this paper is to explore the effectiveness of the alliancing system for the procurement of construction projects following such an event. The methodology for this research consists of analyzing international literature on the alliancing procurement system and then assessing this for usefulness following an earthquake. Comparisons of this system with more common procurement systems will be made. The paper will then discuss how the construction industry in New Zealand, and internationally, can facilitate the adoption of pre-disaster reconstruction procurement plans. This will include a discussion on what such a plan might include, with particular focus on the adoption of the alliancing system of procurement for reconstruction following an earthquake.

Introduction

The traditional risk-transfer contracting models have increasingly been shown to be inadequate to deal even with the relatively predictable circumstances of normal construction. However, in an earthquake disaster situation many projects have to be delivered in an environment of great uncertainty. There is uncertainty in many aspects, for example the scope and the cost of the work and the availability of people and other resources. For this reason many reconstruction projects have in the past been paid for on a cost reimbursable basis.

In a post disaster situation there tends to be more mutual understanding of the uncertainty between the client and contractor and often cost-reimbursable contracts are used. Alliancing is a development of target cost contracts that is in turn a development of a cost-reimbursable contract.

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Construction Procurement

The suitability of procurement strategies such as traditional, design-build, partnering and alliancing can be judged against, amongst other things, time, cost, quality, industry familiarity, communication and management. Procurement systems are the organisational structure adopted by the client for the implementation of the project process and eventual operation of the project (Griffith et al., 2000). Procurement can be seen as a strategy designed to satisfy the client's development needs (Moore, 2002) and the inherent part of a procurement system is to achieve the clients' objectives (Love et al., 1998). In an emergency situation reconstruction is required rapidly, and this should be at the forefront of the client's objectives. Cheung (2001) suggests procurement is critical as it determines the overall framework embracing the structure of responsibilities and authority for participants within the building process. In all projects, but particularly in a crisis situation such as after an earthquake, clear structures need to be determined and responsibilities and authority for rebuild established.

Commonly used procurement systems can be categorised as either traditional, integrated or management (Love et al., 1998). The traditional system is where the project process is separate and sequential in nature (construction follows design and tender) and is the oldest form of construction procurement (Moore, 2002). An alternative integrated system, as described by Al Khalil (2002), is where a single organisation is responsible for design and construction of the project and the involvement of the client is at a single point. Common examples of these procurement systems are design and build, built-operate-transfer (BOT), built-operate-own-transfer (BOOT), turnkey and package deal. The management approach is where an additional role of construction manager (CM) or project manager (PM) is added in the organisation to look after the project objectives. These systems as described by Walker & Hampson (2003) are the combination of traditional system of procurement and integrated approach because in this kind of system a separate entity, often called project manager, acts in a management role and the project manager is responsible for all clients' objectives through one point of contact with the client. Other recently developed procurement systems are project alliancing and strategic partnering which are largely based on the ethics of the project participants, collaborative relationships and trust between the parties (Broome, 2002).

Many construction projects are commonly carried out using the traditional procurement system (Masterman, 2002). However, recent changes in the construction industry such as changes in the type of client and development of construction techniques have produced differentiation within construction processes and changes in organisational structures to satisfy a variety of clients' objectives (Love et al., 1998). This has led to the development of variety of more integrated and collaborative procurement systems. Both Sanvido & Konchar (1999) and Walker (2002) comment on the relationships of the parties to the project. As Walker (2002) points out, '...for the purpose of accomplishing a construction project an organisation can be said to be the pattern of interrelationships, authority and responsibility that is established between the contributors to achieve the construction clients' objective'. Hence the key to the management of a construction project is the way in which the contributors are organised to use their skills effectively. Following an earthquake, skills may be lost through injury and loss of life and there would be a high demand on the remaining skilled workforce. Effective use of skills is an essential element

for rebuilding after an earthquake and the procurement system used would need to recognize the skills shortage and respond to it.

Project Alliancing

Project alliancing is typically used on larger and more complex projects, where there is a large amount of uncertainty so would be useful in an emergency situation. The size and duration of the project has to justify the investment in setting it up, both commercially and culturally (Broome, 2002).

Lynch (1989) points out “companies frequently lack sufficient management skills and resources to tackle extremely large and complex tasks.” Team managers need to develop and nurture a culture of collaboration throughout the organization and between organisations in order to manage such projects. Hence the attractiveness of inter-organisations with developed trusting and collaborative approaches to business. Philips (2005) reports that evidence in procuring construction contracts from Los Angeles following the earthquake was that the contracts were finalised within two weeks rather than three months and that the contractor has developed long and lasting relationships with Caltrans. This bodes well for any future emergencies where companies have an appreciation of the merits of the other parties and can trust and collaborate well, essentially having an alliancing project relationship. The next step is the formalisation of this relationship.

A critical success factor is the selection of the appropriate partners (Walker and Hampson, 2003). Walker et al (2003) explain the selection philosophy in the context of Australian National Museum as follows: “In alliancing trustworthy, committed and world—class professional and competent firms are invited to join with the owner/client to develop the project. As an alliance of talented professionals pooling resources to achieve the project goal, they develop the project price target through design development with agreed risk and reward sharing arrangements established.” Project price targets are part of the alliancing system. Such targets have been used in reconstruction. For instance, Philips (2005) described the reconstruction of the Santa Monica Motorway following an earthquake where each contract had bonus incentives for being early and costs for being late. In alliancing this pain/gain is shared across all parties in the project.

But alliancing goes beyond price targets. McGeorge & Palmer, (2002) name the following attributes of the project alliance:

- Mutual trust between team members and parties
- Honest and direct communication
- Generous listening to each other
- Mutual support and respect for others
- An atmosphere of integrity
- Accepting and maintaining a level of stretch or discomfort in declared targets
- Focus on achieving results
- Working on the basis of no blame if someone fails
- Individuals taking ownership of their actions and inactions

- Working in an environment where problems are not seen as negative, but as avenues to new possibilities.

When dealing with strategic alliancing, most authors name trust as the most critical success factor (Walker & Hampson, 2003). According to Howarth et al (1995), trust in a strategic alliance also includes the concept of reciprocity, including a long term focus, the acceptance that obligations are mutual, and room for adjustment if one partner is suddenly placed in a compromising position. The principles of successful strategic alliances proposed by Hampson and Kwok (1997) – trust, commitment, interdependence, cooperation, communication and joint problem solving – reflect a similar theme.

Therefore analysis of alliancing shows that there are core principles that are regarded as fundamental for alliance relationships which can be defined as:

- Collective ownership of all risks associated with the delivery of the project;
- Sharing of the ‘pain’ or ‘gain’ depending on how actual project outcomes compare with the pre-agreed targets which have been jointly committed to
- All participants operate at same level and have an equal say;
- Decision making based on condition that is “best-for-project”;
- Responsibilities are clearly defined and parties respect and support rather than blame each other;
- All parties have full access to the resources, skills and expertise of each other;
- All financial transactions are based on an ‘open-book’ concept;
- Innovative thinking is encouraged with a commitment to achieve outstanding outcomes
- Visible and unconditional support from the top level of each participating organization
- Open and honest communication with no hidden agendas

Many of these core principles can be reflected in the desires of communities for reconstruction projects following a disaster.

Reconstruction following an earthquake – is alliancing the way forward?

In a disaster, the ability of an organization to quickly establish an adequate procurement system for rebuilding is crucial. For reconstruction following a disaster event it is hypothesized (Wilkinson et al, 2004) that the procurement framework needs to have the following attributes:

- Short time for rebuilding
- Low cost
- Use of local material, labour and plant
- Well developed communication links between the parties
- Well developed relationships between the parties (including trust and respect between the parties)
- Local industry familiarity with the construction procurement framework

These features are found in some procurement systems more than others. For instance, if local companies in a reconstruction zone have established long-term relationships then using alliancing will be more easy to implement. Whereas the somewhat fragmented nature of a

traditional design-bid-build system tends to mean that communication becomes complex. This is a disadvantage when working in a crisis situation where clear and easily understood communication systems are required (Wilkinson et al, 2004). Well developed communication links between the parties, coupled with good relationships will aid the reconstruction process. Some clients, owners and public organisations already have such systems in place. These organisations can demonstrate features of alliancing, such as developed links and established communication systems, which can be used in a crisis. Large infrastructure owner organizations, or serial clients, will have an advantage over one-off clients for a number of reasons as follows:

- experienced in procurement and delivery of construction projects
- procurement processes already established
- existing relationships with construction companies
- ongoing projects from which resources can be diverted if necessary

These clients will have formed partnerships, and sometimes formal alliances, with other participants in the construction supply chain. They are in a better position than new clients to understand how reconstruction events will require a different approach and be more willing to use a system featuring collaboration and open communication.

Historically post-disaster reconstruction projects have used a cost-reimbursable payment mechanism as there is a large degree of uncertainty over the scope and cost of the work. Under such an arrangement the contractor keeps records of all their costs and then applies to the client for reimbursement. The actual reimbursement will include an additional agreed component, for example:

- cost plus percentage fee
- cost plus guaranteed maximum fee
- cost plus fee with bonus incentives
- cost plus fee with time penalties

A refinement of the cost reimbursable mechanism is a target cost. Target cost contracts are used when there is uncertainty over the final cost of the project. Under this mechanism the client and contractor will assess the most likely cost of the works and agree on a mechanism for sharing any cost overruns or cost savings. This then gives an incentive to the contractor to identify any efficiencies and make savings, which is not the case under a cost reimbursable type arrangement. Target cost contracts require a collaborative working arrangement and project alliances are a development of target cost contracts (Broome, 2002). Target cost contracts tie the rewards of *all* alliance members to the success of the project through a pain/gain sharing mechanism.

If reconstruction projects following an earthquake disaster are treated piecemeal then the use of alliancing would not be justified on the many smaller individual projects. If however a coordinated programme of work is envisaged to facilitate post-disaster reconstruction, this situation presents an opportunity to use an alliancing approach. Hence alliancing would be appropriate in this situation due to the following factors:

- Large scale of work programme
- Large degree of uncertainty and complexity
- Need for a target-cost type of payment mechanism to allow for variation in the scope of work and promotion of innovation in the execution
- Generation of a cooperative culture due to the wider social incentives to work together for the benefit of the whole community

The use of alliancing does necessitate pre-planning and detailed preparation. Parties need to be confident that they understand how the relationship will work and the benefits that each party will need to be transparent. Preparation for an alliance relationship can be done in anticipation of a future event and the role parties will be able to play in such an event.

Preparation for reconstruction procurement

There is little evidence of pre-planning for post-earthquake reconstruction procurement in New Zealand. In a disaster event, such as an earthquake the focus tends to be on response and initial recovery, with little planning for long term recovery or wide scale reconstruction. International experience indicates that reconstruction projects are procured in an ad hoc, reactive way following a disaster.

Since alliancing requires significant input in the early stages to establish an appropriate commercial and cultural framework, this would work against the use of alliancing if there is no prior planning and attempts are made to establish such a relationship in a reactive way following an earthquake disaster. However, some preparation can be done in advance which would facilitate adoption of an alliance for post-disaster reconstruction. Preparations should be carried out by agencies that would be responsible for delivering reconstruction projects (such as major public utility and highway infrastructure owners). Such preparations could include:

- Identifying construction supply chain companies with similar values and commercial culture to that of the owner
- Identifying facilitators who could be called upon to accelerate and maintain the culture
- Developing alliancing agreements that are provisionally agreed to in advance by potential alliance parties, including commercial and legal frameworks and dispute resolution procedures
- Developing procedures for establishing target costs and pain / gain share

By having reconstruction plans in place in the form of procurement strategies, collaborative arrangements between key organisations those involved in a disaster event will be able to facilitate quick and effective reconstruction.

Conclusions

Reconstruction following an earthquake disaster requires a different response to ordinary construction. One of the key factors to consider is the development of a fast and efficient contractual framework for rebuilding following a disaster event. The alliancing system for the procurement of construction projects following such an event may have positive attributes for

reconstruction. This system requires some pre-planning for such and event but it can provide long-term benefits for the construction parties and communities in the development of strong collaborative and trusting relationships with potential positive effects on reconstruction.

References

Al Khalil, M.I., (2002), Selecting the Appropriate Project Delivery Method Using AHP, *International Journal of Project Management*, 20, pp469-474.

Broome, J., (2002) *Procurement Routes for partnering: A Practical Guide*, London, Thomas Telford Publishing.

Cheung, Sai-on. (2001), An Analytical Hierarchy Process Based Procurement Selection Method, *Construction Management and Economics* 19, pp427-437.

Griffith, A., et al, (2000) *Management Systems for construction*, New York, Pearson Education Inc.

Hampson, K. D., and Kwok, T.(1997). Strategic alliances in building construction: A tender evaluation tool for the public sector.” *Journal of Construction Procurement*, 2(1)

Howarth, C. S., Gillin, M., and Bailey, J., (1995). *Strategic Alliance: Resource Sharing Strategies for Smart Companies*, Pitman Publishing, Melbourne

Love, P.E.D., et al, (1998), Selecting a suitable procurement method for a building project, *Construction Management and Economics*, (16), pp221-233.

Lynch, R.P. (1989) “*The Practical Guide to Joint Ventures & Corporate Alliances.*” John Wiley, & Sons Inc, New York

McGeorge,D. and Palmer, A. (2000) *Construction management new directions.* , Blackwell Science, London p. 188–239 .

Masterman, J.W.E. (2002). *Introduction to building procurement systems.* Second edition. Spon Press. London

Moore, D., (2002) *Project Management: Designing Effective Organisational Structures in Construction*, Oxford, Blackwell Science Ltd.

Philips P (2005) *Lessons for Post-Katrina Reconstruction*, Economic Policy Intitute, Briefing paper, Washington D.C.

Sanvido, V. & Konchar, M., (1999), *Selecting Project Delivery System*, Pennsylvania, The Project Delivery Institute.

Walker, A., (2002) Project Management in Construction, Oxford, Blackwell Science Ltd.

Walker, D. & Hampson, K., (ed), (2003) Procurement Strategies: A Relationship Based Approach, Oxford, Blackwell Science Ltd.

Wilkinson S.J, Le Masurier J, Gupta, S (2004) The development of a contractual framework for disaster reconstruction, CIB Conference, CD Rom proceedings, Helsinki, Finland.