

**A Case Study as to the Effectiveness of
Dispute Review Boards on the Central Artery/Tunnel Project
By
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Introduction

The most prevalent use of the Dispute Review Board (DRB) process in the United States to date is the Central Artery/Tunnel project located in Boston, Massachusetts. A DRB is a three member panel jointly chosen by the contractor and owner that is present throughout the course of the contract. When a dispute occurs it hears both parties' presentation concerning the dispute at hand and then issues a non-binding recommendation as to the disposition of the dispute.

The Central Artery/Tunnel (CAT) Project fondly called by its nickname "the Big Dig" is considered one of America's foremost megaprojects; it is the largest and most complex urban transportation project in United States history. Its relative magnitude is compared with the pyramids and Panama Canal in both cost and scope (Bechtel Parsons Brinkerhoff 2006; Bechtel, 2007; Coughlin & Strahinich 1993; Grunwald, 2006; Pacheco, et al., 2004). The CAT's project actual construction work operations spanned from 1991 to substantial completion in December 2005 with the full opening of I-93 South, Dewey Square tunnel, I-90/I-93 interchanges, and Leonard P. Zakim Bridge (Amorello, 2005).

Central Artery/Tunnels Project History

The original elevated Central Artery was constructed from 1950 and completed in 1959 (Angelo, 2006; Flynn, 1998). The elevated Central Artery carried approximately 75,000 vehicles a day and was originally intended to work with the Inner Belt which circled downtown Boston from the South End and Back Bay across the Charles River to Cambridge and Charlestown (Background, 2006). However, the construction had unintended consequences in that it separated Boston's north end and water front from its downtown thereby cutting off economic development in the north end and waterfront areas (Background, 2007). The elevated Central Artery was reported to carry more "cars per lane than any other highway" in America (Flynn, 1998 p. 47). With traffic jams lasting eight to ten hours a day and an accident rate four times the national average for urban interstates (Background, 2007).

In 1972, a report was prepared by the Boston Transportation Planning Review suggesting to demolish the existing elevated Central Artery and reconstructing it below ground (Boston Transportation Planning Review, 1972). The economic impact of such a plan was projected to revitalize Boston's waterfront and remove the visual "eyesore" of the original Central Artery. The new underground highway system would optimize opportunities for increased tourism as well as enhance land values (Boston Transportation Planning Review, 1972; Grunwald, 2006, p. B02).

However, federal funding was needed to make the project a viable one and in 1987 it was secured covering 90% of the costs for a new, underground

Central Artery and a new Boston Harbor tunnel connecting to Logan Airport (Audit Report, 2002).

Construction of the Central Artery/Tunnel

The Massachusetts Department of Public Works (MDPW) hired the joint venture of Bechtel/Parsons Brinkerhoff Quade & Douglas (Bechtel/Parsons Brinkerhoff) as management consultant in 1985 (Audit Report, 2002). Bechtel/Parsons Brinkerhoff was contracted to provide design services, coordination among and between designers, contractor administration and coordination, safety monitoring, project oversight, cost and schedule reporting, inspection services, and providing recommendations to enable the owner to make informed decisions (Bechtel/Parsons Brinkerhoff, 2006; National Academy, 2003; Miller, 2002). The MDPW retained the authority to actually make decisions (National Academy, 2003). Ultimately in 1997 the Massachusetts Turnpike Authority (MTA or Owner) was designated to be the Owner of the project. Bechtel/Parson Brinkerhoff's project's role ended in December 2005 when all administrative and project functions were turned over to the MTA. At that juncture Bechtel/Parson Brinkerhoff provided support services to the MTA (Bechtel/Parsons Brinkerhoff, 2006).

The Project

As constructed, the CAT project spans 7.8 miles of highway, 161 lanes miles in all, about half in tunnels and was designed to carry 245,000 vehicles/day. The CAT project has two major components. First is the replacing the six-lane elevated highway with an eight-to-ten-lane underground expressway directly beneath the existing road, culminating at its northern limit in a 14-lane, two-bridge crossing of the Charles River. Second, the extension of I-90 (the Massachusetts Turnpike) from its former terminus south of downtown Boston through a tunnel beneath South Boston and Boston Harbor to Logan Airport (Background, 2007).

The initial cost estimated in 1982 dollars was \$2.6 Billion which was based on preliminary concept without technical studies being performed (Bechtel/Parsons Brinkerhoff 2006; Ginsburg, 2004; Micciche, 2001; National Academy 2003; Pacheco, et al., 2004). It originally was to be completed in 1998 (National Academies, 2003 Pacheco, et al. 2004). The project's eventual cost is \$14.625 billion (or \$8.0 Billion in 1982 dollars) (Amorello, 2005; National Academies, 2003; Pacheco, et al., 2004) with Federal contributions capped at \$8.5 Billion (Micciche, 2001). Substantial completion was achieved in 2005 (Angelo, 2006; Bechtel/Parsons Brinkerhoff, 2006), \$12 Billion over the original budget and seven years later than planned.

There is some dispute as to the causes of the cost growth. According to Bechtel/Parson Brinkerhoff (2006) the cost increase was the result of many events, not the least of which is escalation, scope changes, design issues, and

the like (Bechtel/Parson Brinkerhoff, 2006). However the MTA (Owner) noted cost increase were also the result of acceleration and Contractor's claims for schedule extension, overhead costs and impact costs (Amorello, 2002) all within Bechtel/Parson Brinkerhoff's purview (Sullivan, December 2003; 2004). Further discussion on cost growth is beyond the scope of this paper.

Dispute Review Boards - History

DRB is a unique, non-adversarial project management technique which is a pro-active, dispute prevention and resolution method utilized during the course of construction seeking to resolve dispute contemporaneously (Harmon, 2003a). DRBs are based on the premise that early attention to a conflict will generally lead to its prevention (Associated Soil and Foundation Engineers, 1988) or to its timely settlement (Jones, 1995). The success of a DRB is defined as resolving all disputes contemporaneously during the construction of the project with no unresolved disputes at contract completion (Harmon, 2003a, 2003b).

The first DRB was the second bore of the Eisenhower Tunnel at Loveland Pass, Colorado (Silberman & Battelle, 1997). The project was built between May 1975 and open to traffic on December 21, 1979 at a cost of \$106 million (Coffee, 1998; Eisenhower Tunnel, 2007; Smith, 1997) two years late and 117% over the original contract cost (Denning, 1993, p. 43; Eisenhower Tunnel, 2007; Mathews, 1997). Not willing to repeat past mistakes, in the

contract documents for the second bore, the Colorado Department of Highways required a review board to make non-binding recommendations concerning disputes that arose during the course of the project. Although the contract for the second bore did not require organization of the DRB until it was needed, the parties agreed to organize the board at the beginning of the project. The project had four disputes heard by the DRB and all were resolved prior to the contract closeout and without litigation (Bramble & Cipollini, 1995; Mathews, 1997). With this and subsequent successes, DRBs, are now utilized in virtually every area of commercial construction, from tunnels and bridges, to airports, buildings, co-generation plants, roadways, etc., in the United States, Europe, India, China, Great Britain, and Australia.

DRB Process and Procedures

The DRB is included in the contract terms and organized before construction began. The contractor selects one member and the Owner another with each approving the other's choice (Division I Subsection 7.16 of the General Conditions). A third member was selected by the two chosen DRB panelists. Members of the DRB are highly qualified with substantial engineering or construction experience. The project documents require DRB panelists to have at least 10 years experience in their respective professions and substantial experience in the type of construction involved in the contract as well as experienced in contract interpretation and construction claims (Perini v

MHD, 2005). The each DRB panelist serves a term of one year which could be automatically renewed unless either party elected otherwise. The costs of the DRB are shared jointly by the Owner and Contractor.

The DRB was to hear disputes and issue a non-binding recommendation as to how the dispute should be resolved. This recommendation would then be referred to the MTA's Project Director who would accept or reject all or part of the recommendation. If the contractor disagreed with the Project Director's decision, it would appeal such decision to the Massachusetts Highway Division Board of Contract Appeals or file suit in Superior Court. There is a defined period of time to appeal or file suit in the contract. If the contractor does not file on appeal within the prerequisite time, the Project Director's Decision shall be final and binding, and further judicial review is barred (MHD v Perini, 2001).

DRB During Construction Operations

The DRB receives copies of the contract documents, makes a project inspection tour, meets periodically at the site, and is kept informed of project developments. In the event a dispute occurs that the owner and contractor cannot settle on their own, the DRB schedules a hearing where both sides of the dispute will be argued and produce a written recommendation for its suggested resolution of the dispute. The process allows the parties have had an opportunity to be heard, and they recognize that the DRB members have technical expertise and a firsthand understanding of the project allowing for a

realistic determinate as to the disposition of the dispute. Although the decision is not binding, statistics reveal that the parties usually defer to the judgment of the board in settling the dispute; essentially to do otherwise would defeat the purpose of having a DRB (DRBF statistics, 2007).

The Study

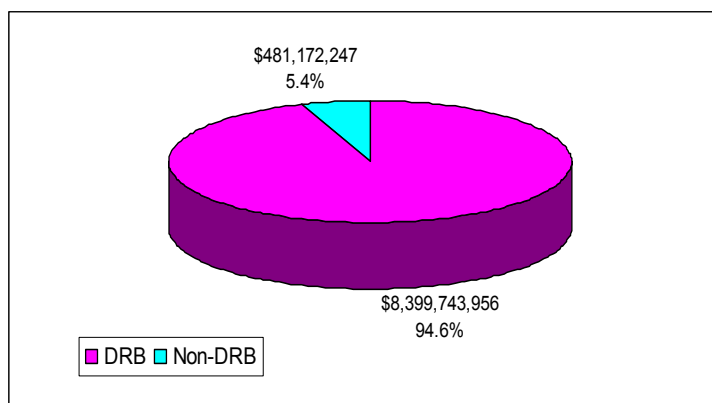
Data for this study was gathered from 2002 to 2006 from many sources including, but not limited to the Bid Dig website (2002 to 2006), Central Artery/Tunnel field staff, construction contract details reports, published reports, audits, hearing testimony, etc. A full list of sources is included in the reference section of this paper as well as in the individual Appendices.

This study is limited only to construction contracts on the Central Artery/Tunnel project, excluding the design and procurement contracts. This study reviewed data on 86 construction contracts which had a notice to proceed issued during the period of February 1990 (C21A3) to 2004 (C08A8) (see Appendix for a full listing). Of the 86 contracts, 46 contracts had DRBs (DRB contracts) included as a dispute resolution mechanism in the bid documents and contract documents. The remaining 40 projects did not include DRBs (Non-DRB contracts) in either the bid or contract documents. The combined value of the construction portion of these contracts had an original contract value of \$6.758 Billion¹. The actual costs expended on these 86 construction

¹ Flagging costs, provided by the police, and other third party costs are not included.

contracts, including executed change orders, as of December 21, 2004, was \$8.9 Billion (see Appendix).

The final contract amount of DRB Contracts (as of December, 2004) is \$8,399,743,956 ranging from \$10,987,579 (CO1A2I) to \$408,199,892 (C17AB). The final contract amount of Non-DRB Contracts is \$481,172,247 ranging from \$374,010 (C21AB) to 19,983,533 (C13A1) (see Appendix). The project achieved substantial completion was in 2005 (Angelo, 2006; Bechtel/Parsons Brinkerhoff, 2006) although work continued into early 2006. Nevertheless, many of the individual contracts achieved substantial completion prior to 2005).



Study's Purpose

Some authors (Denning, 1993; Technical Committee, 1991; Hope for Tunneling Disputes, 1987) assert that having a DRB as a dispute resolution mechanism in the contract documents reduces bid prices due to reduced contingency loadings resulting from the risk sharing between contractors and the Owner. However, it has been opined, bid prices are generally not reduced as a result of the DRB inclusion into a contract (Harmon, 2004a; 2004b).

Because of this conflicting information, the question still begs to be asked; does having a DRB provision on this project result in lower bid prices? Can the “savings” be quantified? Is there a significant difference bid savings between DRB and non-DRB projects?

Additionally, some authors (e.g.; Bramble & Cipollini, 1995; Chapman, 2001; Construction Industry Institute, 1995) have asserted that having a DRB reduces and/or eliminates the escalation of conflicts. Does the fact that a project has a DRB almost “guarantee” that all change orders, conflicts, and disputes on a project will be resolved as some have asserted? These are important questions considering the fact that both Owners and contractor’s desire cost efficiency, when determining whether or not to initialize any new product or idea.

In reviewing the data and literatures for this case study, four overall questions are addressed:

1. Does the use of DRBs reduce bid prices?
 - a. Is there a significant different in bid savings on a DRB Contract versus a Non-DRB Contract?
2. Was the DRB successful?
 - a. Were all change orders/claims resolving all disputes prior to contract close out?
3. What were the barriers to the DRB’s effectiveness?
4. Does the use of DRBs reduce the costs of resolving conflicts?

1. Does the Use of DRBs Reduce Bid Prices?

Engineer's Estimates and Contractor Bids

At the planning stage of the project, the Engineer's Estimate is used to set aside funds for the construction of the project as well as the evaluation of contractor bids for the project (Bledsoe, 1992). The Engineer's Estimate must be as accurate as possible since it represents the money that will be spent when the project is finally constructed. Contractors competing for work submit firm bids using the same information as in the Engineers Estimate, which is the plans, specification, and contract documents prepared by the owner's design team.

Therefore, it could be argued that both the bidding contractors and Bechtel/Parsons Brinkerhoff had similar knowledge and information which should result in contractor bids roughly akin to the engineer's estimate. Although the scope of the contract were unique for each and every contract, the main variables, the Owner, nature of the work, location, work environment, etc. were similar. The main variable, outside the uniqueness of each contract, was that some 46 contracts had DRB provisions in the contract as opposed to 40 that did not. So if all else is similar, e.g. the owner, nature of the work, individual project variables, etc., does the presence of a DRB provision in contract influence the contractor's bid pricing? Are there bid savings on DRB contracts versus non-DRB contracts? If both DRB and non-DRB contracts experience bid

savings, then is there a statistical significance between the bid savings on those contracts with DRBs as opposed to those without DRBs? Essentially, does the Owner reap a financial reward for having a DRB provision in its contract influence contractors to submit lower bid amounts? While the results of one study (Harmon, 2004a) indicated that most contractors did not reduce their bid because of a DRB contract provision, there is been limited empirical data to indicate whether or not a DRB contract provision is a factor in having reduced bid prices.

Data Analyzed - Engineer's Estimates

On September 2, 2003, engineer's estimates for 64 (74%) out of the 86 construction projects were accessed from the World Wide Web (<http://www.bigdig.com/thtml/contlist-a.htm>) (see Appendix). The engineering estimates for the 64 projects total \$6,214,422,600. The contract award amounts for these contract total \$5,433,836,227. Bid savings, characterized as the difference between the engineer's estimate and the contract award amount totaled \$780,586,372.76 (for an average savings of 12.56%). Of the 46 DRB Contracts engineers estimates were available for 37 contracts (80%). The average bid savings for DRB Contracts was 13.4%. The total bid savings for the DRB Contracts is \$725,955,110. Of the 37 DRB Contracts, 32 (87%) experienced bid savings. The range of savings was from 44% (C22A1) lower than the engineer's estimate to 13% (C19D1) higher than the engineer's

estimate. The mode for DRB projects is 13%. For the 40 Non-DRB Contracts, 27 (63%) engineer estimates were available. The total bid savings on the Non-DRB Contracts is \$54,631,263. The range is 53% (C07C1) lower to 51% (C15AA) higher. The average bid savings is 12.25%. Of the 27 Non-DRB contracts, 17 (63%) have bid savings while 10 (37%) Non-DRB contracts had contract awards over the Engineer's estimate. The mode is 53% (2).

	Average Savings
DRB Projects	13.4%
Non-DRB Projects	12.25%

Discussion

While there is a substantial bid cost savings for both DRB and Non-DRB contracts, there is no statistical significance between the bid savings of DRB versus Non-DRB contract. In other words, having a DRB provision did not influence the contractors to submit a lower bid price than they would have submitted had the provision not been included in the contract documents. While there are many factors in estimating the cost of a project, whether or not a DRB provision is included in the contract is not one of them.

2. Was the DRB Successful?

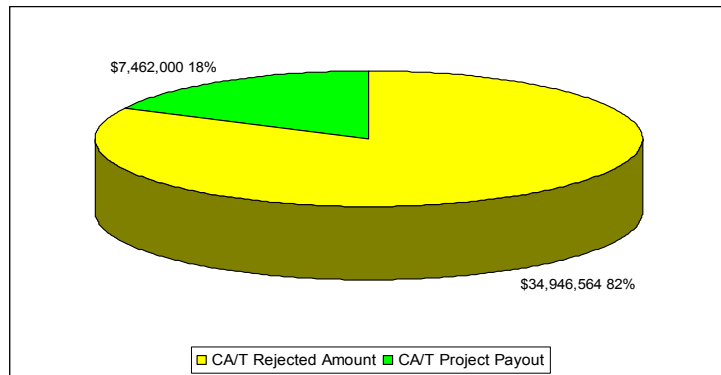
Were All Issues (Change Orders/Claims) Resolved

Prior to Contract Completion?

The data received consists of the construction contracts details reports generated by the Owner's field personnel and project consultants and made available to this researcher from September 2005 to April 2006 (see Appendix).

As of April 2006, 28 issues were presented to the DRB panels on 12 projects. Contractor claim amounts totaled \$169,263,570 ranging from \$16,255 (C04A2) to \$54,000,000 (C11A1). Of the total contract claims of \$169 Million, the DRB issued recommendations suggesting payout amounts totaling \$42,408,564 (personal communication, Larry Delmore, September 21, 2006).

Of the \$42 Million recommended payout amount, the Owner paid out \$7,462,000 essentially 4% of the total claim amount, or 18% of the recommended payout amount.



Unresolved Issues as of April 2006

CAT project members define a claim as a change order request whether or not it is unresolved or uncontested (National Academy, 2003). In this paper we define a dispute as an unresolved issue, change order and/or claim.

As of April 2005, 3,640 claims/disputes were unresolved with a contractor's claimed value of \$441.6 Million contractor's value (Amorello, 2005, p. 12). A year later in April 2006, a total of 1,735 claims/disputes remained unresolved. Of these claims/disputes, 34 (74%) were on DRB Contracts (amounting to \$57,569,773) (see Appendix). As previously noted, the project's substantial completion was in December 2005. However, four months after the project's substantial completion and months and/or years after each individual contract's substantial completion (see Appendix) change orders/claims amounting to \$57 Million were still unresolved whereas out of the 40 Non-DRB contracts, only 6 projects (15%) amounting to \$794,366, had unresolved claims/disputes.

	Total # of Projects	Projects with Unresolved Issues	
DRB Contracts	46	34	74%
Non-DRB Contracts	40	6	15%

Discussion

The reasoning behind the exceptional number of claims/disputes on the project was investigated by an independent project review team (National Academy, 2003). It was their determination that the exceptional number of changes/claims were due to the fact that many of the contracts had completed civil design but required modifications to accommodate project wide systems

that were designed in later contracts (National Academy, 2003). The National Academy (2003) opined that the incomplete designs were the cause of the “high rate of claims and changes” (p. 16) experienced by the project

Essentially, although the majority of issues were resolved on the entire project, \$57 Million (1,735) claims/disputes were left unresolved at the entire project’s substantial completion. Moreover, a greater percentage of DRB contracts as opposed to Non-DRB contracts had unresolved claims/disputes.

More importantly some of these claims/disputes languished unresolved for years. The Appendix lists the number of unresolved issues as well as the individual contract’s substantial completion dates. As can be seen, the claims/disputes remained stagnant from between 1 month to over 8 years (see Appendix). Information as to the number of open issues at each contract’s substantial completion was not made available to the researcher. However, it is noteworthy to mention that as early as 2003 unresolved change orders/claims in the amount of \$188 Million, some between two and seven years old (Mead, 2003) existed. Therefore, having claims/disputes languishing into 2006 seems to be in keeping with the backlog of unresolved claims experienced throughout the project’s duration. Clearly, having a DRB did not achieve its intended end, to wit, to resolve all claims/disputes prior to contract completion. Of the DRB contract claims/disputes, a total of \$56,775,407 was unresolved as of April 2006. However, this figure must be kept in perspective, while \$56.8 Million in claims/disputes is significant, it is a mere 0.64% of the total \$8.9 Billion in

construction contract payments and only 2.68% of the total executed change order amount of \$2,122,226,871.

Therefore if having a DRB was intended to bring an expedient and contemporaneous resolution to unresolved issues/claims, why were so many issues left unresolved for such extended periods?

What Were the Barriers to the DRB Effectiveness?

Given the fact that DRBs are purported to reduce or eliminate disputes prior to contract completion and more DRB versus Non-DRB contracts had many unresolved issues months/years after substantial completion, why were DRBs underutilized? Moreover, why were so few disputes brought before the DRB? As noted previously, as of April 2006 only 28 issues were brought before the DRB for a formal hearing. The majority of the disputes, change orders, and claims were resolved by other means. However, Shipley (1999/2000) attributed the low level of presentation of claims/disputes to the DRB as evidence of the success of the project's partnering efforts. Nevertheless, this opinion is not borne out by the excessive number of unresolved issues as of April 2005 and April 2006.

Not one factor appears to be the sole factor in the underutilization of the DRB, but several appear to have influenced the Owner as well as the DRB contractors to ignore the benefits of the DRB process. These are as follows:

- Elongated dispute resolution process

- DRB process viewed as adversarial
- Preparation for the hearing was time consuming
- Issue with the Recommendations - they were not convincing
- Recommended settlement amounts below historical average

Elongated Dispute Resolution Process

One barrier is the elongated dispute resolution process in the contract. As admitted by the Massachusetts Turnpike Authority (April 2001) the contract contained an “extensive multi-layered evaluation process...to deal equitably with claims by contractors” (p.11). This extensive process required the contractor to present its claim to progressive levels of senior management for review prior to being allowed to request a hearing before the DRB. Another factor extending the settlement process and adding a large delay was that change orders over \$250,000 were request to be forwarded to the CAT’s legal staff (Angelo, 2003). Although a stepped process is generally advisable, disputes that travel through an elongated process risk having positions hardening because of the psychological investment individuals make in the development and arguing merits of the dispute.

The whole purpose of a DRB is to resolve dispute contemporaneously. Disputes should be taken to the DRB when either party recognizes that a negotiated settlement is unlikely (Dispute Review Boards Seem to be the Solution, 1991). For reasons discussed below, this did not happen. While hope

springs eternal, those experienced in the industry know that the longer a change order/claim sits and awaits resolution, the more positions harden and costs grow. Essentially, the older the claim, the harder it is to resolve.

The experience with DRBs on this project and the timing of when issues can be brought to hearing is in sharp contrast to the Corps of Engineer's use of DRBs. In these projects the COE process allows factual disputes to be resolved at the contracting officer level and a DRB hearing is held prior to the Contractor filing an appeal to the contracting officer's decision to the Board of Contract Appeals (Libbey, 2000). The timely use of DRBs has been shown to reduce delays, claims and cost overruns (LA Learns from Mistakes, 1991). But its untimely use negates the positive attribute of the DRB process and result in the experience encountered on this project.

DRB Process Viewed as Adversarial

As commented on by CAT staff, the DRB process itself resembles arbitration in that it is a contractual tribunal conducts the hearing and renders a decision. This observation is not new and has been commented upon in court decisions; (e.g., *Sehulster v. Traylor*, 2003) and in other literature (e.g.; Denning, 1993, Genton, 1999). The DRB process wherein a formal presentation is made by the parties, generally with the assistance of outside counsel and/or consultants, was viewed by some CAT staff as adversarial by its very nature. Although cross examination is not allowed, allegations are responded to and

questions of witnesses by the DRB are common. Moreover, Thibaut and Walker (1975, 1978) demonstrated that disputants prefer procedures that mirror the traditional trial system, such as the process of having witnesses testify, hearing of evidence, and rendering of a legal decision. Lind and Tyler (1988) have claimed that “people react more favorably to procedures that give them considerable freedom in communicating their views and arguments” (p. 9). The fact that the DRB hearing is trial-like does not, in and of itself, make it adversarial. The fact that the parties after traveling through an elongated dispute resolution process still could not resolve the dispute amongst themselves is likely to be the genesis of the adversarial attitude of the parties.

Preparation for the Hearing is Time Consuming

An additional issue prohibiting the effectiveness of the DRB was that in preparing for the hearing, virtually “no stone was left unturned,” in that both field and contract administrative staff developed “briefing books, charts and graphic displays, schedule analyses and other exhibits” (Shiple, 1999/2000, p. 5). It seems apparent that the DRB process took on the same “scorched earth” characteristics as currently exists in arbitration. Again, the psychological investment in terms of effort as well as the financial investment in terms of consulting and legal fees may have contributed to the decision not to bring unresolved issues before the panel.

Issues with the Recommendations

As noted by Genton (1999), in utilizing the DRB, the parties have obliged themselves to act in good faith and be ready to “reconsider their position in light of the DRB recommendation” (p. 68). In fact, ignoring or refusing to accept a well argued recommendation basically defeats the purpose of a DRB. The recommendation that does not adhere to contractual terms and conditions but attempts to make a “fair” determination acts as another barrier to the DRB’s effectiveness. The party’s relationship is structured within the “four corners” of the contract. This defines not only, the scope of the work but also, other responsibilities including the expectations such as notice, delay, payments, etc. If the recommendation does not adhere to the terms and conditions of the contract, no matter how “unfair” they appear to the DRB, then it is likely that the recommendation will be rejected by one party.

Also influencing whether or not an issue is settled is the written recommendation itself. The main purpose of the recommendation is to “convince the parties of the ‘wisdom’ of the panel’s” (Harmon, 2004b, p. 291) proposed settlement. The recommendation is the way the DRB demonstrates is knowledge of the project; understanding of both sides of the dispute as well as the analysis of the solution to the dispute is the recommendation itself. A well crafted, well argued, recommendation was not always developed by the panel. The Owner’s Project Director is the final decision making authority. His decision is based on many factors, not the least of which is the written recommendation

of the DRB. The Owner's Project Director does not have any first hand knowledge of the dispute and may not know the DRB panel members themselves, so the main representation the Project Director has in evaluating the value of the DRB's suggested settlement is the written recommendation. If the recommendation is neither well crafted nor argued, it is unlikely that its suggestion as to the disposition of the matter will be accepted without modification by the Project Director.

The following is illustrative of one recommendation:

DRB MERIT ENTITLEMENT SUMMARY

The claim elements reviewed by the Board and the Board opinion on the merit are as follows:

- Direct Cost of Added Scope
Partial merit of Contractor's claim
- Impact to Contract Work:
Partial merit of Contractor's claim
- Field Support Costs:
Partial merit of Contractor's claim
- Subcontractors' Extended Overhead:
No merit to Contractor's claim
- Contractor's Extended Overhead:
No merit to Contractor's claim

There is no discussion of the issue, the parties' arguments, the contractual support of the arguments or counter arguments, nor what was or was not convincing to the panel. There is a one line monetary amount recommendation with no description on how that amount was calculated. A well crafted, detailed, and fully explained recommendation can be an invaluable "wake up call" to upper management as to the likely disposition of the dispute, but if the recommendation is poorly argued, lacking the recitation of the parties' claims and rebuttals, lacking a demonstration that the panel understood the messages the parties attempted to convey, and failing to demonstrate a "solid understanding of facts and issues" (Harmon, 2004b, p. 291) and/or the appropriate contract language to support the panel's recommendation is missing then the wake up call is not heard.

But, how does the DRB convince the disputants as to the equitable solution to the dispute without the above mentioned discussions? If the recommendation is the "tool for settlement" (Harmon, 2004b, p. 294) then it should be crafted as a stand alone document enabling a final decision maker, in this case the Project Director, to have a full, but pithy understanding of the issues and be convinced as to the logic and reasoning behind the suggested settlement. The manner in which the recommendations were crafted may have influenced the Owner's reduction of the \$42 Million in recommended settlements to \$7.5 Million.

Recommended Settlements Below Historical Averages

Historically contractor claims (which included change order) which totaled over \$2.9 Billion have been settled for approximately \$1.4 Billion (49.9%) of the contractor's initial requested amount (Audit Report, 2002, p.6; National Academies, 2003, p. 21). If the 49.5% payout held true for the issues brought before the DRB, then the \$169 Million in claims argued would have been settled for approximately \$84.3 Million. However, the DRB recommendation suggested a payout of \$42 Million or 25% of the contractor claim amount. Additionally, of this \$42 Million recommended payout, the Owner paid out \$7.5 Million or 4% of the claimed amount (Personal Communication, Larry Delmore, September 21, 2006). Both these percentages are significantly less than the average claim/change order payout noted in the aforementioned reports (Audit Report, 2002, p.6; National Academies, 2003, p. 21).

It is likely that the contractors were dissatisfied with this result. The concept of customer satisfaction has been widely studied (e.g.; Hunt, 1977; Taylor & Baker, 1994; Westbrook, 1980). These studies indicate that when a customer is satisfied with a product or service, (s)he is more likely to repeat the service and recommend it to others (Martinez-Tur, Peiro, Ramos, & Moliner, 2006). People expect consumption experiences to be fair and negative reactions occur when they believe they have been subject to unjust outcomes or procedures (Clemmer & Schneider, 1996). Contractors have a justice motive and judge their relationships with institutions using fairness as a fundamental

base (Martinez-Tur, et al., 2006). In other words, by the mere fact that DRB quantum recommendations were far below average settlement rates may have influenced contractors in believing the outcome was unfair even if the process required to obtain the recommendation was considered fair.

As revealed in earlier studies (Harmon 2003b; 2004b), procedural and interactional justice influences the success of the DRB process. The fair process effect in procedural justice studies reveals that procedural justice positively influences reactions to unfavorable outcomes (Folger, Rosenfield, Grove & Corkran, 1979). Explained differently, it means that if the process is considered fair, even if the outcome is not what one expected or hoped for, the parties are satisfied with it. Of equal importance are studies which show that the fair process effect can be supported by the presence of social comparison information - because this information is a key reference point in the evaluation of the outcome (Van den Bos, Lind, Vermunt, & Wilke, 1997; Van den Bos, Wilke, & Lind, 1998). In other words, the fair process effect takes a back seat if there is a reference, such as the historical payout of change orders and claims, in evaluation whether or not the outcome was fair.

The fair process effect varies with the presence or absence of social comparison information (Van der Bos & Lind, 2002). Therefore when the average settlement of change order/claims was known to be approximately 50% (Audit Report, 2002, p.6; National Academies, 2003, p. 21), contractors had a reference point upon which to judge the DRB recommended settlement

amounts and/or the different settlement amount proposed by the Project Director. In the assessment on whether or not the settlement amount was “fair,” Thibaut and Kelly (1959/1966) in their seminal study demonstrated that when individuals lack experience, other referent standards (for example what other contractors were being paid) are likely to exert significant influence on the perception of fairness. Once individuals have a comparison benchmark, that benchmark will be the reference point as to whether or not the outcome, i.e.; DRB recommendation and Project Director settlement figure, is fair (Goodman, 1974; Masters & Keil, 1987). Therefore we can conclude that even if the DRB process was considered fair but the outcome unfair, the contractors have no incentive to utilize a process that will result in an unfair outcome.

The information concerning the average 50% settlement rate could have been accessed by published information e.g., (Audit Report, 2002, p.6; National Academies, 2003, p. 21) or word of mouth which has been shown to be key factors that influenced the expectations and satisfaction of contractors (Oliver & DeSarbo, 1988; Oliver & Swan, 1989; Zeithaml, Berry & Parasuraman, 1993). Basically, when the level of the recommendation and/or Project Director’s settlement offer falls below what contractors feel are their minimum acceptance level, the contractor feels dissatisfied and may opt out of utilizing the DRB (Zeithaml, et al., 1993). In discussions with contractors concerning the use of DRB’s the National Academies report noted that “some contractors who participated in the [National Academies] round table discussion suggested the

non-binding nature of the [DRB] process serves only to the benefit of the owner” (p. 21). The fair process effect is unlikely to emerge when a reliable benchmark of fairness is present (Hui, Au, & Zhao, 2007). The fact that DRB hearings resulted in payout of 4% underscores previous research and gives credence to the hypothesis that contractors may have believed that unfair outcomes would result in the utilization of the DRB process and resist its use (Construction and Maintenance Fact Sheets, 2007).

3. Does the Use of DRBs Reduce the Cost of Resolving Disputes?

As Genton (1999) opines, the value of a DRB is not necessarily due to the parties being convinced by the suggested settlement, but because the parties believed that the DRB assisted them in avoiding a long and costly legal proceeding (p. 70).

As noted previously, on DRB Contracts not all disputes were resolved via the DRB process. The greater majority of the change orders/claims were resolved without DRB involvement. In addition to the formal DRB hearing, an Advisory DRB process was also utilized. An Advisory DRB is more informed than a DRB hearing in that presented documents are not as elaborate, oral testimony is abbreviated, and the DRB renders an oral opinion shortly after the informal presentation (Bastianelli, 2001). The Advisory DRB does not wait until all the formal dispute process is exhausted before hearing a dispute, but hears it informally during a regularly scheduled site visit (Bastianelli, 2001, p. 7). It was

used after negotiations on the field level had reached an impasse but prior to bringing the issue to the senior partnering level. Both the Owner and Contractor agreed to use the Advisory DRB prior to its implementation. Moreover, there was no risk to the parties since the oral opinion as to the disposition of the dispute is not admissible in any proceeding, nor is it documented in writing. The downside to an Advisory DRB would be that the oral opinion of the panel may be ignored because all the facts and argument would not be presented as a formal DRB hearing would be. Another downside is faced by the DRB itself because they would be asked to render an advisory opinion without all the facts and a complete presentation and in a short time (Bastianelli, 2001). There is little information concerning the Advisory DRB such as contract amounts of claim/dispute, DRB Contract that used them, etc. However, 30 Advisory hearings were held on issues ranging from \$100,000 to \$10 Million. All the issues brought forward for Advisory opinions were settled and contract modifications were issued (Personal Communication, Larry Delmore, September, 2006).

Did the Use of DRBs Reduce the Cost of Resolving Disputes?

DRB Fee

The DRB fees paid for the 46 DRB contracts on the project total \$1.8 Million. This figure is 0.02% of the total project costs and approximately 1% of

the contractor's total claim amount. This amount covers not only the costs of the regularly scheduled meetings, but also the hearings, "study" time and decision making as well. Regular meetings were scheduled quarterly and hearings were scheduled as needed. The average cost per meeting was \$3,492. this falls within the industry range of between \$3,000 and \$5,000 per meeting.

If you combine the 28 formal hearings with written recommendations and the 30 Advisory opinions, the "cost" of the DRB averages \$31,034 per dispute. This is basically the cost of one Motion in a court case.

There are three contracts (C05A1, C01A6, and C11A1) that went to litigation with nine (9) claims/disputes. While the full legal costs of these matters are unknown, an anonymous CAT member estimated that the parties have incurred over \$10 Million in legal fees. Basically the nine claims/disputes involved in these three litigated contracts averages approximately \$1.1 Million per dispute.

Mediation Costs

Moreover, mediation was also used as a methodology to settle claims. Project records reflect that mediation was used on six DRB Contracts (C01A3, C01A6, C09A4, C19D1, C19E4, and C22A1). The mediation fees for the six contracts (C01A3, C01A6, C09A4, C19D1, C19E4, and C22A1) totaled \$351,144 or an average of \$59,024 per contract, whereas the DRB cost per

contract was \$39,130 (\$1.8M ÷ 46 DRB Contracts). DRB costs averaged \$20,000 less per claim/dispute.

Conclusion

As noted by Yates and Duran (2006), the use of DRBs is not a substitute for basic dispute prevention techniques (p. 334), nor does its presence mean that it will be utilized or utilized efficiently. As noted in the above discussions, the DRB could have been used more effectively on this project by having the dispute heard earlier; by drafting up a convincing recommendation as well as actually bringing the unresolved issues to the DRB rather than having it languish for years. In 1993 the Massachusetts Inspector General wrote to MTA warning the cost savings from proposal Alternative Dispute Resolution (ADR) program were unsubstantiated and that the ADR program created another avenue for contractors to pursue payment over and above the original bid amount (Sullivan, February 2003). The Massachusetts Inspector General recommended specific improvements (Sullivan, February 2003) and was later critical of the MTA when its recommendations were ignored.

As Shipley (1999/2000) explains, as early as 1999 the Owner did not believe the DRB process was fully utilized. Arbitration, used in the construction as far back as the late 1800s was once considered a fair, expedient, and inexpensive manner in which to resolve construction disputes. It later fell into disrepute, a victim of its own success. Arbittier (2006) emphasizes that over a

decade ago, arbitration faced a “crisis in confidence” (p. 40), due to arbitrators failing to maintain control over the process as well as issuing awards without explanation. Paid daily and/or hourly, arbitrators welcomed postponements, lengthy cross examinations, and the like, increasing the costs as well as the time to resolve the dispute (Arbittier, 2006). Will the DRB process follow the same route? Has the DRB process become a victim of its own success? Has the increased popularity of the process also resulted in its problems and misuse?

The benefits of the DRB process is that it can be superior to litigation, arbitration, or mediation in that it is designed to be faster, cheaper and better suited for construction disputes. The parties cherry pick the panel who are respected, experience in the type of project being constructed, understand its technicalities, be able to read and understand the drawings, specifications and contract. This process can be far superior in taking a chance of an arbitrator or mediator having the same technical expertise. When significant time and money is spent investigating every aspect of a dispute it is not uncommon for the parties themselves to convince themselves of the righteousness of their position. Once positions harden, it is unlikely a non-binding, poorly crafted recommendation will convince either side to settle.

Moreover, the current popularity in the DRB process is due, in part, to the fact that it is non-binding. The disputing parties get the benefit of neutral third party’s opinion about what they really think about the case. This presents

both a challenge and opportunity for the proponents of the DRB process. Talented DRB panelists should be motivated to draft, write clear, well-reasoned opinions. The parties have an investment in the process by the very fact that panelists' time and effort cost money. Both sides should provide the panel with the information necessary to convince them their positions are correct. This process is most effective when an issue is brought to the panel before the parties have spent considerable efforts and money - contemporaneous with the evolution of the dispute. Moreover, having the dispute presented in a hearing in a timely manner, would allow the panelists to view the conditions at the project site before rendering a decision on the merits of the issue. As Altschuler (2003) aptly notes, "construction professionals instinctively know how important it is to see the site in order to reach an informed decision on the issues" (p. 37). Just as site visits can affect an arbitration award, too can observing the conditions surrounding the dispute as they occur, can influence the recommendation by the DRB, as well as the positions of the parties. Timing of the hearing with the genesis of the dispute can be a powerful motivator for the panel to issue a convincing recommendation.

As noted previously, the small number of matters brought to a formal DRB hearing may be an indication that the Owner and/or the contractors were dissatisfied with the DRB. Distributive justice is based on equity/social exchange theory assumes that humans are motivated to maximize gains and minimize costs. Clemmer and Schneider's (1996) study revealed the

predominance of distributive justice (perceived fairness of the outcome hence outcome oriented) over procedural (perceived fairness that fair procedures were used to arrive at the outcome) and interactional justice (perceived fairness of interpersonal treatment). This was reaffirmed by the Martinez-Tur et al. (2006) study wherein they observe that “[d]istributive justice was shown to be the most important determinant of customer satisfaction, followed by interactional justice and finally by procedural justice” (Martinez-Tur, et al., 2006, p. 111). Basically customer (contractor) satisfaction is based primarily upon the degree to which the outcome was perceived as equitable (Martinez-Tur, et al., 2006). While either party could bring a matter before the DRB, generally it is the claiming party (contractor) that seeks a resolution. Therefore, this author postulates that the fact that contractor’s payments for matters not brought before the DRB (settled at an average of 50% of amounts sought) rather than the 4% (in the settlement after the DRB hearing and recommendation) was perceived by the contractors as inequitable, thus leading to the decision not to bring forth issues to the DRB but to seek other avenues of recourse, such as mediation.

Finally, the amount of time it takes to reach a final resolution is a key component that, in the past, was the cornerstone of the DRB’s success (McMillan, 2000). The facts that claims/disputes traveled through an elongated process prohibited the timely resolution of these disputes. As this case study illuminates, merely having a DRB provision in the contract does not guarantee

its use. Unlike litigation, the DRB cannot force the parties to bring disputes to a hearing.

Moreover, scheduling hearings at the convenience of the parties seems to have contributed to the backlog of unresolved disputes. The DRB process can be effective if disputing parties are compelled to learn the facts, evaluate not only their position, but that of the opposition, and when they do so contemporaneously the chances for settlement or resolution are far greater than if they waited a year or more. Settlement becomes practical when the parties understand and focus on their cases. This happens only with the pressure of an imminent hearing. Perhaps a clause in the contract compelling the parties to bring the unresolved issue to the DRB after - say - 30 days - would convince the disputants to resolve the issue amongst themselves - or bring it - warts and all - to the DRB for a formal hearing.

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