Dispute Review Boards Effects on Bid Prices

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ABSTRACT: The topic of the effectiveness of dispute review boards as the impetus for reducing a contractor's bid pricing was a part of the first US study exploring how those within the construction community perceive the effects the dispute review board (DRB) process has on conflicts within the construction industry. The examination of the cost issues regarding this innovative ADR technique by those who actually have experience using it will bring forth a better understanding of its cost effectiveness and the value or lack thereof it brings to the project. There are those within the industry who question the cost savings of a DRB. Does it result in lower bid prices? Can the "savings" be quantified? These are important questions considering the fact that both owners and contractor's desire cost efficiency with any new product or idea. This article will discuss the portion of the national study as it regards DRB's influence on bid costs.

KEY WORDS: Dispute Review Boards, bids, cost, data collection, demographics, and research

There is little, if any, empirical evidence to validate the opinions of the construction industry concerning the contributions a dispute review board (DRB) has on reducing bid prices, or preventing the costs that a dispute going either to arbitration or litigation requires. This study attempts to partially fill that void. The topic is also significant in light of the fact that the industry, as a whole places a high value on both time and money.

METHODOLOGY

Quantitative Method

This research project will use both descriptive tabulation and multivariate statistical techniques to analyze the data. The statistical analysis is intended to summarize the voluminous data in a manner that can be interpreted confidently and to develop insights into the effectiveness of a dispute review board DRB. Such inferences are appropriate when the data are representative of the general population of those in the construction industry who have experience with or knowledge of DRBs.

The sampled respondents are representative of the general population of those in the construction industry who have experience with or knowledge of DRBs. The sampled respondents are representative of the construction industry population and are appropriately used for descriptive statistical analysis. E. Babbie [1] notes that sample surveys are frequently more precise than interviewing every member in a population. Hence, this sampling methodology was used for both accuracy and efficiency.

Quantitative Research Instrument

The questionnaire instrument in the current study consists of three sections with a total of 76 questions. The first and third sections used a Likert-type scale.

Section I contained 57 questions concerning attitudes about the DRB process and construction conflicts. In Section I, the respondent rates each of the attributes on a 5-point scale anchored by strongly agree (1) and strongly disagree (5).

The answers to these should provide ample evidence concerning the perceived effects of the DRB. Section II contained 11 queries regarding demographic and other pertinent information, including sex, age, profession, experience, education, race, and type of construction experience. Section III contained nine behavioral questions to determine, wherever possible, whether attitudes match behavior.

External validity, those behaviors that participants actually exhibit in the real world, provides confirmation of the survey's validity. (To some extent, validity is subjective because participants who may wish to include a DRB provision in a contract may be precluded from modifying the base contract provisions because of public bidding laws and authority bidding regulations). This article addresses two central questions concerning the DRB and its effect on bid prices.

Data Collection Procedures: Quantitative Questionnaire

A questionnaire was first mailed on August 2, 2002, to individuals in the sample via US post office first-class mail with a self-addressed, stamped return envelop. The questionnaire contained an introduction describing the survey and its significance. Reminder letters/e-mails regarding participation in this study were sent via e-mail and US Postal Service mail between August 8 and Sept. 23, 2002. Follow up telephone calls to those who had not responded to the mailings were made by the researcher and her staff between August 30 and October 4, 2002. These efforts attempted to facilitate a return of the outstanding questionnaires.

Population and Sampling: Quantitative Approach

The participants in this study were construction industry professionals (owners, contractors, construction attorneys, architects, engineers, etc.) who have been involved in complex construction projects. Respondents were asked to indicate their belief about each of the questions. In addition, the survey is designed to provide a quantitative basis for assessing the respondent's experience and satisfaction with the DRB process in terms of its cost effectiveness and savings, if any, during the bid phase of the project.

The subjects for the questionnaire were gathered from several sources, is comprised of individuals from within the construction industry, and is a heterogeneous sampling of the industry as a whole, but was limited to residents of the US. Therefore, their responses are representative of the attitudes of the industry as a whole. In other words, the results of this sample can be generalized to the construction industry and can provide useful information that is relevant to the substantive interests of this study. The net result was a representative sample of 804 construction industry professionals who are familiar with the conflicts generated on construction projects, thereby reducing the chance of bias [2].

Of the 804 questionnaires originally mailed in this study, 456 were returned by the recipients, and 86 were returned as undeliverable by the US Postal Service. Fifteen questionnaires were returned with notes indicating that the participant had passed away or believed they were unqualified to answer. An unrecorded number of individuals also called to indicate their belief of being unqualified to answer the questionnaire. Moreover, among the 456 returned questionnaires, 79 were incomplete, some with notes indicating they were not qualified to answer all the questions. A total of 703 surveys were deliverable to members within the construction community who could have completed the survey. Thus, the adjusted response rate was 65% and reflects opinions of 456 construction industry professionals. Missing cases were excluded from the reliability analysis. The response rate far exceeds those reported by others who have studied ADR methodologies (e.g., [7,9]).

The data were analyzed using SPSS version 10. A reliability coefficient (Chronbach's alpha, [these measurements should range between 0 and 1. The closer the value is to the number 1, the higher the reliability]) was calculated and determined the internal reliability to be .9211 using Section I

questions of the 377 questionnaires with completed answers. The data indicate high reliability.

Qualitative Research

The purpose of the qualitative (phenomenological) portion of this study was to understand the destructive nature of conflicts to the construction process and the attitudes and experiences of those who have been involved in on-site disputes.

Data Collection Procedures

The subjects of the qualitative research were a subset of the participants chosen as a part of the quantitative portion of this study. They were approached via telephone contact by the researcher. Some interviewees are personally known to the researcher through professional societies or past business relationships; others were referred to the researcher by personal contacts. The participants were asked if they would like to be interviewed as part of this research project. Written consent was obtained. The subjects were informed that they did not have to complete the process and could stop at any point. To get a sampling from all perspectives, owner and contractor representatives were interviewed. Given that there are no rigid requirements in determining the number of sources in a sampling, theorists suggest that six to eight sources are optimal for a homogeneous sampling [5-6]. Interviews were conducted with 16 individuals.

Data Collection: Phenomenological Approach

In keeping with the phenomenological tenets underlying this research, semistructured in-depth interviews were conducted to gather data. Qualitative descriptions based on transcribed interviews are reported. To minimize the variation of questions posed to the respondents, standardized questions were asked. Prepared questions enhance the credibility of the findings by reducing the significant variations in responses from participants, allowing for the fact that three different occupational sources were interviewed. Standardized, open-ended interviews are ideal when time is limited and respondents can be interviewed only once [8]. Moreover, such interviews allow flexibility in asking follow-up questions and in pursuing topic areas prohibited or discouraged by closed-ended surveys, thereby strengthening any limitations in the survey portion of this research.

A total of 16 interviews were conducted between August and October 2002. Interviews were conducted in Florida, New Jersey, New York, and Washington, DC. The interviews varied in length from 20 to 60 minutes and were conducted at a mutually convenient time and location for both researcher and respondent. The initial telephone contact with prospective respondents consisted of an introduction to the researcher, the name of the individual who provided the prospective respondent's name if the interviewee was not personally known, an invitation to participate in the study, a description of the purpose of the study, an explanation that participation was voluntary, a statement of the confidentiality of the study, and the researcher's telephone number in case the individual had questions or wanted to contact her at any time.

The interviews were tape-recorded and transcribed. The interview questions were developed to assess each participant's opinions and experiences about construction conflict. The questions were open-ended. Before the start of the interview, participants were informed of the purpose of the study and asked to discuss their feelings and beliefs as completely as possible. Interviewees were also asked if their real name could be used when they were quoted directly. All the interviewees agreed that there was no need for confidentiality and that their names could be used, however, this article uses pseudonyms.

Descriptions in the form of quotations are used to illustrate and explicate each question. Focusing on information-rich interviews gives this analysis depth, in conjunction with breadth, thereby complementing the quantitative portion of this research. Moreover, interviews are used to ascertain social phenomena that are not directly measurable or observable [8]. In addition to the structured questions, the participants were asked to provide the following basic information about their experience and profession.

Demographic and Other Information

Demographically, the total sample for the qualitative portion of this study comprise men involved in the construction industry between 25 and 48 years old, with a mean of 35 years' experience. All the participants were Caucasian male citizens of the US who worked domestically, but several had also worked for US companies abroad during part of their career. An equal number of interviewees were attorneys and engineers (both n = 5), followed by contractors (n = 4), a CEO of a major northeastern university (n = 1), and a consultant (n = 1). With regard to their experience in mediation and arbitration, 68% (n = 11) had experience in sitting as both a mediator and an arbitrator. They are highly educated, with 56% (n = 9) holding a master's degree.

Profile of Questionnaire Respondents

Profession and Employment

The respondents were predominantly contractors (163 or 36.1%) and engineers (139 or 30.8%), yielding a combined 67% of the participants falling into these two categories. Twenty-seven participants (6%) failed to provide an answer to this question. Table 1 shows the distribution by profession.

Profession	Number	%	Cumulative%
Contractor	163	38.4	38.4
Engineer	139	32.8	71.2
Attorney	40	9.4	80.7
Consultant	53	12.5	93.2
Administrator	11	2.6	95.8
Architect	7	1.7	97.4
Other	11	2.6	100
Total	424	100	

Table 1— Survey Distribution

Education

Table 2 shows the highest level of education of the participants. As can be seen, the participants are highly educated, with 86% of the respondents holding a master's degree. Nine participants (2%) failed to answer this question.

Education	Number	%	Cumulative%
High School	10	2.3	2.3
Some College	41	9.3	11.5
Bachelor's Degree	219	49.5	61.1
Master's Degree	110	24.9	86.0
Law Degree	50	11.3	97.3
Doctorate	12	2.7	100
Total	442	100	

Table 2— Highest Education Levels

Sex and Race

As expected, the respondents were overwhelmingly male (97.5%) and Caucasian (96.3%). Table 3 shows the distribution of respondents by sex and race. Only 2.5% of the respondents were women and less than 4% were non-White. Thirteen participants

		Caucasian	Hispanic	Asian	Other	Total
Male	Number	412	4	4	7	427
	% of Total	94.1%	.9%	.9%	1.6%	97.5%
Female	Number	10	-	-	1	11
	% of Total	2.4%	-	-	.2%	2.5%
Total	Number	422	4	4	8	438
	% of Total	96.3	.9%	.9%	1.8%	100.0%

Table 3— Distribution of Respondents by Sex and Race

(approximately 3%) did not provide an answer to these questions.

Age and Work Status

The average age of the respondents was 59. Table 4 shows the average age by sex as well as the standard deviation. Fourteen participants (3.1 percent) failed to respond. As can be seen, the average age for the males is approximately 15 years older than that for the females.

Their ages ranged from 26 to 90, with 50 percent between the ages of 49 and 67. The age range for full-time workers was from 26 to 77, with 79 percent of the total full-time working participants being 60 years old and younger. The age range for part-time workers was from 44 to 90, with 69 percent of those older than 67 years old working part time. Not surprisingly, those who worked part time were the oldest participants.

Table 5 gives the distribution for participants' work status. About 67 percent worked full time, while 33 percent reported that they no longer engage in full-time work activities.

Experience as a Neutral and DRB Panelist

Approximately 45 percent of the sample served as a DRB panel member, whereas only 33 percent served as a mediator and 35 percent served as an arbitrator. It is interesting that approximately 54 percent of the participants had often used the DRB process within the past five years, whereas only 17 percent had never used the DRB process within that same time. This would indicate that the majority of those answering the survey questions had both knowledge and firsthand experience with the DRB process.

Sex	Average Age	Number	SD
Male	58.98	426	11.39
Female	43.91	11	5.56
Total	58.60	437	11.52

Table 4— Age and Standard Deviation

Impact on Bid Prices

According to some an advantage to having a DRB is believed to be lower bid prices [10] as a result of the sharing of risk equability between the contractor and owner due to reduced contingency loadings [4]. In 1996, a large general contractor (Guy F. Atkinson Co.) affirmed it reduced its bid 10 percent because of the inclusion of a DRB provision in a $38 million tunneling project [4]. Others [3] note that while having a DRB specification in contract documents may result in bid reductions, the "real savings" is the money not expended in dealing with unresolved disputes at the completion of the job. As Lenny R., a construction attorney with significant ADR experience in practice, as well as teaching, now working exclusively in the areas of alternative dispute resolution and conflict management notes:

> "We've seen just anecdote evidence that tends to indicate that many contractors are starting to recognize the value of DRBs, and if they are look at a project that has DRB provisions, there is a less chance of protracted dispute resolution and we've heard, as I said, anecdotally that some contractors recognize the value of this and put a, you know, a bid premium on projects that have DRBs."

When asked if you would recommend a reduction in the bid price, a mere 17 percent (n = 73) of the survey respondents indicated that it was either quite likely or highly likely that they would recommend a reduction in the bid price if a DRB provision was included in the contract, while 45 percent indicated that it was highly unlikely that they would recommend a bid reduction. Other categories indicated that 24 percent indicated that it was somewhat likely and 14 percent indicated it was moderately likely that they would recommend a bid reduction.

Interestingly, while 49 percent (n = 77) of the contractors who answered this question noted that it was highly unlikely that they would recommend a bid price reduction; a simple majority of 51 percent (n = 80) indicated that they were somewhat to highly likely to recommend the reduction of the bid price, given the presence of a DRB provision in the contract. A greater majority of those listing their professions as engineers and attorneys—58 percent (n =95), respectively indicated that they too were somewhat to highly likely to recommend the reduction of the bid price, given the presence of a DRB provision in the contract. Of greater interest is the fact that 74 percent (n = 35) / 61 percent (n = 99) of those employed by contracting organizations are somewhat to highly likely to make the recommendation to others that a reduction in bid price was appropriate as the result of the DRB provision inclusion in the contract. This indicates that both owners and contractors understand the value a DRB can bring to the project.

Of those with experience as a DRB panelist, a majority of 62 percent indicated that it was somewhat to highly likely that they would recommend a reduction in the bid price with 16 percent indicating that it was highly likely that they would make such a recommendation.

These results are significant in light of the fact that those who have actual DRB experience from "the other side of the table" so to speak would recommend a bid reduction. These individuals are experienced in the internal workings of the DRB panels and based on their collective experience do see cost savings resulting form the DRB process.

We can see that many would recommend a bid price reduction, but the real question here is have contractors actually reduced their bid price because of a DRB? It is one thing to recommend a bid reduction, it is quite another to actually reduce a bid because of a contract provision. While many can tout the benefits of a DRB, does the expense of a DRB actually result in an initial cost savings?

A vast majority 86 percent (n = 293) have never reduced their bid price. Only eight percent (n = 28) reported having sometimes reduced their bid price for projects with a DRB provision, and just three percent (n = 10) indicated that they often reduced their bid price because of a DRB provision. (see Table 6)

		Full Time	Part Time	Total
Contractor	Number	94	62	156
	% of Total	22.9%	15.1%	38.0%
Engineer	Number	89	45	134
	% of Total	21.7%	10.9%	32.6%
Attorney	Number	32	8	40
	% of Total	7.8%	1.9%	9.7%
Consultant	Number	39	14	53
	% of Total	9.5%	3.4%	12.9%
Administrator	Number	6	4	10
	% of Total	1.5%	1.0%	2.4%
Architect	Number	6	1	7
	% of Total	1.5%	.2%	1.7%
Other	Number	8	3	11
	% of Total	1.9%	.7%	2.7%
Total	Number	274	137	411
	% of Total	66.7%	33.3%	100.0%

Table 5— Distribution of Survey Participants' Work Status

Profession	Never	Rarely	Sometimes	Fairly Often	Very Often	Total
Contractor	108	6	20	4	5	143
	36.9%	54.5%	71.4%	80.0%	100%	41.8%
Engineer	98	4	4	-	-	106
	33.4%	36.4%	14.3%			31%
Attorney	27	-	-	1	-	28
	9.2%			20.0%		8.2%
Consultant	38	1	4	-	-	43
	13.0%	9.1%	14.3%			12.6%
Administrator	9	-	-	-	-	9
	3.1%					2.6%
Architect	6	-	-	-	-	6
	2.0%					1.8%
Other	7	-	-	-	-	7
	2.4%					2.0%
Total No.	293	11	28	5	5	342
Total %	85.7%	3.2%	8.2%	1.5%	1.5%	100%

Table 6—Number and Percentage of Respondents by Profession Who Have Reduced Bid Price for Projects with DBR Provision

It is significant that of those who list their profession as contractors, 76% (n = 108) have never reduced a bid because of a DRB provision. As noted by one engineer survey respondent "I suspect a bid price is lower but can't testify to it". In contrast, 86% (n = 293) noted that they had never reduced their bid price as a result of the inclusion of the DRB provision in the contract. When queried if her ever reduced a bid price, Ashley C. who holds a bachelor of engineering, was a contractor, and is currently the president of a consulting firm specializing in claims consulting and conflict resolution thoughtfully elaborates:

I never did only because DRBs were brand new when I was still in the contracting industry. I can see where a contractor might lower his bid a certain amount with the DRB process in place however.

Aside from the previously noted anecdotal evidence, the results of this study do not support the widespread belief contractors knowledgeable of the DRB process would reduce its bid price because the owner has placed a DRB provision in the contract. As one contractor survey respondent noted:

> "As an estimator I have never let the presence of a DRB impact my estimate. How can you reduce estimated costs on the outcome of a DRB on any other body based on a difference of opinion guaranteed by an unknown?"

As is apparent to anyone involved with pricing a project, many variables affect the final proposal, including type of project, availability of labor, materials and equipment, duration, weather conditions, work sequencing, and economic conditions. The manner in which disputes are to be resolved is only one variable, and for some projects and contractors this factor is not considered critical. Hence having a DRB provision in a contract will not necessarily result in cost savings at the bid stage.

However, a contrary viewpoint is expressed by Tom S., who has over 30 years of experience in construction operations and management for highway, bridge, airport, building, electrical, and municipal projects and has been responsible for field and office operations, project planning, project bids, contract administration and negotiations, construction management, as well as claims preparation. He disagrees by saying:

> With owners that use this process, we're more aggressive about bidding their projects because we feel that by introducing DRBs into their process, that they are looking for fairness. They want to operate with a doctrine of fairness. Whereas there are certain owners that are just very litigious: 'There are no claims, there are no delays, and we are not paying you a damn thing, and, incidentally, there will be no change orders either. You should have contemplated that was what we wanted when we designed the project, even though it may not be in the plans.' So, it makes a difference. There are owners that we won't touch and the owners that are embracing partnering and are embracing DRBs will get more competition from the contractors.

Tom S. believes that bid savings can and do result with a proactive dispute resolution process. This view, though stated somewhat differently, is discussed by a contractor survey respondent who writes:

> "For competitively bid work such as heavy highway projects, I do not believe that a DRB provision will reduce a contractors bid proposal for individual projects. However conflicts will be reduced and settled at an earlier date which will allow contractors to bid lower on future projects based upon their experience. I could also see that on negotiated projects, a DRB may reduce a bid."

Another contractor survey respondent explains:

> "The responsible contractor does not base his bid price on the possibility/probability of claims and disputes. That is a reckless gamble. Instead, he bases his mark-up on a historic percentage of costs that will provide acceptable bottom line profits. Consequently, the long term favorable effects of DRB provisions will reduce that percentage mark up, and thus, bid prices."

The DRB process and individuals's experience in its success, may have benefits that carry over into future projects. As indicated by the data, the cost saving aspect of the DRB process may not be a direct reduction in the bid process, but may be a factor in the reduction of future bid prices if the contractor believes that by including a DRB provision in the contract indicates the owner's willingness to resolve disputes as they occur.

Additionally, 87 percent of the respondents believed that DRBs contribute to the success of a project, with only three percent disagreeing on this issue. Once again, the success of a project depends on many variables, some of which are controllable (e.g., conflict and its contemporaneous resolution) and some of which are outside the control of either contractual party (e.g., weather, unforeseen conditions, material availability).

Discussion

The theme of cost savings as a result of the DRB process seems to indicate that lower bid prices are not a direct result of the owner including a DRB provision in the contract, yet many are open to suggesting the reduction of the bid because of the DRB process being included as a part of the contract.

There seems to be a disparity here, while a majority would recommend a bid adjustment that same majority have not actually reduced their bid. Is this a case of, "do as I say, but not as I do?" Initially, it was believed that this disparity could be the result of part time (semi-retired) individuals versus full time professionals, but there was no significant difference between the answers of those working full or part time. The simple answer may be that as noted previously, there are many factors considered in pricing up a project, the method of conflict resolution may not influence the bid process at all or can have some influence on it. In today's competitive

bidding environment, a DRB provision may be a small factor in reducing some of the bids some of the time.

On the topic of lower bid process, the results of this survey indicate that those who may reduce their bid price because of the inclusion of the DRB in the specifications are in the minority. Clearly, for the vast majority, the DRB process does not affect the bid. This goes against previously published anecdotal evidence that the DRB process results in lower bid process.

However, the cost savings do not necessarily have to result at the bid phase, but can be accumulated throughout the course of the project because conflicts are resolved, money due and owing is paid, and funds do not have to be diverted to conflict resolution professionals.

The data suggests that most industry members do not and would not reduce their bid price solely based on the inclusion of a DRB provision in the contract documents, but the "cost savings" of experience with a DRB may result in more aggressive pricing on future projects.

So, should the DRB process be used as a cost saving measure alone? Clearly the data suggests not, but reduction in bid price alone should not be the determining factor whether or not this process is considered useful.

As noted above, a vast majority of survey participants express high satisfaction with the DRB process and believe it contributes to the success of a project. Project success is a subjective construct and may mean different things for the owner and contractors, but any innovative technique that adds value to the project by contributing to its success cannot be underestimated or ignored because cost savings may not be immediately realized.

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