

**Alternative to Low Bid Selection in Air Force Reserve Military  
Construction:  
Approach to Best Value Procurement**

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**Alternative to Low Bid Selection in Air Force Reserve Military  
Construction:  
Approach to Best Value Procurement**

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## LIST OF ABBREVIATIONS

ACES	Automated Civil Engineering System
AFARS	Army Federal Acquisition Regulation Supplement
AFCEE	Air Force Center for Engineering and Environment
AFRC	Air Force Reserve Command
AGC	Associated General Contractors of America
ASPA	Armed Service Procurement Act
CCASS	Construction Contract Appraisal Support System
CICA	Competition in Contracting Act
CIS	Construction Industry Structure
CO	Contracting Officer
DFARS	Defense Federal Acquisition Regulations Supplement
DMAIC	Define-Measure-Analyze-Improve-Control
DOD	Department of Defense
FAR	Federal Acquisition Regulations
GAO	Government Accounting Office
GMP	Guaranteed Maximum Price
HUBZone	Historically Underutilized Business Zone
KSM	Kashiwagi Solution Model
MATOC	Multiple Award Task Order Contract
MILCON	Military Construction
NAVFAC	Naval Facilities Engineering Command
PBSRG	Performance Based Studies Research Group

## LIST OF ABBREVIATIONS

PIPS	Performance Information Procurement System
PMR	Program Management Review
PPI	Producer Price Index
QC	Quality Control
RAVA	Risk Assessment/Value Added
RFP	Request For Proposal
SBA	Small Business Administration
SSA	Source Selection Authority
SSDD	Source Selection Decision Document
SSEB	Source Selection Evaluation Board
TQM	Total Quality Management
USACE	United States Army Corps of Engineers
USC	United States Code

## **SUMMARY**

Best value is rapidly becoming one of the most commonly used procurement methods in the facility construction industry. The Federal Government and the Air Force Reserve predominant project delivery approach has been via the low-bid award. This process has not been successful, documented by large numbers of construction modifications, as well as project cost and schedule growth over the past sixteen years. Recently, federal procurement agencies have attempted to move toward construction awards based upon best value principles relative to performance and price. Among the obstacles to this transition are the wide discrepancies in the professional military construction contracting and delivery community's understanding of just what constitutes best value in a construction contract. Other obstacles include consensus on how to determine which contractor represents the best value in accomplishment of the work, how to place definitive monetary values on comparative risk of various contractor proposals, and who should identify and control risks associated with execution of the project. Implementation of a system to identify and document past performance in motivating contractors to improve performance is essential. What is required is the movement from a construction award system based only upon price and minimum qualifications to a system that emphasizes the value offered by each contractor proposal. Transition to a bona fide best value project delivery system similar to Dr. Dean Kashiwagi's Performance Information Procurement System can revamp the current Air Force Reserve military construction procurement environment to the benefit of both Air Force Reserve

Command and contractors/vendors through an efficient, logical, and reasonable project delivery format.

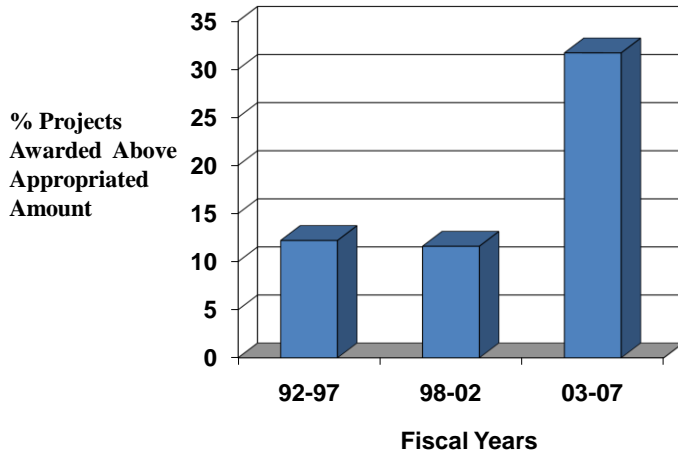
## **Chapter One – Introduction**

Construction procurement based solely upon the lowest responsible bid price from an eligible contractor qualified to perform the work along with a Design-Bid-Build delivery method has been the project delivery system of choice in the Air Force Reserve Command (AFRC) since its inception. Application of this delivery system assumes that construction quality and performance are assured by adherence to the solicitation package specifications and verification that bidders meet some minimal eligibility requirements regarding past performance on work of similar nature. This project delivery option / selection type combination assumes that all contractors submitting eligible bids for the work will perform in an equal manner in terms of quality, skill, risk and time management, project control, and customer satisfaction. Therefore the only discriminating variable is the price of performance.

AFRC as a procurer of real property assets increasingly faces the maladies common to both public and private owners attempting to construct and renovate facilities and infrastructure in the twenty-first century. Construction costs have risen approximately 30% in the past five years due to steel, copper, and paving asphalt prices being extremely difficult to forecast as the cost and availability of oil and its products continue to fluctuate wildly within relatively short periods of time (Nicholson, 2008). Turner Construction Company, the United States leading general builder, announced in June 2008 that construction costs over the First Quarter 2008 increased 1.57% and these costs were 6.61% higher than those experienced over the Second Quarter of 2007 (Building Design and Construction, 2008). The Producer Price Index (PPI) for inputs to construction industries – materials used in all types of construction plus items consumed

by contractors, such as diesel fuel – surged 10.4% over the 12 months preceding August 2008. The index for highway and street construction leaped 18.9 %. According to Ken Simonson, chief economist for The Associated General Contractors of America (AGC) “in the first two weeks of July 2008, asphalt prices have jumped by 40 % in several parts of the country. Prices for rebar – steel used to reinforce concrete in highways, bridges, and buildings – soared \$200 per ton.” Simonson’s predictions include postulation that, “Unless Congress passes additional funding ....many states will stop awarding contracts. Other public agencies, as well as private owners, must adjust their budgets promptly to reflect the new price realities for construction” (Moucka, 2008).

Congressionally appropriated Military Construction Projects (MILCONs) often have budgets significantly below real construction bid prices. Proposed project financial allocations are submitted for congressional approval approximately two years prior to actual bid opening. Inflation escalation factors are used to extrapolate construction costs to the estimated mid-point of construction in the establishment of these apportioned project prices. Not surprisingly, this lengthy appropriation process combined with the unpredictable, rising cost of materials has precipitated a significant decline in construction contract awards within budgets in the last 5 AFRC MILCON program years. Figure 1 below shows almost a third of these projects were awarded over budget (ACES 2009).



*Figure 1. Air Force Reserve MILCON Program Construction Awards above Budget (Air Force ACES 2009)*

Current DOD planning estimates assume declining overall MILCON program budgets into the foreseeable future due to national economic and war fighting conditions. At the same time, requirements to meet the demands of providing facilities supporting worldwide military missions are growing and changing exponentially. This scenario has encouraged AFRC and others to expedite the planning and programming phases of project concept development often at the expense of proper definition of project scope requirements. AFRC is increasingly using the Design-Build delivery method as a tool to attempt to accelerate construction award and transfer the risk of price and non-performance to the contractor. Design-Build can be defined as a project delivery system in which a single firm or team agrees to design and construct a project for the owner. The owner provides the contractor with its requirements, usually in terms of performance specifications. The Design-Builder then designs the project to satisfy these requirements

and builds the project once the design is approved (AGC, 2004). However, this can only be successfully accomplished if the owner can clearly indicate the requirements in the Request for Proposal (RFP) documents and provided they do not change, grow or evolve during the Design-Build process (Kashiwagi, 2002).

The circumstances described above have driven AFRC, as well as many other owners facing swelling requirements and reduced budgets, to seek to make the entire project delivery system more proficient. To increase worth one must maximize value while minimizing both resources and effort. In this paper I propose to demonstrate that a best value construction delivery procurement approach is indispensable if AFRC is to remain a steadfast military institution capable of erecting facilities contributory to our nation's defense with increasing efficiency by perpetually adding value to the project delivery process.

## **Chapter Two - Research Methodology**

Project data was obtained from the Air Force's Automated Civil Engineering System (ACES) database. This database tracks the milestones of all Air Force facility projects from program development through design and construction to beneficial occupancy, construction completion and finally financial closeout. After projects are completed and financially closed, they move to a historical file within ACES and the completed milestone data is available for projects executed over a period of time. At present Air Force projects spanning the last sixteen years are available for review, report writing and analysis.

One hundred forty-seven Air Force Reserve MILCON projects from program years 1992 through 2007 were drawn from the database, compiled into a report and analyzed. Schedule and cost growth data were evaluated for all projects over the sixteen year period as well as comparisons made between projects delivered using price as the only selection factor and those delivered with contracts conferred using price and other non-price components. The analyses were graphed to show comparisons and ascertain trends. It was anticipated that examination of these execution metrics would reveal the need to incorporate best value procurement practices into AFRC's project delivery processes. A comparison of price and price plus non-price contractor selection delivery methods was expected to show some execution metrics improvement because non-price factors integrate the capacity of the contractor to minimize schedule, budget, and quality expectation risks provided owner requirements do not change. Risk minimization is an important attribute of best value procurement. A contractor that cannot identify risks and

act in the best interest of the owner will have to be closely managed. Management of the contractor reduces the project delivery system's efficiency which diminishes value and increases project risk (Kashiwagi, 2002).

A ten question survey was distributed to government, contractor, and engineering professionals with participatory experience in the AFRC project delivery process (See Appendix A, page 85). The purpose of this survey was to ascertain knowledge of best value procurement principles among those likely to be involved in their implementation and to garner opinions concerning the applicability of these best value practices to the project delivery process. Fifty-four out of sixty-two surveys were returned for a response rate of 87%. The results of this questionnaire were consolidated and the responses to each question were graphed to show their distributions.

A fiscal year 2007 AFRC MILCON project was selected to be a case study for best value procurement implementation. The Design-Build delivery method was chosen for execution of this project. Air Force Reserve Command requested a solutions-based approach to procurement. In a solution-based selection, the owner typically provides its budget along with its design criteria, and competing Design-Build firms provide their own design solutions, trying to provide the best solution within the owner's stated budget (AGC, 2004). The United States Army Corps of Engineers (USACE), the Command's paramount construction program management agency, recommended a best value contractor selection method which they called Military Transformation. The results of this selection process provided valuable insight into the challenges faced by the Government and AFRC to awarding MILCON projects using selection factors other than minimally acceptable lowest priced proposals. This case study revealed the costs and

performance risks associated with insistence upon acceptance of the lowest priced proposal.

## Chapter Three - Background

The late great management and quality guru Peter Drucker described a business as an organization that adds value and creates wealth. Value is created for customers and wealth is generated for owners. According to Drucker not many owners and managers are information-literate. They know how to get data but have yet to learn how to use it. To meet this information challenge, these executives must remove a serious flaw. As quoted by Watson (2002), Drucker stated this flaw as “the common assumption that conditions must be what we think they are or at least what we think they should be. An adequate information system must include information that makes executives question this assumption.”

Three basic questions are formulated around delivering value and the repercussions for the organization.

- What is our business today?
- What will be our business?
- What should be our business?

It is management’s responsibility to discover the answer to these questions and implement solutions that deliver results. The critical questions owners and managers must ask themselves are:

- What information do we owe?
- To whom do we owe it?
- In what form should we present it?

As stated by Watson (2002), “Let’s hope that Drucker’s ideas will provide a foundation for our continuous learning about how to deliver more value to customers.”

Drucker’s concept of the knowledge worker from the “Post Capitalist Society” and just in time from Toyota’s application in lean manufacturing define and propagate the use of best value construction. These two concepts are used to structure procurement into an information system, which results in performing construction and an improvement in contractor capability to produce on-time, on-budget, and meet quality expectations. Many performance information issues are resolved using these concepts.

In 1991 the Performance Information Procurement System (PIPS) was developed by Dr. Dean Kashiwagi at Arizona State University and has been tested extensively since 1994 (See Appendix C). This system uses the knowledge worker and lean manufacturing concepts. The transfer of these concepts from the manufacturing industry to the construction industry has been slow due to a lag in technology transfer and required education. The new concepts can save the construction business years in transforming to a high performance industry by following the pattern of socioeconomic change in the production, manufacturing, and managerial industries. PIPS uses the difference between the service worker and the knowledge worker to show how to increase construction performance (Kashiwagi and Slater, 2000).

Construction has typically been viewed as a production process, with the product being the completed facility. In addition to providing this product, however, contractors also provide services. The construction services furnished range from meeting periodically with the owner’s representatives to offering customer satisfaction. Construction purchasers, given the choice, would prefer not to base their selection decision solely on the construction product provided but rather the entire smorgasbord of

products and services inherent to the process. There is no natural demand for the construction product; the demand for the construction product is derived from the demand for the intended use of the facility. As a case in point, there is no natural demand for a manufacturing facility; the demand for the facility derives from the demand for the product that is to be manufactured in that facility. Necessity for cars generates a demand for auto parts and assembly plants. The client's primary concerns are when the facility will be available and what it will cost. These two factors significantly influence the economic viability of the project. Completion of the project in accordance with the plans and specifications within budget and on time will satisfy the client's needs and allow the contractor to make a profit. However this criterion alone does not guarantee that the client will desire working with the contractor on future projects. The contractor's skilled workforce may be a factor in the customer's decision to select the contractor to perform the work. For example, because of a skilled workforce, the customer may have the expectation that there will be no rework on the project or service calls to repair something after the client has begun to use the facility. A contractor must have a detailed understanding of the customer's expectations and be able, through his or her personnel, to satisfy those expectations (Maloney, 2002).

## Chapter Four - Information Theory

The intelligent use of information whether by human beings or machines involves the following areas of concern:

1. Selection of appropriate information along with adequate commands to obtain this information,
2. Comparison with previously obtained information,
3. An ordering of actions based on preferences and expected results.

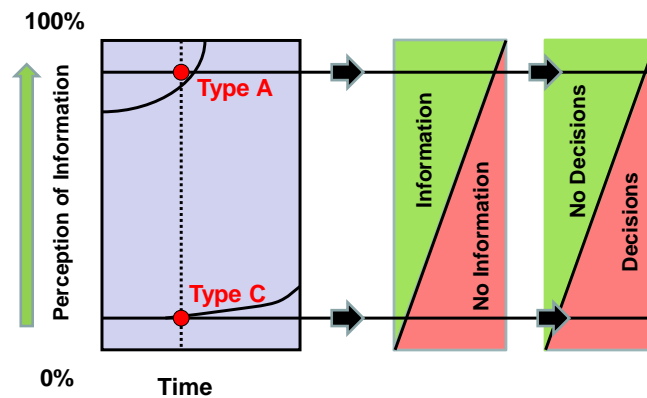
Information implies not only the presence of messages and symbols but requires that the meaning of these be taken into account. Meaning is intimately associated with the context of the information. Individuals attempt to control certain observables in their environment. These desired environmental effects can be called goals and when a person responds to an event in accordance with these goals this response is referred to as an appropriate response or one is said to be acting intelligently (Pedelty, 1963).

An event is a significant occurrence that triggers an activity or process that must be recognized and reacted to (Young, 1987). In the absence of appropriate current information about an event, humans revert to previously obtained information and opinions and make decisions with unpredictable results. This unpredictability infuses risks into an enterprise.

Figure 2 shows the decision making Kashiwagi Solution Model (KSM). The premise of this model is that decisions are made when information cannot be perceived. The more information that is available, the easier it is to predict the outcome and minimize decision making and risks. As demonstrated by the model, if someone has “all”

information no decision is necessary. Some people describe the impact of information as making the decision easier. Every event is constrained by the initial conditions that cause predictable conclusions. A Type A organization (represented by the top dark circle in the figure below) can be characterized as a business entity that constantly perceives more information, changing the way they do business. A Type C organization (represented by bottom dark circle below), on the other hand, perceives very little information and cannot differentiate between options. These business entities need rules to tell them what to do because they cannot perceive and differentiate, and therefore change very slowly. A Type C organization is usually bureaucratic, resists change with rules, cannot use information, and is filled with personnel who feel comfortable in this environment. The Type C organization is further distinguished by the following attributes (Kashiwagi, 2002):

1. Forces its personnel to make decisions to determine if the rules are being followed.
2. Decisions are minimum standards that use the lowest common denominator.
3. Require means, methods, and specifications to direct marginal services on how to do their job.
4. Require inspection and other means of control (project management) to ensure that the marginal services do the minimum specified requirement.
5. Procure marginal performing services.



**Figure 2. Decision – Information Relationship**  
 (Adapted from Kashiwagi , 2002)

Information is not only an organizational resource but also an asset. Accurate and pertinent information empowers a business to produce changes in its environment. The reliability of the information in a corporation’s systems database is crucial. Three major sources of information system failure are: (1) users withholding information from the system, (2) biased information entered into the system, and (3) incorrect updating of the database.

An enterprise’s information system should provide information within the company when and where it is needed at any managerial level. An information system should be a logically interrelated set of business processes that accomplish organizational goals.

Information in an information system environment should have the following attributes (Aktas, 1987):

- Understood by its recipient in the proper frame of reference

- Relevant to a current need in a decision-making process
- Have surprise value; not already known
- Lead appropriate users to make a decision which could be to take no action

Decision making should be the result of the right information made available at the right time to the right people within the organization.

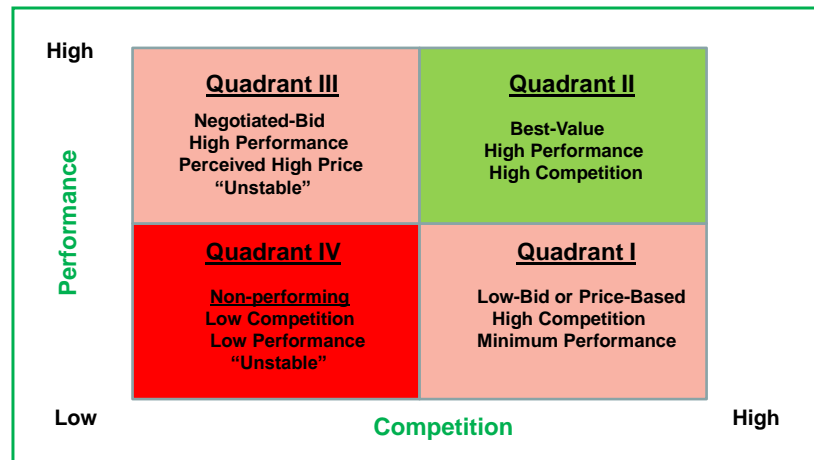
Decisions should never be driven by a lack of information. The results are inefficiency and debilitating hierarchy, rules and structure that impose additional restrictions on the organization's workforce and their ability to perform their tasks.

## **Chapter Five - Construction Industry Structure Model**

The two components of construction industry stability are competition and performance. Models like the Construction Industry Structure (CIS) Model, developed by Dr. Dean Kashiwagi at Arizona State University help to simplify the problems of the construction industry, and show how an information environment will optimize value for the owner and profit for the vendors. The CIS model can also be used to identify how the industry participants (building owner/users, designers, contractors, and manufacturers) can become more efficient.

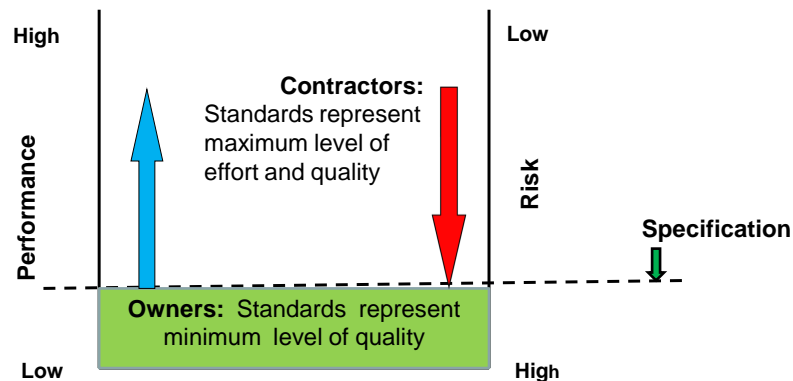
The CIS model (Figure 3 below) divides the industry into four quadrants:

1. Quadrant I – Low-Bid or Price-Based Sector: Described by high competition and marginal performance.
2. Quadrant II – Best-Value Sector: Described by high competition and performance.
3. Quadrant III – Negotiated-Bid Sector: Described by high performance and low competition.
4. Quadrant IV – Unstable Sector: Described by low performance and low competition.



**Figure 3. The Construction Industry Structure (CIS) model**  
(Kashiwagi , 2002)

The Quadrant I low-bid, price-based environment is one in which the process is controlled by the owner’s representative. Minimum standards are used to specify products and performance. Contractors and manufacturers lower their performance to meet the minimum standards in order to save money and thus compete to be the low priced offeror. The owner’s professional project managers have to minimize the risks caused by specifications and the impact of the low price award through management and inspection (See Figure 4).



**Figure 4. The Standards “Great Divide”**

(Adapted from Kashiwagi, 2002)

Quadrant II is the best value environment where users consider both performance and price. Characteristics of the best value environment are:

1. Use of performance information.
2. Contractors and vendors maximize competition by using standards to ensure performance.
3. The contractor is allowed to accept and reduce risk.
4. The performing contractor controls the construction project.
5. Forces quality control and continuous improvement.
6. Minimizes decision-making
7. Decisions have to be made by the participant with liability and the most information.
8. Continuous efforts to make the delivery system more efficient.

The only way to meet the requirements of Quadrant II is for the owner/user's representative to be an information worker.

Quadrant III represents a high performance and low competition environment. Characteristics of this environment are pre-qualifying contractors and subjectively selecting via minimal performance information. Relationships with contractors are built by sole source solicitation. Quadrant III is dissolving due to price pressures of the present worldwide competitive marketplace.

Quadrant IV is unstable. The following are attributes of the Quadrant IV environment (Kashiwagi, 2002):

1. No identification of performance
2. Contractors with less performance can get paid more
3. No one has a competitive advantage
4. Highly political
5. No real competition
6. True performers have a difficult time competing

## **Chapter Six - Public Project Procurement**

Public projects are governed by strict statutory and regulatory frameworks intended to reduce the risk of fraud, favoritism and undue influence and to reassure taxpayers that their tax dollars are being spent properly. In recent years, “best value” procurement, i.e. procurement in which a contractor’s qualifications, design (where applicable) and price or cost are weighted against its competitors to identify the contractor whose proposal represents the greatest value to the government, has begun to encroach upon traditional procurement methods at both the state and federal level. In 2001 the American Bar Association Model Procurement Code added Design-Build procurement as a new project delivery method to assist state and local agencies in implementing “best value” procurement. The ultimate goal of best value procurement measures is to combine the twin goals of promoting efficiency of private construction contracting and taxpayer trust in the procurement process.

Historically, public projects have used traditional Design-Bid-Build procurement. The Design-Bid-Build method requires separate contracts between the owner and designer on the one hand and the owner and the constructor on the other. Contracts are awarded to the lowest responsible bidder. Statutory bond requirements allay concerns about the ability of the low bidder to perform the project. Payment and performance bonds guarantee that subcontractors will be paid and the work will be performed as promised. However, the conventional Design-Bid-Build model does not allow the government to evaluate contractor bids based on factors other than price. Other concerns that could dramatically change the evaluation process include completing the project in

the shortest amount of time, incorporating necessary aesthetic or environmental design issues, and producing a facility with the lowest long term operating and maintenance costs (Heisse, 2002).

According to Palaneeswaran, Kumaraswamy, and Ng (2003) the following are some key common procurement principles of public clients:

- Public accountability – since public money is used it should be properly “justified.”
- Value for money – in order to achieve the best “value for money”, the contractor selections should consider competitiveness, compliance with client’s requirements, reliability of performance, qualitative superiority, and life-cycle costs.
- Transparency – in order to encourage contractors to be more responsive and competitive, all necessary information should be provided to them and all selection procedures and evaluation criteria should be clearly outlined and made transparent to facilitate their adequate understanding. There should be proper debriefing arrangements for providing feedback to unsuccessful contractors.
- Open, equitable and fair competition – all contractors should be treated on an equal footing and it should be ensured that all those eligible are given the same information to prepare their proposals. They should be treated in an equitable manner without any bias or discrimination.
- Confidentiality – all proposals and evaluations should ensure adequate confidentiality. No information relating to the examination, clarification, and evaluation of bids and recommendations concerning awards should be

communicated after the public opening of bids to any person not officially concerned with these procedures.

- Propriety/integrity/probity – all procurement procedures should be beyond reproach/criticism. The procurement personnel should exercise fair dealing within a sound ethical framework.

In addition to the above basic procurement principles, the prime objectives considered in public sector construction contractor selections should include:

- Proper delivery of good products and services that adequately meet the outlined qualitative and quantitative requirements
- Minimization of risks
- Maximization of value for money

The Federal Government, Department of Defense (DOD), and AFRC have all had difficulty procuring successful construction through the low-bid, design, bid specification, procedure. Several programs have been implemented with the intent of moving to a best value procurement system where both performance and price are considered. As asserted by Kashiwagi and Gardner (2002) success of these programs has been hampered by the following:

1. Inability to change the current bureaucracy to a performance based environment.
2. Difficulty in identifying performance.
3. The perception of subjectivity (decisions based on personal perception due to a lack of differentiating performance information that proves difficult to explain and justify in a bureaucratic environment).
4. Inability to minimize the risk of nonperformance (on-time, on-budget, meeting quality expectations).

5. The inability to influence the contractor's performance based on the potential for future work.
6. The lack of documentation of performance due to the variation of construction work and the many unique factors that impact construction performance.

From formation through administration, contracting with the Federal Government is a highly regulated process. Unlike commercial contracting, which is governed generally by the Uniform Commercial Code and the common law, Federal Government contracting is governed by a maze of statutes and regulations. These statutory and regulatory provisions dictate, for example, what method or process an agency must use to solicit a contract and how the agency is to negotiate or award a contract. The Armed Services Procurement Act of 1947 (ASPA), codified as 10 United States Code (U.S.C) §§ 2301-2314 governs the acquisition of all property, construction, and services by defense agencies including AFRC. The Competition in Contracting Act (CICA) codified in scattered sections of 10, 31, 40, and 41 U.S.C is applicable to both defense and civilian acquisitions and requires federal agencies to seek and obtain "full and open competition" whenever possible in the contract award process.

The Federal Acquisition Regulation (FAR) – codified in 1984 at Title 48 Chapter One of the Code of Federal Regulations – contains the uniform policies and procedures for acquisitions by all federal agencies. It implements or addresses nearly every procurement-related statute or executive policy. In doing so, the FAR reaches every stage of the acquisition process. The FAR reflects Congress' efforts to create a uniform structure for Executive Branch federal contracting. Prior to the FAR, the Department of Defense services each had their own set of regulations. The goal of uniformity has been somewhat undermined by the numerous agency-specific supplements. These

supplements, however, may not conflict with or supersede relevant FAR provisions (Vacketta, 1999).

AFRC's two authorized construction program management agencies are the United States Army Corps of Engineers (USACE) and the Naval Facilities Engineering Command (NAVFAC). These agencies employ the Defense Federal Acquisitions Regulation Supplement (DFARS) to apply the FAR acquisitions specifically to AFRC MILCON projects.

The ASPA and CICA established two basic methods of obtaining "full and open competition" – (a) sealed bidding and (b) competitive negotiation. Sealed bidding is characterized by a rigid adherence to formal procedures. These procedures aim to provide all bidders an opportunity to compete for the contract on an equal footing. In a sealed bidding acquisition, the agency must award to the responsible bidder who submits the lowest responsible bid (price). In contrast, competitive negotiations is a more flexible process that enables the agency to conduct discussions, evaluate offers, and award the contract using price and other factors. According to the FAR, the primary objective of discussions is to maximize the agency's ability "to obtain best value, based on the requirement and the evaluation factors set forth in the evaluation." After completion of all discussions the Contracting Officer (CO) may request the offerors revise their proposals to clarify any compromises reached during negotiations and submit a final proposal revision. Subsequently, the CO will undertake a comparative analysis of the final offers in accordance with the evaluation procedures set forth in the Request For Proposals (RFP), and select the offeror whose proposal is most advantageous to the Government.

The U.S. Small Business Administration (SBA) is responsible for the management and oversight of the small business procurement process across the Federal

Government. SBA negotiates with federal departments concerning their prime contracting goals and achievement with small businesses to ensure that small businesses have the maximum practicable opportunity to provide goods and services to the Federal Government. Further, the negotiations ensure that the Government will achieve construction contract award goals of not less than 23 percent to small businesses, not less than 5 percent to woman-owned and small disadvantaged businesses, and not less than 3 percent to service disabled veteran-owned small businesses and certified Historically Underutilized Business Zone (HUBZone) small businesses (U.S. Small Business Association, 2009).

AFRC MILCON project procurement is especially targeted for SBA contracting venues because the Command's projects tend to be less complicated and of lower dollar value when compared to other DOD workload contracted by the USACE and NAVFAC program management contracting offices.

Another contracting venue commonly used for AFRC projects is the Multiple Award Task Order Contract (MATOC). MATOCs are pools of pre-qualified contractors, already under contract to USACE or NAVFAC to deliver broadly specified construction services according to specific technical and contractual standards. Each contractor is asked to submit a proposal to perform a particular construction project. Typically, each MATOC contractor pool is comprised of firms qualifying as small disadvantaged businesses or HUBZone contractors as defined by the SBA (Garner, Richardson, and Castro-Lacouture, 2008).

## **Chapter Seven - What Constitutes Best Value Contractor Selection?**

Like many other terms, Best Value Selection is used by many people to describe many different things. Generally speaking though, the term refers to a type of selection process. In the construction industry the decision referred to most often is the choice of the design team, the construction team or both. The term best value is commonly used to denote a rating procedure in which the final selection criteria include subjective considerations and not just a low bid price.

How the phrase “best value” is applied can vary depending on what defines “value”. Does value represent the perceived quantity/quality measures of service versus the price to provide those services? Is the term “value” applicable to the best design solution for a stated budget as is common in some Design-Build selections? Or, is “value” appropriately used to indicate the qualifications of a firm and its ability to add worth by being part of the project team?

Once a common understanding of how the expression “value” is being used has been established, the next challenge is to determine which firm is “best.” Challenges to implementation of best value selections can seem endless. The burden on public sector owners to maintain a fair and open election process faces greater scrutiny when using methods applying subjective evaluations. The ability to have an entirely objective criterion for final selection continues to be the primary advantage that a traditional low bid selection process offers over other procurement alternatives. Once a decision is reached to include subjective criteria in making a final selection, it is imperative that all the parties in the selection process clearly understand those criteria and how they will be evaluated and measured.

For decades Federal Government selection procedures for obtaining design services has been regulated by the Brooks Act. The selection procedures permitted by this Act are completely void of any price element criterion for choosing designers to provide these services. Instead, fair compensation is negotiated only with the most technically qualified design firm. Thus, selection of architect-engineers has been based on subjective criteria for years (Associated General Contractors of America and National Association of State Facilities Administrators, 2004).

Federal agencies are directed to Section 36 of the FAR for guidance on procuring construction services. FAR Section 36.103 – Methods of Contracting states “the contracting officers shall use sealed bid procedures for a construction contract if the conditions in 6.401(a) apply. Section 6.401(a) of the FAR instructs that “contracting officers shall solicit sealed bids if—

- (1) Time permits the solicitation, submission, and evaluation of sealed bids;
- (2) The award will be made on the basis of price and other price-related factors;
- (3) It is not necessary to conduct discussions with the responding offerors about their bids; and
- (4) There is a reasonable expectation of receiving more than one sealed bid (FAR 2005F).

Section 6.401(b) specifies that “Contracting officers may request competitive proposals if sealed bids are not appropriate under paragraph (a) of this section (FAR 2005B).

For competitive proposals the FAR allows agencies to use any process or combination of processes described in the FAR, such as best value one or two step, or performance contracting to procure contracting services (FAR 15.101). According to the

regulations, an agency may obtain best value in negotiated acquisitions by using any one or a combination of source selection approaches. In different types of acquisitions, the relative importance of cost or price may vary. For example, in acquisitions where the requirement is clearly defined and the risk of unsuccessful contract performance is minimal, cost or price may play a dominant role in source selection. The less definitive the requirement, the more development work required, or the greater the performance risk, the more technical or past performance considerations may play a dominant role in source selection. “This process permits tradeoffs among cost or price and non-cost factors and allows the Government to accept other than the lowest priced proposal. The perceived benefits of the higher priced proposal shall merit the additional cost and the rationale for tradeoffs must be documented in the file” (FAR 2005C; Kashiwagi, Savicky and Massner, 2000).

The evaluation process for two step procurement is accomplished in two phases. The Step One proposals are evaluated only on technical approach and technical qualifications, to include: specialized experience and technical competence; capability to perform, past performance and other project specific factors deemed important. The Step One evaluation process results in a short list of offerors (normally three to five) who then are invited to prepare Step Two technical design and cost proposals for final evaluation and selection. Examples of Step Two evaluation factors include design concepts, management approach, key personnel, and proposed technical solutions.

FAR 15.609 provides guidance regarding the competitive range determination for Step One contractor selection. Only those firms with a reasonable chance of being awarded the project should be asked to submit Step Two cost and technical proposals. When determining if a proposal should be included, consideration should be given to the

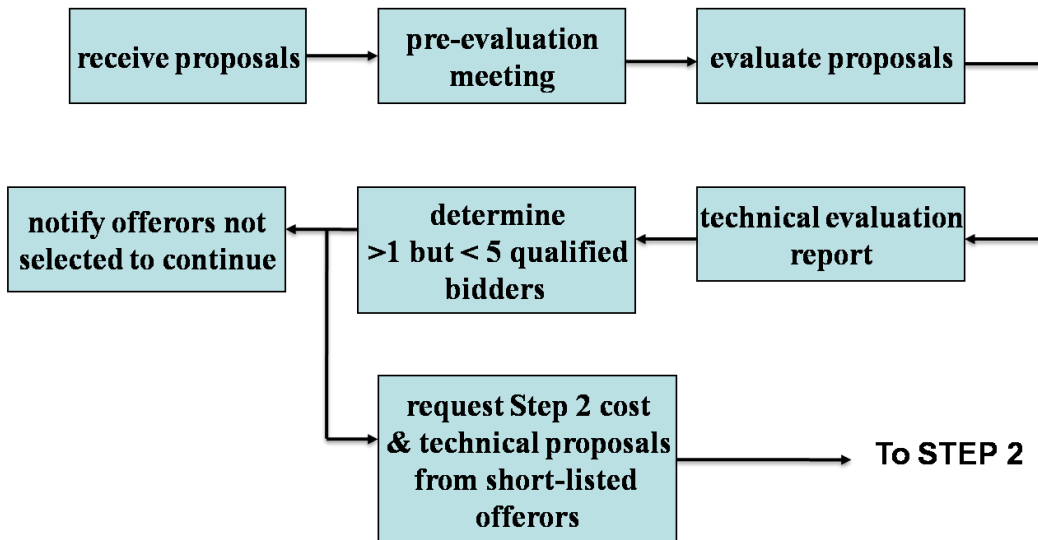
Clarification Requests and Deficiency Reports. The Government submits a clarifications request form to a firm when a section of a proposal is not clear enough to enable a fair and complete evaluation of the offeror's capabilities. A deficiency form request is submitted to firms whose proposed solution is deemed non-compliant. When there is doubt about a firm's chances of being awarded the project, the Contracting Officer should err on the side of including a proposal for Step Two submission. Oral or written discussions with all offerors in the competitive range should be conducted to allow firms the opportunity to provide clarifications and correct deficiencies with their proposals. Offerors outside the competitive range should be notified promptly – in writing. The purpose of this notification is to inform them that they are no longer being considered and to prevent them from spending any additional time or money germane to the project (FAR 2005C).

The Step Two proposal submittal should consist of two volumes: Volume One – Preliminary Design Proposal and Volume Two – Cost/Price Proposal and Sub-Contracting Plan. The Step Two submittal is received and evaluated as in the Step One process. However, this step includes the preparation of any required clarification requests. Insufficient approach definition, proposal inconsistencies, and inadequate substantiation are examples of reasons to generate a clarification request. The Step Two technical evaluation report should do the following:

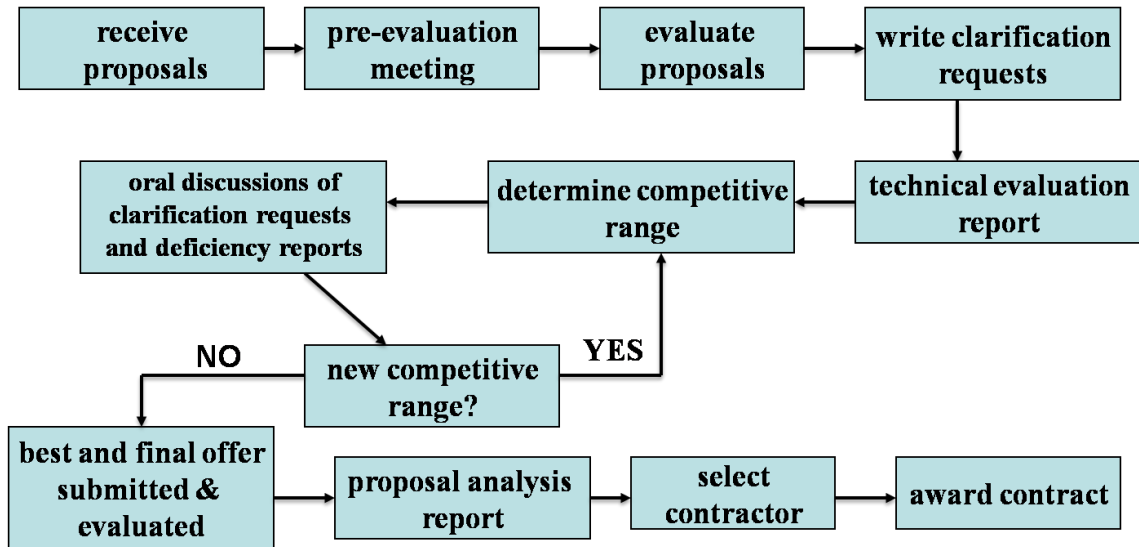
- Identify offerors whose proposals do not meet the Government's minimum standards as outlined in the RFP.
- Identify offerors whose proposals do meet the Government's minimum RFP standards.

- Identify areas where the offeror may have exceeded the Government's technical standards as outlined in the RFP.
- Document deficiencies in the RFP itself.
- Identify clarifications and deficiencies in each offeror's proposal.
- Assess risk factors.

The technical evaluation report is revised following discussions, the best and final offer, and the final technical evaluation. Figures 5 and 6 below summarize Step One and Step Two best value contract acquisitions respectively.



*Figure 5. Step One Source Selection Process Diagram for Best Value Acquisitions (United States Air Force Project manager's Guide 2000).*



*Figure 6. Step Two Source Selection Process Diagram for Two-Phase Best Value Acquisitions (United States Air Force Project Manager’s Guide 2000).*

On the federal acquisition community web site the “seven steps of performance based acquisition” team of federal departmental acquisition executives affirm that “best value” is a process used to select the most advantageous offer by evaluating and comparing elements in addition to cost or price. It allows selection flexibility via tradeoffs which the agency makes between cost and non-cost evaluation components with the goal of awarding to the contractor providing the Government with the best value for the money. The rules for the best value and tradeoff process are twofold: the rules for the specific acquisition process being used and the regulations the agency establishes in the solicitation. The federal departmental acquisition executive team advises that the selection team should include the following features in the evaluation process:

- Quality and benefits of the solution
- Quality of the performance metrics and measurement approach
- Risks associated with the solution

- Management approach and controls
- Management team (key personnel)
- Past performance (how well the contractor has performed)
- Past experience (what the contractor has done)

The General Accounting Office (GAO) acknowledges broad agency discretion in selection. Quite simply, best value source selection involves subjective analysis. It cannot, and should not, be reduced to a mechanical, mathematical exercise. The following list helps to define the broad discretionary selection latitude available to government agencies as envisioned by GAO (Acquisition Central, 2009):

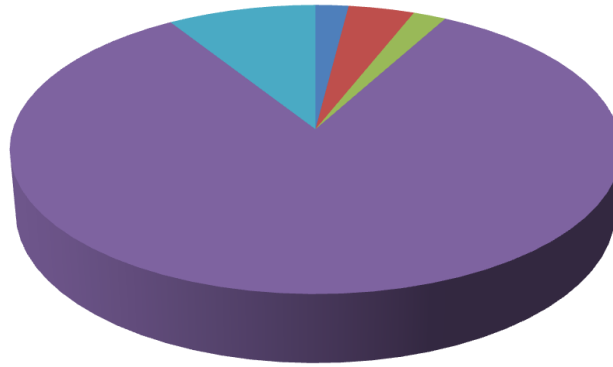
- Source selection officials have broad discretion to determine the manner and extent to which they will make use of the technical and price evaluation results in negotiated procurements.
- In deciding between competing proposals, price/technical tradeoffs may be made; the propriety of such tradeoffs turns not on the difference in technical scores or ratings per se, but on whether the source selection official's judgment concerning the significance of that difference was reasonable and adequately justified in light of the RFP evaluation scheme.
- The discretion to determine whether the technical advantages associated with a higher-priced proposal are worth the price premium exists notwithstanding the fact that price is equal to or more important than other factors in the evaluation scheme.
- In a best value procurement, an agency's selection of a higher-priced, higher-rated offer should be supported by a determination that the technical superiority of the higher-priced offer warrants the additional cost required.

## **Chapter Eight - Survey of Air Force Reserve Professionals Perceptions and Opinions on Best Value Procurement**

A ten question multiple choice questionnaire (See Appendix A, page 75) was electronically mailed to USACE, AFRC, and Air Force Center for Engineering and Environment (AFCEE) MILCON program managers along with private sector design engineers and contractors possessing experience in construction delivery of AFRC MILCON projects. Fifty-four of sixty-two delivery professionals polled responded to the survey with their opinions regarding just what constitutes best value procurement. Views on the applicability, costs, traits, risks, FAR considerations, quality control, personnel interviews, and the ability to determine contractor qualifications as they apply to the capacity to obtain best value were also requested and recorded. The final question pertained to the responder's amenability to an information environment that allows other members of the project team to dictate the amount of information and control they need.

Each question along with a corresponding pie chart summarizing the resultant responses follows. Below each chart are the author's comments on the feedback received regarding each question.

**Which of the following best describes your definition of best value in terms of military project procurement?**



■ **A 2%** ■ **B 4%** ■ **C 2%** ■ **D 83%** ■ **E 9%**

*Figure 7. Survey Question No. 1: Definition of Best Value Procurement*

- A) The contractor representing the best value is the one meeting the minimally acceptable qualification evaluation factors and proposing the lowest price.
- B) The contractor having the best qualifications and who offers a price within the project's budget (programming amount) is the best value.
- C) The best value contractor is the one with acceptable past performance and offering the lowest price.
- D) The best value contractor is the one whose qualifications, including past performance, technical ability and experience when combined with price provides the best opportunity for successful execution at the least risk.
- E) None of the above. Please write your own definition of best value in terms of military procurement.

According to Figure 7, the survey participant responses to this question revealed a basic understanding of best value procurement of construction services by a large number of AFRC project delivery professionals. Some additional definitions chosen by those selecting (E) None of the above were:

1. “Best value is a balance of lowest technically qualified price and demonstrable project understanding and proposal clarifications which represent the lowest risk to the buyer” (a construction contractor’s definition).
2. “The contractor who provides the best mix of qualifications, design intent and price which gives the government the best project for the price.”
3. “The contractor having the best qualifications and who offers the best technical proposal for the best price within the project’s budget.”

**Best value procurement can be used with which of the following delivery methods?**

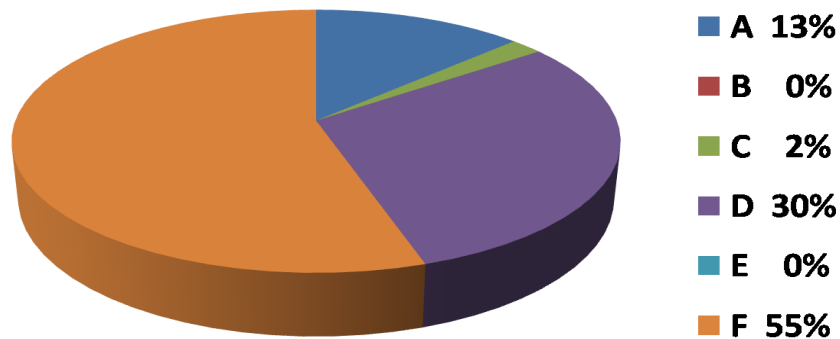


Figure 8. Survey Question No. 2: Best Value Procurement and Current Delivery Methods

- A.) Design-Build
- B.) Design-Bid-Build
- C.) Construction Management at-Risk
- D.) A and B above
- E.) B and C above
- F.) All of the above

Figure 8 presents evidence that a slight majority of AFRC project delivery professionals are aware that best value can be applied to three of today’s most common delivery methods. Construction Management at-Risk is a method not used in military procurement because of FAR restrictions. Design-Build is still seen as an innovative approach to project delivery compared to the traditional Design-Bid-Build delivery and is sometimes seen as the method available for attempting non-conventional approaches to awarding construction contracts.

**In order to receive greater performance and value in a construction contract you have to pay more.**

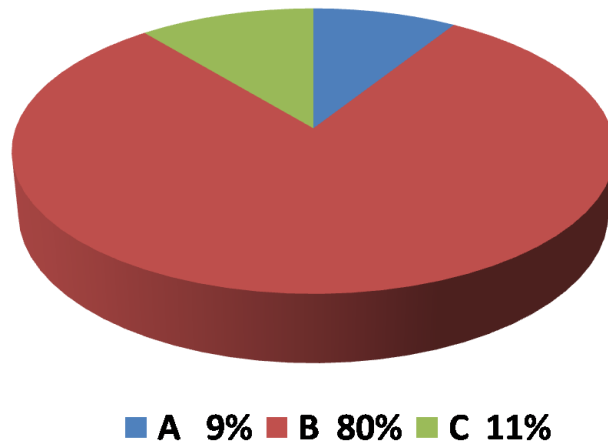
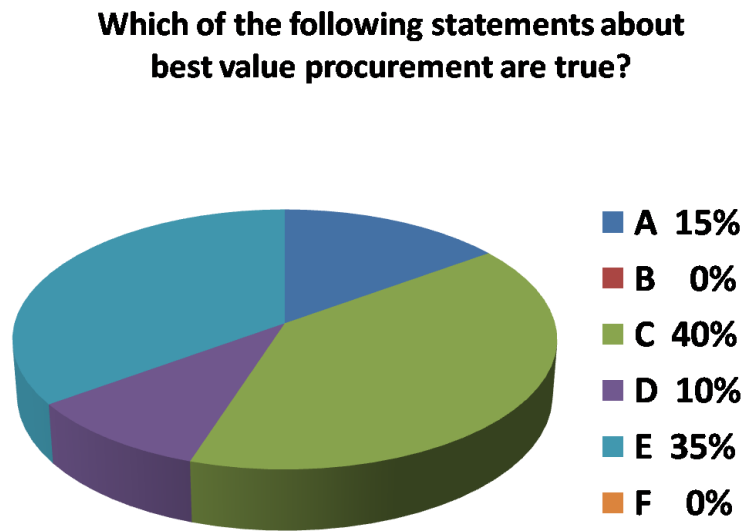


Figure 9. Survey Question No. 3: Potential Marginal Costs Due to Best Value Procurement

A.) True    B.) False    C.) Not sure

Actually to receive greater construction performance and value the reverse of the statement above is true. Best value delivers the best performance at the lowest cost.

Figure 9 divulges that eight of every ten AFRC project delivery professionals agree with this attribute of best value procurement.



*Figure 10. Survey Question No. 4: Traits of Best Value Procurement*

- A.) Trust between the contractor and owner/client is required.
- B.) The construction industry controls the quality of construction.
- C.) Best value is a selection process.
- D.) Partnering is a valuable tool in resolving issues.
- E.) All of the above.
- F.) None of the above.

This is perhaps a trick question since none of the statements are true but represent false perceptions of best value. The fact that none of the project delivery professionals recognized this, as demonstrated by Figure 10, provides strong evidence of a lack of knowledge regarding true best value principles in the AFRC construction community.

The quality gap in performance between owner and contractor objectives (See Figure 4, page 17) has resulted in conflicts and disputes, poor collaboration and a deficit in customer focus and involvement in the project delivery process. These input and deficiency factors lead directly to outcome inefficiencies such as time and cost overruns, and low productivity, poor quality and customer satisfaction. Generally, increased collaboration between project actors is argued to be a suitable antidote for many of the industry's problems. Partnering aims to increase cooperation and integration between the players by building trust and commitment while decreasing disputes (Eriksson, Nilsson and Atkin, 2008).

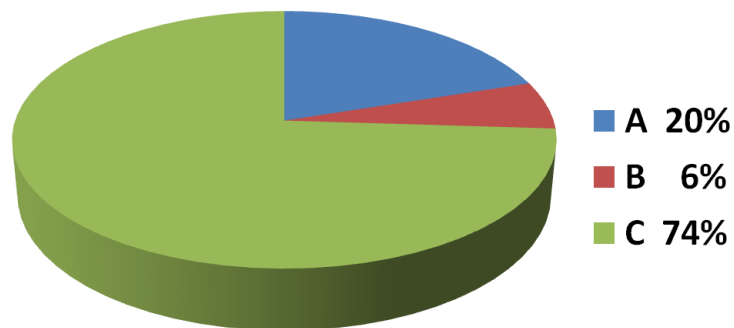
The present USACE approach to partnering represents a reactive course. Partnering sessions focus on teambuilding and defining the resolution process and roles of the individual team members when problems/issues arise. A much more effective line is to make anticipation and management of risks associated with a project key aspects of partnering. The subject should be introduced during the first partnering meeting, encouraging participants to draw upon their past experiences and technical expertise to pool their perceptions of project-related risks to the achievement of project goals. Partnering as a risk management process should include the following standard component parts (Manley, Shaw, and Manley, 2007):

1. Risk Identification: Which risks are likely to affect the project and what are the characteristic elements of risk.

2. Risk Qualification: Evaluate the various risks and their impacts upon possible project outcomes.
3. Risk Response Development: Steps for opportunities and responses to anticipated risks.
4. Risk Response Monitoring and Control: Structure a process that will respond to changes in risks over the course of the project.

Only one of every ten professionals regards partnering as a valuable tool for resolving conflicts and a beneficial construction industry best practice. Failure to incorporate proactive risk management elements into the partnering process is a key reason for this low opinion.

**Who should assume responsibility for identifying risks to the project and minimizing the risks that are beyond their control in best value procurement?**



*Figure 11. Survey Question No. 5: Risks*

A.) Contractor      B.) Government      C.) Both in a partnering session

In a true best value procurement this responsibility should be delegated to the contractor and not shared jointly by the owner and the contractor as Figure 11 proposes.

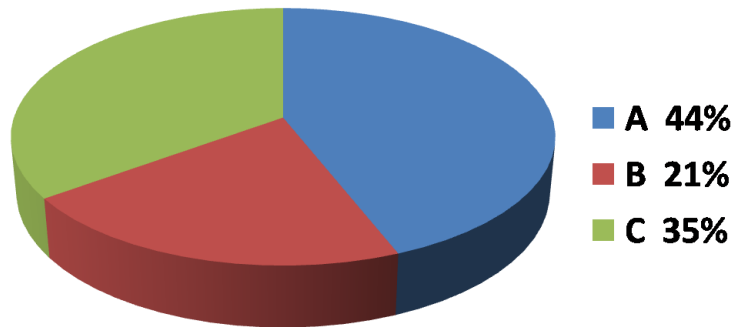
By coercing the contractor to minimize the risk they do not control, it forces the best value contractor to:

1. Take control of the project.
2. Preplan.
3. Minimize all of the risks.
4. Identify and document the risks if they cannot be minimized.

If the owner wants to partner, it is accepting the liability. A party is never at risk when they do not have the accountability, regardless of what is perceived. The owner may send its highly trained personnel to the partnering meeting. The contractor, on the other hand, will send only its medium trained personnel. Only when a party has liability and risk will it engage its most experienced and skilled people in these sessions. If the contractor has complete control over the project, it will employ its best trained people to identify problems and plan solutions to most efficiently use resources (Kashiwagi, 2002).

The responders' low opinion of partnering in Figure 10 (See page 36) does not appear to have persisted in their responses summarized in Figure 11. Perhaps the conviction of the majority, that risk identification and minimization are within the ambit of partnering sessions, provides tacit affirmation of a preponderant attitude that risk management exercises are fruitless?

**The FAR (Federal Acquisition Regulations)  
specifically prohibits evaluation of  
contractor past performance using  
numerical rating systems.**



*Figure 12. Survey Question No. 6: FAR Considerations*

A.) True      B.) False      C.) Not sure

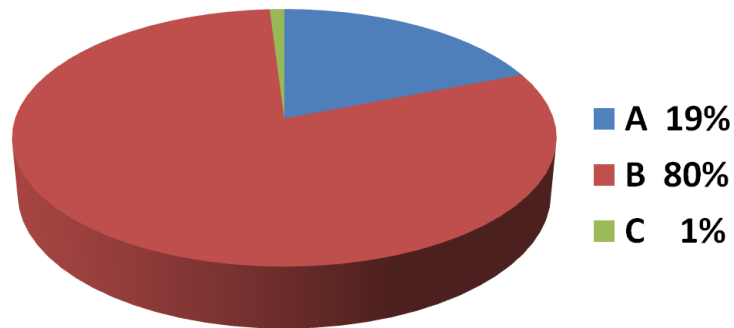
Figure 12 affirms that delivery professional opinions regarding whether numerical ratings may be used to evaluate contractors' past performance varies widely. This is not unexpected since both FAR and the USACE Army Federal Acquisition Regulation Supplement (AFARS) guidance is confusing and difficult to interpret. According to Jim Whalen, Defense Acquisition University, "You are free to use numerical ratings to distinguish between the "Non-Price" factors (technical, past performance, management plan, etc.). What you cannot do is express a numerical relationship between "Price" vs. "Non-Price." You can only use the three statements of relative importance found at FAR 15.101-1(b) (2). These are: "whether all evaluation factors other than cost or price, when combined, are significantly more important than, approximately equal to, or significantly less important than cost or price." Nonetheless, most people agree that numerical rating

is not a best practice in Government source selection. The “color” (Blue, Green, Yellow, and Red) coding system seemed to work best over the years.”

Mr. Whalen further explains that “First you need to be clear that there are two percentage “ratings” going on - the relative importance between price (all by itself) as compared to all of the non-price factors together. Then you prioritize the non-price factors on one side of the “scale” by their relative importance, for example: past performance 50% + technical 20% + quality 20% + management plan 10% = 100%. On the other side we have the price factor. The number of non-price factors can vary from one procurement package to another. However, the weights assigned to each non-price factor must total 100%. ....This allows the Source Selection Authority some latitude in the weighting process without having to amend the solicitation. This way contractors cannot determine the overall weight of ANY factor (Price or Non-Price) since they do not know the weighting of Price vs. Non-Price. The only clue we give them is the statement of relative importance [FAR 15.101-1(b) (2)]” (Whalen, 2002).

An AFRC Contracting Division executive, when asked about the use of numerical rating systems for past contractor performance had this to say: “Color coding is an Air Force mandatory procedure. Use of numerical versus color or adjectival ratings makes it very difficult at times to draw a clear line between winning proposals and those that are not. ....Contractors spend hundreds of thousands of dollars putting together proposals, if they could lose by a subjective point here or there.....” (Sharpe, 2009). The implication is that numerical point ratings are difficult to defend in case of a bid protest.

**The best value contractor's Quality Control (QC) Plan is a document describing how the contractor will control their personnel on the job.**

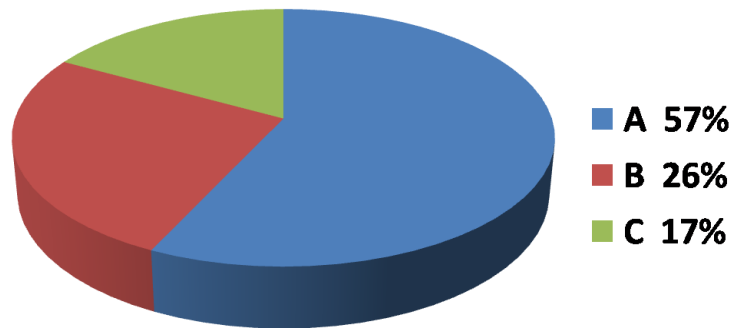


*Figure 13. Survey Question No. 7: Best Value and Quality Control*

A.) True      B.) False      C.) Not sure

Figure 13 demonstrates that AFRC project delivery professional realize that the QC plan is not a tool used to control contractor personnel. The Quality Control (QC) Plan in the best value environment should minimize risks that the contractor does not control. If a risk still occurs after the contractor has done everything it can possibly do, the client and not the contractor should be responsible for the risk. The QC Plan is the contractor's plan to control the project. It does not have to control its own people; the contractor's personnel should know how to do their jobs. However, the contractor does need to tell everyone else how the project risks (which it doesn't control) will be minimized. The QC Plan should clearly explain how the contractor wants to see the risks handled. Contractors who don't know what they want done, put themselves in a precarious position (Kashiwagi, 2002).

**The ability to conduct brief interviews with key personnel prior to contractor selection adds significant value in selecting the best value contractor.**



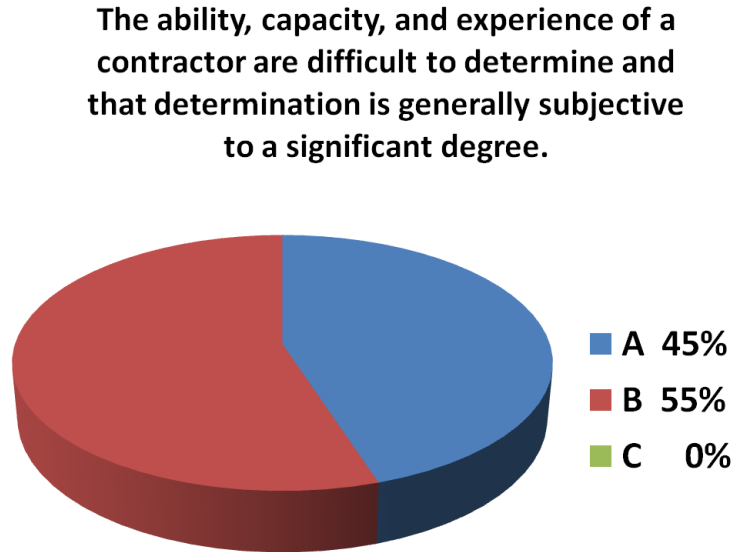
*Figure 14.* Survey Question No. 8: Interviews with Key Personnel

A.) True      B.) False      C.) Not sure

Contractor interviews provide the most information in the best value project delivery process. According to Figure 14, a majority of AFRC delivery professionals agree that contractor interviews add significant value to the selection process. They should not be the traditional “marketing and sales” interview with senior officers but rather an in-depth look at the site superintendent, project manager or other key/critical personnel and their understanding of risk and risk minimization, experience with like projects, and measure of their perception and ability to predict the future outcome. If the project results in nonperformance, the interviewees should be held accountable.

When individual ratings for past projects are signed and made available for consideration as part of the past performance evaluation in the contractor selection process, the value of these interviews increases significantly. Absent this accountability, the interviews have limited value. Military construction procurement has no mechanism

in place to hold key contractor personnel personally responsible for prior project performance. Figure 14 reveals that less than a third of the survey responders consider the statement that interviews add significant value to be false while an additional 17% are unsure and perhaps don't know (Kashiwagi, 2002).



*Figure 15.* Survey Question No. 9: Contractor's Ability, Capacity, and Experience

A.) True      B.) False      C.) Not sure

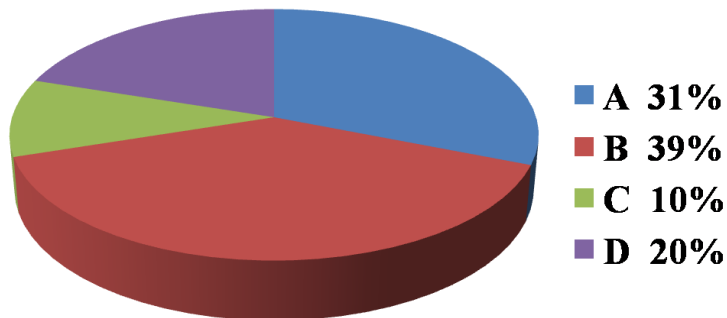
Figure 15 illustrates that almost half of those answering the survey agree that it is difficult to determine contractor ability, capacity, and experience and that the process is subjective. A possible reason for this high percentage response is that present Federal Government past performance databases and models provide no means to objectively use this information. Consequently, this historical material is primarily used to assess whether contractors meet arbitrary minimum standards for past performance, i.e. no unsatisfactory ratings on previous work. Contractor scores for attributes pertaining to the

ability to provide best value are forced into subjective models. This allows the Source Selection Authority (SSA) some latitude in the weighting process without having to amend the solicitation and precludes the use of specific numerical numbers which are often perceived to be arbitrarily assigned (see earlier comments on FAR Considerations survey query). This past performance evaluation process reduces the propensity for bid protests (Sharpe, 2009).

Federal procurement seeks to command the procurement process using regulations as a means to direct (Type C organization – see Chapter 4: Information Theory and Figure 2 “Decision Making”). When the owner exercises control, the following related conditions also exist (Kashiwagi, Savicky, Massner, 2002):

1. Detailed means and methods for direction.
2. Increased subjective decision-making.
3. A need to manage and direct the participants in the process.
4. Attracts contractors that need management and direction.
5. Poor construction performance results.
6. Focus on the process and not the results.

**Do you agree with the following statement as it applies to construction project delivery: “The greater a person’s ability to perceive and utilize a high degree of pertinent information, the more willing they are to allow other members of the project team to dictate the amount of information and control they need.”**



*Figure 16. Survey Question No. 10: Information Management*

A.) Agree    B.) Disagree    C.) Not sure    D.) What are you talking about?

Based on the information provided by Figure 16, a majority of the survey respondents do not appear to appreciate Peter Drucker’s information management theories and their application in delivering value to the customer. Drucker believed many executives have business problems because they are poorly informed about the fundamentals of the business’s performance and don’t really know how to interpret business information. Appropriate information must be gathered and properly interpreted and used according to Drucker.

In establishing an adequate information system, project delivery professionals must include information that coerces them to continually question previous assumptions.

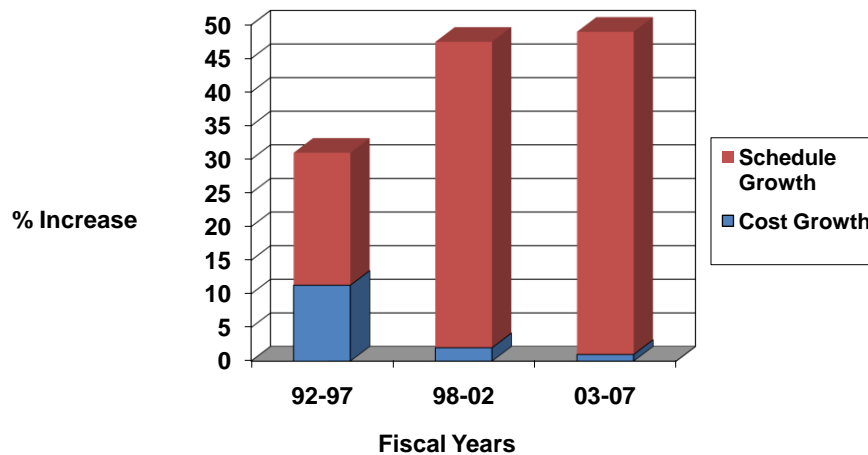
This drives continuous improvement of business processes essential to increasing value and remaining competitive in a dynamic and changing business environment (Watson, 2002).

Someone with a high degree of information allows the people with whom he or she is working to dictate the level of information and control they need. This is the action of a facilitator. The facilitator passes along only as much information as the people who are being coordinated feel comfortable with. The facilitator distributes more information to those who are faster at processing, and less to those who are slower. While a controller tries to dominate, manipulate and control everyone, a facilitator treats everyone differently based on each person's capability to perceive and use information. A facilitator rarely makes someone feel uncomfortable (Kashiwagi, 2002).

## **Chapter Nine**

### **AFRC Performance in MILCON Project Delivery 1992 – 2007**

MILCON construction project performance data was obtained from the Air Force's Automated Civil Engineering System (ACES) database. Inputs to this database are supplied by Air Force Reserve Command field program engineers and by Headquarters staff MILCON project managers. Estimated and actual execution milestone performance dates and project cost statistics during both design and construction are regularly logged, inspected, and confirmed during the entire project delivery process. In preparation for briefings to AFRC higher management, project managers produce status reports derived from this information. These reports provide the groundwork for decisions regarding future project execution strategies and may precipitate permutations to existing delivery schemes. One hundred forty seven AFRC MILCON projects in program years 1992 through 2007 were drawn from the database, compiled into reports and analyzed. Figure 17 shows calculated average construction cost and schedule growth for three annual AFRC MILCON program periods since 1992. Base upon the results graphically shown in this figure, AFRC has experienced significant problems supplying complete projects in time to meet customer's scheduled requirements for new facilities.



*Figure 17. AFRC MILCON Program Construction Cost & Schedule Growth (Air Force ACES 2009).*

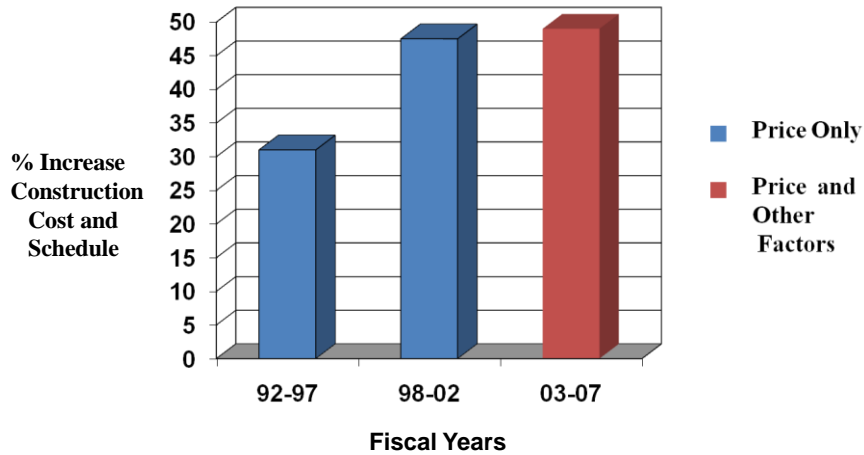
Actual project completions are approaching 50% schedule growth when measured against contractually specified construction performance periods. Conversely, construction cost growth has shown a significant decrease over the sixteen year period of analyzed project performance. However, this optimistic cost growth trend is dampened considerably by the large number of projects awarded above budget causing any change order costs to be a major execution issue (See Figure 1/Chapter 1). Additional funding for individual project budget overruns can only come from savings realized from other projects within the congressionally appropriated program.

Informal discussions about these construction cost and schedule growth discoveries with various AFRC project management professionals disclosed the following opinions regarding explanations for this performance metric trend:

1. The proclivity of AFRC to trade “time for dollars” when resolving contract issues that arise during construction. Contractors receive relief consideration from unauthorized delay claims in exchange for controlling contract cost growth.
2. Increasing propensity for customer involvement in construction management discussions/decisions including the inclination to add additional requirements.
3. Failure to identify and plan for potential unanticipated risks before they occur.
4. Failure to properly plan and coordinate construction material deliveries and work activities particularly those along the schedule’s critical path.
5. Construction schedules subjectively established based only upon the size of the project’s budget without regard for the work complexity, availability and skill level of the construction workforce, site location characteristics, and other project specific factors influencing the time required to construct.

When interviewed in February 2009, the USACE head of program management for the AFRC MILCON program stated that prior to 2003 all AFRC MILCON projects used price as the sole selection criterion, provided the contractor met minimal qualifications for bidding on AFRC projects (Ringenberg, 2009). These minimum qualifications typically include proof of approved wage rate payments, appropriate subcontractor selection criteria for federal contracts, adequate bonding capacity and adherence to federally mandated requirements for minority group participation in the project. The USACE program management chief went on to say that beginning in 2003 to the present a radical shift to FAR Part 15.101 best value procedures as interpreted by USACE MILCON project contracting officers was implemented. Contractor selection criteria for projects in years 2003 through 2007 included both price and non-price factors (Ringenberg, 2009). Figure 18 shows the lack of positive impact that USACE’s concept

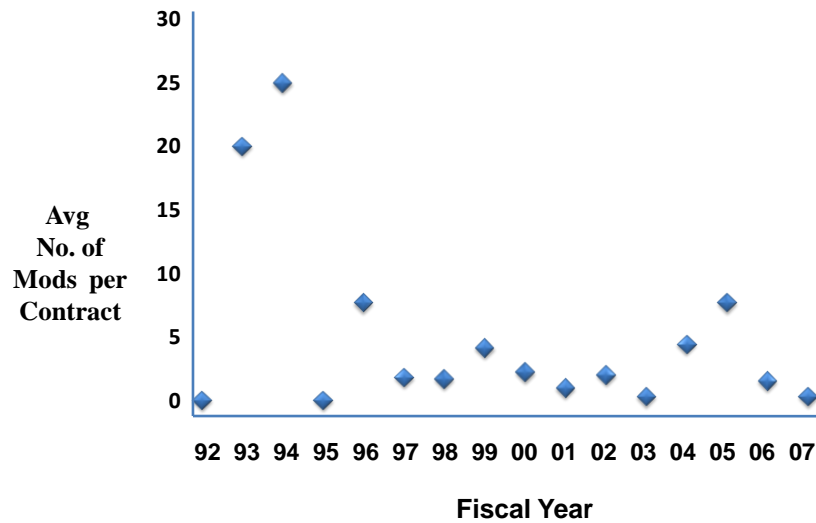
of federally regulated best value procurement has had on AFRC construction performance.



*Figure 18. AFRC MILCON Program Solicitation Method Comparison (Air Force ACES 2009).*

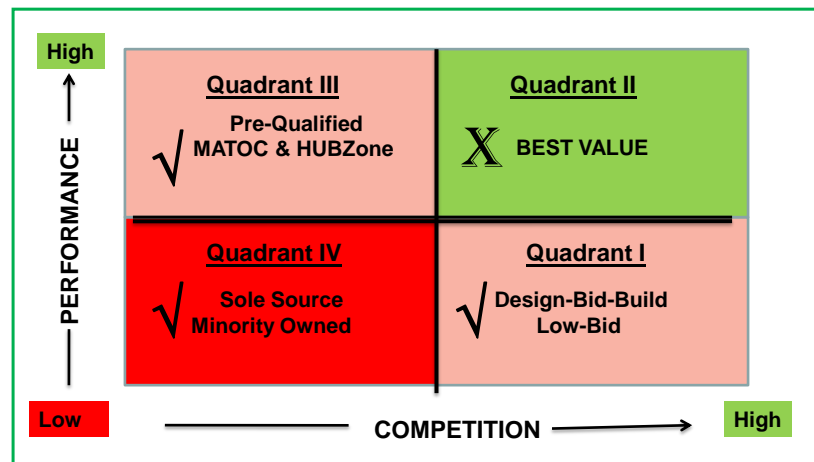
The average number of construction modifications per project per fiscal year for the sixteen year time period was also gleaned from the ACES database. Analysis of this data and discussions with ACES database administrators spawned speculation that a significant number of modifications were not posted by project managers in ACES. Nevertheless the following chart (Figure 19) demonstrates that AFRC, both before and after implementation of FAR 15 best value negotiations procedures, continues to be plagued with unexpected changes during MILCON construction that adversely affect project costs and schedules.

## Air Force Reserve MILCON Construction Mods



*Figure 19.* Average Number of Changes per Construction Contract (Air Force ACES 2009).

For the last sixteen years the AFRC MILCON construction industry has overwhelmingly demonstrated the characteristics of only three of the four quadrants of the CIS model (See Figure 20) for describing competition and performance in the project delivery environment (Kashiwagi, 2002):



**Figure 20. The Construction Industry Structure (CIS) model as Applicable to AFRC Project Delivery**

Adapted from Kashiwagi (2002)

- Quadrant I – use of the Design-Bid-Build delivery method to award contracts to the lowest bidding construction contractor.
- Quadrant II – not used.
- Quadrant III – use of SBA contracting venues such as MATOC and HUBZone in which pre-qualified contractors are subjectively selected as the best value using minimal performance standards in a limited bid competitive environment.
- Quadrant IV – use of sole source minority owned construction firms that deliver less performance for a higher price. There is no real competition because true performers are prevented from participation.

## Chapter Ten

### **Air Force Reserve Command Difficulties in Moving to Best Value Project Delivery**

Best value procurement was injected into the federal project acquisition process via regulatory and legislative initiatives. The Clinger-Cohen Act of 1996 authorized Design-Build procurement, described the two phase selection process (See Figure 6), and provided a procedure for using best value procurement (Heisse, 2002). Mentioned previously in Chapter Seven, FAR 15.101 is the regulatory vehicle intended to provide guidance to federal agencies in legally consummating best value contracts. Clearly defined requirements are inherently encouraged and it behooves the requiring agency to identify and reduce or, better yet, eliminate risks if possible prior to actual solicitation. The quickest, simplest, and least controversial procurement process is to let price play the dominant role in source selection. The propensity to treat procurement of facility construction services in a manner analogous to the purchase of manufactured goods is apparent. For construction acquisitions with poorly defined requirements, the acquisition strategy language in the FAR can appear abstruse. The following FAR 15.101-1(c) phase,” the perceived benefits of the higher priced proposal shall merit the additional cost, and the rational for tradeoffs must be documented in the file...” causes considerable consternation among the contracting office cadre of the various governmental agencies. This recondite phrase has been the agent for driving many construction procurements to the price only selection criterion. Even when requirements are murky and proposals provide various alternative scenarios for satisfying them, it can be incredibly difficult to justify more expensive, but technically superior, offers when the rational is subject the perceived astringent review of GAO auditors.

Although the FAR allows federal agency procurement offices to use any variation of performance contracting or best value procurement, the various federal agencies in general and the two authorized AFRC procurement agencies, USACE and NAVFAC, in particular have been slow to implement genuine best value selection techniques. There is much skepticism within the ranks of AFRC project delivery professionals and senior management regarding the legality and prudence of allowing the contractor to control its construction projects. Moreover, many within the AFRC project delivery community are unaware of any available mechanism that permits construction award based on performance and price while also motivating the contractor to produce and continuously improve.

A major obstacle to incentivizing contractor performance and continuous improvement is the Federal Government's procedure for appraisal of contractor past performance. There are several databases used to access past performance. These various records apply assorted performance metrics and subjective ratings that present serious challenges to the ability to make meaningful decisions regarding contractor experience on prior government projects. By far the most common performance database used for AFRC solicitations is the Army Corps of Engineers Construction Contract Appraisal Support System (CCASS). Contractors, under consideration with no previous USACE construction project experience, submit their own past performance information including references. The deficiencies of the CCASS system and the contractor's own submission include:

1. No method to use contractor submitted information or past performance numbers except to affirm that minimum standards are met.
2. Ratings are adjectival and subjective.

3. No method to maintain a useable performance number on a contractor once they have done work.
4. No method to use past performance numbers to give credit for high performance in the award of a construction project.

The CCASS and contractor submitted past project work performance assessments and narratives become information or descriptive ratings used merely to verify that the contractor meets minimum selection standards. This past performance evaluation tool encourages the use of low-price award. This is the Quadrant I environment that has led to poor construction performance, failure to deliver projects on time, and construction delivery costs above budget.

AFRC, USACE and NAVFAC's current structure for best value contracting is very subjective and has no method to (Kashiwagi, Savicky, Massner, 2002):

1. Factor in past performance.
2. Factor in the capability to identify and minimize risk and value engineer in non-technical terms.
3. Move the risk of nonperformance to the contractor minimizing cost increasing change orders.
4. Factor performance on the project directly into the contractor's future rating and competitive nature.

Federal agencies like USACE and NAVFAC maintain huge databases of difficult to use information. The value of this information is diminished because much of it is based upon idiosyncratic past performance interpretations by a myriad of government project management personnel. The selection board, with contracting officer oversight, discretionarily decides the degree of influence this performance information will have on

the final selection decision. Whenever there is subjective decision making, the direction of awards is always toward the Quadrant I environment and the low bid. This can be seen by analysis of Figure 2 “Decision –Information Relationship”:

1. A lack of information leads to decision-making.
2. Decision-making is only done when information is lacking. If information is readily available, everyone will agree, and decision-making is not needed.
3. When information is lacking, risk is high.
4. Decision-making brings risk.
5. A lack of information will make alternatives look alike.
6. When alternatives look alike, the best value is the lowest price.
7. The lowest price brings the highest risk.

Instead of supporting the procurement of value these federal agencies are merely procuring commodities. To successfully procure value they must (Kashiwagi, 2002):

1. Minimize decision-making.
2. Release control and direction of the contractor (a tall order indeed!)
3. Help measure performance using relative numbers.

## **Chapter Eleven**

### **Case Study**

#### **AFRC Military Transformation Project Delivery**

AFRC's fiscal year 2007 MILCON program included construction of an approximately 50,000 square foot administrative facility at a military installation in the United States Midwest. A team project acquisition strategy meeting, consisting of project and program managers representing both AFRC and USACE, along with USACE and SBA contracting personnel, was conducted in October 2005. The team's decision was to employ Design-Build project delivery requesting competitive proposals from HUBZone contractors as the solicitation vehicle. Request For Proposal bridging documents, comprised of a conceptual design with primarily prescriptive specifications, were developed by a private design firm and completed in November 2006. Preliminary soil borings and the subsequent soils report prepared for inclusion in the RFP revealed potentially unsuitable soils for specifying a standard spread footing building foundation. The RFP design firm postulated a mat foundation system could work and was confident that an expensive concrete pile foundation system would structurally support the facility. However, additional geotechnical and engineering work would be required to definitively specify the proper foundation system for the facility. The engineering firm's recommendation was to specify the use of a piling foundation system (worst case scenario) in the RFP and invite the chosen contractor, after award, to offer alternative foundation designs. The primary disadvantage of this approach would be receipt of more costly (possibly budget busting) proposals for the expensive piling foundation. An additional concern was the inability to realize competitive savings for technically

adequate and less expensive alternative foundations after contract award should additional soils testing provide confirmation.

Since the 2007 appropriations fiscal year was nearing the beginning of the second quarter (January 2007), considerably political pressure was being applied to the project delivery team to advertise and award the project as expeditiously as possible.

Congressionally appropriated MILCON projects awarded after the year of apportionment receive lots of negative attention in Department of the Air Force Program Management Reviews (PMR's).

The AFRC project manager's initial suggestion was to convert the project delivery method from Design-Build to Design-Bid-Build and requisition a complete design prior to construction solicitation. This strategy would insure adequate time to fully investigate the soil conditions and specify a foundation system sufficient to satisfy structural load requirements. Unfortunately, neither design dollars nor time were available to implement this strategy.

The next delivery tactic proposed by the AFRC project manager was to convert the Design-Build RFP schema from a hard bid proposal to a solutions -based best value procurement. Contractors would be given the project budget with instructions to submit technical proposals and prices within the funds available. This project pricing mechanism was a modification of the Guaranteed Maximum Price (GMP) format where the owner agrees to reimburse the cost of the work up to a prescribed ceiling amount. In this case proposals submitted above the stated budget would be unacceptable, however, the selected contractor would not be asked to hold its price for the duration of the contract if circumstances arose that justified price increases. Contractors would have the opportunity

and the presumed incentive to recommend the best solution within the project financial budget in order to receive the contract.

USACE project delivery team members then offered to convert the Design-Build RFP to a USACE Contracting Office approved best value format called Military Transformation. Bidders would be provided a specified project construction cost limit and given the opportunity to provide the best value for the funds available. The maximum price or budget for the project had already been established by congressional authorization; however the project team had no assurance that the facility could be constructed for the funds available given the unexpected soil conditions. The Military Transformation approach would encourage innovation, cost saving ideas, and proffered opportunities for maximizing the scope and project quality in an attempt to supply an acceptable proposal within the funds authorized. The existing RFP would have to be modified, removing many prescriptive project requirements and replacing them with performance specifications. The revised RFP would permit the contractor to select how and with what materials and finishes the building would be constructed.

When presented with the Military Transformation procurement proposal, the Air Force end-user customers (the military installation project manager and occupants of the facility) were unwilling to give the contractor this much latitude in the choice of the facility's materials and finishes. The project delivery team decided to pursue a "modified Military Transformation" solicitation allowing the contractor limited freedom to choose building components with certain features restricted by prescriptive specifications solely specified by the Government and "off-limits" to innovative and cost-saving alternatives.

A March 2007 project team conference established the ground rules for revising the existing RFP for this modified Military Transformation acquisition. The solicitation

would include a “president’s clause” requiring the contractors to identify all deviations included in their proposals that did not conform to the contract document requirements. The inclusion of this clause was not an attempt to force the contractors to identify and mitigate risks to the project but simply an instrument making it easier to flag items in the various proposals not meeting either the performance or prescriptive specifications of the modified Military Transformation solicitation. These items could then be considered for acceptance in evaluation of the aptness of the overall proposal, within the funds available, to substantially meet the project’s ultimate goals. The project team member representing the Midwest military installation, site of the proposed new facility, demanded inclusion of non-negotiable building elevations in the revised RFP. The reason cited for this stipulation was to ensure that the final product would conform to the installation’s architectural standards. The RFP documents would include the following:

- Site Plan
- Floor Plans
- Exterior Elevations
- Site Utility Plans
- Geotechnical Report

The solicitation would remain restricted to HUBZone contractors in a competitive bid environment as decided in the October 2005 acquisition strategy meeting.

A Source Selection Evaluation Board (SSEB), comprised of USACE and AFRC technical project management personnel under USACE contracting and legal counsel guidance, was established and the revised RFP was issued for contractor consideration in November 2007. The due date for proposals had to be extended because a conflict arose regarding the wording used to state the construction cost limit in the solicitation. The

AFRC project manager wanted the verbiage to clearly state that offers received with cost proposal above this maximum price would not be acceptable. The manager's objective in making this request was not to require contractors to provide a GMP. This pricing mechanism has the perception of being unfair to contractors in USACE contracting and legal counsel circles and is only used when contractors participate in development of the RFP prior to contract award. In stating the construction cost limit, USACE contracting personnel did not want to misrepresent to the contractors the final amount of money that might be made available to award a contract as AFRC mission priorities might change. They wished to add the phrase "The Government cannot guarantee that additional funds can be made available for award" (Gee, 2007). The AFRC project manager's argument was that if the contractors knew there was a possibility that the Government might receive additional funds for the project, there would be less incentive to provide innovative alternatives to keep the price of the work within the known available construction funds. The difference was settled by inclusion of the following sentence in the General Conditions specifications section of the RFP solicitation regarding cost: "The cost limitation for contract award is \$\_\_\_\_\_ based on funds made available for this project. The Government cannot guarantee that additional funds can be made available for award. Offerors are under no obligation to approach this ceiling."

The source selection process was a one step best value acquisition (See Figure 5). The HUBZone contractors were asked to submit both technical (non-price) and price proposals in a single submittal package. The SSEB convened in April 2008 and evaluated each proposal to ensure non-price factors conformed to General Conditions requirements. The Board determined technical proposal consensus ratings for each factor. A cost analysis for each price proposal was also accomplished. The proposals were reviewed for

unbalanced pricing information, realism, and reasonableness. This review consisted of a comparison of the various proposals with each other and with the governmental non-disclosed RFP cost estimate, prepared and updated prior to solicitation. Upon completion of both the technical and price evaluations, the SSEB continued to evaluate its findings. A comparative analysis of all acceptable offers was conducted encompassing a cost/technical trade-off with the goal of choosing and recommending for selection the offeror representing the best value to the Government.

The non-price selection criteria required to be submitted by each contractor in its technical proposal consisted of the following:

**Experience**

- Prime contractor experience constructing up to five projects of similar size, scope and dollar value.
- Design team experience providing design services for up to five projects of similar size, scope and dollar value.

**Past Performance**

- Prime contractor (general contractor) past performance on the construction experience cited above including references, letters, awards and ratings such as CCASS. Only documentation of satisfactory performance on similar projects would render sufficient evidence that proposals met the minimum RFP requirements for this criterion.
- Design team past performance on the construction experience cited above including references, letters, awards and ratings such as CCASS. Only documentation of satisfactory performance on similar projects rendered sufficient evidence that proposals met the minimum RFP requirements for this criterion.

- Past performance on utilization of small, small disadvantaged, and women-owned small businesses.

### **Technical Proposal Information**

- Color renderings demonstrating that the proposal complied with overall appearance and functionality requirements of the RFP including compliance with the military installation's architectural compatibility plan intended to provide assurance that the new building would blend with the architectural features of existing buildings in the locale.
- Design drawings that provided evidence the proposal was in compliance with applicable codes and that building materials and finishes were of sufficient quality to meet the RFP performance and prescriptive requirements.
- A design narrative exhibiting a complete understanding of the project requirements as stated in the RFP Statement of Work. The narrative should also include any improvements and betterments exceeding the requirements of the RFP including an explanation of proposed building systems.

The project delivery teams' intent was for the contractors, in their design narratives, to include proposed solutions to the building foundation issue made apparent by the preliminary soil borings report.

### **Subcontracting Narrative**

- This technical proposal criterion insured that the contractors met United States Small Business requirements for subcontractor participation by Veteran-Owned, HUBZone, Small Disadvantaged Businesses and Women-Owned Small Businesses. Rating for each contractor on this factor was accomplished solely on a "go, no-go" basis.

## **Management**

- A management plan describing how the contractors' labor, resources, designers, subcontractors and material suppliers would be coordinated and used to ensure successful completion of the project. This plan required a narrative detailing how and by whom the contractor would provide management, supervision, and coordination of subcontractors' work. An organizational chart showing home office support, on-site management, and the responsible chain of command was also required. This chart had to include the designated Quality Control and Safety Officers along with a brief description of their qualifications/experience. Plans not demonstrating a clear understanding of the work or capacity to coordinate resources were not considered to have met the RFP requirements. Furthermore, organizational charts that were confusing and cluttered with duplicate entries or not clearly defining responsibilities were also deemed to not meet provisions of the RFP. This Military Transformation management plan emphasized the listing of specific personnel and their qualifications along with a vague narrative requirement explaining how the contractor would "manage" the project. Practically any submission naming people with apparent legitimate prior experience along with a general description of their construction project management work would suffice. In fact, contractors have been known to submit the same management plan for several AFRC projects with only slight modifications in a meager attempt to make it project specific.

Neither the technical proposal information nor the management plan submittals included a requirement for the contractor to identify risks that it did not control or a proviso to explain how it would mitigate risks to the project. Failure to include these

requirements relieved the contractor from accountability for these risks and placed the responsibility and consequences for risks completely on USACE as the project management agency and AFRC, the fiscally responsible owner. This deficiency in the proposal requirements meant that project control would always remain with the Government and that the successful contractor would always act in its own best interest and not the owner's.

The SSEB was directed to consider and individually rate all technical proposal factors for each contractor. The individual evaluator analyses were to be discussed by Board members and assimilated into a single consensus evaluation of each factor and any sub factors summarized in concise written commentaries on consolidated comment sheets. The evaluators were instructed not to vote or average individual ratings. Once concurrent comments were developed for all proposals, the Board was instructed to establish final ratings for each criterion based on the group's consensus opinions. The ratings were to include assessment of overall proposal risks. For all criteria except subcontractor narrative, factors and sub factors were to be rated using the following adjectival-based system:

- Outstanding
  - The proposal has exceptional merit and reflects an excellent approach which will clearly result in the superior attainment of all requirements and objectives. Proposal risk level is very low.
- Good
  - The proposal demonstrates a sound approach expected to fully meet all requirements and objectives. The proposal risk level is low.
- Acceptable

- The proposal demonstrates an approach which is capable of meeting all requirements and objectives, with no advantages or disadvantages. The proposal risk level is moderate.
- Marginal
  - The proposal demonstrates an approach which may not be capable of meeting all requirements and objectives. The proposal risk level is high.
- Unacceptable
  - The proposal contains major errors, omissions, or deficiencies that indicate a complete lack of understanding of the requirements or it contains an approach that cannot be expected to meet the requirements or involves a very high risk. The proposal risk is very high.

Based upon gathered past performance information, the SSEB was instructed to complete a contractor performance risk assessment sheet on all offerors using the following rating bands metrics (Gee, 2008):

- Low Risk
  - Essentially no doubt exists that the offeror will successfully perform the required effort based on its performance record.
- Moderate Risk
  - Some doubt exists that the offeror will successfully perform the required effort based on their performance record.
- High Risk
  - Significant doubt exists that the offeror will successfully perform the required effort based on their performance record.
- Unknown Risk

- Little or no relevant performance record is identifiable upon which to base a meaningful performance risk prediction. This equates to an unknown past performance risk assessment, having no positive or negative evaluation significance.

Equipped with a thorough understanding of the ratings language for technical adequacy and performance risk, the SSEB arrived at consensus rankings of these components for the various contractor proposals. Board members were then allowed to view contractor price proposals submitted in separate sealed envelopes. A trade off analysis of competing proposals was conducted. Past performance and design narrative rankings when compared with price proposals convinced members of the Board that the low price proposal did not represent the least risk to the Government both in terms of performance or the tendered building foundation system. In fact the lowest priced offeror, unlike others, submitted a standard spread footings foundation in its proposal and did not offer an alternative for an improved building foundation system. The implication was clear to Board members that, by accepting this proposal, the Government was assuming all cost risks if further geotechnical investigations disclosed that soil conditions at the site rendered this foundation system inadequate to meet the building's structural support requirements. A change order would be required to install a different and more expensive foundation system if additional soils reports mandated the requirement.

Discussions with USACE contracting personnel ensued. SSEB criteria state that the Source Selection Authority (SSA) is the contracting officer. The chairperson of the SSEB is a contracting specialist while the Board members serve as technical advisors. The SSA has the final decision regarding contractor selection. The decision must be consistent with the evaluation factors and the source selection process, however beyond

this; the SSA has broad discretion in making the source selection decision. The SSA is not bound by the SSEB's evaluation findings and may require the Board to re-evaluate or re-analyze to aid the SSA's basis for a differing opinion.

The Source Selection Decision Document (SSDD) is intended to fully justify the SSA's decision. It should address the rationale for the business judgments and tradeoffs, and focus on key proposal differences and specific tradeoffs that led to the decision. If the SSA determines that the best value proposal is other than the lowest-priced proposal, the SSDD must explicitly justify paying a price premium, clearly stating what benefits or advantages the Government is receiving for the added price and why it is in the Government's best interest to expend the additional funds.

In this case study the SSA agreed with the SSEB that the low price offeror did not provide the least risk to the Government both in performance as well as technical risks. However, quantifying the additional risks imposed on the Government by the low priced contractor into a monetary amount supportable by a GAO audit appeared to be an impossible task. Unsuccessful contractors can file bid protests triggering such an audit up to 10 days after award of the construction contract. The SSA's final decision was to select the contractor submitting the lowest priced offer. In this case, instead of procuring true best value construction services for this MILCON project, the Government and AFRC instead consummated a contract based upon minimum requirements qualifications and the lowest price offer. The old traditional "tried and true" method of contractor selection, based upon previous FAR interpretations and source selection experience, was imposed on this attempt to inject best value criteria into the AFRC MILCON procurement process (Yates, 2008).

## Chapter Twelve

### A Comparison of True Best Value and Military Transformation

The following (Table 1) is a comparison of the AFRC case study modified Military Transformation best value format, applied in the case study, and a true best value delivery process such as PIPS (See Appendix C).

**TABLE 1. True Best Value/Military Transformation Project Delivery Comparison**

PROJECT PHASE	TRUE BEST VALUE	MILITARY TRANSFORMATION
<b>Preparation</b>	<ul style="list-style-type: none"> <li>➤ Schedule development</li> <li>➤ Strategic plan,</li> <li>➤ Measurements</li> <li>➤ Core team education</li> <li>➤ Objectives and roles established</li> </ul>	<ul style="list-style-type: none"> <li>➤ Focus on specific project</li> <li>➤ No strategic plan</li> <li>➤ No measurements</li> <li>➤ No core team</li> </ul>
<b>Selection</b>	<ul style="list-style-type: none"> <li>➤ Pre-bid meeting w/ contractors/vendors</li> <li>➤ Objective past performance</li> <li>➤ Interviews</li> <li>➤ Best value selection</li> </ul>	<ul style="list-style-type: none"> <li>➤ SSEB established</li> <li>➤ Price and non-price criteria</li> <li>➤ Trade-off analysis</li> <li>➤ “Best value” selection</li> </ul>
<b>Pre-Award</b>	<ul style="list-style-type: none"> <li>➤ QC Plan identifying risks and minimization added to contract</li> <li>➤ Schedule and weekly report added to contract</li> <li>➤ Project risks and control transferred to contractor</li> </ul>	<ul style="list-style-type: none"> <li>➤ Contractor selected by SSA</li> <li>➤ Proof of insurance, performance bond, and minority subcontractor participation required to award</li> </ul>
<b>Risk Management</b>	<ul style="list-style-type: none"> <li>➤ Weekly reports document cost and schedule contract changes and risks that caused them</li> <li>➤ Reports record contractor’s performance responding to risks it did not control</li> <li>➤ Continuous improvement</li> </ul>	<ul style="list-style-type: none"> <li>➤ All project risks are assumed by the owner</li> <li>➤ USACE provides construction inspection services</li> <li>➤ Subjective contractor performance ratings</li> <li>➤ No continuous improvement process</li> </ul>

The differences between the two best value project delivery processes are striking. True best value project delivery is an information system providing documentation of the impact of risks on cost and schedule growth along with contractors' performance in dealing with these risks. An authentic best value process imposes Peter Drucker's idea for providing a foundation for continuous learning about how to deliver more value to customers. Genuine best value provides a pattern for increasing construction performance by implementing strategic benchmarking methodology like aligning the project with the owner's organizational strategic plan. A best value procurement system also incorporates Six Sigma Define–Measure–Analyze–Improve Control (DMAIC) concepts into its process by providing provisions for performance measurement, project data analyses, and transitioning of lessons learned back into the process permitting continuous improvement (Watson, 2007).

Conversely, the modified Military Transformation best value process lacks strategic benchmarking principles. The owner's strategic plan, performance measurement, and an objective means for collection and analysis of data for work performance trends and consistency are missing. Military Transformation does not force identification of risks or provide for their minimization; rather it exposes the owner to unanticipated risks associated with the project. Additionally, without a perpetual improvement model, the probability of unexpected but recurring risks on future projects is high. Project control and risk from preparation through construction completion firmly resides with the owner. Construction inspection services are used with the hope that minimum quality standards are achieved. Once the perceived best value contractor is selected there is practically no incentive for it to perform above obligatory contract requirements either for the present project or in anticipation of potential future contracts.

CCASS past performance ratings are primarily used to confirm satisfactory compliance with minimum contractual requirement on past government projects as a “pass–fail” selection criterion. Any additional past performance information (references, awards, letters, etc.) receive only subjective consideration by future SSEBs.

## Chapter Thirteen

### Conclusions

This thesis research and examination of AFRC MILCON project data, surveys of AFRC project delivery professionals, and a case study of implementation of USACE's Military Transformation best value project delivery system results in the following conclusions:

- A. Air Force Reserve construction schedule growth has approached 50% over the most recent 10 year period.
- B. Approximately 30% of Air Force Reserve MILCON projects over the most recent 5 year period have been awarded at prices above the project programmed budget.
- C. Introduction of non-price selection factors as per FAR Part 15.101 has had no beneficial effect on limiting cost overruns, schedule growth and construction modifications in the AFRC MILCON project delivery process.
- D. AFRC construction delivery professionals only marginally understand best value project procurement principles. The survey reveals that these professionals lack an understanding/appreciation for: (1) continuous improvement; (2) who should identify and control risks; and (3) information management theories. In addition, these delivery professionals exhibit a significant propensity for desiring to control rather than facilitate the project delivery process.
- E. The USACE best value procurement vehicle known as Military Transformation fails to deliver true best value. This pseudo best value delivery process: (1) fails to objectively rate and apply contractor past performance; (2) lacks the means to monetarily quantify contractor proposal risks; and (3) provides no means of

transferring control and responsibility for risks and risk minimization to the contractor.

The Air Force Reserve Command is earnestly seeking alternatives to the traditional low bid project delivery process because of its increasingly perceived inability to produce facility construction value necessary to meet mission requirements. Only a true best value project delivery system can provide this urgently required increased efficiency. AFRC and USACE are reluctant to cede project control to those in the best position to decrease the risk of nonperformance, i.e. contractors and vendors. Contractor selection processes supply no contractor incentive to provide value in expectation of receiving future work. Mammoth government bureaucracy inundated with voluminous rules, decrees, and paradigms hinders the ability to change and move toward the best value procurement environment envisioned in the FAR.

## APPENDIX A

# Survey on Military Construction Procurement using Best Value

Please circle the letter beside the letter corresponding to your answer. Thank you for your participation.

- 1) Which of the following best describes your definition of best value in terms of military project procurement?
  - a) The contractor representing the best value is the one meeting the minimally acceptable qualification evaluation factors and proposing the lowest price.
  - b) The contractor having the best qualifications and who offers a price within the project's budget (programming amount) is the best value.
  - c) The best value contractor is the one with acceptable past performance and offering the lowest price.
  - d) The best value contractor is the one whose qualifications, including past performance, technical ability and experience when combined with price provides the best opportunity for successful execution at the least risk.
  - e) None of the above. Please write your own definition of best value in terms of military procurement.
  
- 2) Best Value procurement can be used with which of the following delivery methods?
  - a) Design-Build
  - b) Design-Bid-Build
  - c) Construction Management at-Risk
  - d) a and b above
  - e) b and c above
  - f) all of the above

## APPENDIX A

- 3) In order to receive greater performance and value in a construction contract you have to pay more.**
- a) True
  - b) False
  - c) Not Sure
- 4) Which of the following statements about Best Value procurement are true?**
- a) Trust between the contractor and owner/client is required.
  - b) The construction industry controls the quality of construction.
  - c) Best Value is a selection process.
  - d) Partnering is a valuable tool in resolving issues.
  - e) All of the above.
  - f) None of the above.
- 5) Who should assume responsibility for identifying risks to the project and minimizing the risks that are beyond their control in Best Value procurement?**
- a) Contractor
  - b) Government
  - c) Both in a partnering session

## APPENDIX A

- 6) The FAR (Federal Acquisition Regulation) specifically prohibits evaluation of contractor past performance using numerical rating systems.**
- a) True**
  - b) False**
  - c) Not Sure**
- 7) The Best Value contractor's Quality Control (QC) Plan is a document describing how the contractor will control its personnel on the job.**
- a) True**
  - b) False**
  - c) Not Sure**
- 8) The ability to conduct brief interviews with key personnel prior to contractor selection adds significant value in selecting the Best Value contractor.**
- a) True**
  - b) False**
  - c) Not Sure**
- 9) The ability, capacity, and experience of a contractor are difficult to determine and that determination is generally subjective to a significant degree.**
- a) True**
  - b) False**
  - c) Not Sure**

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**10) Do you agree with the following statement as it applies to construction project delivery : “The greater a person’s ability to perceive and utilize a high degree of pertinent project information, the more willing they are to allow other members of the project team to dictate the amount of information and control they need.”**

- a) Agree**
- b) Disagree**
- c) Not Sure**
- d) What are you talking about?**

## APPENDIX B

### AFRC MILCON CONSTRUCTION SCHEDULE & COST GROWTH 1992 - 2007

Program Avenue: MCP

FY	Project Title	PA	Act Awd Date	Dsn Met	Est Cns Compl Dt	Act Cns Compl Dt	Orig Contr Amt	Orig Contr Amt	% Cst Incr	Mod Day	Ctr Day	% SCH #	
												Incr	Mod
92	JET FUEL STORAGE COMPLEX	\$1,100,000	29-Sep-92	T	1-Jul-94	28-Jul-94	\$1,132,065	\$1,132,065	0	27	365	7.4	0
<b>1992 Fiscal Year Total: \$1,100,000 - 1 Project</b>							<b>(Averages)</b>		<b>0</b>			<b>7.4</b>	<b>0</b>
93	CORROSION CNTL/FUEL SYS MAINT	\$1,000,000	25-Mar-94	T	29-Feb-96	13-Feb-96	\$971,100	\$1,078,705	11.1	315	360	87.5	14
	COMPOSITE MAINTENANCE FACILITY	\$2,600,000	1-Feb-94	T	1-Sep-96	17-Feb-97	\$2,550,517	\$2,681,403	5.1	169	555	30.5	19
	AVIONICS SHOP	\$2,300,000	1-Feb-94	T	1-Sep-96	17-Feb-97	\$1,853,965	\$1,983,290	7.0	169	555	30.5	15
	AIRCRAFT HANGAR FIRE PROTECTN	\$1,000,000	1-Feb-94	T	1-Sep-96	17-Feb-97	\$745,358	\$777,044	4.3	169	555	30.5	12
	ADD/ALT FACILITIES FOR CONV	\$2,300,000	1-Feb-94	T	1-Sep-96	17-Feb-97	\$1,807,160	\$1,994,445	10.4	169	555	30.5	32
	BC-AFRES AIRCRAFT MAINT HANGAR	\$12,700,000	13-Sep-93	DB	1-Dec-96	1-Jun-97	\$11,172,824	\$11,474,838	2.7	182	642	28.3	46
	BC-AFRES SPEC PURPOSE HANGAR	\$5,100,000	13-Sep-93	DB	1-Dec-96	29-Apr-97	\$4,508,538	\$4,709,674	4.5	149	642	23.2	40
	BC-AFRES MUNITIONS MAINT/STOR	\$3,687,000	8-Jun-94	T	1-Dec-96	3-Feb-97	\$3,212,340	\$3,245,140	1.0	64	450	14.2	8
	BC-AFRES COMPOSITE MAINT FAC	\$5,246,000	13-Sep-93	DB	1-Dec-96	15-Feb-97	\$4,615,666	\$4,767,426	3.3	76	642	11.8	34
	BC-AFRES WEAPONS REL/CREW TRNG	\$2,783,000	13-Sep-93	DB	1-Dec-96	15-Dec-96	\$2,427,674	\$2,472,496	1.8	14	642	2.2	5
	BC-AFRES EXTEND UTILITIES	\$1,800,000	13-Sep-93	T	1-Dec-96	12-Dec-96	\$388,298	\$445,943	14.8	11	642	1.7	13
	BC-AFRES ALT FAC FOR WING O&T	\$2,577,000	11-Feb-94	T	1-Mar-97	9-Dec-96	\$1,074,417	\$1,072,100	-0.2	0	120	0.0	2
<b>1993 Fiscal Year Total: \$43,093,000 - 12 Projects</b>							<b>(Averages)</b>		<b>5.5</b>			<b>24.2</b>	<b>20</b>
94	REPLACE AIRCRAFT PARKING APRON	\$13,373,000	27-Jun-94	T	1-Oct-96	4-Oct-96	\$6,370,134	\$9,958,213	56.3	3	540	0.6	25
<b>1994 Fiscal Year Total: \$13,373,000 - 1 Project</b>							<b>(Averages)</b>		<b>56.3</b>			<b>0.6</b>	<b>25</b>
95	COMPOSITE MAINTENANCE HANGAR	\$1,800,000	28-Sep-95	T	4-Dec-96	31-Dec-96	\$1,772,825	\$1,772,825	0.0	26	460	5.7	0
	RENOVATE AIRMEN DINING FAC	\$2,650,000	26-Mar-96	T	26-Mar-97	30-Mar-98	\$2,384,444	\$2,384,444	0.0	369	365	101.1	0
	SQUADRON OPERATIONS FACILITY	\$1,900,000	22-Sep-95	T	22-Sep-96	4-Dec-96	\$1,731,675	\$1,731,675	0.0	73	460	15.9	0
<b>1995 Fiscal Year Total: \$6,350,000 - 3 Projects</b>							<b>(Averages)</b>		<b>0</b>			<b>40.9</b>	<b>0</b>
96	BC-AFRES ALTER SQUAD OPS/TRNG	\$760,000	8-May-96	T	4-Dec-96	24-Dec-96	\$542,100	\$574,775	6.0	20	210	9.5	9
	BC-SECURITY POLICE FLIGHT	\$900,000	23-Sep-96	T	10-Feb-98	26-Feb-98	\$859,083	\$859,083	0.0	16	450	3.6	1
	BC-GROUP HEADQUARTERS	\$4,100,000	23-Sep-96	T	26-Feb-98	26-Feb-98	\$4,421,979	\$4,421,979	0.0	0	450	0.0	0
	BC-ALTER SHOPS	\$2,800,000	9-Mar-96	T	5-Sep-97	5-Sep-97	\$2,439,273	\$2,518,016	3.2	0	720	0.0	20
	BC-ALTER MAINT HANGAR	\$5,900,000	9-Mar-96	T	30-Jan-98	30-Jan-98	\$5,229,082	\$5,381,725	2.9	0	720	0.0	21
	BC-AFRES ADAL AERIAL PORT	\$360,000	9-Mar-96	T	30-Dec-97	3-Oct-97	\$324,879	\$347,893	7.1	0	720	0.0	3
	BC-ADD MEDICAL TRAINING FAC	\$700,000	23-Sep-96	T	10-Feb-98	26-Feb-98	\$688,938	\$688,938	0.0	16	365	4.4	0
<b>1996 Fiscal Year Total: \$15,520,000 - 7 Projects</b>							<b>(Averages)</b>		<b>2.8</b>			<b>2.5</b>	<b>7.7</b>

## APPENDIX B

### AFRC MILCON CONSTRUCTION SCHEDULE & COST GROWTH 1992 - 2007

Program Avenue: MCP

FY	Project Title	PA	Act Awd Date	Dsn Met	Est Cns Compl Dt	Act Cns Compl Dt	Orig Contr Amt	Cur Contract Amt	% Cst Incr	Mod Day	Ctr Day	% SCH #	
												Incr	Mod
97	BC-PARARESCUE TRAINING FAC	\$2,650,000	30-Sep-97	T	5-May-99	24-Jul-99	\$3,027,437	\$3,074,656	1.6	80	365	21.9	7
	BC-ALTER FOUR MISC SHOPS	\$500,000	19-Sep-97	T	30-Apr-99	19-Jun-99	\$320,000	\$325,008	1.6	50	245	20.4	2
	BC-ALTER COMBAT CAMERA	\$1,200,000	29-May-97	T	6-Feb-98	13-Mar-98	\$494,442	\$599,201	21.2	35	210	16.7	7
	FIRE TRAINING FACILITY	\$2,500,000	30-Dec-96	T	26-Oct-97	18-Feb-99	\$2,090,000	\$2,106,133	0.8	780	300	260.0	1
	UPGRADE STORM DRAINAGE SYSTEM	\$1,150,000	27-Sep-97	T	15-Sep-98	15-Oct-98	\$773,000	\$890,449	15.2	30	330	9.1	1
	WING HEADQUARTERS FACILITY	\$5,300,000	30-Dec-96	T	15-Dec-98	28-May-98	\$4,714,700	\$4,714,700	0.0	0	540	0.0	0
	MEDICAL TRAINING/ADMIN	\$2,300,000	12-May-97	T	22-Jun-98	18-Jun-98	\$2,333,000	\$2,347,174	0.6	0	360	0.0	2
	MEDICAL TRAINING FACILITY	\$2,500,000	21-Mar-97	T	15-May-98	4-Jun-99	\$2,011,750	\$2,049,250	1.9	385	360	106.9	4
	IMPROVE STORM DRAINAGE SYSTEM	\$950,000	30-Sep-97	T	15-Feb-99	30-Jun-99	\$705,366	\$705,366	0.0	135	300	45.0	0
	FUELS SYSTEMS MAINTENANCE HGR	\$6,000,000	11-Mar-98	T	15-Jun-99	17-May-99	\$6,100,000	\$6,100,000	0.0	0	360	0.0	0
	FIRE TRAINING FACILITY	\$1,500,000	30-Dec-96	T	2-Jul-98	18-Feb-99	\$1,254,969	\$1,254,969	0.0	231	300	77.0	1
	CONSOLIDATED MEDICAL TRAINING	\$2,600,000	30-Sep-97	T	30-Dec-98	30-Dec-98	\$2,401,027	\$2,699,112	12.4	0	180	0.0	4
	CONSOLIDATED MAINTENANCE FAC	\$3,600,000	12-Mar-97	T	24-Apr-98	29-May-98	\$3,529,950	\$3,529,950	0.0	35	360	9.7	0
	COMPOSITE MAINTENANCE FACILITY	\$3,200,000	15-Nov-96	T	5-Mar-98	16-Jun-98	\$2,877,859	\$2,877,859	0.0	103	420	24.5	0
	BC-MUNITIONS STORAGE	\$1,500,000	10-Jul-97	T	5-Jul-98	15-Oct-98	\$1,192,379	\$1,202,379	0.8	102	360	0.0	1
	AWACS MISSION	\$3,400,000	1-Apr-97	T	15-Feb-98	29-May-98	\$2,923,885	\$2,923,885	0.0	103	285	36.1	0
	ADAL FACILITIES FOR CONVERSION	\$5,700,000	16-Apr-97	T	14-May-98	6-May-99	\$5,607,394	\$5,607,394	0.0	357	365	97.8	0
	<b>1997 Fiscal Year Total: \$46,550,000 - 17 Projects</b>						<b>(Averages)</b>		<b>3.3</b>			<b>42.7</b>	<b>1.8</b>
98	FIRE TRAINING FACILITY	\$1,800,000	3-Aug-98	T	29-Jul-99	27-Apr-01	\$1,546,434	\$1,623,024	5.0	638	360	177.2	10
	CONSOLIDATED TRAINING FACILITY	\$2,100,000	17-Sep-98	T	14-Jul-99	22-Jun-00	\$1,479,650	\$1,514,466	2.4	344	300	114.7	3
	RENOVATE BLDG 220 - HQ AFRES	\$5,580,000	28-Sep-95	T	20-Jan-97	29-Mar-97	\$6,331,000	\$6,365,632	5.6	68	480	14.2	2
	CORROSION CONTROL FACILITY	\$1,550,000	29-Jan-98	T	24-Apr-99	7-Apr-99	\$1,530,198	\$1,530,198	0.0	0	450	0.0	0
	BASE CIVIL ENGINEER COMPLEX	\$8,913,000	20-Aug-98	DB	10-May-00	30-May-00	\$7,928,100	\$7,928,100	0.0	20	540	3.7	0
	ALTER MISCELLANEOUS MAINT FAC	\$1,000,000	18-Dec-97	T	18-Dec-98	30-Dec-99	\$842,000	\$842,000	0.0	377	365	103.3	0
	AERIAL PORT TRAINING FACILITY	\$4,200,000	17-Sep-98	T	3-Feb-00	13-Apr-01	\$3,159,317	\$3,159,317	0.0	435	415	104.8	0
	ADD/ALTER BASE SUPPLY	\$2,800,000	18-Dec-97	T	15-Jun-99	15-Dec-99	\$2,163,661	\$2,163,661	0.0	183	365	50.1	0
	ADAL SQUAD OPS FACILITY	\$1,400,000	18-Dec-97	T	15-Jun-99	30-Dec-99	\$1,018,000	\$1,018,000	0.0	183	365	50.1	0
	<b>1998 Fiscal Year Total: \$29,343,000 - 9 Projects</b>						<b>(Averages)</b>		<b>0.9</b>			<b>55.9</b>	<b>1.7</b>
99	CONSOLIDATED MAINTENANCE FAC	\$5,200,000	31-Mar-99	T	23-Feb-01	15-Jun-01	\$4,396,000	\$4,649,862	5.8	112	420	26.7	6
	RENOVATE VAQ 478	\$4,600,000	1-Sep-99	T	21-Nov-00	21-Nov-00	\$3,113,585	\$3,113,585	0.0	0	390	0.0	0
	RENOVATE MAINTENANCE HANGAR 4	\$5,200,000	19-Apr-99	T	12-Jun-00	5-Aug-03	\$4,753,000	\$4,753,000	0.0	1149	420	273.6	0
	PARARESCUE FACILITY	\$1,400,000	28-Sep-00	T	23-Jul-01	20-Aug-01	\$1,455,307	\$1,455,307	0.0	28	270	10.3	0
	MUNITIONS HAND EQUIPT MAINT	\$1,900,000	23-Jul-99	T	29-Nov-00	29-Nov-00	\$1,688,354	\$1,688,354	0.0	0	360	0.0	0
	CONSOLIDATED MEDICAL FACILITY	\$3,400,000	27-Aug-99	T	23-Sep-00	23-Dec-01	\$2,745,820	\$2,920,920	6.4	456	360	126.7	17
	CONSOLIDATED MAINTENANCE FAC	\$3,900,000	30-Jun-99	T	15-May-01	22-May-02	\$3,031,400	\$3,031,400	0.0	372	420	88.6	0
	CONSOLIDATED LODGING FAC PH 1	\$3,236,000	11-Aug-99	T	1-Jun-01	5-Sep-01	\$3,764,682	\$3,764,682	0.0	96	540	17.8	0
	ALTER FAC FOR C-141 SIMULATOR	\$1,600,000	25-Jan-99	T	10-Aug-99	3-Sep-99	\$1,446,000	\$1,521,911	5.2	24	180	13.3	14
	<b>1999 Fiscal Year Total: \$30,436,000 - 9 Projects</b>						<b>(Averages)</b>		<b>1.9</b>			<b>61.9</b>	<b>4.1</b>

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### AFRC MILCON CONSTRUCTION SCHEDULE & COST GROWTH 1992 - 2007

Program Avenue: MCP

FY	Project Title	PA	Act Awd Date	Dsn Met	Est Cns Compl Dt	Act Cns Compl Dt	Orig Contr Amt	Cur Contract Amt	% Cst Incr	Mod Day	Ctr Day	% SCH Incr	# Mod
00	CONTROL TOWER	\$4,250,000	28-Mar-00	T	16-Jan-02	9-Aug-02	\$4,033,800	\$4,064,240	0.8	205	631	32.5	6
	ADD/ALTER AFRC HQ & ATACC	\$14,000,000	22-Sep-00	DB	11-Dec-03	28-Jul-04	\$13,519,500	\$14,939,071	10.5	117	999	11.7	6
	AERIAL PORT TRAINING FACILITY	\$800,000	28-Feb-00	T	25-Jan-01	18-Apr-01	\$774,400	\$800,146	3.3	21	321	6.5	12
	LODGING FACILITY	\$6,300,000	29-Jun-00	T	10-Mar-02	30-May-02	\$6,233,032	\$6,233,032	0.0	20	615	3.3	0
	LODGING AND DINING HALL	\$10,800,000	28-Sep-00	DB	13-Aug-02	18-Jul-03	\$9,742,900	\$9,742,900	0.0	339	660	51.4	0
	FIRE TRAINING FACILITY	\$2,000,000	27-Jun-00	T	23-Apr-01	31-Aug-01	\$1,892,000	\$1,892,000	0.0	130	300	43.3	0
	FIRE STATION	\$2,950,000	30-Oct-00	T	30-Dec-01	30-Nov-02	\$2,666,500	\$2,666,500	0.0	335	426	78.6	0
	DEICING RECOVERY PAD	\$3,400,000	28-Sep-00	NULL	22-Nov-01	22-Nov-01	\$1,948,400	\$1,948,400	0.0	0	270	0.0	0
	CONSOLIDATED LODGING FAC PH 2	\$8,140,000	30-Mar-00	T	3-Oct-01	3-Oct-01	\$7,456,000	\$7,456,000	0.0	0	600	0.0	0
	C-17 ADAL SQ OPS FAC	\$3,300,000	30-Mar-00	T	25-Feb-02	4-Apr-02	\$2,912,800	\$2,912,800	0.0	38	575	6.6	0
	ADAL FACS FOR C130H AIRCREW TG	\$2,130,000	29-Sep-00	T	11-Dec-01	17-Jun-03	\$2,319,934	\$2,319,934	0.0	553	400	38.3	0
	<b>2000 Fiscal Year Total: \$58,070,000 - 11 Projects (Averages)</b>								1.3			24.7	<b>2.2</b>
01	ADAL FIRE STATION, PHASE II	\$2,000,000	4-Mar-01	T	15-Apr-03	14-Feb-04	\$1,691,000	\$1,691,000	0.0	305	333	91.6	0
	ALTER HANGAR AND ADD AFFF	\$2,400,000	14-Sep-01	T	12-Aug-02	30-Sep-03	\$2,125,000	\$2,125,000	0.0	414	330	25.5	0
	C-130 ASSAULT STRIP	\$5,951,000	24-Aug-01	T	23-Sep-02	12-Jun-03	\$5,839,880	\$5,839,880	0.0	262	360	72.8	0
	SERVICES COMPLEX PHASE 2	\$11,290,000	21-Sep-01	T	15-Jun-03	9-Feb-04	\$10,192,305	\$10,192,305	0.0	239	450	53.1	0
	SMALL ARMS MUNITIONS STORAGE	\$700,000	8-Aug-94	T	2-Dec-95	2-Dec-95	\$504,599	\$504,599	0.0	0	450	0.0	0
	REPAIR/ALTER AIRMAN QUARTERS	\$7,450,000	3-Aug-01	T	8-Dec-02	19-May-03	\$6,687,700	\$6,984,446	4.4	129	450	28.7	6
	<b>2001 Fiscal Year Total: \$29,791,000 - 6 Projects (Averages)</b>								0.7			45.3	<b>1</b>
02	C-130J MAINTENANCE HANGAR	\$12,000,000	28-Mar-02	DB	14-Apr-04	23-Jun-04	\$8,936,000	\$9,031,590	1.1	161	720	22.4	8
	ADD/ALTER AFRC HQ & ATACC	\$2,000,000	29-Mar-02	DB	9-Apr-04	28-Jul-04	\$1,347,535	\$1,890,595	40.3	67	738	9.1	8
	Services Complex - Dormitory	\$13,200,000	28-Jun-02	T	20-Oct-04	15-Dec-04	\$10,263,000	\$10,263,000	0.0	56	540	10.4	0
	FUEL CELL MAINTENANCE HANGAR	\$7,300,000	16-Aug-02	T	6-Jul-04	7-Feb-05	\$4,905,593	\$4,905,593	0.0	216	690	31.3	0
	CONSOLIDATED LODGING PH 3	\$8,400,000	3-May-02	T	26-May-03	16-Oct-03	\$7,734,000	\$7,734,000	0.0	143	360	39.7	0
	AIRCRAFT MAINTENANCE HANGAR	\$9,900,000	16-Aug-02	T	6-Jul-04	6-Mar-05	\$7,424,207	\$7,424,207	0.0	243	690	35.2	0
	ADD/ALTER SQUAD OPS FACILITY	\$1,400,000	30-Sep-02	T	12-Jun-03	27-Feb-04	\$1,547,615	\$1,547,615	0.0	230	300	76.7	0
	ADD/ALTER COMM CENTER	\$2,000,000	21-Sep-02	T	29-Nov-03	4-Nov-04	\$1,825,788	\$1,825,788	0.0	341	360	94.7	0
	<b>2002 Fiscal Year Total: \$56,200,000 - 8 Projects (Averages)</b>								5.2			39.9	<b>2</b>
03	SECURITY FORCES OPERATION	\$3,850,000	25-Sep-03	DB	30-Jul-05	2-Mar-06	\$3,759,000	\$3,794,638	0.9	128	720	17.8	6
	SERVICES TRAINING FACILITY	\$2,500,000	9-Sep-03	T	18-Nov-04	12-Mar-05	\$2,780,000	\$2,780,000	0.0	114	360	31.7	0
	MEDICAL TRAINING ADDN	\$2,150,000	27-Jun-03	DB	20-Aug-04	30-Jun-04	\$1,867,582	\$1,867,582	0.0	0	311	0	0
	Hydrant Refueling System and Parking Overl	\$6,400,000	29-Aug-03	T	12-Oct-04	15-Mar-06	\$5,770,000	\$5,770,000	0.0	519	450	115.3	0
	ENTRANCE F.P. - VISITOR CENTER	\$2,000,000	19-Sep-03	T	18-Nov-04	12-Jul-05	\$2,094,644	\$2,094,644	0.0	236	360	65.6	0
	Cosolidated Space Group Operations	\$6,900,000	5-Sep-03	DB	1-Jun-05	14-Feb-05	\$6,317,225	\$6,317,225	0.0	0	450	0	0
	Consolidated Training Phase 1	\$1,609,000	12-Aug-03	T	10-Sep-04	13-Jul-06	\$1,573,567	\$1,573,567	0.0	0	365	0	0
	Consolidated Lodging Facility	\$6,300,000	25-Feb-04	T	15-May-04	15-Jun-05	\$3,391,109	\$3,391,109	0.0	671	360	186.3	0
	CONST INSTLTN PERIMETER FENCE	\$1,100,000	15-Aug-03	DB	8-May-04	9-Jun-04	\$1,020,276	\$1,020,276	0.0	396	210	188.6	0
	C-17, ALTER CO-LOCATED LIFE SUPPORT	\$3,000,000	17-Sep-03	T	29-Sep-04	14-Jun-05	\$2,925,088	\$2,925,088	0.0	32	360	8.9	0
	C-17 MAINTENANCE & INSPECTION HANC	\$15,100,000	31-Jul-03	DB	28-Feb-05	23-May-05	\$11,227,018	\$11,411,703	1.6	84	540	15.6	3
	C-17 Alter Squadron Operations Facility	\$1,700,000	29-Aug-03	T	26-Jun-04	1-May-04	\$1,608,877	\$1,608,877	0.0	0	360	0	0
	C-17 ALTER GEN MAINT SHOPS	\$2,000,000	14-Aug-03	T	29-Aug-04	27-Sep-05	\$2,418,345	\$2,418,345	0.0	394	360	109.4	0
	C-17 ALTER FLIGHT SIMULATOR FACILITY	\$1,900,000	2-Sep-03	T	16-Aug-04	14-Aug-04	\$1,669,645	\$1,727,182	3.4	0	300	0	2
	Alter Maintenance Hangar	\$525,000	12-Aug-03	T	15-Sep-04	13-Jul-06	\$394,145	\$394,145	0.0	666	365	182.5	0
	Alter Maintenance Facilities	\$2,650,000	12-Aug-03	T	15-Sep-04	13-Jul-06	\$2,697,246	\$2,697,246	0.0	666	365	182.5	0
	<b>2003 Fiscal Year Total: \$59,684,000 - 16 Projects (Averages)</b>								0.4			69.0	<b>0.3</b>

## **APPENDIX C**

### **Performance Information Procurement System (PIPS) Best Value Delivery Process**

#### **(Brief Synopsis)**

The PIPS project delivery system provides best value by injecting common sense and sound judgment into the process. This system places diminished value on management choosing to substitute leadership in its place and thus add efficiency and value to the project delivery blueprint. This best value strategy reduces the need for owner control, expertise, and information and transfers accountability without having to trust in people. PIPS has demonstrated the ability to take full advantage of competition while increasing contractor profits. Further, this delivery system incorporates Total Quality Management (TQM) principles by encouraging continuous improvement. When analyzed from the standpoint of a single project, there are four major PIPS phases:

1. Preparation
2. Selection
3. Pre-award
4. Risk Management

#### **Preparation Phase**

The following activities encompass the PIPS preparation phase:

1. Schedule development
2. Definitions, strategic plan, measurements, project education, core team selection
3. Core Team objectives and roles

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4. Project selection
5. Request For Proposal (RFP)
6. Weighting of performance criteria
7. Contractor/vendors education meeting(s)
8. Past performance criteria

The purpose of schedule development is to develop a timetable for the various milestones to be accomplished in all four phases of the PIPS process. Strategic planning and what measurement system to employ are the most important elements used to implement this project delivery course. They specify the expected outcomes and serve as a model to ensure the goals and objectives of each activity are obtained. Core team education is conducted by Performance Based Studies Research Group (PBSRG) of Arizona State University. The purpose of this education is to identify core team members and any resistance within the organization. Additionally, the education should include recognition of previous performance and best value justification, beginning with individual perceptions of past performance and what constitutes best value. High performance contractors/vendors/suppliers should participate in this presentation. The core team should include the following:

- A high level executive
- Legal representative
- Mid level manager
- Project manager
- Procurement/contracts person

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- Information worker

The project manager is a key component in successful PIPS implementation. He or she must be able to explain PIPS because this will be the person ensuring system operation. This information worker makes certain that all measurements are accurate, up to date, and available if questions of a political nature arise during the process.

Selection of a project for PIPS implementation should depend on project budget, the core team's ability and willingness to learn new procedures, the ability to justify implementation costs to senior management, and the owner's strategic plan. The core team should put together a traditional RFP; the PBSRG team will modify the RFP and convert it to a best value document. The owner's legal representative will review and approve the RFP.

Performance criteria weighting is unique for each owner and project. The weights should be based upon the owner's distinct requirements and expectations and not upon anticipated project risks. Typical weighing criteria are price and performance. Current capacity and past performance encompass sub-criteria to be evaluated in determination of a contractor's ability to perform. Other criteria like minority program participation, experience with Design-Build, and safety record can be added.

An education meeting for contractors/vendors will explain the PIPS best value project delivery process. This meeting should inform these contract personnel of what past performance information will be evaluated, in what form and when to present it and to whom. The contractor is allowed to select its own references. This prevents (1) arguments from contractors that the wrong projects were selected for evaluation; (2)

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accusations of unfairness; (3) questioning whether too many or too few references were evaluated; and (4) questions regarding the validity of a reference.

### **Selection Phase**

The Selection Phase of PIPS begins when the following are complete:

- owner education
- core team formation and education
- project selection and RFP creation
- contractor/vendor selection
- performance information collection

The following activities are in the Selection Phase:

1. Pre-bid/proposal meeting
2. Contractor completion of past performance information
3. Contractor submittal of proposals
4. Owner interviews contractor's key personnel (project manager, site superintendent, chief designer, etc.)
5. Evaluation and prioritization of all alternatives
6. Best value contractor chosen to move into Pre-Award Phase

The pre-bid meeting is used to explain the project and the PIPS best value selection and delivery process to contractors/vendors. The remainder of the items covered in this meeting are typical of all such meetings: (1) identify schedule and critical milestones; (2) answer questions about the project; (3) visit the project site; and (4)

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establish a time for Request For Information (RFI) along with the expectation of a written reply to the same.

The Risk Assessment/Value Added (RAVA) blueprint submittal is a major selection criterion and important element of the proposal. The purpose of this plan includes:

- Identification of risks that the contractor does not control.
- Explanation of how the contractor will minimize the risk.
- Show how the contractor can work in a team oriented, visionary, experienced method to successfully complete the project.
- Contractor identification of project inputs that will add quality, reduce time or costs and thus add value.

The other part of the proposal is the value added submittal. Value added submittals include (1) anything that distinguishes a contractor from the competition; (2) items with potential cost impact; and (3) any out of scope work required. If allowed within the owner's legal constraints, value added items should be considered during the Pre-Award Phase.

Interviews are conducted with key personnel that will have an impact on the project. Each interview is recommended to last a maximum of twenty minutes with questions designed to show the ability of the person to minimize project delivery risks they do not control. The interview is one filter to determine if there is one outstanding individual whose ability stands out above all the rest.

Prioritization of the proposals has two main phases:

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1. The objective assessment of the proposals using past performance, RAVA, and interviews.
2. The subjective assessment of best value. Verifying the best value based on price and the financial constraints of the project.

Technical qualifications give a proposal a best value advantage only if they can be translated into performance attributes of best value. These qualifications when used as a prequalification mechanism should be rated as go or no go only.

### **Pre-Award Phase**

The contractor whose proposal is deemed to comprise the best value alternative per the Selection Phase criteria proceeds to the Pre-Award Phase. This phase is initiated with a pre-award kickoff meeting. The best value contractor is provided with all the risks identified by the other contractors and required to add them to its quality control plan.

During the Pre-Award Phase:

1. The contractor decides if it is still interested in pursuing the project.
2. The contractor identifies all subcontractors and coordinates the decision to proceed with the best value proposal with these subcontractors.
3. The owner's professional project technical representative(s) reviews the contractor's technical approach and notifies the owner of any potential issues.
4. The Quality Control (QC) Plan is created.
5. The weekly report is established.
6. The QC Plan, weekly report, and schedule are coordinated.

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7. Documents are reviewed by the owner's technical representative(s).
8. The core team holds a pre-award presentation.
9. The contractor's QC Plan and weekly report are added to the contract.

The QC Plan is the contractor's plan to control the work. It should inform the other project delivery team members of the manner in which the project risks, which it doesn't control, will be minimized. The QC Plan and weekly risk report transfer both risk and control to the contractor and protects the contractor against owner directives that can jeopardize the project schedule and/or budget.

### **Risk Management Phase**

During this final PIPS phase the contractor's weekly report provides a history of the project. This report documents:

1. Changes in the project schedule or cost.
2. Changes to the contract (modifications).
3. Risks that resulted in contract changes.
4. Explanations of the risks in (3.) including their source(s), why they were not minimized and what was done in the contract modifications to reduce the risks.
5. Performance of the contractor in reaction to risks it did not control.

The weekly report consists of the project vital statistics including the schedule and a risk report page identifying the date, minimization plan, resolution, and impact of individual risks associated with the project. The weekly risk report addresses risks that

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are unforeseen and/or that the contractor does not control but for which it is trying to reduce the impact even if it is not legally responsible to do so.

Any risk that conveys cost and time repercussions is apt to result in a change order. These changes should be recorded along with the risks that precipitated them and an explanation of the solutions. This allows the high performing contractor to document its performance and illustrate its actions in managing project risks. The weekly report, in spreadsheet format, should be sent to the project director's electronic mail address. This director is presumably the owner's highest ranking executive core team member. The spreadsheet defends and protects the contractor. It affects its communication, professionalism, and performance score at the end of the project. The weekly /director's report should allow a contractor to influence upward movement of a project experiencing delay to the top of the owner's list of at-risk projects. This compels the director to reduce the risks as soon as possible. The weekly reporting system and director's report protects the contractor and is in its best interest.

Upon project completion the contractor is rated. The project is complete when:

- All punch list items have been addressed and resolved.
- All systems perform as designed.
- All systems documentation including warranties and as-builts has been completed and submitted to the appropriate owner's representatives.
- The site has been cleaned and is ready for use/occupancy.

The contractor is then rated and its future past performance rating is modified by including this project rating into the new performance average. Best value project ratings

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are weighted heavier than past performance ratings from other projects. (Kashiwagi, 2002,)

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