

ACEC OKLAHOMA

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The Case For QUALIFICATIONS-BASED SELECTION

The Importance of Good Design

It is no exaggeration to say that the most important ingredient of any construction project is its design. The quality of design is the single most important factor in determining a project's "life-cycle cost" - the initial cost of construction, plus the ongoing costs for operation and maintenance.

Design is one of the very first steps in the construction process, but it dictates everything that follows: the size and layout of the facility; type of construction materials; capacity of mechanical and electrical systems; energy efficiency; and other factors. Not even the best contractor using the finest of construction materials can overcome the failings of a poor design.

Professional design services - engineering, architecture or surveying - represent only a small percentage of the construction budget, and a far smaller percentage of life-cycle cost, so it makes sound economic sense to ensure your consulting engineer has the experience and qualifications needed to deliver a high-quality design.

Qualifications-Based Selection (QBS) is a process that enables the project owner to obtain the services of a highly qualified engineering professional at a fair and reasonable cost, an investment in quality that will result in substantial savings over the life of the project.

Why is the hiring of a design professional to design a project any different from hiring a general contractor to construct a project?

As a Purchasing Agent or project Owner, don't I have a responsibility to get the most I can for the least amount of money spent, or an obligation when purchasing goods or services with public dollars to see that the lowest price is obtained, you may ask? Why is the likelihood of the success of a project reduced simply because the services of the design professional for the project are obtained through the price bidding process?

Design professionals do not sell a commodity, but rather their knowledge. Architectural, engineering, and land surveying design work is a highly skilled and personally distinctive service. Because of this, designers encourage owners to select them on the basis of their experience and qualifications to do the work.

Bidding is Not the Solution: Case Studies in Bidding

"It is unwise to pay too much, but it's worse to pay too little. When you pay too much, you lose a little money -- that is all. When you pay too little, you sometimes lose everything because the thing you bought was incapable of doing the thing you bought it to do. -- John Ruskin (1819-1900)

"The common law of business balance prohibits paying a little and getting a lot - it can't be done." -- John Ruskin (1819-1900)

"Price has no meaning except in terms of the quality of the product." -- Dr. W. Edwards Deming (1900-1993)

Here are some common questions:

- Why is the hiring of a design professional to design a project any different from hiring a general contractor to construct a project?
- As a Purchasing Agent, don't I have a responsibility to get the most I can for the least amount of money spent, or an obligation when purchasing goods or services with public dollars to see that the lowest price is obtained?
- Why is the likelihood of the success of a project reduced simply because the services of the design professional for the project are obtained through the bidding process?

Design professionals do not sell a commodity, but rather their knowledge. Architectural and engineering design work is a highly skilled and personally distinctive service. Because of this, designers encourage owners to select them on the basis of their experience and qualifications to do the work.

Example #1: Roof Collapse Sav-On Foods Store, Burnaby, British Columbia

On April 23, 1987, shortly after the official opening of the new mega Sav-On Foods Store at Station Square in Burnaby, British Columbia, an area of the building roof-top parking lot of approximately 6400 square feet collapsed into the food store, injuring 20 people.

A Commissioner's Inquiry by the Canadian Government determined that one of the major factors that led to the ultimate collapse of the structure was the selection of the Structural Engineer on the basis of competitive bidding, with the structural design being done by lesser skilled staff of the Structural Engineer, and much of the detailing of the connections being done by the subcontractor of the steel erector.

Although competitive bidding bids were required, the structural engineering work had been awarded to the third lowest bidder for the \$5.4 million Sav-On Foods building. Unfortunately, this bidder's fee was subsequently negotiated down by the building's development manager.

In the Commissioner's Report, it was stated that: "with tendering [bidding], relatively intense competition has driven fee levels down, and this has raised questions about the quality of professional services in this environment."

The Commissioner's Report went on to state that "bidding for Professional Services caused a great deal of concern." The report stated that one approach to correcting the situation was to "pressure the owner of the building to provide sufficient compensation to permit the Engineer to do the work properly."

Example: Skyway Collapse Kansas City Hyatt Regency, Kansas City, Missouri

In July of 1981, two elevated walkways over the lobby of the Kansas City Hyatt Regency Hotel collapsed during a party, killing 111 people and injuring 188 others.

The engineering services on this structure had been awarded on the basis of low bid, and the design professional services were limited by contract. In order to keep his fees low, and because of the "practices of the industry" at the time and past dealings with the fabricator, the Engineer had specified that the detailing of the rod connections of the two walkways to the building be done by the "fabricator".

Had a properly qualified and experienced design professional carefully designed and detailed these rod assemblies, this disaster may have been averted.

A 1984 U.S. House of Representatives Subcommittee report on Structural Failures in Public Facilities (House Report 98-621), stated that one of the six factors of critical importance in causing the structural failures in this particular project was the selection of architects and engineers based on bid.

When such selection is generally made on a "low bid" basis, the report stated as one of its findings:
"....there is a tendency to unrealistically reduce the price when price is known to be the primary basis for the contract award....use of "low bid" procedure has frequently resulted in insufficient funds allocated to a project to adequately verify the accuracy of design and to thoroughly check plans before construction....election of an Architect or Engineer solely on price-competition basis provides the potential for reductions in quality due to initial underestimation of the costs and resources required to adequately perform the work."

The recommendations of that same report went on to say:

"Federal procurement practices that lead to or promote the selection of Architects and Engineers on a 'low-bid' basis should be changed to require....greater consideration given to prior related experience and past performance of the parties seeking the contract award."

The Reality of Bidding

If an architect or engineer is asked at the outset for a price, coupled with the knowledge that the contract will be awarded to the lowest bidder, severe limitation will be placed on how much creative talent, exploration of alternatives and other efforts that design professionals can bring to the project.

Architects and engineers who know that low price is the only way that will get them the work have no incentive to provide great value or service.

A system that simply seeks the cheapest design cost is bound to produce lower quality projects - not every time, but most of the time. A design firm's approach to a project must change when fee becomes a major criteria for selection. These firms develop a means of cutting their time on a project by minimizing the level of service such as:

- * Using less experienced personnel and evaluating fewer alternatives.

- * Developing plans with minimal details that often require much layout and decision-making in the field by the contractor.

- * Selecting systems that are easiest to design as opposed to selecting those that are the most economical and cost-effective for the owner over the life of the project.
- * On a structural project, designing only the most heavily loaded members, and then repeating these conservative member sizes throughout, resulting in oversizing of most members.
- * Providing minimal review of the drawings and observation of the work during construction, leaving the owner with lower quality construction and higher maintenance costs.

Qualifications is the Solution

The procurement of engineering and architectural services is one of the most important parts of the process of ensuring quality in the constructed project.

A qualifications-based selection (QBS) process allows the owner to choose the firm determined to be most qualified by objective criteria, whereas selecting design professionals by low bid takes this process out of the hands of the owner.

The owner's challenge is to get a good "return" on the investment in design services. This may be achieved by selecting a qualified A/E and negotiating the appropriate scope and compensation to permit the A/E to work toward a successful constructed project.

The impact of the A/E's efforts on innovative design, exploration of alternatives, life cycle costs, construction costs and liability exposure to the public client is critical to a project's success.

The design professional is in a unique position to assist the owner with both the scope of the project and the services required to fulfill the owner's needs. The only way to develop a complete scope of work that fully meets the owner's needs is through interaction between the selected design professional and the owner. QBS has the advantages that:

- * a well-qualified firm is selected
- * a scope of work satisfactory to both parties is negotiated
- * a mutually agreed-upon price is paid for the services
- * a team approach (partnership) between the owner and consultant can be developed so that both parties have an interest in the project's success.

Mr. Ben Watts, P.E., the Secretary of Transportation for the State of Florida, one of the recipients of the National Society of Professional Engineers 1996 QBS Award, made the following remarks about the Qualifications Based Selection process:

“The (QBS) process is open, the process is fair, and the process is honest. It is a simple process you do good work, you get more work. And, if you do poor work, it is the end of the partnership (with the Florida DOT). I think that is what the public is demanding of us more and more each day.”

“I would hate to think that I would be lying on the operating table and the doctor came in with the low bid competitive system, and he scrubbed up and he looked at me and said, *‘Well, you know we do this by low bid, Mr. Watts, and things have been a little slow and I really needed this job now, I have never done one of these before, but I am fairly certain that I can handle it.’*”

“We as engineers need to help every citizen to understand that when they ride across a bridge structure or they drive on the interchange or traffic signal phasing, or whatever it is, it is just as important an impact on that individual as what that doctor could be doing, and then they will understand this (QBS) system much better.”

The QBS process is a legal, fair and objective process. Used successfully since the Civil War, QBS is the most widely endorsed method by which public owners select design professionals. Particularly because of concerns for public health and safety, the QBS process is endorsed by the American Council of Engineering Companies (ACEC), American Institute of Architects (AIA) and the National Society of Professional Engineers (NSPE), as well as public organizations such as the American Public Works Association (APWA) and the American Water Works Association (AWWA). The process is also strongly supported by the American Bar Association (ABA) and the Associated General Contractors of America (AGC).

This process is mandated on federally funded projects as outlined in Public Law 92-582 (Brooks Architectural and Engineering Act). At least 34 states, including Oklahoma, have adopted a statute requiring the QBS process on publicly funded state and local projects.

For More Information, Contact:

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