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# Design Build Contracting in the Oregon Department of Transportation

by

Francisco O. Simas

November 1998



An engineering report submitted to the faculty of

Oregon State University

in partial fulfillment of the requirements for the

**MASTER OF SCIENCE DEGREE**

**IN**

**CIVIL ENGINEERING**

Department of Civil, Construction, and Environmental Engineering
Oregon State University
Corvallis, Oregon

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## LIST OF ACRONYMS

| | | |
|---|---|---|
| 1 | AE | Architect-Engineer |
| 2 | AGC | Associated General Contractors |
| 3 | AIA | American Institute of Architects |
| 4 | Ca AIA | California American Institute of Architects |
| 5 | CECO | Consulting Engineers Council Org |
| 6 | CII | Construction Industry Institute |
| 7 | CM | Construction Management |
| 8 | D/B | Design-Build |
| 9 | DBIA | Design Build Institute of America |
| 10 | ENR | Engineering News Record |
| 11 | FHWA | Federal Highways Administration |
| 12 | GC | General Contractor |
| 13 | ODOT | Oregon Dept of Transportation |
| 14 | OSU | Oregon State University |
| 15 | PCC | Portland Cement Concrete |
| 16 | PM | Project Manager |
| 17 | PSU | ODOT Project Systems Unit |
| 18 | RFP | Request For Proposal |
| 19 | RFQ | Request For Qualifications |
| 20 | SOQ | Statement of Qualifications |

# 1

## INTRODUCTION

Alternative delivery methods such as construction management (CM) and design-build continue to see increased acceptance within the construction industry in the delivery of projects. The latest ENR figures saw the top 100 design-build firms generating $39.4 billion in revenue during 1997 with the market increasingly expanding in the public sector (1). States, as well as Federal Government, are becoming more interested in design build as an alternative delivery method despite legislative restrictions in it's use.

The Oregon Department of Transportation (ODOT) is proving to be consistent with this trend. In May 1997, ODOT undertook it's own effort in developing a design-build program to add to it's own contracting methods toolbox. Working with consultants and stakeholders from the industry, ODOT advertised it's first design-build project in July 1998 joining the ranks of public sector owners interested in delivering projects through design-build contracting.

Instituting design-build at ODOT brings some controversy. As with any new program, it's impacts can be extensive and far-reaching to a variety of groups. ODOT, recognizing this, has worked extensively with different stakeholder groups to address concerns with the method, and has recognized the benefit of having a third party

evaluation of it's program. The department, through an inter-agency agreement, has selected Oregon State University to evaluate it's design-build program.

This paper addresses the evaluation of ODOT's program to date, which includes their conceptual development of their design-build program and presents feedback from industry regarding their first advertised design-build project, The Williamette River Harrisburg Bridge Deck Replacement.

The strategy for this evaluation effort included work in three main areas. First, a literature review into design-build was undertaken to gain understanding of the method and it's proper use. Secondly, ODOT's program was studied through documents provided by the department and it's consultant along with discussions and meetings with department personnel. This provided an understanding into ODOT's specific development and application of the method, and the issues the department has and is confronting. Finally, with the advertisement of the Harrisburg Bridge, a list of contractors and engineers became available who have expressed interest in ODOT's program. These engineers and contractors specifically received Harrisburg solicitation packages detailing ODOT's design-build project requirements and through their own review, became more familiar with the department's application of the method. Oregon State University contacted these engineers and contractors with the objective of receiving industry feedback into ODOT's program.

The organization of this report begins with an introduction to design-build contracting and its application in the delivery of construction projects. It's potential for benefits and motivation into its use will be presented and compared to the more

traditional design-bid-build process. Since application here involves a state transportation agency, design-build within a public agency will also be covered.

Next, the paper will present an overview of ODOT's efforts in building a design-build program with highlights of specific issues the department has been and is confronting. The report will then describe the evaluation strategy undertaken with emphasis placed on the means and methods of gaining industry feedback. Next the report will focus on industry feedback and finally, a section on conclusions and recommendations regarding the program and further opportunities for evaluation will be presented.

# 2

# DESIGN BUILD CONTRACTING

## INTRODUCTION

This section will give the unfamiliar reader an increased understanding of design-build contracting and it's associated benefits by comparing its advantages against the more traditional method of design-bid-build. First, complete descriptions of design-build and traditional methods will be presented showing the processes and contractual arrangements of the methods. Specific advantages will be presented focusing on design-build and comparing it to the traditional method. Issues here involve quality, appropriate use, and cost and schedule factors.

Anytime contracting involves the public sector, special provisions are made when selecting contractors, regardless of contract method, to ensure fair and proper management of public funds. A presentation of these requirements will also be illustrated with emphasis on appropriate ways to select design-build teams in the public sector. Finally, it should be noted that there is a multitude of other contracting methods that are available for use in addition to the two main ones discussed here. A brief overview of these methods is warranted to understand tradeoffs between all the methods.

## TRADITIONAL METHOD (Design–Bid–Build)

The traditional method, like the name implies, has been the most common form of project delivery for both private and public owners. With it's age comes extensive experience with the method by owners, contractors, and engineers. In addition, when questions arise, plenty of case law is available to guide decisions when conflicts arise.

Strictly speaking, the traditional method is a broader name encompassing both a design-bid-build and negotiated contract. Both types are similar in their contractual arrangements but vary on how a contract price is determined. Design-bid-build is the more common type in the public sector, while negotiated contracts are more common in the private sector. What is important here are the contractual relationships, identical to both, which will be discussed further.

### Contractual Relationships

In design-bid-build contracting, like most other methods, there are three parties involved; the owner, architect/engineer (or designer), and construction contractor (or builder). The owner has the basic need for the project and carries responsibility for financing it. The owner designs the project either by in-house or contracted designers. Finally, to build the project, the owner typically contracts with a builder to construct the project.

Relationships also fall into two categories, either contractual, or communicative/working. Typically, in design-bid-build, the only contracts involved are between the owner/designer, and the owner/builder. However, the designer is the most knowledgeable party concerning the design and therefore must communicate with the

builder regarding interpretations of the design. The relationships are clearly illustrated by Figure 2-1.

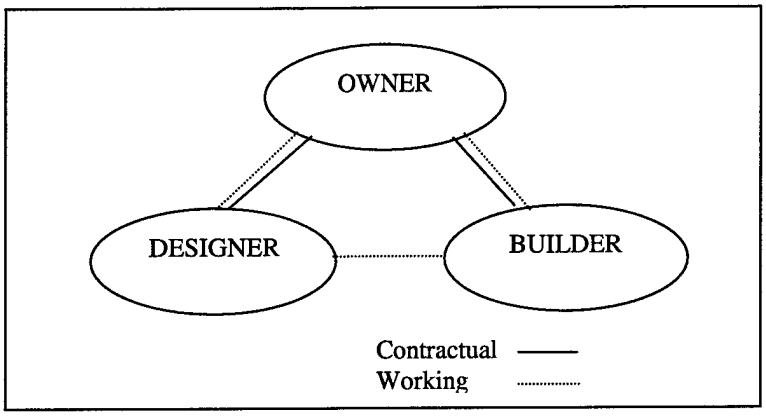


Figure 2-1, Traditional Relationships

**Process**

The process of design-bid-build occurs in a linear fashion. First, the owner identifies the need for a project and engages a designer to design and prepare the specifications and drawings. The specifications and drawings, combined with general contract conditions are put out for advertisement to prospective contractors. Contractors analyze the documents and prepare a bid for the work. Finally, based on bid and possibly other factors, a builder is selected. The process is illustrated by Figure 2-2.

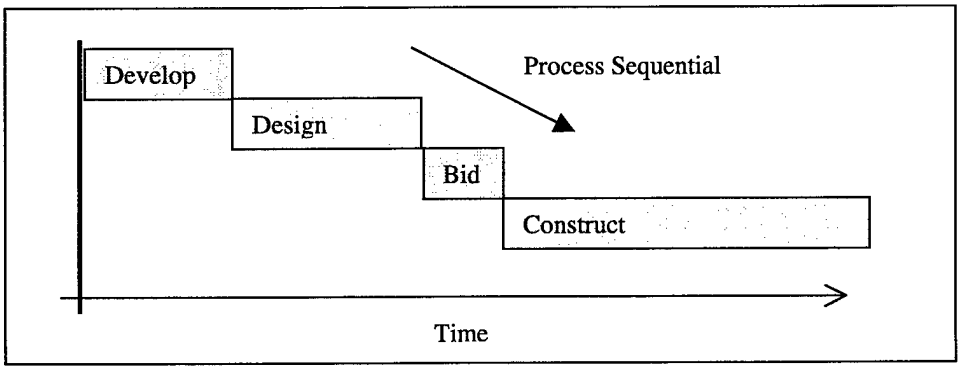


Figure 2-2, Design-Bid-Build Process

## DESIGN-BUILD

Design-build significantly alters the relationships between the three principle parties of owner, architect/engineer (designer), and contractor (builder). The owner contracts with a single entity to provide both design and construction services. The method has seen tremendous growth in the private sector. Interestingly, public sector owners are also becoming attracted to design-build in a search to expand their contracting tool bag to deliver projects faster, cheaper, and with reduced risk (2). Several forms of design-build exist as well, but the focus here will be on typical design-build and a hybrid called bridging.

Like the discussion with traditional contracting, the emphasis here will be on the contractual relationships of design-build and it's process. Later, benefits and issues of design-build will be presented and compared to the traditional method.

### Relationships

Under design-build, the designer and builder team up and contract with the owner as one entity, a design-build team. All communication between the owner and team occur through a single point of contact. Also, since the designer is part of the team, faster and more direct communication takes place between the engineer and contractor which enables the design and construction phases to overlap. Similar to the traditional method, relationships have contractual and communication elements. The design-build team consisting of designer and builder has the only contract with the owner. However, the team itself can be built in a variety of ways consisting of large single firms, joint ventures, general contractors contracting design, and others. At a general level, the team

will have contractual relationships with the designer and builder. Again, designers must communicate with builders particularly in regards to interpreting designs.

Since communication between designer and builder is easily facilitated by both members being on one single team, another powerful element to design build results. This cross communication between designer/builder facilitates design input from the builder during the design phase. This is not typically available with the traditional method. This feedback provides designs that are more cost effective and feasible to build. These relationships are illustrated by Figure 2-3.

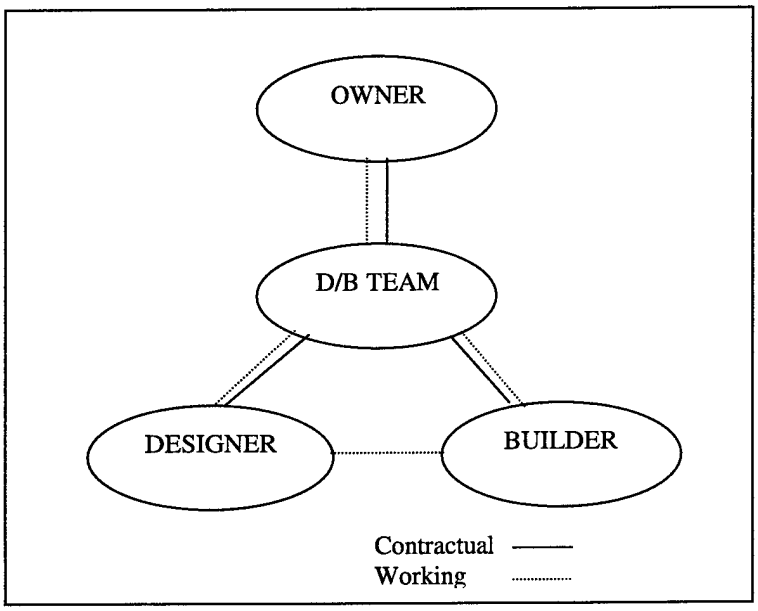


Figure 2-3, Design-Build Relationships

**Process**

Like the relationships, the process involved with design-build is significantly different from the traditional method. The main difference involves the owner's preparation for advertising a project, and the design and construction phases overlapping.

Unlike the traditional method where everything in the process occurs linearly, design-build has elements occurring simultaneously.

The process again begins with the owner selecting a project. This time, the owner advertises a detailed scope of requirements instead of a design and prospective design-build teams evaluate the scope, do some preliminary design work to determine project cost, and submit a proposal to the owner. If selected, the team undergoes the complete design process in conjunction with the construction process and consistent with the submitted proposal to the owner. The process is illustrated by Figure 2-4.

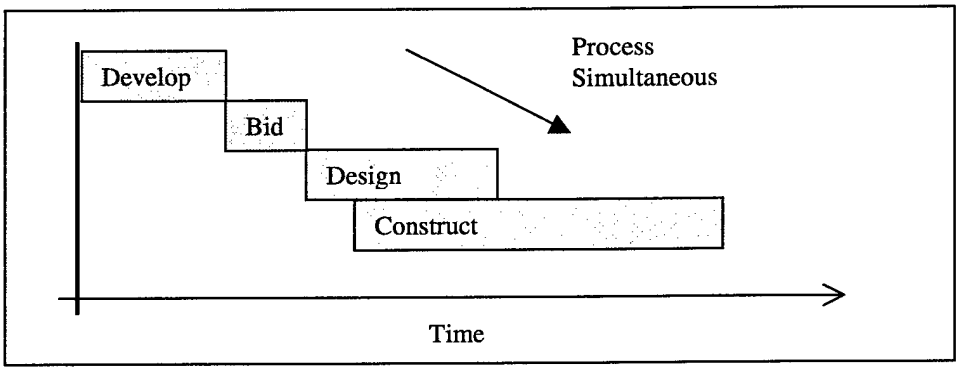


Figure 2-4, Design-Build Process

**Bridging**

Bridging (2) is a hybrid form of design-build and design-bid-build delivery systems. The primary difference from standard design-build is that the owner hires an independent designer in addition to contracting with the design-build team. The owner's designer can serve functions such as preparing a project for design-build construction to serving as the owner's representative concerning the design-build contract. The value of the independent designer will be illustrated when quality issues in design-build are discussed.

In the bridging delivery system, one extra player is added to the relationship diagram of design-build. In this method the owner will procure his own independent designer to serve as an owner's representative for the project. The owner's designer has a contractual relationship with the owner and a communication relationship with the design-build team. Owners with qualified designers on staff typically use their own architects and engineers to serve as representatives and don't employ bridging. The relationships are highlighted in Figure 2-5.

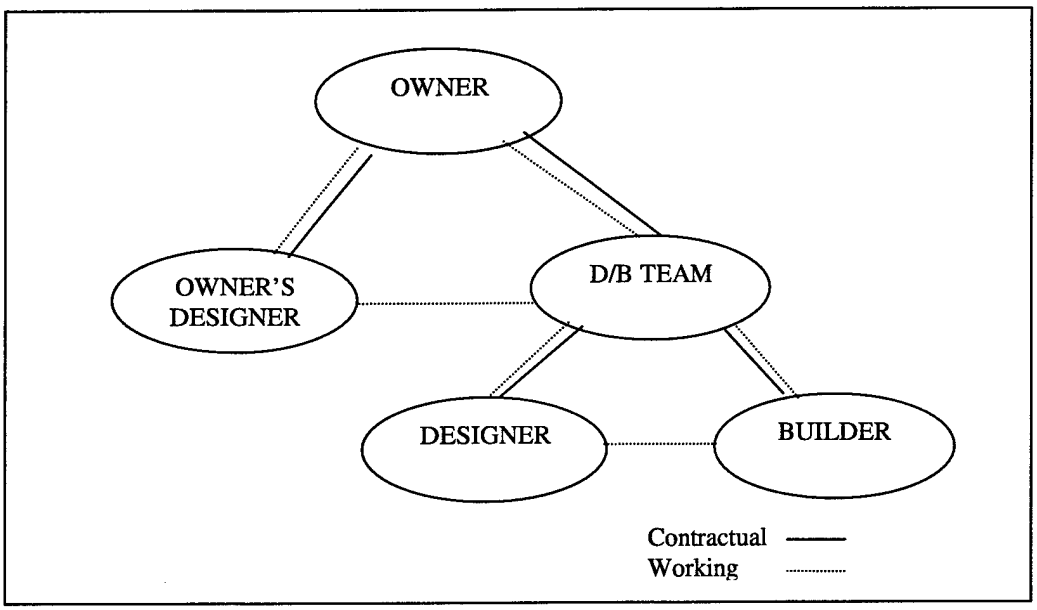


Figure 2-5, Bridging Relationships

## ADVANTAGES IN DESIGN-BUILD

Understanding the advantages of design-build leads to a greater understanding for the increased motivation in its use. Also, since the method is relatively new compared to traditional contracting, some elements are unclear to their impact and are subject to controversy. This is particularly evident in regards to issues of quality in design-build.

In addition, the advantages are viewed differently by each party in the contract. For example, the owner can perceive quality much differently than the contractor. Here, generally accepted advantages will be presented along with brief explanations (3).

**Singular point of contact**

The singular point of contact in design-build proves to be very beneficial to the owner. It allows him to concentrate on communicating project scope rather than coordinating activities between designer and builder. The single point of contact also eliminates "finger-pointing" between designer and builder since they are on the same team.

**Cost Savings**

Design-build encourages higher opportunities for value engineering because the designer receives direct feedback from the builder on the constructability and cost effectiveness of designs. In addition, with multiple teams vying for a job, more ideas are brought forward for more economical solutions to a problem. Finally, since the designer is part of the team, builders can't propose costly change orders due to design errors, a very typical situation in traditional contracting.

**Time Savings**

Possibly the biggest motivator behind design-build is the time savings that can be realized by overlapping design with construction. Design documents can be prepared while construction is on-going. Designs can be scheduled for completion on an as-needed

basis for construction. Design-build is typically chosen when the owner desires a "fast track" approach to a project.

Time savings is one area with opposing arguments. Definitely once the contract is signed, design and construction occurs faster than with traditional methods. However, additional administrative burden occurs to the owner as a result of design-build in developing a project for advertisement. Selection processes are more complex and project scopes need to be developed sufficiently to enable design-build teams to put together quality proposals (2). Depending on project, these additional requirements can offset the time savings from overlapped design and construction.

**Quality**

Design-build relationships provide a motivator to "design in" quality consistent with that found in a TQM environment. Builders can't point to designers when defects arise since the designer is part of the same team. Traditional contracting typically sees adversarial relationships between designer and builder as a result of different interpretations of the given design and this simply can't exist under design-build.

Some organizations argue quality is not a priority with design-build and they present some convincing arguments (2). For example, the owner has little control over the quality of the project unless certain expectations are expressly stated in the project scope. The designer sets the specifications and determines the quality of the project. Since the designer is part of the design-build team, he's not necessarily looking out for the owner's best interest. This potential conflict is a key reason why bridging is sometimes employed to give the owner a designer that represents his own interests.

While these arguments have been based on primarily subjective evaluation, the Construction Industry Institute (CII) has presented quantified data indicating that quality does indeed improve through the use of design-build (4).

## APPROPRIATE USE OF DESIGN-BUILD

Design-build contracting isn't the correct solution to all contracting situations. The method lends itself particularly well to certain situations (5). Generally, the appropriateness of a project depends on the ease with which requirements can be communicated to a prospective design-build team.

Projects containing repetitive elements and that do not require detailed design inputs by the owner are good examples of appropriate projects. In vertical construction, good examples are franchisees and tract housing. With horizontal work, typical with the state highway department, road and bridge construction would also contain repetitive elements and basic design input by the owner. When the owner and design-build team "see" the project conception on the same terms, detailed design specifications can be reduced achieving greater efficiency.

Other appropriate projects include those that can be defined best by performance standards. Projects can be objectively defined by requirements such as meeting a certain stated capacity rather than more subjective elements of owner preferences. Good examples in vertical construction include water and wastewater treatment plants. Here, standards are set on acceptable water quality levels and capacity the plants must handle. What's important is the design-build team meet these standards in the design. This element is more illusive with horizontal work, but again the highway department can set

objective performance standards for elements such as required traffic capacity for bridges and roadways leaving the details of design to the design-builder.

Finally, design-build lends itself to high-tech and confidential work. Here, owners wish to maintain confidentiality of designs of their facilities to maintain a competitive edge in the marketplace. This is achieved by forming few, long term relationships with design-build teams to minimize exposure. This element applies more to private high-tech industry more than public entities such as state highway departments.

## SELECTING THE DESIGN-BUILD TEAM

Design-build teams are selected by a seemingly endless variety of methods. Private owners have a great deal of latitude and the selection process can be as simple as picking up the phone and asking a contractor for a proposal on a project. When contracting involves public agencies, the selection process is much more formalized to ensure fair and efficient management of public funds. The concentration here will be on public sector selection of teams and will draw on standards recommended by the AIA/AGC and DBIA in procurement of public contracts (6),(7).

The first issue confronting a public agency is whether design-build is even an authorized method of procuring a construction contract. Many state and federal laws exist requiring that contracts be awarded to the lowest responsive bidder. Since design-build includes selection of a "team" including design professionals, owners rightfully want to include qualifications of the team as part of the selection. This presents a barrier to public owners using the method and necessitates enabling legislation or exemption from the rules and procedures.

When the public owner does go forward with a design-build solicitation, a two-phase selection process is generally recommended. The first phase consists of a qualification phase where teams submit their qualifications for review by the owner. The owner will then short-list a select number of teams meeting the required qualifications to move to the next phase, proposal. Limiting the teams who submit proposals for a project saves time and money for the industry as well as the public agency reviewing the proposals.

The next phase, proposal, requires the public agency to review the detailed proposals submitted by short-listed teams. Proposals are measured against a criteria scale developed by the agency for the solicitation and ranked accordingly. Finally, the team's proposed price is factored in and an overall selection is made.

The above description presents the process in a very generic fashion. The degree to which these elements apply also varies widely between public agencies. The specific method used by ODOT will be presented in the next section and its elements will be compared against the given guidelines in the evaluation/feedback section.

## ALTERNATIVE DELIVERY METHODS

With the emphasis of this report on design-build, it's easy to lose sight of the fact that there are many other delivery methods developed with the objective of saving time and/or money in the delivery of a project. This section will briefly describe some of the other methods available in addition to design-build that have specific application to highway projects (8).

**Lane Rental**

This alternative is an option when traffic disruption rather than contract time is the factor to be minimized. This method emphasizes the importance of maintaining traffic flow by assessing a "rental" fee to the contractor for the use of the roadway adjacent to the project. Therefore, the motivation exists for the contractor to minimize this fee that must be added on to his bid. The contractor places a priority on maintaining traffic flow and is encouraged to seek innovative solutions to minimize any closures.

**A+B Bidding**

This method considers the time as a selection factor in a contractor's bid. Two factors are part of a bid, namely cost and time giving the name to the method, cost plus time bidding (or A+B bidding). With this method, the job will not be necessarily awarded to the lowest bidder when a competitor underbids the time it will take for contract completion.

The weighting of time and cost are used in various fashions among different organizations. A typical way is to assign a monetary value conversion to the contractor's bid for time and combine it with the proposed cost. The overall lowest cost will be the successful bidder. A formula to compute may appear as follows:

Proposal Score = (Cost) + (Time * $value/Time)

**No Excuses Bonus**

This is a relatively simple method that is employed when time to completion is the priority. With this method, substantial incentives are paid out to the contractor for completing the project earlier than the contract states. In many methods, contract time is

adjusted for factors beyond a contractor's control such as bad weather beyond normal expectations. However, in this method, contract time is not adjusted on any basis and the bonus is awarded if the scheduled milestone is met without exception.

### Liquidated Savings

Liquidated savings is another method employed when time to complete contract is a high priority. Here, incentives are paid to the contractor for early completion of the project. In contrast to No Excuses Bidding though, contract time is adjusted for factors beyond the contractor's control.

## CONCLUSION

This section has examined design-build contracting and compared it to traditional methods by illustrating the relationships and process of using the method. Design-build is seeing increasing use because of it's associated advantages in its use, namely time savings by overlapping design. However, design-build methods show they are suited to a particular type of project more appropriately than others. Finally, design-build isn't the only way an owner can save time during execution of a construction project. Many alternative methods are available. The suitability of a method for any project depends on many factors and it's helpful to have a matrix to illustrate and guide an owner to matching the project with the correct delivery method. An example of ODOT's matrix will be presented in the next section.

# 3

# DESIGN BUILD AT THE OREGON DEPARTMENT OF TRANSPORTATION

## INTRODUCTION

ODOT began developing design build contracting in 1997. During 1997 and into the summer of 1998, the agency developed their process for the method culminating in issuance of the first design-build advertisement in July 1998. This section details this development stage by presenting the background history motivating the method and highlighting the players involved. ODOT's program began focusing on several main elements and each of these will be presented here as well. ODOT also realized design-build was just one tool available from an array of tools and also formalized their look into alternate delivery systems and when they're appropriate. Much of the information on ODOT's design-build program is detailed in their "ODOT Design-Build Guidebook"(9)

## BACKGROUND HISTORY

Design/build contracting became an authorized avenue of project delivery during 1995 when the Oregon Legislature passed the bill implementing tollways in Oregon. Under the bill, (now ORS 383), alternate delivery methods for tollways projects were

authorized including the use of design/build. During 1997, the legislature considered funding a pilot program to deliver up to 15 projects under design/build contracting. While that legislation did not pass, ODOT, through it's own initiative, undertook it's own pilot program in order to get educated on the process of design/build contracting and posture itself for any future legislation mandated design-build contracting.

In May 1997, ODOT began work on developing it's own pilot program in design/build contracting and retained consultant services with an AE firm possessing nationwide experience with design/build contracting for transportation projects. ODOT sought to deliver pilot projects utilizing design/build contracting as described by the Oregon Legislature where the department contracts with a single design/build team responsible for the design, construction, and it's management at a guaranteed maximum price. Traditionally, ODOT utilizes a design-bid-build process where the department delivers a design, which is then put out for advertisement for construction by contractors. By using a design/build approach, ODOT is hoping projects can be delivered either better, faster, and/or cheaper than the current method allows but recognizes some projects are better suited to design/build than others.

The pilot program consisted of first, developing the means and methods in design-build. This included formulating guidelines for RFQs and RFPs, selecting the right project, learning how to appropriately develop the project, identifying risks, and finally, modifying the ODOT General Specifications (Part 100) to spell out responsibilities of the agency and design-build team under design-build contracting.

The agency chose two projects to "test" the newly developed design-build program. The first project chosen, "The Williamette River (Harrisburg) Bridge Deck

Replacement" requires the design-build team to design and construct a replacement concrete decking system for the bridge with emphasis on traffic control to maintain access during agency specified periods. The second project, "The Evans Creek Rock Point Resurfacing" is an asphalt overlay project on existing failed PCC pavement along with some bridge rework along Interstate Highway 5. Advertisement of Harrisburg occurred in July. The qualification phase submittal and evaluation occurred during August and September 1998, and receipt of proposals and evaluations from shortlisted teams occurred in October. The Evans Creek schedule trails Harrisburg by approximately two months with advertisement occurring in September 1998. Receipt of qualifications came in October 1998 with evaluation scheduled for early November 1998.

## STAKEHOLDERS

From the beginning, ODOT recognized the implications of design-build and reached beyond it's own doors and formed a team of stakeholders from across the industry to discuss the issues involved. Representatives were sought from the design, construction, and the insurance/bonding industry to facilitate cross communication and education for all members. The stakeholder committee conducted monthly meetings during the initial development of the program where issues were brought to the table and discussed, and developed products were reviewed. Figure 3-1 illustrates the stakeholders involved in ODOT's development of design-build.

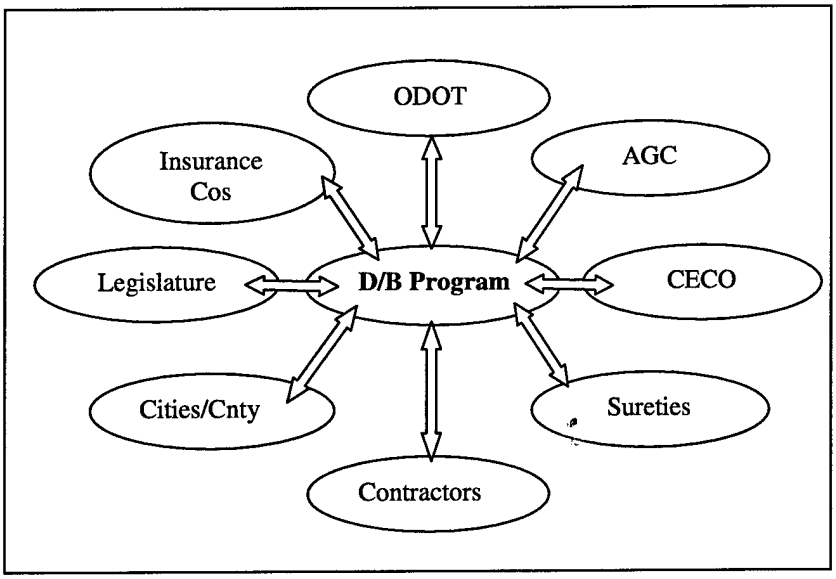


Figure 3-1, Stakeholders

The stakeholder meetings soon evolved into a rather set agenda surrounding the main issues in ODOT's design-build program. Specific items included drafting the RFQ/RFP, project selection, project development, identifying elements of risk, and the required changes to ODOT's general specifications (Part 100).

Two issues arose which required investigations beyond the expertise of the stakeholder committee. The first area centered on risks in design-build, particularly in regards to design liability and bonding. A risk allocation subcommittee was formed to identify all risks and prescribe a method of mitigation.

Secondly, obstacles surfaced in regards to contractor selection. Oregon's statutes state that contractors must be competitively selected according to lowest responsive bid (ORS 279.015 and ORS 279.029) while designers must be selected by qualification. In design-build contracting, ODOT would contract with a construction contractor who may subcontract to a design professional. The contractor would be selected according to

qualifications of the "team". Fortunately, ORS 279.015 allows an exemption process to the low bid selection. Oregon's administrative rules (OAR 125-300-0050) state the conditions when such an exemption can be made. Basically, exemption can be made when competition is not diminished and there is a substantial cost savings involved. Each project in ODOT's pilot program would need an exemption in order to be delivered by design-build and statutory changes would be required to eliminate the exemption process if design-build is to become an efficient process. The legislative task force was then identified as the group to undertake this task of seeking exemptions and proposing legislative changes to allow design-build projects to proceed without going through the exemption process.

**Steering Group**

Primarily the Steering Group undertook decision-making responsibility for the design-build program. The group consisted of ODOT managers, it's consultant, and FHWA. They met directly after the stakeholder meetings in order to provide timely decisions to issues raised during stakeholder meetings. The discussion and decisions made during Steering Group meetings provided the meat to the design-build guidebook which was developed for ODOT by it's consultant (9). The steering group is graphically illustrated in Figure 3-2.

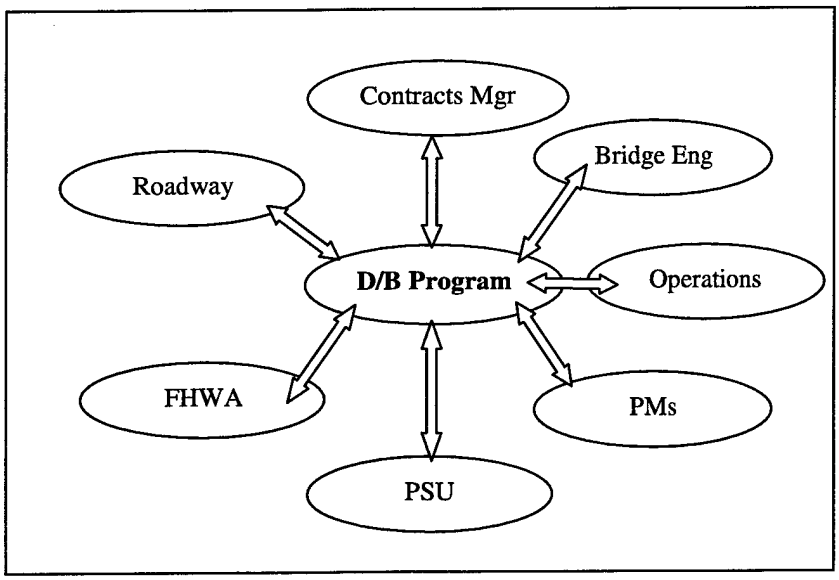


Figure 3-2, Steering Group

## MAJOR ISSUES

As mentioned, the stakeholder committee quickly found itself focused on 5 major issues with the design-build program:

- RFQ/RFP Development
- Identification/Mitigation of Risk
- Project Selection Criteria
- Project Development
- Required Specifications Changes

Each of these issues will be summarized in regard to it's overall impact on the design-build program.

**RFQ/RFP Development**

In order to select a design-build team, ODOT must use a fair process that identifies companies with the best overall value in terms of price and performance. To accomplish this, ODOT selected a two stage process where first, a request for qualifications (RFQ) is issued and interested firms submit a statement of qualifications (SOQ). Firms are then short-listed and invited to submit proposals through a request for proposals (RFP).

Even though selecting the two stage solicitation process was relatively straightforward, numerous decisions had to be made on exactly how the RFQ and RFP would work. First the RFQ process could select qualified firms based on a pass/fail to minimum criteria or could actually rank firms based on qualification. It was decided that a combination of pass/fail and scores would be used with specific criteria to be set on a per project basis. The criteria and scoring for the Harrisburg Bridge project is illustrated in Figure 3-3.

| RFQ EVALUATION | MAXIMUM SCORE |
|---|---|
| Cover Sheet | Pass/Fail |
| Proposal Format/Length | Pass/Fail |
| Design/Build Project Team | 30 pts |
| Project Team Key Personnel | 70 pts |
| Design-Builder Information Form | Pass/Fail |
| Work History Form | Pass/Fail |
| Project Description Form | Pass/Fail |
| | |
| RFP EVALUATION | |
| Cover Sheet | Pass/Fail |
| Proposal Format | Pass/Fail |
| Project Understanding | 30 pts |
| Project Approach | 55 pts |
| Quality Control Plan | 10 pts |
| Safety Plan | 5 pts |

Figure 3-3, Harrisburg Scoring Criteria

Subjectivity in evaluating proposals is always an issue with the industry when using qualification based selection. With the RFQ, criteria were restricted to inquiring about work experiences of design-build teams related to specific project elements. This restriction makes qualifications criteria not radically different from pre-qualifications required under design-bid-build with the marked difference being experience of the design professionals with the project being solicited. Criteria for qualification carries a high level of objectivity with scoring weighted by number of years experience and number of projects undertaken.

In the proposal phase of selection, the prospective team addresses how the team and their experience will apply to the project at hand and present their technical solution to the project. Since the proposal contains more subjective elements, the evaluating team has a higher challenge in scoring proposals as objectively as possible to avoid protests. ODOT addresses this by placing effort in communicating proposal criteria elements as clearly as possible and holding a pre-proposal meeting with contractors to address any confusion.

A committee of voting members consisting of design engineers, project developers and managers, and the overall design-build program manager accomplishes the evaluation of the proposals. The committee also has a contracts manager who serves as a facilitator familiar with the evaluation procedures and is on the committee as a non-voting member.

For final contract award, a best overall value approach is utilized. This method combines the results of evaluation of the SOQ and proposal scores combined with the bid

price for the project. To combine the price and scores, ODOT adjusts the bid price by dividing the price bid by the total score (technical score or total score if qualifications are also advertised as award factors) to achieve the final score:

Final Score = Proposed Price / Total Score

**Identification/Mitigation of Risk**

The risk allocation subcommittee through their meetings identified over 100 risks associated with design-build contracting. The risks were identified, studied, and categorized. The committee's findings noted that the majority of risks were not any different from those associated with the traditional design-bid-build process. Many of the risks were assigned to be the responsibility of either ODOT or the contractor through the general specifications. However, a handful are, as of yet, still unresolved. These primarily focus on the issue of errors and omissions liability, insurance, and bonding and cannot be resolved under current statutes.

Errors and omissions liability presents a unique liability challenge in ODOT's design–build program. In traditional contracting, the contractor who builds the projects assumes liability for the project to be built per the given design. In public agencies, this is assured through a bonding process that guarantees to the owner that the project will meet the performance specified in the design and typically expires upon successful completion and acceptance of the project. The contractor is not liable for errors and omissions, which may surface in the design of the project and would typically request guidance from the owner (usually in a change order) on how to proceed.

However, in design-build, the contractor is also contractually responsible to provide the design as well as construction services. Under current state statutes, errors and omissions claims in design can be made for up to ten years (project tail coverage) after project completion leaving the contractor exposed for claims for a much longer period than with traditional contracting. Since in design-build the bonds issued are now guaranteeing the performance of the scope rather than completion of a given design, the contractor's bonding of the project would not necessarily expire after project completion. This can affect the contractor's bonding capacity and limit his acquisition of new bonds until some tail coverage commitments expire from past projects.

Of course the actual designer in the design-build team will be carrying the standard AE errors and omissions liability insurance, but owner or third party claims can't make a claim against that AE directly since their contract is with the team. Claims would have to be made through the contract links with first contact through the design-build team.

ODOT's desire in risk management was to retain risk as close as possible to their traditional design-bid-build process. With this philosophy, ODOT specified in the Harrisburg Bridge project for the design-build team to purchase errors and omissions insurance to cover design defects. It is unclear as of yet if this will release the tail coverage burden on the bonding companies since any holes in the insurance policy could let claims fall back on the surety. This liability issue is also being addressed by ODOT with the Legislative Task Force as statutory changes would have to be made possibly limiting the ten year tail coverage for errors and omissions.

While professional liability has received a great deal of attention with the agency, other risks were also considered and addressed. For example, permitting presents an array of challenges to the project. Designers may propose solutions that require permits by regulatory agencies in order to proceed. For example, with the Harrisburg Bridge, the contractor would be responsible for securing any permits outside the work area boundaries as designated by ODOT. ODOT agrees to secure and pay for permits when the regulatory agency requires the applicant to be the state.

**Project Selection Criteria**

During the stakeholders meetings, criteria were agreed upon for the type of project best suited for design-build contracting. Primary consideration is given to projects that have funding well defined, that have all rights-of-way and environmental issues resolved, and that are of appropriate size to attract contractors and encourage innovation. A project too well defined, or too small in scope, leaves little room for contractor innovation. This innovation opportunity is a main driver in the use of design-build contracting when cost savings are sought.

It should be noted that the first pilot projects were not selected as the best candidates for design-build, but rather, as well defined projects with low risk suitable for getting educated on the process of advertising and awarding a design-build contract. Once experience is gained in the advertising/evaluation process, later projects can be tested using the selection criteria.

**Project Development**

ODOT traditionally has taken the responsibility of gathering all site data, investigating right-of-ways and environmental concerns, and completing the design in-house. Using design-build presents a new way of doing business where the contractor will be responsible for design. Through the meetings, it was agreed ODOT would still develop the project up to site investigations and present the information to the contractor who will then proceed with the design.

The challenge with design-build is to appropriately define the project but still realize the staff savings by not designing the project. The ODOT project team has the primary responsibility of writing a professional scope of work with a degree of detail necessary to allow contractors to provide a professional proposal and accurate bid.

ODOT recognized the importance of the project description (scope) since this is the first source of project information for the prospective design-build teams. ODOT emphasizes this document in their design-build guidebook. The elements contained within the description will most likely be key elements in the RFQ/RFP criteria.

**Specification Changes**

Significant work was undertaken in capturing the information that related to all areas of design/build contracting and documenting them in the contract. Specific areas of responsibility, particularly in regards to risk, have been outlined in ODOT's general specifications (Part 100). Sections have been added regarding professional services as well. ODOT's consultant has drafted these changes in a generic specifications document which can be edited for specific project use.

## ALTERNATIVE METHODS

Section 2 of this report identified some alternative delivery methods suggested by the Florida Department of Transportation (8). ODOT has also employed many of the methods presented. With the addition of design-build to their contracting tool bag, ODOT now has a complete array of tools with which to undertake projects. The challenge is selecting the right tool for the right job. Faced with this, ODOT studied the benefits of each method and how it would best apply to certain project circumstances. The result is a matrix of delivery methods located in their design-build guide and also illustrated in Figure 3-4 (9).

| | | Complete Project Delivery | | | | Construction Only | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Project Risk | Weighing Factor | Design/Bid/Build | Design/Bid/build Consultant Contract | Bridging | Design/Build | Liquidated Savings | Lane Rental | No Excuses Bonus | Incentive/Disincentive | Cost Plus Time (A+B) |
| Limited Department resources available to deliver project | | N | Y | Y | Y | | | | | |
| Project delivery time constrained | | N | N | Y | Y | Y | | Y | Y | Y |
| Likelihood of Department changes | | Y | Y | Y | N | Y | N | N | Y | Y |
| Project staging sensitive | | N | N | Y | Y | N | Y | Y | | |
| Traffic impediments undesirable | | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Project definition requires significant development | | Y | Y | Y | N | | | | | |
| Railroad involvement | | Y | Y | Y | N | | | | | |
| High probability of unknown site conditions | | Y | Y | N | N | | | | | |

Figure 3-4, ODOT Delivery Matrix

# 4

# EVALUATION STRATEGY AND PLAN

## INTRODUCTION

ODOT recognized the need for an independent evaluation of their design-build program and in early 1998, began discussions with Oregon State University to be the focal point of an on-going evaluation. Since pilot projects are just getting underway, the objective in this evaluation report is a study of ODOT's design-build program development to date. Once contracts are awarded, by law, evaluation will need to be conducted on each project to evaluate design-build's impacts on project cost, time, and quality (ORS 279.103).

This section describes the strategy and plan for evaluating the conceptual development of ODOT's design-build program. The next section of this report presents the feedback gained from this evaluation.

## STRATEGY

The strategy of this evaluation essentially consisted of four main parts. First, a study of design build contracting was undertaken to gain knowledge about the method. Once design-build knowledge was acquired, study of ODOT's specific application into the method was possible. The next step was to compare and contrast ODOT's program

against the design-build information studied earlier. Finally, with both knowledge of design-build contracting and ODOT's methods, discussions with industry could be undertaken and feedback acquired from ODOT's use of design-build.

The first step in the strategy was to gain general knowledge about design-build contracting. To accomplish this, a sweeping literature review was conducted on design-build with emphasis on design-build use in the public sector. Literature reviewed came from a variety of organizations including AIA, AGC, DBIA, and CII. Also included was literature published by ODOT's consultant, other state design-build programs, and other university evaluation programs. Much of the information reviewed provided the bulk of development for Section 2 of this report. The complete list of sources is available under Section 7, References.

Next, with a background on general design-build contracting, study of ODOT's program was undertaken. This was essentially accomplished in two steps of first, drawing from information gained in ODOT's Design-Build Guidebook (9) and then by discussing the program with ODOT personnel and their consultant. Discussions took place in various forums including scheduled meetings and informal drop in visits.

The knowledge gained by the first two steps of the strategy provided the basis for evaluating ODOT's program. Additional feedback was gained by contacting engineers and contractors also familiar with ODOT's program to gauge a level of acceptance with the program.

## PLAN

While the strategy outlines the overall objective of the evaluation program, the plan places specifics on how the evaluation was undertaken. The plan includes what issues were generally focused on and the type of questions used to solicit feedback. In addition, the plan also details the engineers and contractors contacted. As a wrap up, observation was also undertaken of ODOT's technical proposal evaluation process.

### Focus

To simplify the evaluation, decisions had to be made regarding the specific areas to focus on within ODOT's program. Through meetings with ODOT, it was decided evaluation would focus on 5 elements:

- Project Selection Process
- Project Development Process
- RFQ/RFP
- Risk
- Contract Specifications

Each of these elements with their associated issues was detailed in the last section. The evaluation took a look at each of these elements and formulated a basis for questions. Each element is listed below noting the basis each would be evaluated on:

| Element | Basis |
|---|---|
| • Project Selection | Opportunity for innovation |

| | |
|---|---|
| • Project Development | Detail of project description |
| • RFQ/RFP | Fair and understandable process |
| • Risk | Comparative level to traditional |
| • Specifications | Adequacy of issue coverage |

**Questions for interviews**

Through study of design-build, ODOT's program, and with the focus of the evaluation in mind, questions were drafted for interviews with ODOT personnel and contractors. ODOT reviewed these questions and provided feedback. It was also determined at this time that interview of ODOT personnel should not occur until after the solicitation phases of the two pilot projects is complete. This was decided based on the sensitivity of conducting fair and impartial evaluations of statements of qualifications and technical proposals. The complete list of the questions that was used is located at Appendix 1.

It should also be noted that the intent of the questions was to provide a basis and structure for the interviews with industry. The questions provoked thought and made the interviews more conversational ultimately deriving more information than that obtained by the direct answers to the questions by themselves.

**Interviews**

Telephone interviews were conducted with engineers and contractors who had expressed interest in the Harrisburg Bridge project but ultimately did not submit a statement of qualifications for consideration. Twenty-three firms, comprised of engineers

and general contractors, picked up solicitation packages for the Harrisburg Bridge project. Three firms ultimately submitted the Statement of Qualifications (SOQ) and ODOT short-listed all three to further submit technical proposals.

The list was further shortened, as one of the engineering firms was partnering with a general contractor submitting for the project. Since interviews were confined to non-proposers, this left a pool of 19 engineer and general contractor firms available for interviews. The total list of 19 firms is located at Appendix 2.

Contact was attempted with the 19 firms available for interviewing. Several of the firms picked up the package for informational purposes only and without real intentions of going for the project. They were not familiar with the provisions to provide a valid interview. Several other firms were simply unavailable to comment. In the end, successful contact and interviews were conducted with 8 of the firms, 3 being engineering firms. The list of successful contacts with the associated contact information is located at Appendix 3.

**Proposal Technical Evaluation Observation**

The final element of the evaluation plan included observing ODOT and it's personnel conducting the evaluation of the proposer's technical evaluations. ODOT members conducted their technical evaluations of each proposal independently and then met in a meeting to total up scores and to compare and defend their scoring among evaluators. The ODOT contracts manager invited several persons to observe the process in addition to inviting Oregon State University.

# 5

# EVALUATION FEEDBACK

## INTRODUCTION

This section presents the feedback obtained from industry on ODOT's design-build program. As mentioned under the plan, feedback was obtained from engineers and contractors who expressed interest in the Harrisburg Bridge project but ultimately did not submit a statement of qualifications. Out of the 19 non-submitting firms, 8 firms were available or were familiar enough with the program to give a useful interview.

The interviews were structured according to the interview plan and list of questions developed. For the most part, the five areas of project selection, development, RFP/RFQ, risk, and specifications were the focus. However, as expected, firms hardly narrowed their feedback to this structure. An array of comments was provided beyond these areas as well.

In addition to the interviews, feedback from firms was also provided by another independent report. ODOT has hired a consultant to work it's legislative issues. As a result, this consultant interviewed three of the above firms and provided results in another report (16).

The interviews also proved to provide feedback more in certain areas than others. By far, the areas attracting the most feedback from industry included the RFP/RFQ and risk factors. Each of these will be developed separately below. Project selection and development brought somewhat less feedback and these areas will be combined in this section. Also specific feedback on specifications was limited but will be handled in it's own paragraph below. Finally, the additional comments warranted inclusion of a paragraph to capture feedback to the overall program. In short, the feedback will be presented below in the following order:

1. General Program
2. RFP/RFQ
3. Risk
4. Project Selection/Development
5. Specifications

## GENERAL PROGRAM

Through study of ODOT's program and interviews with industry, surfaced concerning the general program in addition to the specific areas sought by the plan. These elements will be discussed here and can be categorized into three areas, stakeholders, competition, and the program's focus.

### Stakeholders

Through review of ODOT's program, it became evident ODOT put an exceptional effort forth in engaging stakeholders in the development of it's design-build

program. ODOT engaged stakeholders on several fronts including meetings, workshops and direct mailings to solicit input into the development of their program. Firms became familiar with the program through one of the avenues. This was confirmed by the interviews. Every engineer and contractor contacted stated they were aware that the agency was developing a design-build program.

ODOT's first method to engage industry was through their monthly stakeholder meetings. This forum allowed industry and the agency to communicate with each other concerning their interests in design-build. Results from the meetings produced input directly into ODOT's RFP/RFQ and project selection process. The firms interviewed in this report were not a part of this group and therefore did not directly feed input into ODOT's program.

However with the next forum, the workshops, interviewed firms indicated they did indeed participate. These forums had a much larger audience and were a good opportunity to get the word out on the agency's program. On the negative side, the size of the forums made it more difficult in providing feedback to ODOT.

Finally, ODOT enhances communication with industry by maintaining a mailing list of engineers and contractors and mails out agency information concerning it's programs. Firms indicated they became aware of the program first by mail and then learned more about it by attending one of the workshops.

Through the use of these forums, ODOT successfully communicated it's intent with industry and provided means for feedback. However, most feedback was limited to participants in the actual stakeholder meetings. The stakeholder meetings did provide valuable information into industry concerns in drafting an RFQ/RFP. This assessment of

industry is recommended by the DBIA prior to drafting the design-build documents and ODOT has instituted this as part of it's program (10).

**Competition**

The interviewed firms were consistent on their views on how the design-build method would impact competition. The overall consensus was use of the program, specifically qualification based selection, would limit competition. Views were primarily based on difficulty in forming a qualified team, and having the capacity to deal with the liability and extra costs involved. The firms interviewed included medium to small general contracting firms.

Putting together a qualified team that would meet the criteria outlined in the RFQ can prove difficult for a smaller GC firm. These smaller firms, who may be completely qualified to undertake construction of the type proposed, may not have relationships in place with engineering firms meeting the qualifications set forth in the RFQ. This was expressly stated by one of the interviewed firms. The firm stated the Harrisburg Bridge is a project typically accomplished by them and has contracted with ODOT in the past on similar work. However, the firm did not submit because they felt they would be unable to partner with a design firm that would have qualified under the RFQ. The qualified designers are teaming up and forming relationships with the bigger GC's having the financial resources necessary to take on design-build.

The financial resources of the contractor is another issue that may be possibly limiting competition. Using the design-build method requires the GC to take on additional financial commitments to secure the work. Some of the commitments include

the cost of proposal preparation and additional required insurance. These elements will be discussed more fully under the RFP/RFQ section and risk. The point here is smaller GCs with more limited resources may simply not go after design-build work due to the increased financial commitment and risk of not getting the job.

**Program Focus**

Interviewed firms indicated they were not 100% clear of why ODOT was developing design-build as a delivery method. Many believe it's primarily legislative driven while others offer it might be to simply deliver projects faster. The DBIA guide recommends development of a strategic plan to document the program's goals and objectives (10). A plan such as this may provide a clear focus on the program and may be a good way to get the word out to the industry.

A key question offered by the firms concerns the stability of the market. Simply put, will there be a constant supply of design-build projects put out by the agency to justify the effort in putting together the long-term design-build relationships necessary between GCs and designers? Projects that are put out infrequently force GCs to put together a one-time team to go after the work and these type of arrangements may not support the benefits gained with design-build (1).

**RFP/RFQ PROCESS**

This area attracted extensive feedback from the interviewed firms and extensive literature exists devoted to the subject. Feedback can be categorized into three areas,

ODOT's RFQ/RFP requirements, subjectivity and favoritism, and the agency's selection and evaluation process.

**RFQ/RFP Requirements and Understanding**

Interviewed firms responded that the requirements set forth in the RFQ and RFP were generally clear and understandable. While the qualifications phase has the potential to significantly limit firms who submit proposals, the interviewed firms understood and concurred with guidelines set by the AIA/AGC and DBIA. It's in the best interest of the industry to limit proposals due to the time and cost effort involved (6) (7).

Limiting the number of proposals also limits the number of non-selected firms. A non-selected firm suffers the cost of preparing a proposal without gaining the profits to be incurred with the project. Stipends should be considered by the agency for non-selected proposers. Inclusion of a stipend indicates the agency's commitment to receiving quality proposals from offerors and encourages smaller teams to compete (7) (11). Several of the interviewed firms (smaller firms) indicated inclusion of a stipend would have made the Harrisburg Bridge much more attractive to compete for. Of course, in deciding award of stipends, estimates must be made on the level of effort involved in preparing proposals. Two interviewed firms also indicated the Harrisburg Bridge wouldn't require a complex proposal and that a stipend wasn't necessary.

**Subjectivity and Favoritism**

The RFQ/RFP two step selection process also drew plenty of concern from interviewed members on perceptions of favoritism and subjectivity. In terms of

objectivity, the RFQ was clearly the standout in comparison to the RFP. Firms commented that the RFP criteria was a bit more illusive and subject to different interpretations by different people. The challenge of dealing with the perception of favoritism is common throughout RFP processes among public agencies (11,12).

The challenge is further complicated because the degree of objectivity and subjectivity has a dual sided nature. Criteria that is 100% objective does not provide the solution to favoritism perceptions. Two interviewed firms in particular noted that they believe if the criteria is 100% objective, that certain firms have been pre-selected for the project. It seems the degree of objectivity and subjectivity only provides a limited solution to perceptions of favoritism.

DBIA recommends that when selection processes are used consistently across the industry and the methods well communicated, favoritism perceptions are diminished (7). ODOT engages this philosophy by using a standard method of selection recognized by national organizations. Since firms still express uncertainties about the process, a continual communication effort by ODOT with industry may prove beneficial particularly in regards to which people will be responsible for making the selection and how the selection will be made.

**Evaluation and Selection Process**

The actual evaluation and selection process deserves separate attention since OSU observed this process directly. Obviously, evaluation in this area is limited to OSU's observations since interviewed firms did not observe this process. ODOT utilized their contracts manager as a non-voting member in the committee to guide and facilitate the

evaluation and selection process. Observations confirm that ODOT engaged the process in a fair manner and clearly communicated the importance of fairness and objectivity to all selection committee members. The contracts manager (facilitator) put out ground rules and agenda prior to convening the selection committee.

Since this was the first selection committee for some of the members, naturally learning was exhibited while the process was on-going. At one point, a committee member commented on a previous working experience with one of the proposing firms and the facilitator was responsive in pointing out the experience mentioned was not in the criteria proposed. The facilitator was effective in keeping the committee focused on the RFP criteria and was able to dissuade interfering comments not relevant to the criteria.

The committee also documented the proceedings particularly when individual scorers made adjustments in proposal scores. When scoring was complete, results were tallied and where large differences in scores existed, discussion focused on identifying why a range was large. After discussions, scorers would announce if they intended on changing their scores in light of the discussion.

Several practices are noted in literature on the correct way to conduct a selection committee. AIA/AGC recommends use of outside observers to bring fresh perspectives to and encourage fair conduct of the committee (6). ODOT carried through on this recommendation by inviting OSU. Next, masking out the names of offerors on their proposals helps alleviate any firm bias entering the selection process. Masking names can prove difficult since firms use a variety of logos and stamps throughout their proposal. Firms must be instructed in the RFP to present the proposals in a standardized way where the name of the firm can be easily and efficiently masked out. Finally, DBIA

recommends use of an independent selection chair to guide the selection committee. While whether to use this method will be also be determined by the specific project, it's benefits in ensuring a fair process are evident (10).

Finally, the OSU evaluator has participated in selection committees where two techniques may be of interest to ODOT in conducting their selection committees. First, a leveling exercise helps reduce the range of scores among evaluators. It entails the committee scoring a past proposal, with similar criteria, together as a group to "level" the understanding of the criteria. This is particularly helpful for inexperienced committee members. The current proposals to be scored would be scored independently after the leveling exercise and this helps members understand the criteria better and how scores should be assigned. Secondly, this type of evaluation is particularly suited to the Delphi Technique to obtain consensus on scoring. While ODOT discussed disparities in scores among members, scorers also indicated what they would change their scores to after discussion. The Delphi Technique proves to be a more accurate method of obtaining the "right" consensus. First, like ODOT's method, members score the elements separately, and then meet and compare where differences are evident. Differences are discussed, but mention of new scores is not. Again, members go and re-score elements again and again meet to compare differences. The method generally shows accurate consensus of scores within four iterations. The technique is frequently applied in committee performance evaluations.

**RISK**

The second area generating much comment from the interviewed firms centered around the risk surrounding the design-build method and it's use on the Harrisburg Bridge. Primarily, the concern here focused on where the responsibilities rested with the agency and the design-build team, the required insurance necessary for the project, and the permitting process.

The main concern with risk applied to where the lines of responsibility are drawn. While the specifications clearly delineate typical risks associated with the design-build method, several firms were specifically concerned about a more illusive element, namely the unknown pre-existing conditions of the Harrisburg Bridge. The project description stated that the design-build contractor would be responsible for repair or replacement of any deteriorated structural members found once the bridge decking was removed. Very limited investigation was accomplished on the bridge to make an accurate estimate on the amount of structural deck support members requiring replacement. The project description quantified it to the extent that "limited rehabilitation, repair, and replacement of members is expected". This placed design-build teams in a risky situation. The interpretation of how much "limited" is and what would be expected as part of the team's design or be qualified as a changed site condition proved to be a major issue with firms on their decision to go after the project or not. As one firm pointed out, it's not clear where the state falls in guaranteeing the structure of the bridge and it's deck support members. Some firms felt in order to submit an accurate proposal, they should undertake their own investigations into the structural condition of the bridge. This type of

investigation drives the team's cost of submitting a proposal up which is a concern since there are no assurances they will even receive the job.

The second area concerning risk centered around the professional liability insurance required by the contract documents. None of the interviewed firms had any problem with this requirement and in fact expected it as it is consistent with the trend seen in public sector design-build contracting. The firms did note they thought the cost of obtaining the insurance was expensive but also indicated that it is a cost they would pass on as part of the bid price amount. The firms interviewed did not see any problems obtaining such insurance as insurance companies are generally making the insurance more accessible to general contractors (13) (14).

The only comment made on potential problems with the errors and omissions insurance concerned gaps in coverage. Since design-build is a relatively new method being employed by public agencies, the newly available insurance policies covering design-build team professional liability are also new. Through passage of time, claims may arise which may illustrate a gap in available coverage. This gap in coverage may keep a bonding company on the hook during the tail coverage period, which all stakeholders agree is an unfavorable situation. Even with the insurance, the contractors support legislative action to reduce the time required for design liability tail coverage.

The final element of risk centered on the permitting process. ODOT's program takes the position that the agency will be responsible for all permits it deems necessary to accomplish the work as according to it's "default concept". If work is proposed that doesn't fit this concept, the contractor is required to secure the permits. One contractor expressly stated he would have preferred if ODOT had secured an environmental permit

for work over the river. Even though work would not be required in the river, working above on the bridge still has the potential for some impact, even if slight, due to demolition debris. Again, the firms shied away since the possibility exists that some type of permitting may be required after work begins, and it isn't totally clear if ODOT or the team will have the responsibility of securing it.

## PROJECT SELECTION/DEVELOPMENT

ODOT has openly stated that selection of the Harrisburg Bridge was based on it being a familiar project with lower risks involved and was used more to test and learn the process of soliciting and awarding a design-build project than to be an ideal design-build project. The interviewed firms agreed it wasn't an ideal project and unanimously cited the reason as the size of the project, and to a lesser degree, the opportunity for innovation.

In terms of size, the firms agreed the Harrisburg Project was to small a project for design-build. The main reason concerns the risk to benefit ratio. With the risks involved with the method, the firms felt they would have required a higher profit opportunity, which due to the dollar amount of the project didn't afford this opportunity. One firm expressly stated that design-build projects are not worth it until they are on the order of $10 million and up.

To a lesser degree, firms also stated that the Harrisburg Bridge presented little opportunity for innovation. Since the project is a bridge deck replacement, fairly typical solutions would be expected and the work was fairly simple and non-complex. The consensus was the biggest opportunity for innovation with Harrisburg Bridge was to test options with the traffic staging problem. The firms stated not surprisingly that they

believe new construction provides much higher innovation opportunity than maintenance and repair projects. Interestingly, one firm believed that the staging problem was overly complex for utilizing the design-build method. The basis of this belief centers on the discussion regarding appropriate design-build projects located at section 2 of this report. As stated there, some believe design-build projects should be simple to scope and require fairly simplified designs such as site adaptations of food chains, etc.

In summary, ODOT has been shown to be quite aware of the issues involved in picking the right project for design-build. Selection of their pilot projects was based on a somewhat different motivation in order to provide a low risk way to test their method. The State of Washington applied a similar approach with their design-build pilot program (15).

## SPECIFICATIONS

Interviewed firms did not provide much feedback in terms of the specifications. They felt issues in specifications surface through execution of the project being much more apparent than that which would surface from spec review. Also since these firms ultimately did not submit a qualifications statement, they did not review the specs in detail.

Even without feedback from the firms on the specs, the emphasis that ODOT placed on drafting quality specifications for design-build contracting is evident. Many of the changes to their Part 100 General Specifications were a result of feedback from stakeholder and risk allocation subcommittee groups.

In addition, ODOT made the changes readily apparent. When the RFQ packages went out, a draft RFP (which includes the Part 100 specs) was also attached. Changes as a result of design-build contracting were underlined in the specs and readily apparent. The biggest changes included adding sections for standards of professional services and responsibilities of the department and the design-build team.

# 6

# CONCLUSIONS AND RECOMMENDATIONS

## INTRODUCTION

This section presents some overall comments and conclusions regarding ODOT's design-build program. The conclusions presented here are a summary of the material presented in the feedback section of this report. This section will also summarize the challenges ODOT will continually face with their program. While the Harrisburg Bridge project provided a great deal of insight into ODOT's program, opportunities for further evaluation still exist. This section concludes with a presentation of these opportunities.

## OVERALL CONCLUSIONS

ODOT has taken a conscientious approach in developing it's design-build program. It's evident that significant study was undertaken into the appropriate ways of using the method and on how to solicit and select design-build teams. Several key elements give all indications that ODOT's program will succeed. First, ODOT has done an outstanding job bringing the industry on board prior to launching their program. Secondly, their program has been developed in a clear, standardized format. Lastly, all

observations have witnessed that ODOT is committed to the fairness and success of the program. Each of these elements will be expanded below.

**Communication**

Their communication with industry deserves special note. Contractors and engineers in industry unanimously state they are familiar with ODOT's program and their intention to use the method. Some construction firms have even taken an active role in the program's development. ODOT's stakeholder meetings and workshops were the key to success in this area.

**Standardized Program**

Standardization surfaces as another key element giving all indication ODOT's program will succeed. ODOT developed their program consistent with recommendations provided by nationally accepted organizations. In addition, they also drew information from other state transportation agencies to specifically address design-build with transportation projects. The result is a standardized program which helps design-build teams get educated on the process and alleviates the confusion which happens as a result of unique contracting processes.

**Commitment**

ODOT is committed in making their program succeed and ensuring their processes are fair and safe from protest. Probably the best indicator of this is their selection of OSU to provide independent evaluation and observations of their program.

While statutes mandate project cost evaluations, the evaluation undertaken by OSU was optional, a testament to ODOT's commitment.

Personal observations of ODOT's selection evaluation committee also showed ODOT's commitment to fairness. The committee was facilitated to ensure fairness and all members displayed integrity while undergoing the scoring process.

## CHALLENGES

The launch of any program always brings an array of challenges. The concerns with industry here are common in public agencies throughout the United States. Issues concerning competition and favoritism in the technical proposal evaluation process must always be watched. In ODOT's case, their guidebook illustrates they are aware of all concerns and are continually addressing them. In fact, it's doubtful any element in this report will come as a surprise to the department. Every issue discussed here has also been addressed by ODOT and it's consultant and work continues to ensure the elements of the program employ the latest philosophy of the industry.

From the industry side, contractors and engineers seem receptive to the idea of ODOT engaging in design-build contracting. They do however, indicate the importance of maintaining a market of projects capable of sustaining design-build team relationships. It seems the industry could benefit from more communication regarding ODOT's intended uses for the program and the expected market of design-build projects.

## OPPORTUNITIES FOR FURTHER EVALUATION

As mentioned, this report focused on industry feedback from the Harrisburg Bridge project. Even though Evans Creek provides another opportunity to interview some additional firms, the comments received would be expected to be fairly typical. However, ODOT personnel have not, as of yet, been formally contacted concerning the method. Of particular interest here will be the project manager and developer's feedback after using the method for the first time. Also, evaluations are required for comparing cost of the method to the estimated costs in using a traditional contracting system. It seems evident that two further evaluations are recommended:

- ODOT feedback for the overall program
- Evaluations on Cost, Schedule, and Quality Impacts of the Method

As stated earlier, feedback from ODOT was not obtained with this report. ODOT's preference was to conduct ODOT interviews after the solicitation and selection process is complete. This is expected to be complete by the end of the year (1998). It's recommended that the focus be on ODOT project managers and developers. They will provide valuable information on the actual workings of the program in action.

Evaluation should also be accomplished concerning the cost, schedule, and quality impacts of the method. The cost evaluation is required by the exemption process, but valuable information can also be derived from the schedule and quality impacts. The ideal situation would be to have a pool of projects to evaluate where statistical analysis can be run and actual results quantified on cost and schedule impacts. Also, such a pool

would provide a good picture on the more subjective nature of quality impact. It would be interesting to compare the perceptions of quality from the different players, including the design-build team, and ODOT personnel.

# 7

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# Appendix 1

## INTERVIEW QUESTIONS

**RFQ/RFP:**

- Do you understand the qualification and proposal criteria and the basis for award?
- Do you perceive the qualification and proposal criteria evaluation and selection as fair?
- Should you be paid for your effort in preparing a proposal?
- Were you award ODOT was developing a design/build program prior to advertisement?
- What was your level of input toward development of the RFQ/RFP?

**Project Development Guidelines**

- Does the project description give sufficient detail to prepare an accurate proposal?
- Is the department successful in communicating project requirements without providing a detailed design?
- Did you have input into ODOT's project development guidelines?

**Project Selection Process**

- Do selected projects provide sufficient opportunity for innovation and value engineering? If not, what features were less than ideal?

**Specifications**

- Are the added responsibilities for design/build adequately covered in the specifications.
- Did you have opportunity to review specifications as part of ODOT's development process?

**Risk**

- How would you describe your level of risk as compared to traditional contracting?
- Does the current situation restrict subcontracting of designers?
- What risks dissuade your firm for submitting qualifications for the project?

# Appendix 2

## NON-SUBMITTING ENGINEERS AND CONTRACTORS

| ID # | Firm |
|---|---|
| 1 | W & H Pacific |
| 2 | HNTB |
| 3 | OBEC Consulting Engineers |
| 4 | James W. Fowler |
| 5 | Concrete Enterprises |
| 6 | Anderson-Perry & Assoc |
| 7 | Abne &Svoboda Inc |
| 8 | FE Ward Inc |
| 9 | Mowat Construction |
| 10 | Pacific Coast Construction |
| 11 | Morse Bros Prestress |
| 12 | Donald W. Thompson |
| 13 | Penhall Company |
| 14 | K-2 Construction |
| 15 | Golder Associates |
| 16 | Boggs Cardspa Associates |
| 17 | Fair Contracting Foundation |
| 18 | RB Johnson Co |
| 19 | Sargent Engineers |

# Appendix 3

## INTERVIEWED ENGINEERS AND CONTRACTORS

| ID # | Firm | Type | Ph # | Contact |
|---|---|---|---|---|
| 1 | HNTB | Eng | 425-455-3555 | Jerry Dorn |
| 2 | James W. Fowler | GC | 503-623-5373 | Mark Bethel |
| 3 | Anderson-Perry | Eng | 541-963-8309 | Steve Anderson |
| 4 | FE Ward, Inc | GC | 360-573-8929 | Dave Mingo |
| 5 | Mowat Const | GC | 360-693-1178 | Bill Ott |
| 6 | Donald W. Thompson | GC | 541-756-7511 | Donald Thompson |
| 7 | K2 Construction | GC | 503-775-4606 | Gene Kozowski |
| 8 | Sargent Engineers | Eng | 360-943-3590 | Monte Smith |