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RECOMMENDED AASHTO DESIGN-BUILD PROCUREMENT GUIDE

FINAL REPORT

Prepared for
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Table of Contents

List of Figures and Tables

Figures

Tables

Chapter 1: Introduction

1.1 Guide overview

This Design-Build Procurement Guide (Guide) is intended to assist state highway agencies in the design-build procurement process including the preparation of requests for qualifications and requests for proposals and the selection of the successful proposer. Design-build procedures are rapidly evolving concurrently within individual states and significant experience is concentrated in only a few agencies. As of January 2003, more than 30 states had used or were considering the use of design-build project delivery on federal aid highway construction projects. However, significant experience is concentrated in only a few states. Only three of these states, Florida, Ohio, and Pennsylvania, had experience with more than 50 projects. Conversely, 17 states have experience with less than five projects as shown in Figure 1.[1] Although comprehensive federal design-build contracting regulations do exist, there is no single document to provide guidance regarding basic procurement procedures and contractual issues inherent in a process that includes both design and construction services with a single source.

The AASHTO Joint Task Force on Design-Build commissioned an NCHRP research project to develop this Guide.[2] The Guide includes guidelines for design-build procurement, along with sample RFQ and RFP documents. The contents of this Guide are based upon *best practices* from experienced state highway agencies and other public sector agencies. The Guide is intended to be *flexible* for varying project types, sizes, and procurement requirements. Finally, the Guide promotes a common design-build *"vocabulary"* for better dissemination of lessons learned and incorporation of continuous improvement.

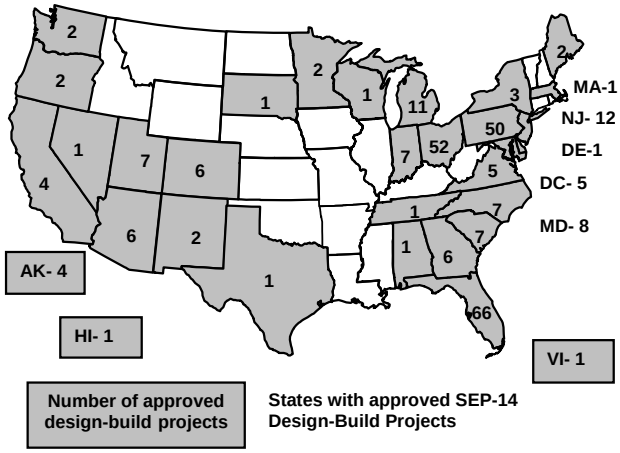

Figure 1.1: Approved SEP 14 Design-Build Projects as of January 2003[3]

It is important to note that this Guide is not intended to be a procedures manual. While a procedures manual provides a step-by-step detailed description of a process, this Guide supplies an overarching description of the strategies and methods for successful design-build implementation. Each State has its own laws and regulations that cause significant differences among agencies in executing design-build. Therefore, the Guide is written more generically for broad application, but it also offers concise examples of agency practices to assist with process implementation. The Guide is also written with a focus on those highway agencies that have less

[1] FHWA (2004). Design-Build Project Approvals under SEP-14, http://www.fhwa.dot.gov/programadmin/contracts/sep14a.htm, January, 2004.
[2] National Cooperative Highway Research Program, Project 20-07/Task 172, FY 2004, "Recommended AASHTO Design-Build Procurement Guide."
[3] FHWA (2004).

experience. However, the Guide does provide advanced details on selected critical topics so it can be a valuable supplement to experienced readers as well.

Figure 1.2 provides an overview of the Guide's approach to writing a successful design-build Request for Proposal (RFP) and forms the basis for the Guide. While the four step approach of defining project goals, allocating risk, planning the evaluation, and writing the contract documents may seem overly simple, these four elements, and the order in which they are performed, are critical to project success. Highway agencies must not overlook or improperly communicate these critical concepts when creating design-build procurement. Following these four steps will 1) align the agency's team while writing the procurement and contract document, 2) align the design-builder's team with the end customer needs when proposing on and performing the work, and 3) provide the most efficient use of both agency and design-builder resources.

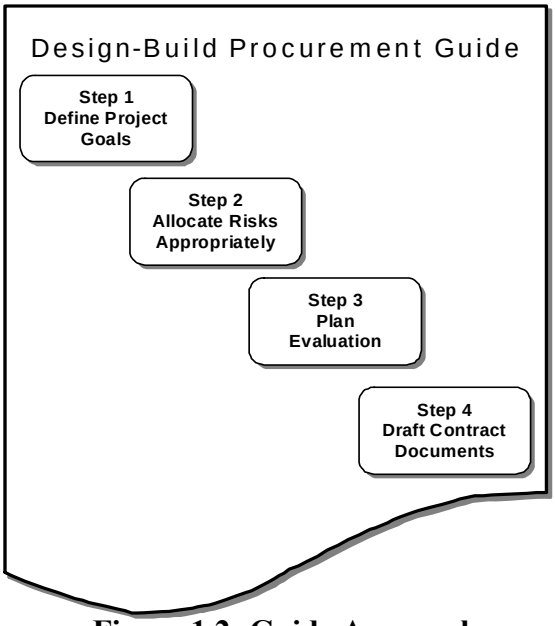

Figure 1.2: Guide Approach

The Guide is intended to be used as a reference when developing design-build project Requests for Qualifications (RFQ) and RFPs. It is also intended as a reference for developing agency design-build manuals or establishing design-build policy. Chapters 1, 2 and 3 will be helpful for all agency team members as an introduction to design-build. Chapters 4, 5, 6 and the Appendices will be most helpful for those team members developing the design-build contract.

1.2 Definitions of critical design-build concepts and terms

Design-build is a new way of doing business. Highway agencies need a common vocabulary and framework for sharing best practices and lessons learned. The following definitions have been incorporated from various design-build procurement guidelines and contract documents.[3] These terms are used throughout this guide

Advertisement. Public announcement requesting statements of qualifications or design-build proposals for specified work or materials.

Agency. The State Highway or Transportation Department, Commission, or other organization, constituted under State or Commonwealth laws, that administers highway or transportation work.

[3] Arizona Department of Transportation. "Design-build procurement & administration policy." 1997 ed.
Florida Department of Transportation. "Design-build guidelines." 2004 ed.
Kansas Department of Transportation. "Design-build policy guide." Undated draft ed.
Montana Department of Transportation. "Design-build Guidelines." 2004 ed.
Washington Department of Transportation. "Design-build Process for highway projects." 1999 ed.

Award. Agency acceptance of proposal.

Best-Value. a procurement process where price and other key factors are considered in the evaluation and selection process.

Design and Construction Criteria Package. The design and construction requirements that clearly define the criteria essential to ensure that the project is designed and constructed to meet the needs determined by the Agency. This package is part of the Request for Proposal.

Design-Bid-Build. The traditional project delivery method for building highways and making highway improvements where the Agency (or a consulting engineer working for the Department) designs the project, solicits bids, and awards the construction contract to the lowest responsive bidder (construction contractor) to build the project.

Design-Build. Combining the design and construction phases of project delivery of a project into a single contract.

Design-Builder. Individual or legal entity contracting with the Agency to perform the work included in the design-build contract.

Notice to Proceed (NTP). Written notice to the design-builder to begin work. Notice includes contract time starting date.

Project. The specific section of the highway or property where design and construction is to be performed.

Proposal. A proposers's written offer to perform the stated work at the quoted prices. The proposal includes both technical and price components. In the case of a best-value procurement, the proposal will contain separate sealed price proposal.

Proposer. The individual or legal entity submitting a proposal to the Agency to perform the advertised work.

Request for Proposal (RFP). Advertisement requesting proposals for work in accordance with the requirements outlined in the design-build criteria package.

Request for Qualifications (RFQ). Advertisement requesting statements of qualifications. It contains at least the desired minimum qualifications of the design-builder, a scope of work statement, and general project requirements.

Statement of Qualification (SOQ). The written information prepared and submitted by an proposer in response to an RFP.

Responsive Proposal. A proposal meeting all requirements of the RFP.

Stipend. The fee paid to unsuccessful firms for development of a responsive proposal.

Subcontractor. Individual or legal entity to which a design-builder sublets part of the work.

Work. Furnishing all resources necessary to complete the design and construction of the project. Work includes and is the result of performing or furnishing design professional services and construction required by the contract.

1.3 Relationship to AASHTO references

Since agency design-build programs have developed independently, RFQs, RFPs and design-build contract documents have evolved in significantly different forms. Some states, like Pennsylvania, New Jersey, and Ohio have taken the approach of designing design-build contract documents that follow very similar formats to their traditional design-bid-build contracts, and these states often complete a large amount of design in the design-build criteria package. More recently, other states such as Minnesota and Colorado have developed unique design-build contract documents which vary significantly from the traditional design-bid-build documents based on the *AASHTO Guide Specifications for Highway Construction*.

This Guide is intended to coordinate with the general organizational format and broad-based national references used in the *AASHTO Guide Specifications for Highway Construction.* The time and effort required to develop RFQ and RFP documents for design-build transportation projects is significant, even for projects in the $10 to $100 million range. For traditional projects, AASHTO and FHWA provide global guidance to member agencies. This Guide encourages the use of a "stand-alone" General Conditions for design-build contracts and provides examples that support this approach. The approach is intended to expedite the development process and promote a consistency. While this is not the approach of all states, it will provide the best continuity with the *AASHTO Guide Specifications for Highway Construction*. Even if agencies wish to develop their own revisions to the Standard Specification terms and conditions, the Guide approach will still provide appropriate guidance.

Chapter 2: Understanding Design-Build

Design-build is an alternative project delivery method that combines both project design and construction under one contract. One firm, or team, contracts to complete a project in its entirety.

Traditionally, highway agencies define the scope and requirements of a construction project by fully completing design documents (within the agency or with the assistance of design consultants) and then procuring construction contractors to build the project though a low bid process. In design-build project delivery, agencies define the project scope and requirements through initial design documentation and then procure both the final design and construction through an evaluation of technical proposals and/or price. Design-build projects can vary significantly in the amount of design included in the RFP, risks allocated to the design-builder, and procurement methods, but the key element in each project is a single source of responsibility for the agency through one contract for both design and construction.

Figure 2.1 presents a comparison of the design-bid-build and design-build methods of delivery by depicting the primary roles and responsibilities of the agency and the contractor/design-builder. Figure 2.1 also depicts the basis of the contracts for each delivery method.

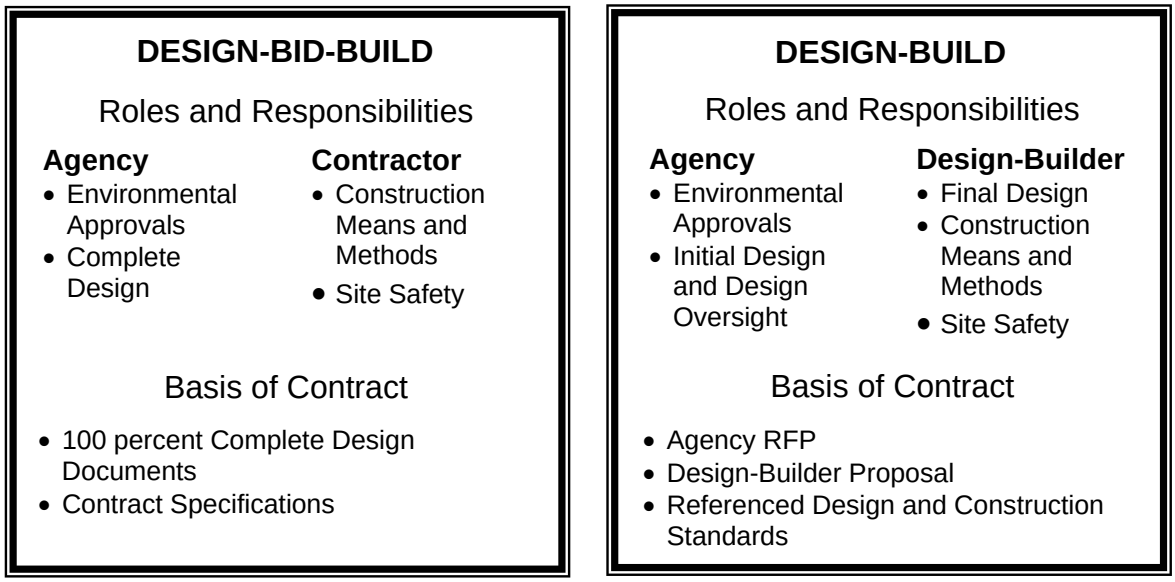

Figure 2.1: Comparison of Responsibilities and Contracts

As seen in Figure 2.1, the roles and responsibilities are significantly different for design-bid-build and design-build delivery. The agency delegates responsibilities for final design to the design-builder and assumes a design oversight role during the final design development. The agency may also choose to delegate certain aspects of quality control and/or quality assurance, third party coordination, and construction oversight, but they must carefully consider the possible risks and associated costs of allocating these aspects of the project. In the same manner, the design-builder assumes responsibility for the final design and also the responsibility for the coordination of construction with this design. This relationship significantly changes the basis of

the contract between the agency and the entity performing construction. No longer are 100 percent complete plans and specifications the technical basis of the construction contract. In design-build, the agency RFP and the design-builder proposal are the technical basis for the contract. The 100 percent complete plans and specifications become a deliverable of the contract – they are no longer the basis of the contract.

This chapter of the Guide presents critical benefits and cautions surrounding design-build so that agencies can make intelligent decisions about when to use this alternative method of delivery. The chapter also provides information for agencies to use when preparing a justification for using design-build to the project stakeholders. To aid in this discussion, a generic design-build process model is presented and forms the basis of the remainder of the Guide. The chapter concludes with a brief discussion of developing a design-build program versus a one-time design-build project.

2.1 Justification for design-build

Design-build use has been steadily increasing in the public building sector since the early 1980s, but it has only been gaining acceptance on transportation projects since the mid 1990s. Currently, design-build is in use on a wide variety of highway projects, from bridges to automated traffic management systems and from new freeways to reconstruction of decaying roads. The Utah I-15 reconstruction, the Transportation Corridor Agencies projects in California, the Transportation Expansion Project (TREX) in Colorado, and numerous other design-build mega projects have captured the attention of the transportation community. Although smaller design-build projects have not gained the notoriety of the mega projects, the Federal Highway Administration (FHWA) has approved design-build on over 200 smaller projects since 1988 under Special Experimental Project No. 14. With the FHWA Design-Build Contracting: Final Rule going into effect in January of 2003,[4] design-build has become a legitimate highway project delivery alternative.

Design-build is growing in the public sector for a number of reasons. Highway agencies are struggling to meet the growing needs of the traveling public, often with inadequate public funds and insufficient staff. While traditional design-bid-build delivery produces a transparent set of checks and balances between design integrity and construction cost, it also results in slow product delivery and often in adversarial relationships. Agencies are in need of alternative project delivery methods to meet schedule, cost, and quality constraints and also to select the best firms who can provide innovative solutions to meet these constraints. Agencies are finding that design-build is beneficial in meeting many of these challenges. Benefits and risks surrounding schedule, cost, quality, and innovation are discussed below.

2.1.1 Schedule

Shorter Durations – Design-build delivery yields shorter schedules due to the overlapping of design and construction activities. As seen in Figure 2.2, design-bid-build project delivery is very linear while design-build allows for concurrent activities yielding shorter overall schedules.

[4]Department of Transportation, Federal Highway Administration, 23 CFR Parts 627, et al., Design-Build Contracting; Final Rule. Federal Register, Vol. 67, No. 237, December 10, 2002.

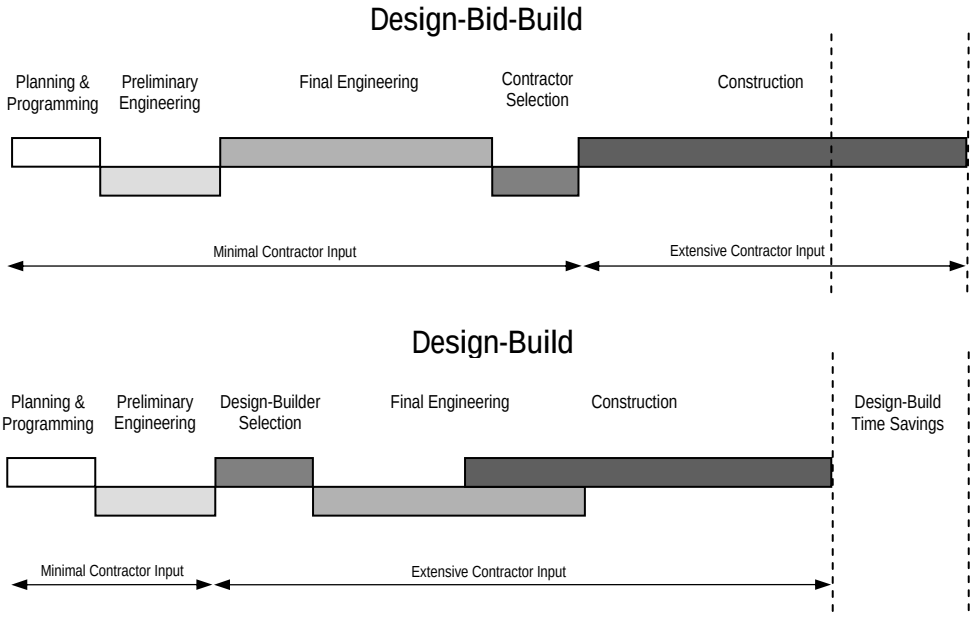

Figure 2.2: Sequence of Project Activities by Contact Approach

Procurement, engineering, and construction sequences can vary substantially, but Figure 2.2 represents a typical process for both design-build and design-bid-build. Given this generic example, design-build clearly provides for faster overall project delivery. This theoretical time savings has been confirmed by numerous studies in both the highway and building sectors.

- An unpublished study of SEP 14 design-build projects found an average 14 percent time savings on 61 design-build projects when compare to design-bid-build schedule estimates.[5]
- A study by Warne and Associates found that 76 percent of the 21 design-build projects studied were completed ahead of the schedule established by the owner and 100 percent of the projects were finished faster than if design-bid-build were used.[6]
- A report by the University of Florida for the Florida DOT's found a 37 percent time savings on FDOT's first 11 design-build demonstration projects when compared to design-bid-build.[7]
- The Construction Industry Institute (CII) and Penn State University found a 33 percent project delivery time savings and a 12 percent construction time savings for design-build

[5] University of Colorado (2005). Unpublished study of SEP 14 design-build projects http://consruction.colorado.edu/design-build, June 2005.
[6] Warne, Tom (2005). Design-Build Contracting for Highway Projects – A Performance Assessment. Tom Warne and Associates, LLC.
[7] Ellis, R.D., Z. Herbsman, and Kumar, A. (1991). "Evaluation of the FDOT Design/Build Program," Final Report, No. 99700-7435-010, *Submitted to the Florida Department of Transportation*, Department of Civil Engineering, University of Florida, Gainesville, Florida.

vs. design-bid-build projects on the 351 design-build, design-bid-build, and construction management at risk projects studied in the building sector.[8]

- The University of Reading in the UK found a 30 percent project delivery time savings and a 13 percent construction time savings for design-build vs. design-bid-build projects on the 330 design-build and design-bid-build projects studied in the building sector by the.[9]

Earlier Schedule Certainty – In addition to faster completion, design-build project delivery yields earlier schedule certainty than traditional methods due to the fact the construction contract is procured earlier in the project development process. As seen Figure 2.2, the design-builder is awarded the project well before final engineering is complete and they fix a final construction schedule early at that point. Knowing the final construction completion date earlier has numerous advantages for the agency and the traveling public for maintaining traffic flow.

Additionally, design-build has been shown to yield less schedule growth when compared to traditional projects. Table 2.1 is from an unpublished study of SEP 14 design-build projects[10] and shows less schedule growth during both the overall project delivery and during the construction phase.

Table 2.1: Schedule Growth by Contract Type

	Design-Build	**Design-Bid-Build**
Construction Phase	-1.2%	+11.6%
Overall Project Delivery	-4.2%	+4.8%

Source: University of Colorado comparison of SEP design-build projects of 11 pairs of similar design-build and design-bid-build projects.

2.1.2 Cost

Initial Cost – Evidence of initial cost savings due to design-build delivery is not as clear the scheduling savings described above, but there is evidence of lower initial costs. Making accurate estimates of cost before bidding on design-bid-build projects is difficult even when the design is 100 percent complete. The fact that design-build projects are estimated and bid before the design is complete makes this task even more difficult. To compound the issue, it is difficult to find comparable projects in terms of cost due to differences in time, market conditions, and material availability. Given these difficulties in measuring cost performance, numerous studies have measured initial cost performance and found that design-build had no significant cost increases or minimal cost savings.

[8] Sanvido, Victor and Konchar, Mark (1999). Selecting Project Delivery Systems: Comparing Design-Bid-Build, Design-Build, and Construction Management at Risk. The Project Delivery Institute, State College, Pennsylvania.
[9] Bennett, J., Pothecary, E. and Robinson, G. (1996). Designing and Building a World-Class Industry, The University of Reading Design and Build Forum Report, Centre for Strategic Studies in Construction, The University of Reading, Reading, U.K.
[10] University of Colorado (2005). Unpublished study of SEP 14 design-build projects http://consruction.colorado.edu/design-build, June 2005.

- The University of Colorado design-build study found an average 2.6 percent cost savings estimated by project managers on 48 design-build projects analyzed.[11]
- The Construction Industry Institute (CII) and Penn State University attributed a 6 percent project cost savings to design-build.[12]
- The University of Reading in the UK attributed a 13 percent cost savings to design-build.[13]

However, cost performance can vary widely depending upon the amount of risk that is allocated to the design-build contracts. In a detailed longitudinal study of the Washington State DOT's first design-build project, a 23 percent cost increase was found when the project was compared against a design-bid-build model of the project.[14] The study determined that the risk allocation in the contract documents for items such as warranties and schedule caused an increase in the project cost. Agencies must carefully consider risk allocation to minimize initial design-build cost. Risk analysis in project development is discussed extensively in Chapter 4 of this Guide.

Early Cost Certainty – Similar to early schedule certainty, agencies benefit from early cost certainty because the design-builder is contracted under a lump-sum contract before design is completed. In the traditional design-bid-build process, the project is awarded only after design is 100 percent complete and it is very difficult to make changes to the project if the bids do not come in at the engineer's estimate. In design-build, the cost is known early in the project development process. Eighty-one percent of the 66 design-build projects studied in the University of Colorado study were awarded with less than 30 percent of the design complete.[15] Given the large number of projects and the limited funding available in the U.S., early cost certainty has obvious advantages to both the agency and the traveling public.

Less Cost Growth – Due to the fact that design-build projects are awarded under lump sum contracts and design-builders have control over both design and construction, it is not surprising that design-build projects experience less cost growth. The agency does not experience cost growth due to errors and omissions in plans because the design-builder is the sole source of responsibility for both design and construction. Due to the use of lump sum contracts, there are also no increases in cost due to variation in unit quantities. Similar to early cost certainty, less cost growth is beneficial to both the agency and the traveling public with planning and managing a design and construction program. Numerous studies have confirmed design-build experiences low cost growth.

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[11] University of Colorado (2005). Unpublished study of SEP 14 design-build projects http://consruction.colorado.edu/design-build, June 2005.
[12] Sanvido, Victor and Konchar, Mark (1999). Selecting Project Delivery Systems: Comparing Design-Bid-Build, Design-Build, and Construction Management at Risk. The Project Delivery Institute, State College, Pennsylvania.
[13] Bennett, J., Pothecary, E. and Robinson, G. (1996). Designing and Building a World-Class Industry, The University of Reading Design and Build Forum Report, Centre for Strategic Studies in Construction, The University of Reading, Reading, U.K.
[14] WSDOT (2003). Washington State Department of Transportation Design-Build Pilot Project Evaluation: A Measurement of Performance for the Process, Cost, Time, and Quality, *Report to the Washington State Department of Transportation*, Olympia, Washington, January 2003.
[15] University of Colorado (2005).

- The University of Colorado study of SEP 14 design-build projects found an average of only 3.2 percent cost growth on 36 design-build projects.[16]
- The Warne and Associates study found only a 4 percent cost growth on the 21 design-build projects studied compared to an estimated industry average of 5-10 percent for similar design-bid-build projects.[17]
- The Florida DOT study found a -2 percent cost growth it's first 11 design-build demonstration projects compared to 9 percent average cost growth for their design-bid-bid projects.[18]
- The Construction Industry Institute (CII) and Penn State University study found 5.2 percent less cost growth in design-build versus design-bid-build.[19]

2.1.3 Quality

Equal or Better Overall Quality – Quality can be defined in many ways such as conformance to specifications, fitness for purpose, or meeting agency and user expectations. With the different definitions of quality and the subjective nature of its assessment, quality is difficult to measure. However, the previously referenced studies by the University of Colorado, Warne and Associates, CII, and Reading have all attempted to measure quality. All four of these studies concluded that design-build was of equal or better quality when compared to design-bid-build.

Design-build project delivery does not change the fact that engineers and constructor are required to meet the same design standards, manuals, and guidelines used by agencies and consultants in traditional project delivery. Due to the fact that design-builders must design in a competitive environment to win a project, they may choose to meet the minimum standards in some cases, but the design-build contract requires that they do meet these standards. When using best-value procurement, designers can be rewarded for designing and constructing projects that are above minimum standards and often do make choices that increase the value of a project without increasing the cost substantially.

Quality in Procurement – Procuring design-build projects through best-value methods enable agencies to assess the quality of design, the qualifications of design-builders, and a number of other non-price factors. Traditional design-bid-build project delivery does not allow the agency to consider these important aspects of quality the procurement decision. In fact, the ability to utilize a qualifications-based selection on the construction contractor as well as the engineer can be of great advantage to the owner. Although low bid procurement has been used for design-builder selection, this Guide strongly recommends the use of best-value procurement primarily based upon the fact that the design is not complete at the time of project award. Procurement methods are discussed extensively in Chapter 5 of this Guide.

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[16] University of Colorado (2005). Unpublished study of SEP 14 design-build projects http://consruction.colorado.edu/design-build, June 2004.

[17] Warne, Tom (2005). Design-Build Contracting for Highway Projects – A Performance Assessment. Tom Warne and Associates, LLC.

[18] Ellis, R.D., Z. Herbsman, and A. Kumar, (1991). "Evaluation of the FDOT Design/Build Program," Final Report, No. 99700-7435-010, *Submitted to the Florida Department of Transportation*, Department of Civil Engineering, University of Florida, Gainesville, Florida.

[19] Sanvido, Victor and Konchar, Mark (1999). Selecting Project Delivery Systems: Comparing Design-Bid-Build, Design-Build, and Construction Management at Risk. The Project Delivery Institute, State College, Pennsylvania.

2.1.4 Innovation

Better Constructability – Inherent to the design-build process is the early involvement of the contractor. Figure 2.2 depicts the extensive involvement of the contractor in the design-build process versus the design-bid-build process. Interjecting contractor knowledge early into design fosters creative design and construction solutions. If used correctly, design-build promotes constructability and innovation in the same manner as traditional agency constructability and value engineering plans.

Like quality, innovation is difficult to measure. The University of Colorado study found that overall agency satisfaction was higher on those design-build projects that were procured through best-value with a lower level of design complete at the RFP stage. They also found satisfaction being higher on larger and more complex design-build projects.[20] All of these findings point to the fact that the more contractor input leads to better user satisfaction.

Less Impact on Traveling Public – Perhaps the largest opportunity for innovation on design-build is in the staging of construction and the maintenance of traffic. Design-build projects have the ability to lessen the impact on the traveling public by shortening overall project and construction schedules as previously discussed, and they can also use extensive contractor innovation to design projects that minimize the effects on traffic. As our current highway system continues to age and population centers continue to grow, more highway construction will occur on active roads. Design-build has obvious advantages on these projects if agencies craft contracts that allow design-builders to innovate and reward them for exemplary performance.

A justification can be made for using design-build on the basis of faster project deliver, better cost control, equal or better quality and enhanced innovation. However, design-build may not always be the best project delivery choice. All of the studies cited in the previous section rely on average performance measures and there are numerous examples of projects in each of the studies where design-build projects have not performed well in every aspect. The next section of this Guide discusses design-build project selection.

2.2 Design-build project selection

The FHWA design-build regulations give contracting agencies wide discretion in identifying projects that are appropriate for the design-build project delivery method.[21] However, a fundamental premise of this Guide is that *not all projects are appropriate for design-build*. Design-build delivery has been successfully applied on simple pavement overlays and complex corridor reconstructions. However, it should only be one of many tools in the project delivery toolkit. Almost any project can be delivered through design-build, but best value is obtained from innovation and from superior qualifications, technical solutions, and management

[20] University of Colorado (2005). Unpublished study of SEP 14 design-build projects http://consruction.colorado.edu/design-build, June 2005.
[21] Department of Transportation, Federal Highway Administration, 23 CFR Parts 627, et al., Design-Build Contracting; Final Rule. Federal Register, Vol. 67, No. 237, December 10, 2002.

approaches offered by the design-builder. It should only be applied on projects where (a) the proven benefits of shortened duration, increased constructability, and enhanced innovation and/or (b) the value of superior qualifications, technical solutions, and managerial approaches, outweigh the additional costs for sharing the risk of design errors and omissions and lump sum contracting to the design-builder.

Table 2.2 summarizes the findings for agency satisfaction from the University of Colorado study. The results are based on an agency satisfaction rating and are statistically significant with a 95 percent confidence.

Table 2.2 Overall Agency Satisfaction by Project and Contract Type[22]

Project/Contract Characteristic	Overall Sponsor Satisfaction	
	Lower	**Higher**
Project Type	Road-Resurface/Renewal	Road-New/Widening and Rehabilitation/Reconstruction
Project Size	Smaller	Larger
Procurement Method	Low Bid	Best-Value
Percent of Design Complete at Award	Higher	Lower

Source: 69 SEP 14 Design-Build Projects

The results of Table 2.2 point to the following project characteristics being optimal for design-build delivery based on the projects in the study sample.

- Roads and highways
  - New alignments and widening
  - Rehabilitations or reconstruction
- Projects greater than $10 million in value
- Projects which can utilize best-value procurement
- Projects with no more than 25 percent design completed by agency

At face value these project characteristics are quite clear and easy to follow. However, agencies have experience poor project performance on projects with the same four criteria.[23] Likewise, agencies have experienced excellent project performance on resurfacing and bridge projects using low bid procurement.[24, 25] Proper project selection is somewhat more complex than simply following the four criteria listed above.

[22] University of Colorado (2005). Unpublished study of SEP 14 design-build projects http://consruction.colorado.edu/design-build, June 2005.
[23] WSDOT (2003). Washington State Department of Transportation Design-Build Pilot Project Evaluation: A Measurement of Performance for the Process, Cost, Time, and Quality, *Report to the Washington State Department of Transportation*, Olympia, Washington, January 2003. 79 pp.
[24] Ohio Department of Transportation, (1999). Rep. ODOT Experience on Six Pilot Design-Build Projects. Ohio Department of Transportation, Columbus, Ohio.
[25] Ellis, R., Herbsman, Z. and Kumar, A. (1991). "Evaluation of the Florida Department of Transportation's Pilot Design/Build Program," University of Florida, College of Engineering, Gainesville, FL.

This Guide suggests the following central premise when selecting design-build projects.

> *Select projects with characteristics that provide significant benefit using design-build project delivery. Once identified, develop the evaluation plan and project scope to confirm that the benefits are real, the negative impacts are minimal, and the risks are manageable.*

In addition to the four project characteristics listed above, there are other compelling reasons to select a project for design build delivery. These reasons are closely related to the benefits of design-build described in Section 2.2. A list of reasons why an agency might choose design-build is as follows.

- A compressed schedule is required
- Schedule certainty is required
- Early cost certainty is required
- The project scope is well defined
- Project quality can be defined though minimum design
- Opportunity for innovation exists
- Minimal third party risks exist

A danger in selecting design-build project delivery is applying it to a project that will not benefit from it. There are a number of reasons not to use design-build, and early in the project scoping process, the agency should look for these red flags and ensure that none apply to the project at hand. A list of reasons why an agency might decide that a given project is not a good candidate for design-build delivery is as follows.

- The design must be complete for accurate pricing
- The design must be complete for permitting or third party issues
- Third party issues that are not be manageable for the design-builder
- There are sensitive environmental issues
- Project is too small to attract competent competitors

Finally, agencies must have proper staffing resources to pursue design-build projects. Design-build yields different agency workloads. Design-build requires more agency personnel in preliminary design than in traditional projects due to the intensive RFP development and evaluation process. Once the design-builder is hired, agency involvement is less than traditional projects, but it requires individuals who are trained in design-build design and construction oversight. The importance of proper agency staffing cannot be overemphasized.

2.3 Design-build procurement process overview

There are perhaps as many different design-build processes as there are agencies with design-build programs. However, there are some critical steps that should be followed by all agencies. In order to promote a common process for design-build delivery for highway construction, this Guide is presenting a concise model of the design-build procurement process. The process

model is based upon the four steps presented in Figure 1.1 at the beginning of this Guide and corresponds to the chapters that follow.

Step 1 – Define project goals (Chapter 3)
Step 2 – Allocate project risks appropriately (Chapter 4)
Step 3 – Plan evaluation and award (Chapter 5)
Step 4 – Write the RFQ, RFP, and contract documents (Chapter 6)

As shown in the process model in Figure 2.3, the steps are somewhat iterative. The first step, define project goals should occur at the planning and programming phase of the project and is done in conjunction with selecting the project as a design-build candidate. The second step of allocating project risks relies heavily on the preliminary design findings and relates closely to the drafting of contract documents. The third step of planning the evaluation and award is perhaps the most critical element to project success as it communicates the project goals and defines the project requirements. The final step of drafting the RFQ, RFP and contract documents occurs continuously throughout the process, but it cannot be complete until the first three steps are finished. Each of these steps is discussed in detail in the remainder of this Guide.

2.4 Design-build programs vs. design-build projects

While this Guide is designed to assist highway agencies in developing project procurements, agencies must also consider how to develop an overall design-build program. If highway agencies wish to use design-build delivery repeatedly when appropriate projects present themselves, they should strive to create a set of policies and document templates. Standardization of certain documents and processes is desirable to promote internal consistency for the agency and external efficiency for the industry.

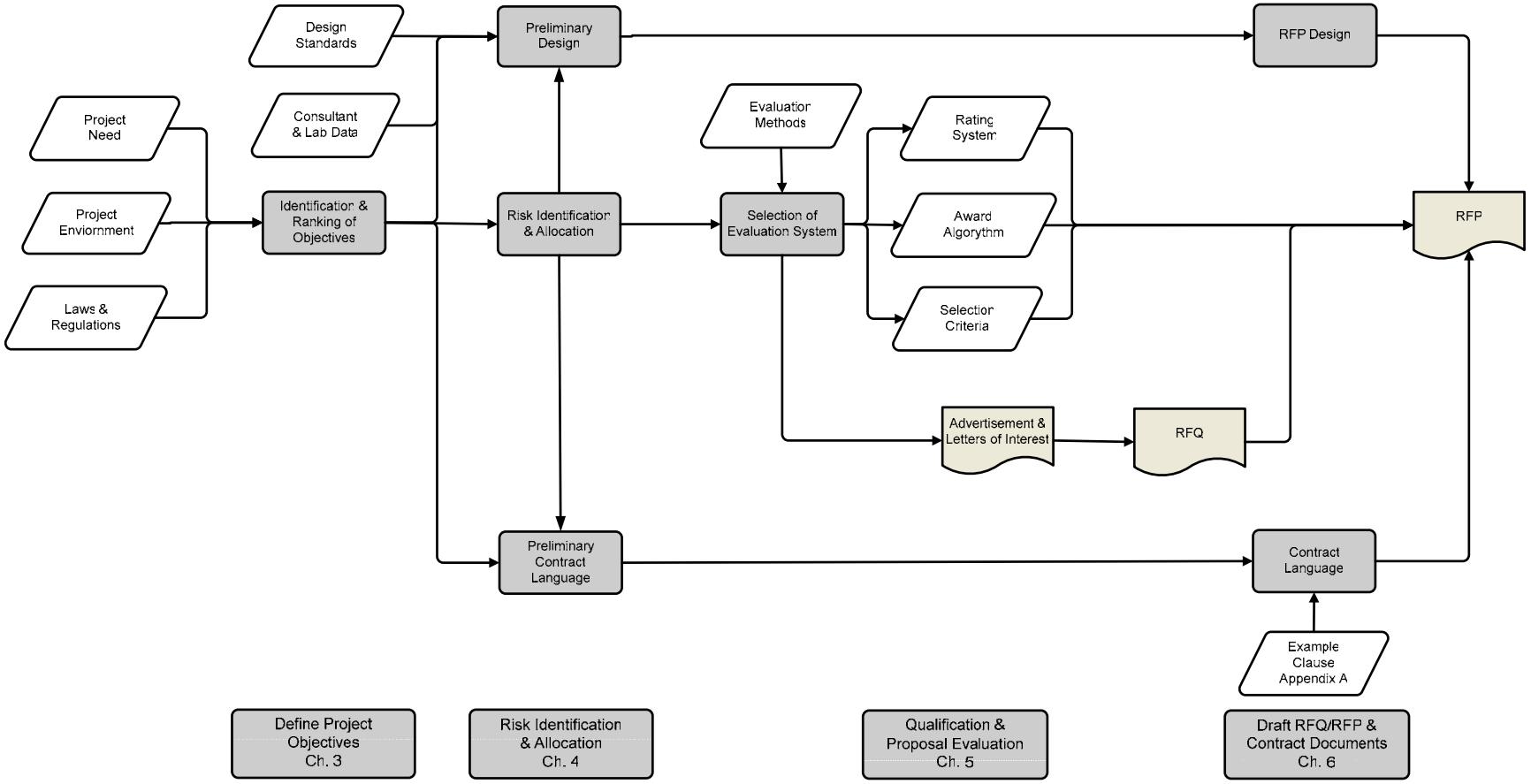


Figure 2.3: Design-Build Procurement Process Model

2.4.1 Programmatic issues and documents

The following list of issues and documents that should be considered when creating a design-build program. It is not intended to be comprehensive, but critical items are provided for agency consideration and discussion.

Changes to standard general and technical provisions for design-build contracts – Combining design and construction into one contract requires changes to critical language in standard general and technical provisions of agency contracts. Many of these changes will be repeated from project to project.

Changes to design manuals and design guides for design-build contracts – most highway design manuals and design guides were written for agency personnel and consultants. Agencies often try to reference these documents in design-build contracts. Since these documents were written as guides rather than contract documents, they often need editing in areas where direction is ambiguous.

RFQ and RFP instructions to proposer templates – While each project is unique and RFPs and RFQs *must* be project specific, agencies and the industry can benefit from some standardization in the format of these documents. RFQs documents can loosely be based upon existing consultant selection documents, but the RFP is a new document for the agency.

RFQ and RFP evaluation instructions – Chapter 5 of this Guide discusses the importance of defining an evaluation plan and adhering to it during the procurement. These instructions are important to the efficiency and accuracy of the evaluation process and also to avoid potential protests from unsuccessful proposers.

Quality assurance and quality control procedures – In design-build administration, agencies assume a role of design review rather than design approval and construction oversight rather than construction inspection. These are major differences in design and construction administration and require new procedures and new documentation, including the development of design quality management plans.

Bonding and insurance policies – Combining design and construction into a single contract raises issues about bonding and insurance. In traditional projects, designers provide errors and omissions insurance and contractors provide performance and payment bonds. Design-builders are predominantly teams consisting of contractors with subcontracted engineers. The agency must be clear on bonding and insurance requirements for these teams.

Schedule of values templates – although this issue is minor compared to the others discussed above, agencies must create pricing templates for lump sum contracts to use design-build. Since quantities are not known at the time of project award, design-build projects are awarded using lump sum contracts rather than unit price contracts. Lump sum contracts require payment schedules of values that protect the agency and fairly compensate the design-builder as well as define the project's cash flow.

2.4.2 Strategic approach to design-build programs

While some agencies have found success implementing design-build on a single project in a short time period, most agencies have developed their design-build programs over a number of years through a strategic approach. These design-build programs have been developed with agency staff and consultant assistance. The following tasks should be considered when developing a sustainable design-build program.

Draft enabling legislation – Although there are no Federal barriers to the use of design-build, some States still have procurement legislation that does not specifically allow design-build project delivery for highway construction. If legislation needs to be developed, it should be done in conjunction with industry partners such as the American Consulting Engineers Council (ACEC), the American Society of Civil Engineers (ASCE), the International Federation of Professional and Technical Engineers (IFPTE), and the Associated General Contractors of America (AGC). Prior to writing the legislation, agency management should obtain input and support from these and other key stakeholders. The Washington State DOT followed this format in developing their design-build legislation and it is offered below as just one example of what this legislation should cover.

> *Washington State Enabling Design-Build Legislation*
> *RCW 47.20.780*
> *Design-build -- Competitive bidding. (Expires April 30, 2008.)*
>
> *The department of transportation shall develop a process for awarding competitively bid highway construction contracts for projects over ten million dollars that may be constructed using a design-build procedure. As used in this section … "design-build procedure" means a method of contracting under which the department of transportation contracts with another party for the party to both design and build the structures, facilities, and other items specified in the contract.*
>
> *The process developed by the department must, at a minimum, include the scope of services required under the design-build procedure, contractor prequalification requirements, criteria for evaluating technical information and project costs, contractor selection criteria, and issue resolution procedures.*

Stakeholder input – Stakeholder input should not cease after legislation is established. To create a successful design-build program, continuous stakeholder input should be collected and reviewed by the agency. In addition to groups like the ACEC, ASCE, IFPTE, and AGC, internal agency stakeholders must be involved in the design-build program development process. Activities that have been used by various highway agencies to solicit stakeholder input include:

- Design-build education workshops;
- Periodic stakeholder input meetings; and
- Publication of draft documents for comment.

Design-build champions – Many agencies have found that creating a design-build program requires champions within the agency. Various titles are being used for this person(s) including design-build program director, design-build program manager, design-build contracting engineer, and design-build specialist. No matter the title, the role of this individual is to serve as a single point of information for the design-build program and an advocate the delivery method. In addition to necessitating procedural changes within agencies, design-build project delivery requires cultural changes as well. These champions can serve the duel role of a design-build knowledge disseminator and agency change manager.

Agency design-build policy committee – Design-build procedures will affect many different divisions or departments within the agency. Many agencies have found it useful to create a design-build policy committee or design-build task force to discuss relevant issues that affect departmental policies and procedures. These groups should be scheduled to meet on a periodic basis to discuss global issues, and should be available to meet as important project issues arise that shape agency policy. Representation in the group will vary by agency, but design, construction, procurement, and legal stakeholders should have strong representation. Additionally, some agencies have chosen to include design consultant and contractor representatives on the committee.

White papers – A number of agencies have found the process of writing white papers on important policy issues helpful in developing design-build programs. These white papers should be written by the stakeholders who are most affected by the issue. The following topics were covered by the Minnesota DOT as they were developing their design-build program.

- Third Party Agreements
- Approach to Alternative Technical Concepts
- Approach to Notice to Proceed
- Approach to Change Order
- Approach to Differing Site Conditions
- Approach to Dispute Resolution

Design-build education – As previously mentioned, design-build constitutes both procedural and cultural changes in most agencies. A number of agencies have found it beneficial to conduct continuing education on the topic of design-build project delivery. Continuing education can take the form of lunchtime discussions with experience agency personnel or formal accredited continuing education delivered by external entities. A number of agencies have employed the ASCE and the Design-Build Institute of America (DBIA) to deliver courses. The National Highway Institute also delivers a course on Alternative Contracting (Co. No. 134058A) that covers design-build contracting. Agencies have also found that inviting industry to these courses helps to more quickly and effectively develop their design-build programs.

Design-build guidelines and manuals – A number of agencies have developed design-build guidelines, manuals, or policy guides in conjunction with their program. These documents can vary in length from 20 to 200 pages depending upon their purpose. The documents are typically intended to serve as a single source for design-build procedures and policies. Agencies have found that creating the documents stimulates discussion of important issues and can help to

create consistency in methods across the agency. However, these must be living documents as the design-build program develops and they need to have resources committed to keeping them current. The following are a few guides and manuals currently in use.

- Arizona Department of Transportation, *Design-Build Procurement & Administration Policy*, 1997
- Colorado Department of Transportation, *Design-Build Guidelines*, 1997
- Florida Department of Transportation, *Design-Build Guidelines*, 2004
- Montana Department of Transportation (2004), *Design-Build Guidelines*
- Washington Department of Transportation, *Design-Build Process for Highway Projects*

Pilot projects and benchmarking of performance – Numerous agencies have treated their first design-build projects as "pilots" to test the delivery method. The benefit in doing this is that there is a clear understanding that the process is new and will evolve. This method requires that the project performance is reviewed and the results are disseminated in the form of lessons learned. A few of the agencies that have conducted pilot projects in developing their programs are as follows.

- Arizona DOT
- Colorado DOT
- Florida DOT
- Indiana DOT
- New Jersey DOT
- Minnesota DOT
- Ohio DOT
- Oregon DOT
- Washington State DOT

Highway agencies should view design-build project delivery in terms of a program, rather than simply a set of individual projects. The traditional design-bid-build method was established over at least the last 50 years. Design-build requires new procedures and attitudes to be successful. The issues listed in this section of the Guide are not comprehensive, but they are critical to consider when embarking on design-build project delivery.

Chapter 3: Defining Project Goals

A clear and concise definition of project goals is a critical element of any project's success, but it is even more critical in design-build delivery. When a highway agency chooses a non-traditional delivery method, it must be clear about why it has chosen this approach and must clearly and consistently communicate this decision to all of its internal and external stakeholders. Additionally, the project goals will drive decisions when writing the RFQ and RFP, evaluating the proposal, and administering design and construction. This chapter presents the process of identifying, ranking, and communicating project goals. These goals provide a foundation for the risk allocation, evaluation planning, and contract writing process that follows.

3.1 Importance of project goals

This Guide cannot overemphasize the importance of clearly defining project goals at the beginning of a design-build project. These goals affect the planning of risk allocation strategies, procurement methods, contracting, and, most importantly, the success of the project. Design-build projects require the highway agency to assemble a large number of resources to develop an RFP. Clear project objects align the team when writing the numerous sections of the RFP. Clear goals assist in making risk allocation decisions. By conveying these goals in the evaluation plan, proposers can provide proposals that better meet the highway agency's needs for the project. Finally, the goals can be used to administer the project during the design and construction phases after award.

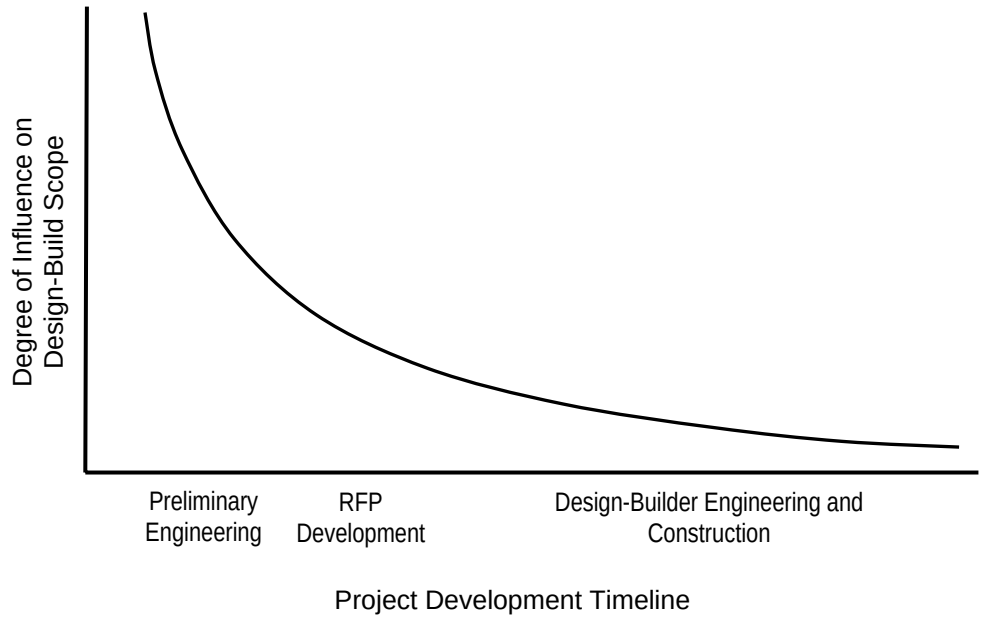


Figure 3.1: Agency Influence on Design-Build Scope

Figures 3.1 and 3.2 illustrate the importance of project goals. Figure 3.1 provides an illustration of the agencies ability to influence the design-build project scope. The figure is based on research in the area of constructability done by the Construction Industry Institute in the mid 1980s.[1] The idea is that the ability to influence the final outcome of the project is best early in the project's life cycle. As times goes on, the agency's ability falls off dramatically and the cost of making changes increases. Thus, it is critical to identify the full scope of work as early as possible in the project development process and clearly defined project goals assist in this task.

Figure 3.2 graphically depicts the primary differences between the design-bid-build and design-build contracts. The contracts are fundamentally different due to the manner in which the design-build contract shifts risk and responsibility for design details from the agency to the design-builder. The agency develops or contracts a designer to develop the final construction drawings in a design-bid-build contract as depicted in Figure 3.2. The agency in essence "owns" the details of the design and guarantees that the plans are constructable and free from defects. In a design-build contract however, the design-builder in essence "owns" the details of the design and is responsible for providing both design documents and a construction facility that is free of defects. However, both systems legally obligate the designer to deliver a project that meets all applicable codes and standards within a reasonable standard of care.

The fundamental difference in the contract modes is how and when the construction plans and specifications fit into the contact. In the design-bid-build system, the final plans and specifications form the basis of the contract and define the scope of work along with the price proposal. A fundamental assumption of this system is that the plans are complete, constructable and free from defects – often a difficult task. In the design-build system, the plans and specifications are a deliverable of the contract and it is the agency's request for proposal (RFP) and corresponding design-builder's technical and price proposals that form the basis of the contract. This is a fundamental change.

The models presented in Figure 3.2 are an oversimplification of the process, but they convey several important nuances of the delivery systems very clearly and help to explain why agencies must clearly convey project goals. First, clear project goals help the agency's evaluators differentiate between competing proposals during the evaluation period. Next, and more importantly, the design is not complete at the time of project award so there can be significant "design intent" in both the agency's RFP and the design-builder's technical proposal. Clear project goals help to convey how the agency would like the final project to function. As the design-builder completes their design, clear project goals help them to make design decisions when two or more technically acceptable solutions are available. Finally, these same goals carry through to the construction administration of the project for both the agency and design-builder to follow.

[1] Construction Industry Institute (CII), (1986). *Constructability: A Primer,* Publication 3-1, CII, Austin, Texas.

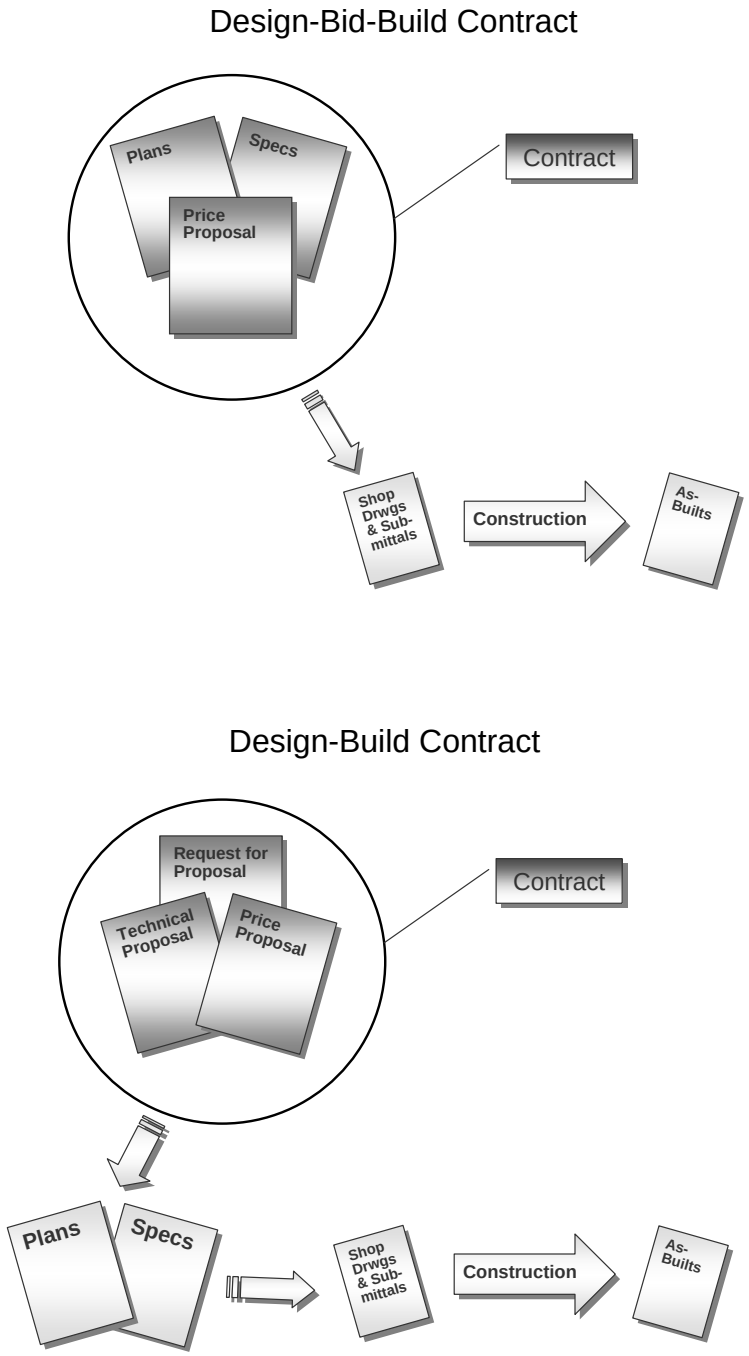


Figure 3.2: Illustration of Contract Basis for Design-Bid-Build and Design-Build Contracts

3.2 Identification and ranking of project goals

Identification and ranking of project goals should directly follow design-build project selection. As stated in Chapter 2, design-build is an alternate delivery method and the agency should justify its selection on each project. Therefore, the justification for selecting design-build project delivery should translate to the project goals. Table 3.1 provides a list of project goals that translate to the design-build benefits as presented in Chapter 2.

Table 3.1: Mapping of Design-Build Benefits to Project Goals

Possible Design-Build Benefits	Project Goals
Schedule • Shorter Duration • Earlier Schedule Certainty	Schedule • Minimize project delivery time • Complete the project on schedule
Cost • Initial Cost Savings • Earlier Cost Certainty • Less Cost Growth	Cost • Minimize project cost • Maximize project budget • Complete the project on budget
Quality • Equal or Better Quality • Quality in Procurement	Quality • Meet or exceed project requirements • Select the best team
Innovation • Better Constructability • Less Impact on the Traveling Public	Innovation • Provide innovative solutions • Minimize impact on the traveling public

Table 3.1 demonstrates a clear mapping of design-build benefits to concise project goals. Agencies with design-build experience find that it is important to clearly communicate project goals in their RFPs. Table 3.2 provides examples of project goals from a number of agencies. These goals were located at the beginning of the respective design-build project RPFs in the "Instructions to Proposers" or similar sections.

Table 3.2: Examples of Design-Build Project Goals

Agency	Project	Project Goals (in descending order of importance)
Colorado DOT	Colorado Springs Metro Interstate Expansion Project	1. Maximize capacity and mobility improvements in the corridor within the program budget of approximately $150 million 2. Minimize inconvenience to the public during construction 3. Provide a quality project 4. Complete by the end of calendar year 2008 5. Provide a visually pleasing final product
	Southeast Corridor Multi-modal Project (TREX)	1. Minimize inconvenience to the community, motorists, and public 2. Meet or beat the total program budget 3. Provide for a quality project 4. Meet or beat the schedule of June 30, 2008
New Mexico DOT	US70 Hondo Valley	1. Cost not to exceed budget 2. High quality, safe, aesthetic, environmentally responsible, durable and maintainable project 3. Contract awarded and signed by June 2002 4. Project completion not later than September 25, 2004 5. Valid basis for evaluation of D/B delivery system
South Dakota DOT	Interstate 229	1. Timely completion 2. Quality design and construction 3. Reasonable cost
Washington DOT	Everett HOV Design-build Project	1. Deliver the project within budget. 2. Achieve substantial completion by October 1, 2007 or sooner. 3. Achieve quality of design and construction equal or better than traditional design-bid-build. 4. Provide a safe construction site for workers and the traveling public. 5. Meet or exceed environmental requirements and expectations with no permit violations. 6. Foster confidence with the environmental permitting community in the design-build process. 7. Manage traffic to minimize disruption and inconvenience to the public during construction. 8. Maintain community support during design and construction.
	I-405 Kirkland Stage I	1. Quality of Design and Construction (On time within budget) 2. Environmental compliance and innovation 3. Maintenance of traffic 4. Public information and community involvement

The project goals in Table 3.2 vary in style and emphasis due to the unique project needs, but they all help define the agencies' requirements in terms of schedule, cost, quality, aesthetics, and end user requirements. As design-builders prepare project proposals, the project goals will help them align their proposals to the requirements. The goals will also help the design-builders make appropriate design decisions during final design. The agency will use these goals to evaluate the proposals, review design, and administer construction.

Ranking of the project goals is important. It is not reasonable to expect that a project will realize all of the possible design-build benefits. On every project there are tradeoffs between schedule, cost, and quality. It is to the project's benefit if both the agency and design-builder are in alignment with these project goals. For example, the Colorado Springs Metro Interstate Expansion Project's first goal was not to exceed the program budget and the second was to minimize inconvenience to the public. This ranking provides clear direction to the design-builders that maintenance of traffic is important, but not at the expense of exceeding the program budget.

3.3 Communication of goals

Once the highway agency team agrees on project goals, they must communicate them to the design-builders and all of the other internal and external stakeholders. Communication to internal agency team members requires good management skills and a clear evaluation plan. Communication with design-builders requires effectively written evaluation criteria in the RFP that accurately convey the agency's requirements.

Writing the goals clearly at the beginning of the RFQ and RFP communicates them concisely. However, the agency must also create a transparent evaluation plan that rewards design-builders for meeting these goals in their project proposals. A best-value procurement method is the best manner in which to reward proposers for responding to the project goals.

Although low bid procurement can be applied to design-build projects if the project is not complex and the scope is absolutely clear, this Guide strongly recommends the use of two step best-value procurement. A best-value procurement is a process in which price and other key factors are considered in the evaluation and selection process. The project goals should constitute the basis for the non-price factors. Figure 3.3 graphically depicts the best-value process.

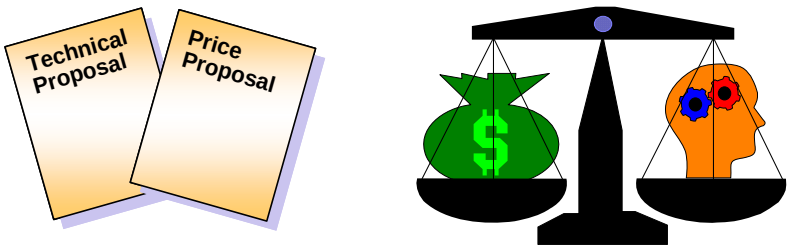


Figure 3.3: Best-Value Procurement

Chapter 5 of this Guide discusses how to leverage the best-value procurement process to achieve a successful design-build project. The project goals are critical to crafting a good best-value procurement. Using the Colorado Springs Metro Interstate Expansion Project as an example again, the agency's first goal was not to exceed the program budget. The evaluation team was able to craft a best-value procurement in which the price proposals were fixed at the maximum allowable within the budget, and technical proposals were evaluated on the basis of the amount of scope that the design-builders proposed. This method is explained in Chapter 5 as a "fixed price – best proposal" best-value procurement along with a number of other methods that can be used as project circumstances dictate. In this example, the project goals clearly aligned with the evaluation plan so that all agency personnel, design-builders, and other project stakeholders understood how the project could be successful.

The need to establish project goals early in the project development process is clear. Project goals create alignment between internal agency personnel, design-builders, and project stakeholders. The steps in creating project goals can be summarized as follows.

1. Justify the selection of design-build delivery for the project on the basis of the delivery method's benefits.
2. From this justification, establish project goals for schedule, cost, quality, and innovation.
3. Rank these goals in order of importance.
4. Publish the goals in the RFQ and RFP.
5. Using best-value procurement, develop evaluation criteria that reward proposers for meeting or exceeding the project goals.
6. Remain consistent with the goals after award throughout project design and construction.

Chapter 4: Allocating Project Risks

Appropriate allocation of project risks is critical when developing any project contract. Risk allocation is even more critical for design-build contracts because many of the risks and traditionally managed by the agency can and do become the responsibility of the design-builder. However, if inappropriate risks are allocated to the design-builder, they will need to include additional cost in their project proposal in the form of contingency to manage these risks.

In recently years, many public agencies have chosen to use the design-build method of project delivery to better manage their risk.[27] One reason is that the design-build system provides more flexibility in risk allocation. Design-build allows for the transfer of many risks traditionally borne by the contracting agency to the design-build. This is attributable mostly to the single point of responsibility and earlier procurement characteristics of design-build. Most notably, the risk for errors and omissions in final plans and specifications is inherently transferred from the agency to the design-builder. However, this flexibility should not result in shifting all possible risks to the design-builder because it leads to the potential for higher price proposals, excessive changes, and disputes. The flexibility can be beneficial only upon proper allocation of the risks.

Identification of risk begins at project inception. Throughout the project development, the contracting agency must work to advance the design far enough so that the related risks are tolerable for the design-builder. The central premise is to then clearly allocate the risks to the party that can best control them to avoid any confusion, disputes, and litigation. FHWA's design-build contracting rule[28] recommends identifying and allocating various project risks such as:

- Governmental risks, including the potential for delays, modifications, withdrawal, scope changes, or additions that result from multi-level Federal, State, and local participation and sponsorship;
- Regulatory compliance risks, including environmental and third party issues, such as permitting, railroad, and utility company risks;
- Construction phase risks, including differing site conditions, traffic control, interim drainage, public access, weather issues, and schedule;
- Post-construction risks, including public liability and meeting stipulated performance standards; and
- Right of way risks including acquisition costs, appraisals, relocation delays, condemnation proceedings, including court costs and others.

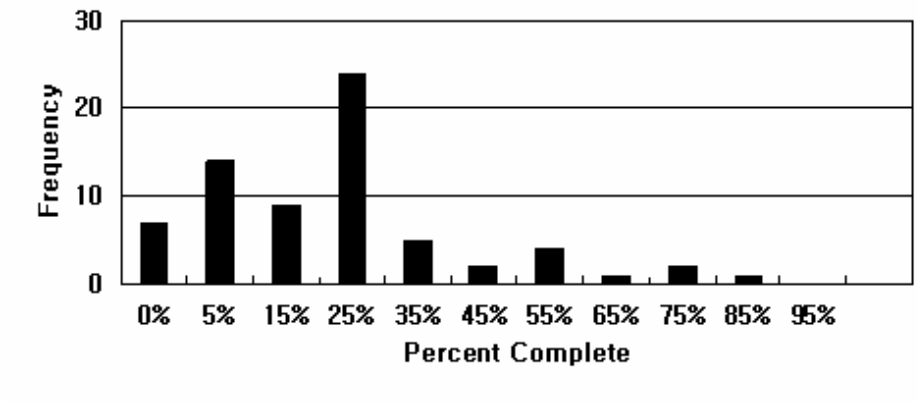
This chapter provides a checklist of possible risks and introduces risk identification and allocation strategies. This chapter also presents a brief discussion of the appropriate level of design to be completed by the agency because it directly relates to project risk allocation. To the greatest extent possible, this chapter will link the discussion to relevant contract provisions in presented in Chapter 6.

[27] Gurry, W. W., and Smith, R. J. (1995). "Allocation of Risk in Design/Build Project." *Proceedings of the 1995 Construction Congress*, San Diego, CA.
[28] Department of Transportation (2002). Federal Highway Administration, 23 CFR Parts 627, et al., Design-Build Contracting; Final Rule. Federal Register, Vol. 67, No. 237, December 10, 2002.

4.1 Appropriate level of design in the RFP

Design-build delivery combines design and construction responsibilities into one contract, making the design-builder the single point of accountability for both the design and construction. However, the agency must provide enough of the preliminary design in the project solicitation documents to ensure that the project scope is characterized sufficiently to minimize risks for proposers. This preliminary design is referred to as a design-build criteria package or basic configuration. If the agency wishes to obtain maximum innovation from the design-builder, they should only include enough design to be sure that the project is "buildable" and that the major risks are identified and allocated. If the agency provides too much initial design before the procurement, it can greatly limit the chance of innovations from the design-builders that may help to meet the project goals more effectively. Therefore, determining the appropriate level of design for the agency to complete and publish in the RFP is essential.

Preliminary design in the design-build criteria package can vary greatly. A study in 2001 of six different highway agency design-build projects found that the level of preliminary design complete before issuing requests for bids of proposal has a broad range from 15 percent to 50 percent, with an average of 27 percent.[29] The University of Colorado study of SEP 14 design-build projects validated these early finds and an analysis of 69 Federal-aid design-build projects is presented in Figure 4.1.[30] As seen in Figure 4.1, the amount of design included in the RFP ranged from 0 to 85 percent with the largest number of projects being in the 25-35 percent range. The average percent design for these projects was 27 percent.



Source: University of Colorado study of SEP 14 design-build projects
- 69 design-build projects total

Figure 4.1 Percent of design complete in RFP

[29] Molenaar, K. R., and Gransberg, D. D. (2001). "Design-Builder Selection for Small Highway Projects." *ASCE Journal of Management in Engineering*, Vol. 17(No. 4).
[30] Department of Transportation (2002). Federal Highway Administration, 23 CFR Parts 627, et al., Design-Build Contracting; Final Rule. Federal Register, Vol. 67, No. 237, December 10, 2002.

The University of Colorado study also found a statistically significant correlation between agency satisfaction and the amount of design included in the RFP as discussed in Chapter 2. Agencies reported higher project satisfaction from design-build projects with lower levels of preliminary design (no more than 30 percent) completed before design-build contract award. This could be attributed to a design-builder's ability to influence the project design earlier in the process to promote its constructability and cost-effectiveness. However, the study's results are general representative of industry-wide projects, and are not true for all projects, so each project should be considered on an individual basis.

While the overall average percent design can be helpful in workload management and planning to write an RFP, agencies must be cautious not to apply the percent for each item in the design-build design criteria package. The agencies must examine each element of the project and determine how much design needs to be complete to convey the scope in a performance manner while not placing undue risk on the design-builder for design. The best RFPs will contain elements with no drawings or significant design as well as elements with 100 percent complete drawings. The goal is to convey the project's scope to the design-builder with the minimum level of design so that they may create an innovative design and be fully responsible for any errors and omissions in the end product. Providing too much design in the RFP inhibits innovation. It can also create design liability for the agency, which in turn can result in changes, disputes, or litigation.

When deciding the appropriate level of design, the agency should consider the following characteristics:

- Clarity of the project goals and scope;
- Nature and complexity of the project;
- Agencies ability to convey the scope through performance criteria; and
- The comfort level that the contracting agency has with outsourcing the design.

Finally, agencies should consider one very important benefit of having the design-builder complete more design – the agency is not responsible for any errors, omissions, or constructability issues with drawings that they have not designed. Experienced agencies have discovered that they should resist designing project elements unless there is only one technically acceptable solution.

4.2 Risk Identification

To understand how to carry design on each design-build project, the agency must conduct a thorough risk analysis. The Project Management Institute's "Guide to the Project Management Body of Knowledge (PMBOK)" has been an industry standard in risk analysis for the past decade and a number of state highway agencies use this to develop risk management plans.[31] Based on the PMBOK and other sources,[32, 33, 34, 35] the following is a list of risk-identification

[31] Project Management Institute. (2000). "A Guide to the Project Management Body of Knowledge." Project Management Institute, Newtown Square.
[32] Beard, J. L., Loulakis, M. C., and Wundram, E. C. (2001). Design-build: planning through development, McGraw-Hill, New York.

techniques and related data. The four categories are not necessarily listed in order of either execution or precedence. Additionally, risk identification is an iterative process that requires continuous updating as new information becomes available and new discoveries are made.

- Project examination
  - Project goals
  - Project characteristics
  - Stakeholder characteristics
- Document examination
  - Preliminary design (scoping, environmental or engineering)
  - Historic data
  - Preliminary test data
  - Project management plan
- Personal experience and insight
  - Brainstorming
  - Interviews
- Risk categorization
  - Organization of risks
  - Future reference database

Project examination – Project examination involves the review of project characteristics, stakeholders, physical surroundings, and community. The project goals are the objects of the risks, i.e., they are influenced by the risks. Clearly defining the goals can be helpful to the identification of the risk elements. A discussion of the defining project goals is presented in more detail in Chapter 3.

The characteristics of the project, its stakeholders, and environment are key information to risk identification. Different types of projects yield different magnitudes of consequences from risk are different risk items all together. A project that involves heavy civil work, such as a tunnel, potentially bears geotechnical risks significant both in number and magnitude. The characteristics of project environment such as possible political, economical, social, and environmental factors that may impact the project should be examined. Additionally, the characteristics of the stakeholders such as the design-builder (available design-builders in the market), financial investors, surety, and their characteristics may include level of experience, availability of qualified staff, or financial stability.

Document examination – Document review is a critical aspect of risk identification. These documents include available design, historic data, test data, and project management plans. Risk identification for project delivery must occur early in project development. Document

[33] Clemen, R. T. (1996). *Making Hard Decisions: An Introduction to Decision Analysis*, Brooks/Cole Publishing Company, Pacific Grove, CA.
[34] Molenaar, K. R., and Gransberg, D. D. (2001). "Design-Builder Selection for Small Highway Projects." *ASCE Journal of Management in Engineering*, Vol. 17(No. 4).
[35] [74] Molenaar, K.R., Vanegas, J., and Martinez, H. (2000). "Appropriate Risk Allocation in Design-Build RFPs," *ASCE Proceedings of the Construction Congress VI*, Orlando, FL, February 2000. pp. 1083-1092.

examination should begin with a review of the most current design; whether that is scoping documents, environmental documents or preliminary engineering documents.

The historic data include risk documents such as the checklist presented in Section 4.4 and Appendix B or risk identification examples from similar projects. Although each project is unique, the risk identification can begin through an examination of similar completed projects or historic risk management databases. Often a risk charter, allocation matrix, and other products from past projects can be helpful. Some transportation departments provide a database and standard forms that have been tested and approved for future use.[36]

The data collected during the preliminary investigation of the project area, such as geotechnical reports, surveying report, etc., are also used for risk identification. The test results can provide convincing scientific evidence that directly traces a possible risk. These reports can often be compared to past project reports.

The current project management plan will provide risk information regarding the overall project schedule, cost estimate, and human resources from the agency. A tightly scheduled or budgeted project or one in which resources are constrained has a higher probability of time-delay and cost-overrun risks.

Personal experience and insight – Naturally, document examination alone does not provide sufficient information for finding all possible risks. As supplements to document examination, personal experience and insight based risk identification methods such as brainstorming among risk management team members and interviewing of experts are appropriate tools. Experienced agency personnel or external experts can often provide comprehensive and efficient risk identification. Although their opinions can be subjective, their experience and judgment will be beneficial in the beginning of a project when little engineering data is available.

Brainstorming is perhaps the most widely used risk-identification method.[37] The brainstorming session is usually conducted among the risk management team members. Additionally, groups of external experts or contractors can help broaden the identification exercise and uncover risks hidden to a particular group.

A facilitator is critical for a successful brainstorming meeting, but this individual need not be an expert in facilitation methods. The essential tasks for the facilitator:

- Arranging and supervising the meeting;
- Leading the discussion proficiently;
- Encouraging critical thinking and active participation of other members;
- Minimizing subjectivity and opinionating in discussion; and
- Recording and organizing identified risks.

[36] Molenaar, K.R. (2005). "Programmatic Cost Risk Analysis for Highway Mega-Projects," *ASCE Journal of Construction Engineering and Management*, 131(3), 343-353.
[37] Project Management Institute. (2000). "A Guide to the Project Management Body of Knowledge." Project Management Institute, Newtown Square.

To ensure success, the brainstorming meeting should also include the following activities:

- Preplanning of the session;
- Collecting and organizing documents including indexing for efficient searching;
- Thorough document examination;
- Information sharing among members;
- Unbiased open discussion; and
- Iterative recording, updating, correcting and supplementing the results.

Interviewing is another widely used risk identification method. The risk team can consult experts to enhance the identification process and results. The risk management team should provide documents or brief the interviewee on the project goals and characteristics prior to the interview.

Risk categorizing – Appropriately categorizing risks has three primary purposes. The first is to enhance efficiency in the subsequent risk allocation process. The second is to help identify any previously omitted risks by tracking the missing piece in the organized set of risks. When all the risks previously identified are categorized and listed, omitted or overlapping risks become more apparent. The third is to create a historic database of risks that can be used in future design-build projects. Section 4.4 and Appendix B in this Guide suggests an appropriate risk categorization matrix that is also being used for risk identification and risk allocation.

4.3 Discussion of critical design-build risk elements

While a thorough risk analysis should be conducted on each project, there are some critical risks that agencies should examine on every design-build project. Design-build delivery inherently transfers the risk for most design errors and omissions in construction documents from the highway agency to the design-builder. Design-build delivery also offers the opportunity to transfer other risks to the design-builder when appropriate. Risk for all or portions of items such as geotechnical investigations, utility relocations, and some permitting can be allocated to the design-builder. However, the transfer of inappropriate risks will result in higher costs to the agency. The risks discussed below are often considered transferable risks when developing a design-build contract. These items correspond to the risk matrix presented in the Section 4.4.

4.3.1 Design Issues

In traditional design-bid-build delivery, the agency bears the entire responsibility and risk for any design-related issues. All responsibility for design decisions and conformance to standards rests with the agency. In design-build, several of these responsibilities shift to the design-builder. The agency is, at a minimum, still responsible for establishing the project goals, the project scope, design criteria, performance measurements, and basic configuration of the project. As the designer of record, the design-builder has the risk for design-errors and omissions. The accuracy of design, conformance with established standards, and constructability all rest with the design-builder.

4.3.2 Environmental Approval and Permitting

The National Environmental Policy Act/State Environmental Policy Act (NEPA/SEPA) process requires definition of major project features. In the design-bid-build process, the agency conducts the studies, prepares the documents, and applies for the appropriate clearances. Currently, the role of the agency does not change when using the design-build delivery method. FHWA has defined the approval of the environmental document (Environmental Assessment/Environmental Impact Statement) to be the formal approval for design-build.

Not all environmental permitting needs to remain the responsibility of the agency in design-build. After receiving official approval of the environmental document, a variety of permits for project impacts and construction activities need to be maintained. Many of these permits can be obtained solely by the design-builder or in conjunction with the agency. Some statutes refer to the "operator" as being responsible while others refer to the "owner" or "agency" as the responsible party. In the later cases, the agency is responsible for a violation even if the design-builder or its employees actually caused a violation. When the agency is required to be a permit applicant for elements of work controlled by the design-builder, the agency can require the design-builder to generate the required permit applications for review and processing. However, the overall responsibility for these impacts and timeline can rest with the design-builder, as the mitigation and timing requirements will be directly related to the design-builder's design. When it is not reasonable to assign the schedule risk to a design-builder, the agency can provide a guaranteed schedule to obtain a given permit.

4.3.3 Right of Way

The agency maintains responsibility for obtaining right of way on the majority of design-build projects. However, under certain circumstances, the agency may wish to transfer this risk or work together with the design-builder to obtain the right of way. The department must delineate existing right of way and access as part of base data collection. Right of way and access are potential high-risk areas that can significantly impact the project schedule both in project development by the agency and contract execution by the design-builder. In some cases it may be advantageous for agency to delay purchasing a portion of the required right of way until the final footprint is created by the selected design-builder. This is important in areas with very high real estate costs where the agency wishes to minimize the amount of real estate purchased.

Under Federal and some State statutes, the agency's ability to acquire property in a timely manner is limited. Because the agencies are in the best position to appraise, negotiate, and purchase right of way or relocate impacted facilities associated with a design-build project, these risks will normally remain with the agency.

4.3.4 Local Agency, Utility, and Railroad Issues

The level of communication and coordination between the design-builder and local agencies, utility companies, and railroads will vary depending upon project conditions, but as the design-builder is responsible for the actual design and construction, they can assume much more responsibility for this coordination in a design-build contract. However, the design-builder is in

a contractual relationship with agency, not these third parties. The local agencies, utilities, and railroads will have a traditional relationship with agency and the agency will likely have more influence in obtaining the required cooperation. For a successful project, the agency needs to have extensive preliminary and on-going communication with outside entities, as well as a strong ownership role throughout the contract. These items are discussed in more detail in Chapter 6.

4.3.5 Construction

As in traditional contracts, the contractor has responsibility for the actual construction. However, in a design-build environment, the agency no longer represents the designer. Many of the traditional materials testing and inspection responsibilities transfer to the design-builder. Items such as surveying, spill prevention, and maintenance of traffic may shift entirely to the design-builder's responsibility. For a more detailed list of items involved in construction see Appendix B.

4.3.6 Force Majeure/Acts of God

Agencies traditionally self insure against Force Majeure and Acts of God. Initially, it may be tempting to place this risk onto the design-builder. While the risk of an occurrence may be small, the potential cost could be devastating to a design-builder. It is extremely unlikely that any design-builder would be able to provide a reasonable price for the project given this high-risk exposure. If a project is so large that an agency does not feel that self insuring is appropriate, obtaining catastrophic insurance through a third party may be an economical option.

4.3.7 Differing Site Conditions/Changed Conditions

Similarly to Force Majeure, the risk for differing site conditions may be tempting to place on the design-builder. However, agencies have learned over a long period of time that it is most economical to maintain the risk for differing site conditions. This Guide suggests that agencies maintain the responsibility for differing or changed site conditions and conduct the initial site investigations necessary to be comfortable with owning this risk.

4.3.8 Warranty

Ultimately, the final responsibility and ownership of a project will transfer to the agency. Due to the single source of responsibility with design-build, some agencies have asked for project or product warranties. The success on these warranties has varied. Warranties ultimately cost agencies money and it is often difficult to measure their true value. Additionally, if not carefully implemented, warranty requirements can cause problems for design professionals because the customary standard of care generally does not guarantee outcomes, nor does professional liability insurance cover expressed warranties. If warranties are used, the agency must be clear about which products and aspects of performance will be warranted. Before applying warranties to design-build projects, agencies are strongly encouraged to develop and test warranty programs

on traditional projects with their local industry so that all parties are comfortable with the implied risks.[38]

4.4 Design-build project risk allocation matrix

Agencies and consultants find it useful to develop a checklist of a design-build project risks in the form a design-build project risk allocation matrix. The matrix is intended to be a template for risk identification and allocation. Once complete, all members of the RFQ and RFP development team can use it for their tasks. It is essential to keeping all team members aligned as they write their portions of these documents. It provides clear direction when determining how far to carry design or when writing contract provisions. Figure 4.2 is a summary template for a design-build project risk allocation matrix.

[38] For more information on warranty programs, see NCHRP Report 451 – NCHRP (1998). Guidelines for warranty, multi-parameter and best-value contracting, *Report No. 451*, National Cooperative Highway Research Program, Washington, D.C.

CATEGORY	RISK	DBB		DB	
		Agency	Contr.	Agency	Contr.
Design Issues	Project scope definition	X		X	
	Design criteria	X		X	
	Geotech investigation – Initial borings on preliminary design	X		X	
	Geotech investigation – Initial borings on proposal	X			X
	Plan conformance with regulation/guide/RFP	X			X
Environmental	NEPA/SEPA	X		X	
	Permitting	X		X	
Right of way	Establishing ROW limits	X		X	
	Acquire ROW	X		X	
Local Agency	Identification of initial local agency impacts	X		X	
	Establish final/actual local agency impacts	X			X
	Modifications to existing local agency permits	X			X
Utility	Establish initial utility locations/conditions	X		X	
	Relocation of utilities under agreement during contract		X		X
	Modified agreement with private utility based on final design	X			X
Railroad	Obtain initial RR agreement based on preliminary design	X		X	
	Coordination with RR under agreement		X		X
Public relations	Community relations	X		X	
	Public safety		X		X
Construction	Initial performance requirements	X		X	
	Final construction/materials QC/QA Plan	X			X
	Material quality		X		X
	Construction quality and safety		X		X
Force Majeure	Natural hazard (tornado, earthquake, etc)	X		X	
	Change in law	X		X	
Differing Site Conditions	Changed and differing site conditions	X		X	
Warranty	Long term ownership/ final responsibility	X		X	
	Insurance		X		X

Figure 4.2: Example of Design-Build Project Risk Allocation Matrix

Figure 4.2 is based on the Washington State DOT's design-build project risk matrix that was developed in association with their local Associated General Contractors (AGC) and American Consulting Engineers Council (ACEC).[39] The risk allocation shown in Figure 4.2 is for a generic design-build project and was the result of discussions with the AGC and ACEC. In addition to the list of various risk items, the matrix marks the party commonly responsible for each risk. The complete Washington State DOT risk matrix is provided in the Appendix XX. All agencies using design-build are strongly encouraged to develop their own template and modify it on a project-by-project basis.

Figure 4.2 intentionally does not contain a category for shared risks. The concept of shared risk can be explored when authoring the contract and may be a good tool in reducing costs as engineering details become available. However, when using the design-build project risk allocation matrix at the project concept, every attempt should be made to clearly assign the responsibility to one party. Fundamentally when using the risk allocation matrix, a risk should not be shared. Sharing risks should only be done in extreme circumstances because it often leads to confusion and disputes.

If a risk cannot be clearly assigned to the agency or the design-builder, the risk must be broken down further into details. An example of this concept is shown in Figure 4.3. The contracting agency may choose to shift the responsibility for some permitting to the design-builder. The example shows the agency obtaining initial local agency permits and the design-builder taking the responsibility for modifications to the permits as design progresses. In the case of local agency permits, there are even likely some permits which the design-builders regularly obtain in commercial construction and they would be willing to take responsibility for those permits in their entirety. Breaking down local agency permits further than what is shown in the example will result in even more appropriate allocation of risk.

Shared Allocation

Contractual responsibility items	Agency	Shared	DB
Local Agency Permits		✓	

Individual Allocation

Contractual responsibility items	Agency	DB
Obtain initial local agency permits	✓	
Modifications to existing local agency permits		✓

Figure 4.3: Risk Sharing Concept

[39] Washington State DOT (2003). Design-Build Guidebook – Chapter 3 Update (http://www.wsdot.wa.gov/biz/InnvContract/desbuild.htm - Viewed May 1, 2005).

4.5 Appropriate risk-allocation strategies

The ultimate goal of risk allocation is to assign the risks to the party that is best able to manage them. Proper risk allocation will lead to lower costs and better achievement of the project goals. As a guide to risk allocation, this section introduces some essential risk allocation principles and techniques.

Allocation of risks to achieve project goals – When any party is responsible for a risk, they must be motivated to monitor the risk and apply preventative measures. Every attempt should be made to allocate risks in alignment with the project goals. For example, the agency may be willing to pay more for a design-builder to take the risk for utility relocation if achieving the shortest project schedule is project priority. Design-builders will place a premium on accepting this risk as they cannot wholly control it, but they may be willing to take it at a premium.

Balancing the burden of risk – As previously stated, design-build delivery provides a temptation to assign many risks to contractors that are traditionally the burden of the agency. In addition to inherent design-risks, agencies will examine risk for all or portions of items such as geotechnical investigations, utility relocations, and right of way and permit acquisitions. However, placing too much risk on the design-builder will raise the bid price, and the agency will end up paying more for the same end product. At an extreme, too much burden on the design-builder can lead to forfeit or bankruptcy. Therefore, it is important to balance the risks adequately among the parties and avoid the temptation to assign unneeded risks to the design-builder.

Allocation to the party with the highest degree of control – Holding uncontrollable risk causes a high risk premium, which may raise the bid price and diminish the positive efforts of avoidance measures. The ability to control the task and associated risk depends on the task assignment, level of experience, political regulation, industry custom, and timing of project participation. Typical examples are the allocation of permit and right of way acquisition. Although the contracting agency may choose to allocate the responsibilities to the design-builder, it is often prudent for the agency to retain such risks because the contracting agency is more experienced, has privilege/eminent domain, and can start the process before the selection of the design-builder.

Allocation to the party who is less vulnerable – The potential magnitude of loss is a primary factor in determining the price a design-builder must assign to accepting responsibility for a risk. The magnitude of loss is not a fixed value, but it can vary depending on the responsible stakeholder. Even identical values can lead to different magnitudes of loss for different stakeholders. Theoretically, parties with higher wealth have less utility on same value, i.e., they are less susceptible to loss or gain and require less risk premium. Force majeure risks are a good example. Force majeure risks usually have low probability of occurrence, but may cause significant loss to the responsible party. Therefore, usually the contracting agency, which is a representative of a government and has more wealth and therefore less utility on the same value, retains such risks. The contracting agency can still choose to shift the risks to the design-builder, but at higher risk premium.

After the highway agency determines which risks should be allocated to which parties, the process of authoring corresponding contract language to support this allocation can begin. The language in the RFP and design-build documents reflects the risks assigned in the design-build project risk allocation matrix. These documents serve to communicate the risks to the proposers and form legal bounds of the contract. Chapter 5 discusses methods to communicate project goals and project risks through the RFP evaluation plan. Chapter 6 provides direction about how to author contract provisions around many of the risks identified in this chapter.

Chapter 5: Evaluation Planning and Award

The surge in use of design-build project delivery for public works projects has proliferated a number of methodologies for proposal evaluation. Public design-build procurements require a fair and equitable system to allow an agency a logical method to establish which proposal has the highest probability of successful completing the project at the most favorable overall cost. Inherent to the success of this system is a highly developed, well-defined evaluation plan that can quantify many of the qualitative aspects of each proposal. Thus, this chapter will identify the component elements of a comprehensive evaluation plan and demonstrate the various methods in use to develop quantitative scoring systems that lead to a fair and equitable award recommendation to the source selection board.

The most common problem caused by a poor evaluation plan does not involve default. It generally takes the form of a minimally qualified contractor attempting to minimize project quality to avoid losing money on the project.[40] This situation generally finds the agency coping with an inordinate amount of change order requests, time extension requests and quality disputes. It is virtually impossible to write a perfect set of plans and specifications. Therefore every ambiguity will be used to reduce the overall quality of the completed project. The ultimate end is a dissatisfied agency, a financially bruised design-builder, and more work for the court system that must settle the disputes generated by a problem project after construction completion. Additionally, a check of the final cost of the project including claims and legal fees will likely show that it ultimately cost more than the prices quoted by unsuccessful offerors on the same project prior to award.

5.1 Evaluation plan transparency

Thus, it is imperative for all the parties involved in a design-build project that the evaluation plan be fair, equitable, and transparent. In this Guide the term "transparent" is used to describe an evaluation process designed so that the competitors can tell precisely how the winning proposal will be selected and use that knowledge to enhance their proposals in a manner the is responsive to project-specific requirements as well as agency technical preferences. An insightful article written by Cordell Parvin in 2000[41] articulates the importance for clearly communicating the method for selecting the winning proposal. Parvin furnishes a list of recommendations that should be followed to avoid the potential for bid protest and it includes the following:

- "Select design-build teams based on a two-step process where a limited number of design-builders [are] short-listed;
- Clearly state the evaluation criteria and weight given for each item and ensure that the evaluation team uses them;
- Clearly state the requirements of the RFP including what will be considered a non-responsive proposal;
- Do not seek from design-builders the number or dollar amount of changes on past projects constructed by them;

[40] Ellicott, M.A. (1994). "Best-Value Contracting," *Proceedings, Area Engineer's Conference,* TransAtlantic Division, U. S. Army Corps of Engineers.
[41] Parvin, C., (2000). "Design-build: Evaluation and Award," *Roads and Bridges*, 38(12).

- Give equal opportunity in the second stage for each short-listed team to converse with representatives of the public agency's evaluation team to clarify their proposal and any of the requirements of the RFP; and
- Provide candid feedback and a stipend to unsuccessful bidders."

This list is based on several cases where the award was successfully protested because the evaluation plan was unclear and overly subjective. Award protests and their subsequent project delays are completely avoidable by the agency investing the upfront resources necessary to develop a fair, equitable, and perhaps most importantly, transparent evaluation system with which to select the best value among several competing proposals.

5.1.1 Subjectivity in evaluations

An essential premise in design-build evaluation planning is that the design is not complete at contract award. Thus, it is always in the agency's best interest to ask for information regarding the design-builders' design approaches. Normally, this information is evaluated, and the output is used in the best-value award decision. The review of design product, in any form, is by definition an exercise in the application of professional judgment. In traditional design-bid-build contracts where the design is out-sourced to a consulting engineering firm, the agency's internal design professionals typically review the consultant's design product to ensure that it conforms to the standards of the design contract as well as laws, codes, regulations, and agency design policy. Thus, it is expected that the agency design professional will exercise not only an objective checking process but also a subjective evaluative process using his/her professional judgment in those areas that are not specifically defined. Thus, it can easily be concluded that the very act of evaluating design product is inherently subjective.

A protest of a design-build evaluation plan in Minnesota dealt with the issue of subjectivity in the evaluation process. The plaintiff, a design-build team who had failed to make the shortlist, argued that the process was "arbitrary and capricious."[42] In its Findings of Fact, the district judge stated: "The court recognizes that there is a human element in the evaluation process. It would be *impossible to use people in the process and filter out subjective evaluation*. [emphasis added by author] However, the court also recognizes that the fact that the process could be improved does not make the process used in this case arbitrary or capricious." This finding also discussed the fact that the requirements for making the shortlist were published in the RFQ, that the evaluators were professionally competent to make judgments between competing statements of qualifications, and that the evaluation criteria were applied as published. Thus, the protest was denied and the Minnesota Department of Transportation's evaluation plan was vindicated even though it contained and element of subjectivity, precisely because it was transparent.

Comparing the results of this case with the earlier points by Parvin, several parallels can be found. First with respect to the qualifications of the evaluation team, Parvin states: "Leave no doubt about the honesty and integrity of the public agency's evaluation tea, made up of design and construction professionals." MnDOT accomplished this by not only staffing the panel with its own qualified design and construction professionals but it also brought in outside consultants

[42] Minnesota District Court, (2004). Lunda/Shafer Joint Venture versus Minnesota Department of Transportation, Second Judicial District, Civil Division, Court File No. CO-03-11451, Saint Paul, Minnesota.

who had extensive design-build experience to supplement its internal members whose design-build experience was limited. Next, Parvin indicates that evaluation criteria should be clearly expressed and that the agency must "ensure the evaluation team uses them." In both instances, the court found this to be the case. While it is functionally impossible to make an evaluation plan "protest-proof," it is possible to win a protest even if the evaluation plan contains some element of subjectivity in its application. The main requirement to be successful is transparency, which ensures that not only the competitors can easily determine how the best-value award decision will be made but also the courts can if a protest is lodged.

5.1.2 Rules for evaluation planning

Based on the above analysis, a short list of general rules can be proposed for the development of a design-build evaluation plan. These rules are as follows:

1. Be as explicit as possible with all evaluation criteria.
2. Publish all the evaluation criteria and their corresponding weights or their order of importance.
3. Strive to be as objective as possible in developing evaluation criteria.
4. Ensure that the evaluation team understands how to apply the criteria during the evaluation and that they apply them as intended,
5. Assign the evaluation of criteria that require some subjective judgment to evaluators who are not only professionally qualified to make those judgments but who also have a reputation for integrity and fairness.
6. Supplement the evaluation panel with outside experts if the necessary experience is not available internally.

5.1.3 Evaluation panel structure

Structuring an evaluation typically involves appointing subject matter experts to an evaluation panel and giving them the time and tools to conduct the evaluation. The make-up of the panel is driven by the technical complexity of the project and any standard agency practices. A panel of generalists may evaluate technically simple projects, but highly technical projects will require specialists who can understand the actual scope being offered and the complexities that are associated with it. It is also affected by the time available in which to complete the evaluation and award the contract. Projects with a short timeline will generally need a larger number of evaluators so that the amount each evaluator must rate is reduced to a specific portion of the project proposals. Thus, the overall time it takes to complete the evaluation is minimized.

The important issue with panel composition is to ensure that there is at least one evaluator with the proper background and credentials to make an informed, credible rating of every major portion of the proposals. For instance, if the RFQ or RFP requires the offerors to submit a financial statement to demonstrate financial capability, the panel should include an accountant or another type of financial professional who is qualified to read, understand, and rate each offeror's financial statement. In the same vein, most RFP's require some form of price proposal breakdown. Therefore, a knowledgeable estimator should be assigned the duties of comparing the price proposals to the independent estimate and determine if the subtotals contained in the

cost breakdown as well as the bottom-line are both realistic and reasonable for the given project. In a different direction, it is also good policy to assign a construction professional to assist in evaluating the design input in addition to the appropriate design professionals. The construction person can assist the design evaluators in determining the impact on field issues that the proposed design may have. Finally, if a project has a significant feature of work that requires politically sensitive permits to be issued by a third party before construction can start, then a person who is expert in the requirements of the applicable permitting agencies should also be assigned to the evaluation panels.

To ensure that the panel both understands the evaluation plan and can implement it in a uniform manner, training for the panel should be scheduled and conducted before the actual takes place. The major purpose of the training is to ensure the evaluators understand the evaluation plan and can apply it as written. The training typically involves the following subjects:

- Essential elements of the RFP and evaluation plan
- Project constraints
- Project requirements
- Evaluation documentation
- Confidentiality

5.1.4 Evaluation planning

Figure 5.1 is a graphical model for what must a good evaluation plan must accomplish. Essentially, the agency must develop a series of evaluation criteria that match the salient project goals and project performance criteria published in the RFQ/RFP. The evaluation criteria will fall into four categories: technical, organizational, schedule, and price. Each criterion must have a standard associated with it that can be used to measure the proposed item of work. Each category must have a weight relative to all other categories, and finally, there must a methodology or award algorithm to "roll-up" the scores in each category and make a final best-value decision.

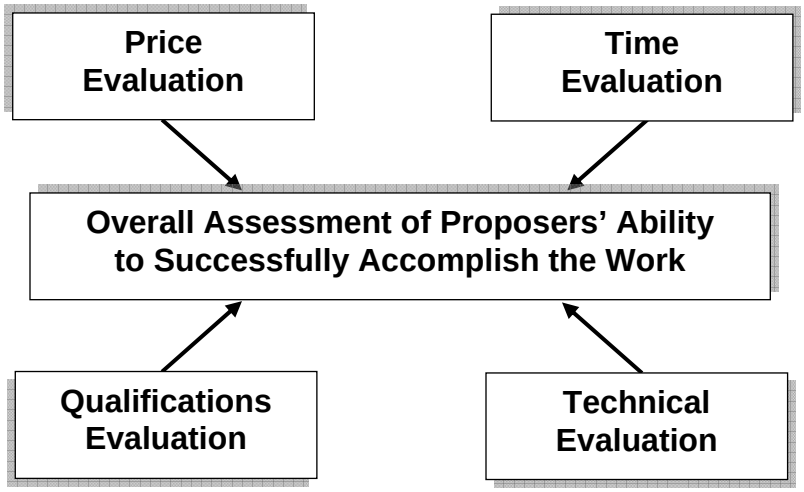


Figure 5.1: Evaluation Planning Model

As discussed in Chapter 3, the project team must be clear on the reason that design-build was selected as the project delivery method for this particular project and what is most important for this project while designing the evaluation system. For instance, if schedule is the preeminent factor, then those evaluation criteria that directly impact the ultimate schedule must be given a greater weight than all other categories. However, agencies must be careful on the weighting evaluation factors. Some enabling legislation dictates the evaluation plan weighting or sets limits on the weighting of non-price factors.

5.2 Best-value contracting framework

NCHRP Project 10-61, Best-Value Procurement Methods for Highway Construction Projects stipulates that best-value parameters are the foundation of the best-value contracting framework.[43] Therefore, it is important to include these parameters in the best-value contracting framework. Figure 5.2 illustrates the parameters' relationship to the other components of the best-value contracting system. Upon determination of those parameters that are most appropriate for a given project, the agency can plan the remainder of the details for the best-value procurement.

The NCHRP 10-61 report applies to all project delivery methods. This Guide is following the NCHRP 10-61 framework and modifying it for design-build projects specifically to help promote a consistent best-value process in the highway sector.

[43]NCHRP (2005). *Best Value Procurement for Highway Construction Projects,* NCHRP Project No. 10-61, National Cooperative Highway Research Program, Transportation Research Board, National Research Council, Washington, D.C.

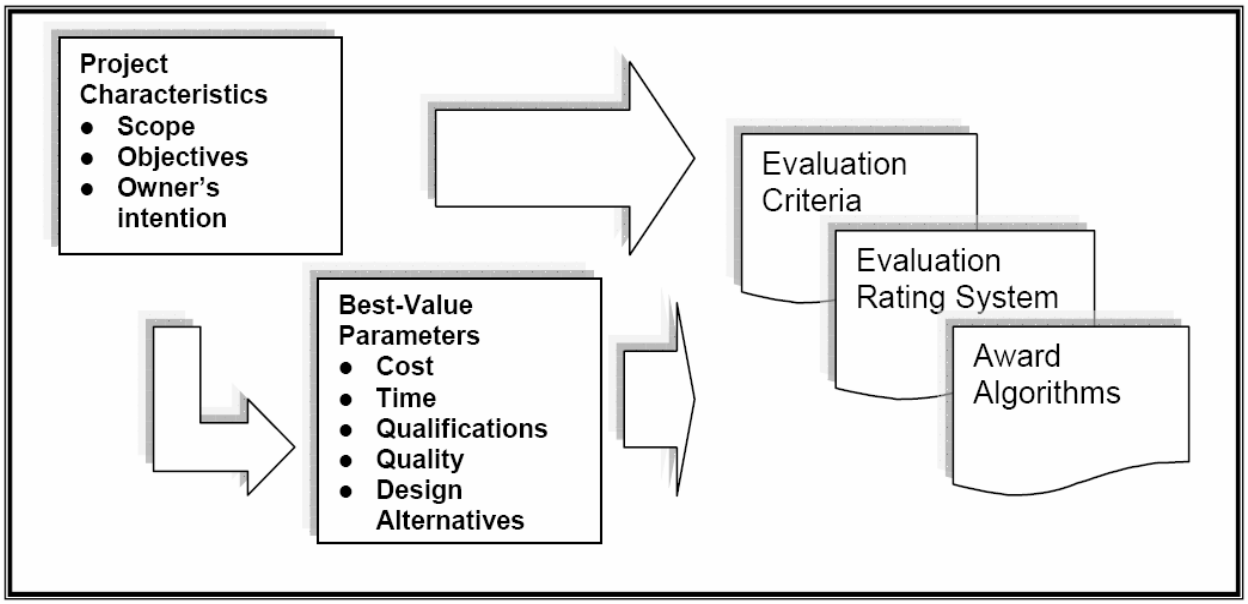


Figure 5.2: Best-Value Framework

5.2.1 Select Best-Value Parameters

The first step is for the agency to identify those best-value parameters that will be applicable to this particular project. Care should be taken to only include those parameters whose evaluation will help the agency distinguish the best value between competing proposals in areas that are critical to project success. For instance, asking each proposal to detail a storm water mitigation plan which amounts to regurgitating the contents of the appropriate environmental regulation and will not differ significantly between proposals will not assist the evaluation panel in identifying the best proposal as all proposals will receive the same rating. Including too many parameters merely unnecessarily increases the magnitude of effort on during both industry proposal preparation and agency proposal evaluation and essentially waters down the value of evaluation output. Table 5.1 is the list of typical best-value parameters outlined in the NCHRP 10-61 report. It also lists corresponding evaluation criteria that must be developed to support the evaluation plan. The technical portion of the design has deliberately been reduced to a single criterion, as each project will have its own requirements for technical evaluation.

Table 5.1: Summary of Best-Value Parameters and Corresponding Evaluation Criteria

Parameter	*Final Designation	Evaluation Criteria	Includes	Remarks
Cost	A.0	Initial Capital Cost	Design, construction, and perhaps, procurement costs.	Sometimes called the "Bid" price
Time	B.0	Schedule	Time to design and build project.	Sets contract performance period
Qualifications	P.0	Prequalification	Financial and corporate information as well as bonding requirements.	Typically a routine government form used for all contracting opportunities.
	P.1	Past Project Performance	Corporate project experience on past project that are similar to the project at hand.	Preference is given to offerors with the most relevant project experience.
	P.2	Key Personnel Experience & Qualifications	Qualifications of key personnel	Licenses, registrations, and past project experience of individuals.
	P.3	Subcontractors Information	Subcontracting plan including small business utilization	Often requires that goals for participation by certain types of firms be met.
	P.4	Project Management Plans	Plans for logistics, material management, equipment, public relations, etc.	Often related to schedule constraints.
	P.5	Safety Record and/or Plan	Corporate safety record and plans for specific safety hazards.	Often uses the Workmen's Compensation Insurance Modifier as a metric to measure safety record.
Quality	Q.0	Quality Management Plans	Typical QA/QC program submitted prior to award.	May include design QA/QC depending on agency policy
Design Approach	D.0	Proposed Design Approach	Owner allows contractor to propose its own design for those features of work that are not designed by the owner. May also include maintenance of traffic plan	Owner makes decision which portions of the design approach will be accepted prior to award and indicates those items that must be changed in the final proposal
	D.1	Technical Proposal Responsiveness	Proposals are considered responsive if they receive a minimum technical score.	Requires that a measurable standard be developed for each evaluation criteria.
	D.2	Environmental Considerations	Plans to obtain the necessary permits that have not already been obtained prior to award	Many are required by law and/or regulation.

* Note: Best-Value parameter designations come from NCHRP Report 10-61.[44]

[44] NCHRP (2005). *Best Value Procurement for Highway Construction Projects,* NCHRP Project No. 10-61, National Cooperative Highway Research Program, Transportation Research Board, National Research Council, Washington, D.C.

5.2.2 Best-value rating systems

Once the best-value parameters and their associated evaluation criteria have been developed, the next step involves selecting the system to rate the proposals' responses to the evaluation criteria. Rating systems essentially fall in two categories: those that yield a numeric result and those that do not. Public owners have used a variety of evaluation (scoring or rating) systems. Many are quite sophisticated and some are quite simple. All can generally be categorized into the following four general types of systems as depicted in Figure:

- Satisficing (more commonly called "Go/No-Go")
- Modified Satisficing
- Adjectival Rating
- Direct Point Score

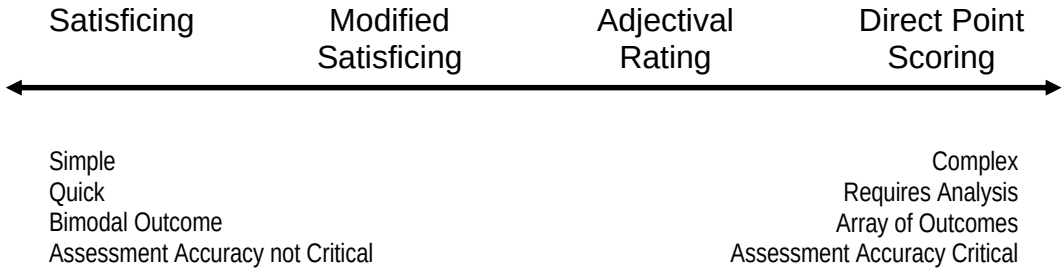


Figure 5.3: The Best-Value Evaluation Rating System Continuum

Satisficing – Satisficing is the simplest and easiest evaluation system to understand for both evaluators and bidders. To use it, the evaluation planner must establish a minimum standard for each and every evaluation criterion against which the proposals can be measured. This is relatively simple for certain kinds of criteria such as qualifications standards. Satisficing is often referred to as "Go/No-Go" by the industry. Satisficing is an "all or nothing" process, thus it is not critical to determine an accurate value for alternatives. An alternative is either acceptable or not acceptable. An alternative that exceeds the minimum would merely be considered acceptable, regardless of the amount of value added. The main advantage of satisficing is that it can be used to reduce the number of alternatives to be evaluated. On the other hand, satisficing would not be an appropriate evaluation methodology for alternatives where the project owner wishes to take value added features into account.

Modified Satisficing – Modified satisficing recognizes that there may be degrees of responsiveness to any given submittal requirement. As a result, the range of possible ratings is expanded to allow an evaluator to rate a given category of a proposal across a variety of degrees. Thus, a proposal that is nearly responsive can be rated accordingly and not dropped from the competition due to a minor deficiency. Additionally, an offer that exceeds the published criteria can be rewarded by a rating that indicates that it exceeded the standard. Modified satisfied systems usually differentiate between minor deficiencies that do not eliminate the offeror from

continuing in the competition and major or "fatal" deficiencies that cause the proposal to be immediately rejected. It is important for agencies to include the definition of a fatal deficiency and its consequences in the solicitation. The simplest of the forms of modified satisficing that are currently in use is the "red-amber-green" system with the definitions for each rating as shown below:

- Green – fully responsive to the evaluation criteria
- Amber – not responsive, but deficiency is minor
- Red – not responsive due to fatal deficiency

Table 5.2 contains modified satisfising rating systems from two public agencies with more than three decades worth of design-build experience. These examples are not the standard system for all projects in either of the two military departments. Evaluators should resist applying the same definitions on each project as all projects are unique. They do furnish excellent examples of how two different owners defined the ratings that were used on two typical projects. Additionally, the definitions for each rating shown in Table 5.2 were published within the context of their respective RFP's. Thus, the design-builders were cognizant of the evaluation framework and could craft their proposals accordingly. It should also be noted that the definition of each rating is clear and offers a standard against which the evaluators can measure each individual proposal.

Table 5.2: Modified Satisficing Examples[45, 46]

Army Rating	Evaluation Plan Definition	Air Force Rating	Evaluation Plan Definition
Dark Blue	Proposal meets the minimum solicitation requirements for this item and has salient features that offer significant advantages to the Government.	Blue	Exceeds specified minimum performance or capability requirements in a way beneficial to the Air Force.
Purple	Proposal meets the minimum solicitation requirements for this item and has salient features that offer advantages to the Government.	N/A	N/A
Green	Proposal meets the minimum solicitation requirements for this item.	Green	Meets specified minimum performance or capability requirements necessary for acceptable contract performance.
Yellow	Proposal meets most of the minimum requirements for this item, but offers weak area or mimics solicitation language rather than offering understanding of the requirements.	Yellow	Does not clearly meet some specified minimum performance or capability requirements necessary for acceptable contract performance, but any proposal inadequacies are correctable.
Red	Proposal meets some but not all the minimum requirements for this item or does not address all required criteria.	Red	Fails to meet specified minimum performance or capability requirements. Proposals with an unacceptable rating are not awardable.

[45] U.S. Army Engineer District (USAED), New York (2002). "Request For Proposals: Composite Medical Facility Replacement Thule AFB Greenland," IFB No. DACA51-02-R-0016 New York, New York.
[46] U.S. Air Force, (2001) "IDIQ Family Housing Design-Build Plus Services, Luke Air Force Base Seed Project" RFP F41622-01-R-0011 J, Brooks Air Force Base, San Antonio, Texas.

Adjectival Rating – Adjectival rating systems utilize a specific set of adjectives to describe the conformance of an evaluated area within a proposal to the project's requirements in that area. Adjectival rating systems are a more sophisticated extension of modified satisficing. They recognize that a more descriptive rating system is in order and that the rating system should be continuous rather than discrete. Adjectival systems also recognize that it is easier to achieve consensus and hence uniformity in evaluation about whether a rated aspect conforms to a particular adjective than it is to assign a discreet numerical score to the same element. Thus, adjectival ratings are more easily defensible in that they are normally associated with a published standard against which the evaluated aspect of the proposal is compared to arrive at the adjectival rating. There are three important elements of an adjectival rating system:

- Definitions;
- performance indicators; and
- differentiators.

Each adjectival rating must have all three. The definition must be both clear and relevant to a specific evaluation factor. Next, each grade of adjective should be associated with a performance indicator that is cogent to the evaluation factor. The evaluators will use the indicator as a marker with which to determine the appropriate rating. Finally, a differentiator should be given to assist the evaluators with those proposals that seem to straddle two adjectival grades. This process is best illustrated by the example given in Table 5.3 for Proposal Risk from an Air Force design-build RFP.

Table 5.3: Example Adjectival Rating for Three Different Evaluated Areas[47]

Evaluated Area **Adjectival Rating**	**Evaluation Plan Definition**
PROPOSAL RISK	Proposal risk relates to the identification and assessment of the risks, weaknesses and strengths associated with the proposed approach as it relates to accomplishing the requirements of the solicitation.
High	Likely to cause significant disruption of schedule, increased cost, or degradation of performance. Risk may be unacceptable even with special contractor emphasis and close Government monitoring.
Moderate	Can potentially cause some disruption of schedule, increased cost, or degradation of performance. Special contractor emphasis and close Government monitoring will probably be able to overcome difficulties.
Low	Has little potential to cause disruption of schedule, increased cost, or degradation of performance. Normal contractor effort and normal Government monitoring will probably be able to overcome difficulties.
PERFORMANCE RECORD	More recent and relevant performance will have a greater impact on the Performance Confidence Assessment than less recent or relevant effort. A strong record of relevant past performance will be considered more advantageous to the Government.
Exceptional High Confidence	Based on the Offeror's performance record, essentially no doubt exists that the Offeror will successfully perform the required effort.
Very Good Significant Confidence	Based on the Offeror's performance record, little doubt exists that the Offeror will successfully perform the required effort.
Satisfactory Confidence	Based on the Offeror's performance record, some doubt exists that the Offeror will successfully perform the required effort.
Neutral/Unknown Confidence	No performance record identifiable.
Marginal Little Confidence	Based on the Offeror's performance record, substantial doubt exists that the Offeror will successfully perform the required effort. Changes to the Offeror's existing processes may be necessary in order to achieve contract requirements.
Unsatisfactory No Confidence	Based on the Offeror's performance record, extreme doubt exists that the Offeror will successfully perform the required effort.
RELEVANCY OF PAST PROJECTS	Past projects will be compared to the solicitation and those that involved features of work that are similar in size, scope, and technical complexity will be considered relevant.
Highly Relevant	The magnitude of the effort and the complexities on this contract are essentially what the solicitation requires.
Relevant	Some dissimilarities in magnitude of the effort and/or complexities exist on this contract, but it contains most of what the solicitation requires.
Somewhat Relevant	Much less or dissimilar magnitude of effort and complexities exist on this contract, but it contains some of what the solicitation requires.
Not Relevant	Performance on this contract contains relatively no similarities to the performance required by the solicitation.

[47] U.S. Air Force, (2001) "IDIQ Family Housing Design-Build Plus Services, Luke AFB Seed Project" RFP F41622-01-R-0011 J, Brooks Air Force Base, San Antonio, Texas.

Direct Point Scoring – Direct point scoring evaluation allows for a continuous rating, and thus may appear to give more precise distinctions of merit. Direct point scoring is a very good system for those evaluation factors which can be precisely measured (i.e. calendar days, lane closures, etc.). However, direct point scoring may lend an unjustified air of precision to evaluations, providing an appearance of objectivity even though the underlying ratings are inherently subjective. Evaluators assign points to evaluation criteria based upon some predetermined scale or the preference of the evaluator. Figure 5.4 illustrates the direct point scoring system through the use of a percentage defining a raw score definition which is then translated into the final point allocation.

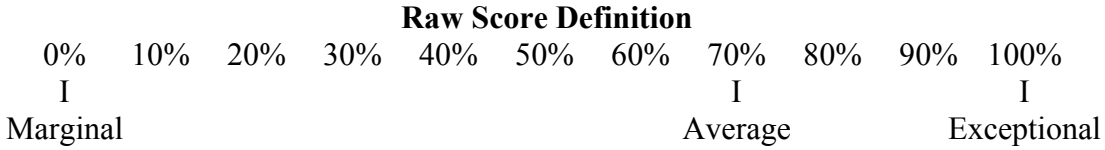


Figure 5.4: Typical Direct Point Scoring System

This system or variations of it are used by many state-level transportation agencies, but is not typically used by federal agencies because the use of numerical rating systems in conjunction with specific percentage weightings for the factors requires the source selection authority to convert the decision-making process to a formula without knowing what will be offered. Such a process allows virtually no discretion to the selection official.

Direct point scoring evaluation is probably the most complex best-value evaluation method. One of its weaknesses is the variation that is induced between evaluators who are scoring the same category when they are asked to assign a numerical score to the category. Even if the evaluators are restricted to using integers, each individual will have his or her own methodology for arriving at a point score. Thus, it becomes difficult for the agency to ensure that the evaluation system is both fair and uniformly applied to all proposals. Fundamentally, two engineers looking at the same thing can probably agree on whether or not it is satisfactory or unsatisfactory (i.e., an adjectival rating), but getting them to agree on exactly how many points a given category should be awarded will be much more difficult.

Due to the difficulties in the application of direct point scoring, some agencies use adjectival ratings as the basis of direct point scoring systems. These should still be considered direct point scoring methods, but the adjectival ratings are used to narrow down the scoring to within ranges. Table 5.4 illustrates and example from the Washington State Department of Transportation that uses a direct point scoring system bases upon adjectival ratings.

Table 5.4: Direct Point Scoring Based Upon Adjectival Ratings[48]

Adjectival Rating	Evaluation Plan Definition	Range of Score (%)
Excellent	The Proposal demonstrates an approach that is considered to significantly exceed the RFP requirements/objectives in a beneficial way (providing advantages, benefits, or added value to the Project) and provides a consistently outstanding level of quality. In order for the Proposal to meet the minimum criteria to be considered to be Excellent, it must be determined to have a significant strength and/or a number of strengths and no weaknesses. The minimum score for Excellent is 90 percent. The greater the significance of the strengths and/or the number of strengths will result in a higher percentage, up to a maximum of 100 percent. There is no risk that the Proposer would fail to meet the requirements of the RFP.	90-100
Very Good	The Proposal demonstrates an approach that is considered to exceed the RFP requirements/objectives in a beneficial way (providing advantages, benefits, or added value to the Project) and offers a generally better than acceptable quality. In order for the Proposal to meet the minimum criteria to be considered to be Very Good, it must be determined to have strengths and no significant weaknesses. The minimum score for Very Good is 80 percent. The greater the significance of the strengths and/or the number of strengths, and the fewer the minor weakness will result in a higher percentage, up to a maximum of 89 percent. There is very little risk that the Proposer would fail to meet the requirements of the RFP.	80-89
Good	The Proposal demonstrates an approach that is considered to meet the RFP requirements/objectives and offers an acceptable level of quality. In order for the Proposal to meet the minimum criteria to be considered to be Good, it must be determined to have strength(s), even though minor and/or significant weaknesses exist. The minimum score for Good is 70 percent. The greater the significance of the strengths and/or the number of strengths, and the fewer the minor or significant weakness will result in a higher percentage, up to a maximum of 79 percent. The Proposer demonstrates a reasonable probability of meeting the requirements of the RFP.	70-79
Non-responsive	The Proposal demonstrates an approach that contains minor and/or significant weaknesses and no strengths. The Proposal is considered to not meet the RFP requirements and may be determined to be nonresponsive.	0-69

[48] Washington State DOT (2005). I405 Kirkland Stage I HOV Design-Build Request for Proposal, Washington State DOT, Olympia, Washington.

5.2.3 Best-value award algorithms for design-build projects

After selecting the appropriate best-value evaluation criteria and associated rating system, the evaluators must choose an appropriated award algorithm (i.e. formula or process to combine the evaluation criteria ratings). The NCHRP 10-61 Best-Value Contracting research project identified seven different best-value algorithms that were in use by various public construction agencies. These are shown in detail in Table 5.5. The research then aggregated these seven algorithms into the following three: Meets Technical Criteria-Low Bid, Value Unit Price, and Qualitative Cost-Technical Trade-off. For design-build, this Guide is recommending these same three algorithms with two versions of Value Unit Price. Thus, four best-value award algorithms are being recommended by this Guide:

- Meets Technical Criteria-Low Bid;
- Weighted Criteria;
- Fixed Price- Best Proposal; and
- Qualitative Cost-Technical Trade-off.

Table 5.5: Summary of Best-Value Award Algorithms

Best-Value Award Algorithm		Algorithm	Variables
Meets Technical Criteria—Low-Bid		If $T > T_{min}$, Award to P_{min} If $T < T_{min}$, Non-Responsive	T = Technical Score P = Price
Value Unit Price	Adjusted Bid	AB = P/T Award AB_{min}	AB = Adjusted Bid
	Adjusted Score	AS = (T x EE)/P Award AS_{max}	AS = Adjusted Score EE = Engineer's Estimate
	Weighted Criteria	$TS = W_1S_1 + W_2S_2 + \ldots + W_iS_i + W_{(i+1)}PS$ Award TS_{max}	TS = Total Score W_i = Weight of Factor $_i$ S_i = Score of Factor $_i$ PS = Price Score
	Quantitative Cost-Technical Trade-off	$T_{Increment} = [(T_j/T_j) - 1] \times 100\%$ $P_{Increment} = [(P_j/P_i) - 1] \times 100\%$ If $T_{Increment} > P_{Increment,}$ Award $Proposal_i$ If $T_{Increment} < P_{Increment}$, Do Not Award $Proposal_j$, Repeat with $Proposal_{j+1}$ Repeat Process until $T_{Increment} > P_{Increment}$	T = Technical Score P = Price
	Fixed Price—Best Proposal	Award $T_{max,}$ Fixed P	T = Technical Score P = Price
Qualitative Cost-Technical Trade-off		Similar to above, only no quantitative analysis of difference. Award to proposal that has best value in proposed scope.	Evaluation Panel reaches consensus as to which proposal is the best.

Meets technical criteria–low-bid (cost) – is any selection process where the eventual award will be determined by the lowest price, fully qualified and/or responsive bidder. As a general rule, the low-bid approach is preferred on projects where the scope is very clearly defined, and where innovation or design alternatives are not being sought. This might include highway projects with a specified type of pavement, geometric design, and minimal ancillary work. If the "cost" element is added to the selection process, it can also be used for more complex projects where different proposals impact life-cycle costs, right of way expense or other costs incurred by the project owner.

Weighted Criteria – has the broadest definition of all best-value algorithms. The weighted criteria algorithm is selected when innovation is being encouraged or the requirement for specific types of experience is required to obtain the desired outcome. Additionally, this approach may also be used when a fast track schedule is required or when constructability is inherent to the successful execution of the project. The weighted criteria algorithm has the advantage of distinctly communicating the agency's perceived requirements for a successful proposal through the weights themselves. For instance, if an agency is attempting to find innovative design solutions, a disproportionate weight can be given to the evaluation criteria that directly define the ultimate technical solution. On the other hand, if an agency is worried that the project's program might exceed the available budget, price can be given a weight of greater than 50 percent of the total, and thus, proposers will be encouraged to propose design approaches that will reduce the price or will only cause a minimal price increase.

Fixed Price–Best Proposal – is a relatively recent addition to the best-value award discipline. In design-build projects, it is sometimes called "design-to-cost." This method stipulates a fixed or maximum price and competes project scope, qualifications, schedule, and other non-cost factors instead of bid price. In other words, every proposal has the same stipulated price and the competition is on scope and quality, not cost. This method has the advantage of immediately allowing the owner to determine if the required scope is realistically achievable within the limits of a tight budget. It also reduces the best-value decision to a fairly straightforward analysis of proposed design approaches and other non-cost factors. Lastly, it truly is responsive to the efficient use of capital by committing virtually all available funding up front and using the quantity and quality of project proposals to determine the most attractive offer.

Qualitative Cost-Technical Trade-off – is an algorithm that includes the federally mandated variations of best-value award and those jurisdictions where technical and price must be evaluated separately. This algorithm could be the most subjective of all the award algorithms. In essence, the owner compares the value of the various features of the technical, schedule, and organization against the proposed price, and using professional judgment, determines if the aspects of a given proposal justifies its price and whether the additional positive attributes of a higher bid are worth more than the attributes contained in the low bidder's proposal.

5.3 Implementing Design-Build Best-Value Award Systems

Implementing design-build best-value evaluation and award is fairly straightforward if the agency gives sufficient thought to the process and devotes the resources necessary to both tailor the method to the project's requirements and develop a strategy for evaluation and award that is transparent to the competitors. This section describes a step-by-step method to implement the four best-value award algorithms along with their attendant evaluation criteria and rating systems. Figure 5.5 is a flow chart illustrating the process by which an agency should implement design-build procurement. The process is project-specific and stems from the output of the project screening and selection process for selecting design-build projects. In essence, the process involves a series of decisions that are constrained by the best-value procurement framework.

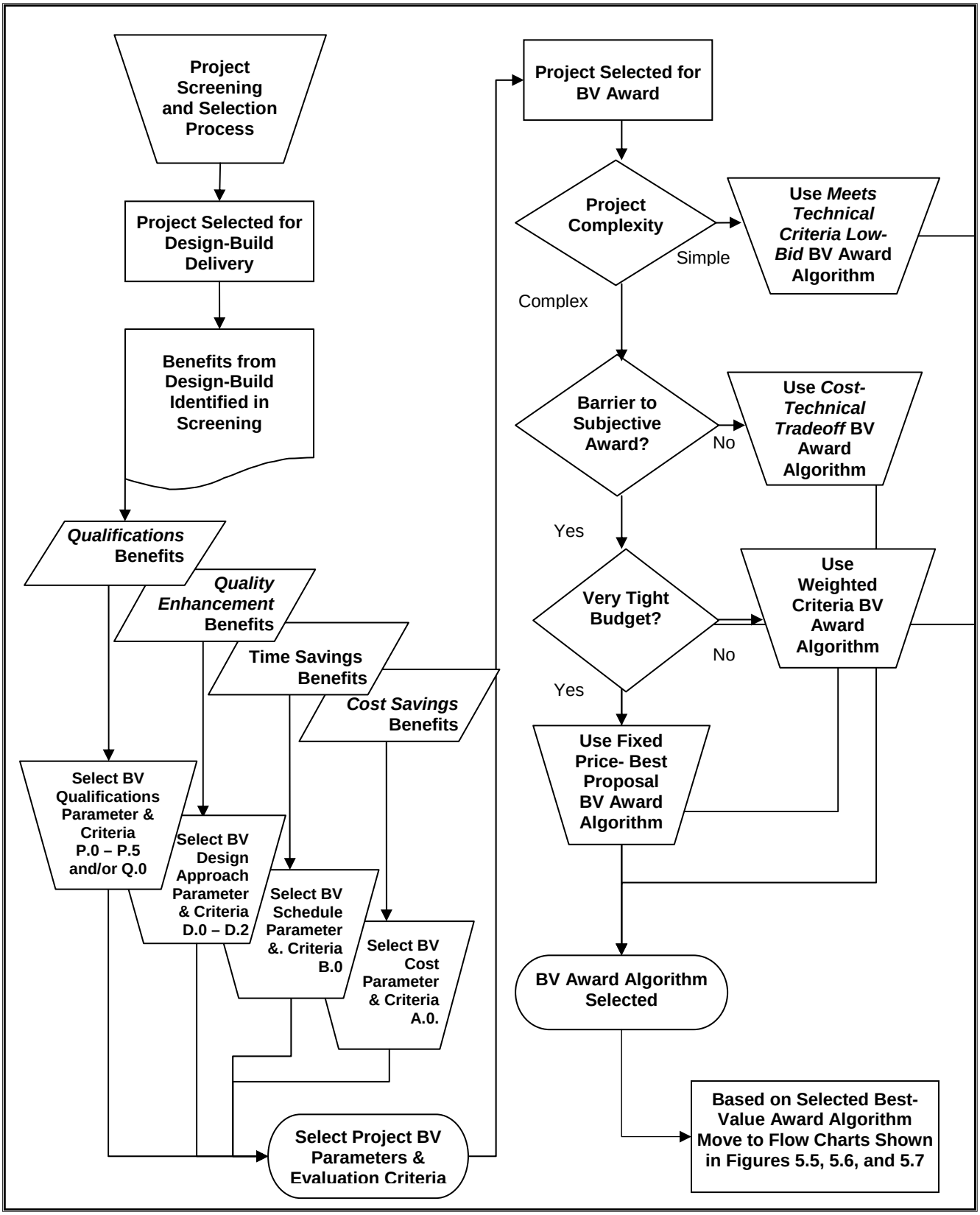


Figure 5.5: Implementing Best-Value Procurement for Design-Build Projects Flowchart

5.3.1 Meets Technical Criteria — Low-Bid

Figure 5.6 illustrates the meets technical criteria – low bid algorithm for design-build best-value procurement with the following steps:

1. Develop qualifications and technical evaluation criteria based on the project goals. For each evaluation criteria, the owner must develop a measurable standard against which responsiveness will be measured. A satisficing rating system will be associated with each standard.
2. Publish the design-build solicitation. The solicitation will contain the following items as a minimum:
    a. Scope of work, plans, and specifications.
    b. Bid form.
    c. Contract completion date or days.
    d. Design-build evaluation plan listing the evaluation criteria with corresponding standards.
    e. Description of what constitutes a non-responsive proposal.
3. Receive design-build proposals and sealed bids.
4. Evaluate design-build proposals against published standards and determine which proposals are fully responsive in meeting the technical and qualifications criteria.
5. Return the sealed bids to the authors of non-responsive proposals. Responsive proposals make up the final competitive range.
6. Open the bids for those competitors that remain in the competitive range.
7. Award to the lowest bid from within the competitive range.

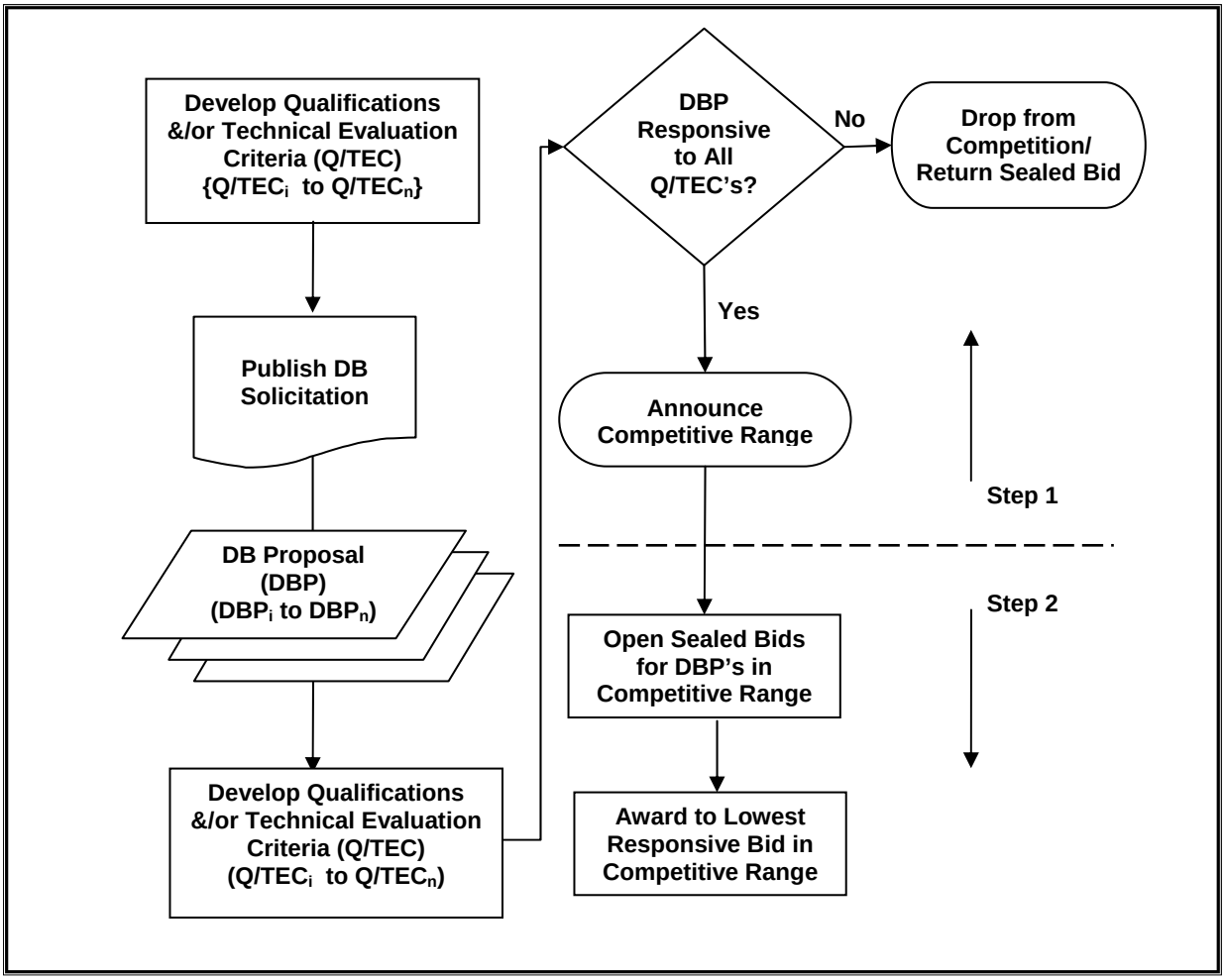


Figure 5.6: Two-Step "Meets Technical Criteria—Low-Bid" Design-build Procurement Flow Chart

It is important in this award algorithm to minimize the number of qualification and technical criteria that are required to those that come from categories that correlate highly with the project goals. The evaluation plan should be written to be completely transparent to members of industry. The goal is to have as many responsive competitors at the end of the first step as possible, thus ensuring the greatest possible price competition in the second step of the procurement. Therefore, only evaluation criteria that will assist the owner in differentiating among the pool of potential competitors should be included in the evaluation plan.

5.3.2 Weighted Criteria

Figure 5.7 illustrates the weighted criteria algorithm for design-build best-value procurement with the following steps:

1. Develop qualifications, technical, schedule, and cost evaluation criteria (QC, TC, SC, and CC respectively in the figure) as appropriate for project goals. For each

evaluation criteria, the owner must develop a measurable standard against which responsiveness will be measured. Typically a direct point scoring system would be devised around the measurable standards.

2. Publish the design-build request for qualifications (RFQ). The solicitation will contain the following items as a minimum:
    a. Scope of work, plans, and specifications.
    b. Bid form.
    c. Contract completion date or days.
    d. Best-Value evaluation plan listing the qualifications evaluation criteria with corresponding standards.
    e. Design-build proposal evaluation plan listing the technical, schedule, and cost evaluation criteria with corresponding standards.
    f. Description of what constitutes a non-responsive proposal.
3. Receive Statements of Qualification (SOQ).
4. Evaluate SOQ's against published standards and determine which proposals are fully responsive in meeting the qualifications criteria.
5. Announce the competitive range made up of all fully responsive SOQ's.
6. Publish the design-build request for proposals (RFP). The solicitation will contain the following items as a minimum:
    a. Scope of work, plans, and specifications.
    b. Bid form.
    c. Contract completion date or days.
    d. Method to carry forward Step 1 qualifications ranking/scores into final evaluation.
    e. Design-build proposal evaluation plan listing the technical, schedule, and cost evaluation criteria with corresponding standards.
    f. Description of what constitutes a non-responsive proposal.
7. Evaluate design-build proposals against published technical, schedule, and cost standards and determine which proposals are fully responsive in meeting the qualifications criteria.
8. Eliminate any non-responsive proposals from the competitive range.
9. Roll-up evaluation results and determine the final point score for each responsive proposal.
10. Compute the final scores using the weighted criteria formula published in the RFP to identify the best proposal.
11. Award to the highest final score within the competitive range.

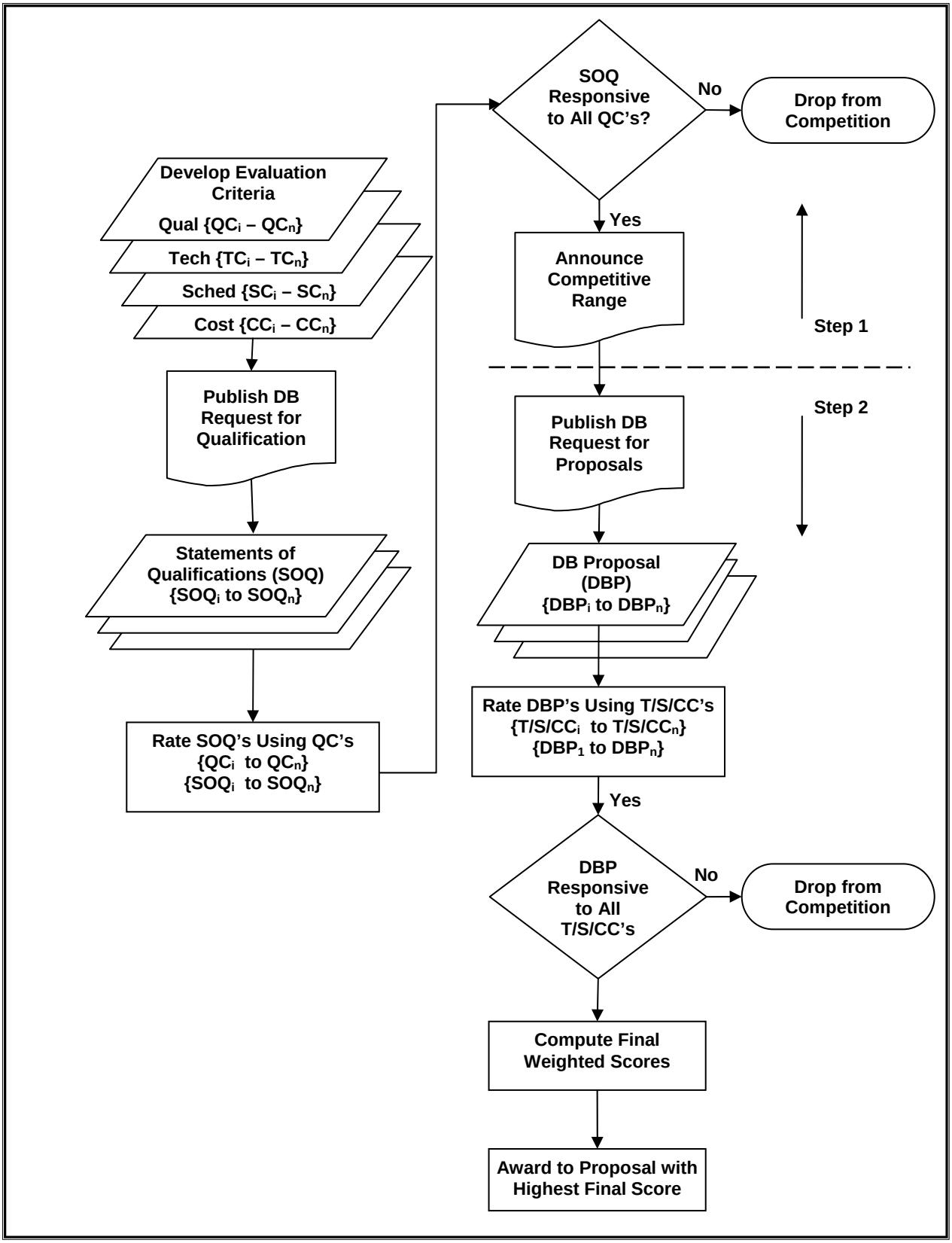


Figure 5.7: Two-Step "Weighted Criteria" Best-Value Procurement Flow Chart

5.3.3 Fixed Price – Best Proposal

Fixed price – best proposal is implemented in exactly the same fashion as weighted criteria with one exception. There are no cost evaluation criteria. The owner announces the stipulated for maximum price for the project, and all proposers develop design approaches with corresponding schedules that maximize the amount of scope that can be designed and built for that price. The evaluation uses some form of weighted criteria method with direct point scoring to arrive at a final score for each proposal and the project is awarded to the proposal that has highest score.

5.3.4 Qualitative Cost Technical Trade-off

Figure 5.8 illustrates the qualitative cost-technical trade-off algorithm for design-build best-value procurement. This method furnishes a way to deliver highway construction projects where it is difficult to quantify the differences between competitors but which require some specific technical or experiential requirements to be successful. Implementation includes the following steps:

1. Develop qualifications, technical, schedule, and cost evaluation criteria (QC, TC, SC, and CC respectively in the figure) as appropriate based on the project goals. For each evaluation criteria, the agency must develop a measurable standard against which responsiveness will be measured. Typically an adjectival rating system is used to avoid eliminating a strong competitor for a minor deficiency.
2. Publish the design-build request for qualifications (RFQ). The solicitation will contain the following items as a minimum:
    a. Scope of work, plans, and specifications.
    b. Bid form.
    c. Contract completion date or days.
    d. Design-build evaluation plan listing the qualifications evaluation criteria with corresponding standards.
    e. Design-build proposal evaluation plan listing the technical, schedule, and cost evaluation criteria with corresponding standards.
    f. Description of what constitutes a non-responsive proposal.
3. Receive Statements of Qualification (SOQ).
4. Evaluate SOQ's against published standards and determine which proposals are fully responsive in meeting the qualifications criteria.
5. Announce the competitive range of all fully responsive SOQ's.
6. Publish the design-build request for proposals (RFP). The solicitation will contain the following items as a minimum:
    a. Scope of work, plans, and specifications.
    b. Bid form.
    c. Contract completion date or days.
    d. Method to carry forward Step 1 qualifications ranking/scores into final evaluation.
    e. Design-build proposal evaluation plan listing the technical, schedule, and cost evaluation criteria with corresponding standards.
    f. Description of what constitutes a non-responsive proposal.

7. Evaluate design-build proposals against published technical, schedule, and cost standards and determine which proposals are fully responsive in meeting the qualifications criteria.
8. Eliminate any non-responsive proposals from the competitive range.
9. Roll-up evaluation results and convene technical review committee to conduct a qualitative cost-technical trade-off analysis to identify the best proposal.
10. Award to the best value from within the competitive range.

This is the most subjective of the three best-value award algorithms, and as a result, it will be the least popular to implement. However, numerous conversations with procurement officials in the federal sector indicate that they have had more award protest problems with the quantitative cost-technical trade-off than with this more subjective approach.

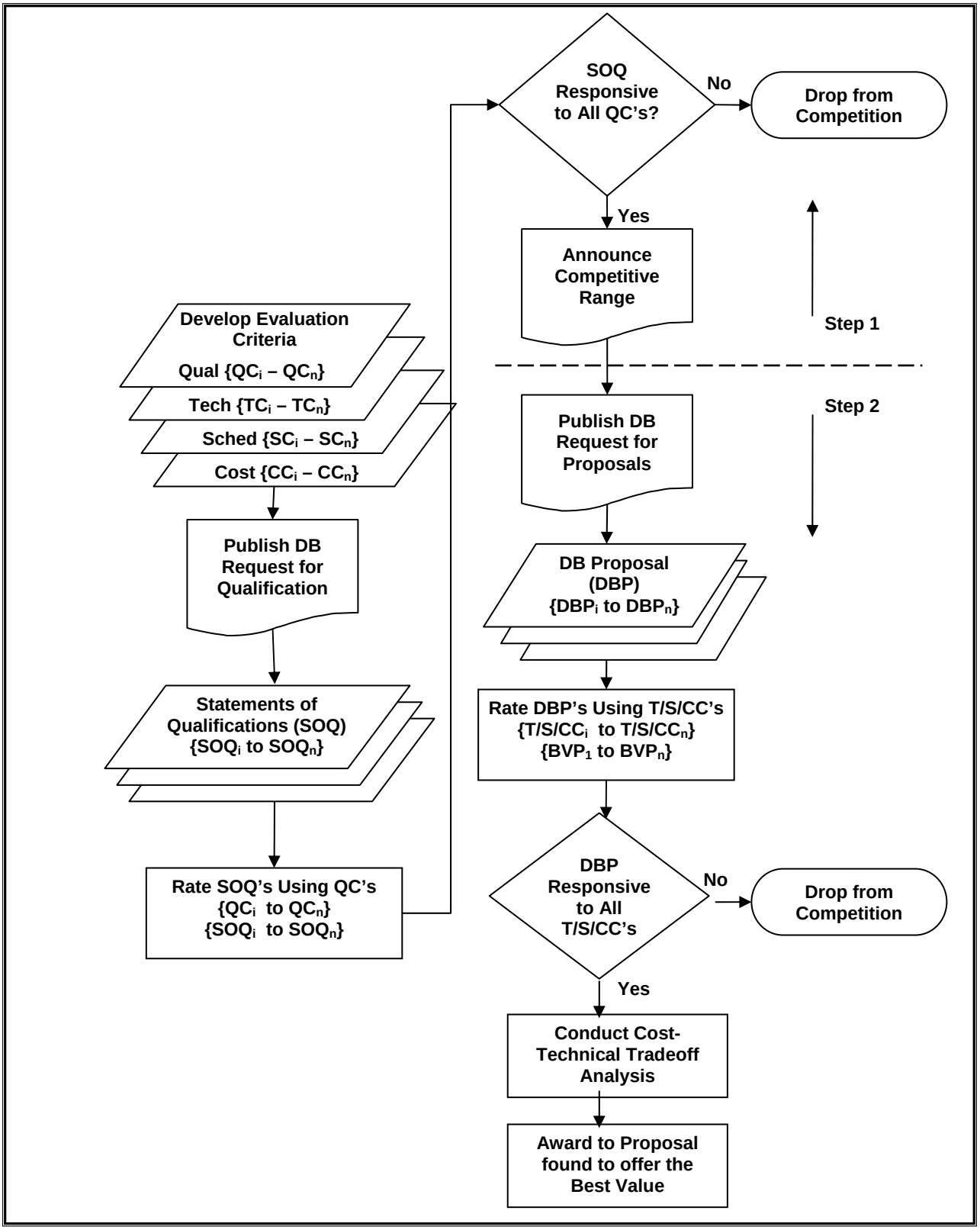


Figure 5.8: Two-Step "Qualitative Cost-Technical Trade-off" Best-Value Procurement Flow Chart

5.4 Design-build evaluation and award planning summary

While every piece of the design-build evaluation and award process is important in and of itself, the evaluation plan is the mechanism that allows the agency to make the final award decision. Thus, the agency must invest the appropriate amount of time, effort, and management energy to ensure that the evaluation plan is:

- Clear: It uses measurable standards against which proposal can be developed.
- Effective: The evaluation panel is able to implement the evaluation plan as written and the evaluation results in a defensible best-value award decision.
- Directed at the project's goals and requirements: It only evaluates those aspects of the project's requirements that will differentiate between proposals.
- Easy to interpret: Competing design-build teams can tell exactly how to win and respond to the agency's most compelling needs.

It must be totally logical and objective wherever possible. Its contents must stand up to legal scrutiny, if necessary. The evaluation panel must be trained in its application and understand its subtleties. The competitors will use it to guide their proposal preparation and to determine where betterments to the minimum requirements will enhance their chances of winning the contract.

The details of the evaluation plan will highlight the salient performance standards contained in the solicitation's performance criteria. In summary, the evaluation plan is the agency's best way to communicate to the design-build industry exactly what is essential to the success of the project. A poorly written or ill-conceived design-build evaluation plan creates more problems than it solves. Because of its importance, the evaluation plan should be written before the RFP to ensure that the RFP itself contains the necessary information for the proposers to develop totally responsive, highly competitive proposals for the design-build project.

Chapter 6: Drafting RFQ/RFP/Contract Documents

The design-build request for proposal (RFP) package is a set of documents that the agency provides to potential design-builders (proposers). It defines the project in performance manner through a combination of preliminary design documents and performance requirements. Similar to the bid package (plans and specifications) in design-bid-build build delivery, the design-build RFP package serves as the basis of proposal preparation before the award and as the contractual obligations to both parties after award. Since the RFP is the basis for the contract (refer to Figure 3.2), it is perhaps the most critical element of design-build project success. Contracting agencies must take a strategic approach in preparing the RFP package and must commit appropriate resources to it if they wish to be successful.

The design-build RFP includes, among other documents, instructions to proposers, a design-build criteria package (project scope, performance criteria, and preliminary design), survey and geotechnical reports, contract provisions, and references to design manuals and standards. This chapter focuses on the discussion of the two most critical aspects of the RFP package. First, this chapter explains the preparation of the request for qualification (RFQ) and RFP. Second, it provides guidance for writing critical design-build contract provisions. Although preparation of other documents such as project scope, preliminary design, and performance requirements are also important, they are not in the scope of this Guide.

6.1 Critical RFQ and RFP Contents

The main functions of the procurement process are to clearly communication of agency's expectations to the proposers and serve as the basis of the procurement and contractual agreement. In the RFQ and RFP, the agency requires minimum qualification, defines the products and services, and provides general information on procurement process and the project. This section introduces some critical elements of the RFQ/RFP which are essential for successful communication and project success.

As discussed in Chapter 5, design-build procurement methods can be categorized into two primary approaches – one step and two step. A one step approach can involve the evaluation of price and qualifications or price alone, but it does not use a project-specific prequalification process. A two step procurement requires a project specific statement of qualifications (SOQ) and produces a short-list of potential proposers who are qualified to prepare proposals for the competition of technical and price proposals. Qualifications typically enter into the technical proposal again in the second step. Two step best-value procurement is discussed in more detail in Chapter 5 of this Guide.

Table 6.1 is list of RFQ and RFP contents that this chapter discusses. In one step procurement, all the elements listed can be included in RFP. In two-step procurement, some are include only in RFQ or RFP, and other are in both.

Table 6.1 is list of RFQ/RFP sections that this chapter discusses.

Table 6.1: RFQ/RFP Elements

Section	RFQ/RFP Elements	Two-step		One-step
		RFQ	RFP	RFP
6.1.1	Announcement of project solicitation	✓		✓
6.1.2	Project description	✓	✓	✓
6.1.3	Mandatory requirements		✓	✓
6.1.4	Procurement schedule	✓	✓	✓
6.1.5	Prequalification requirements	✓		✓
6.1.6	Proposal requirements		✓	✓
6.1.7	Disqualification		✓	✓
6.1.8	Selection criteria and award method	✓	✓	✓
6.1.9	Technical criteria		✓	✓
6.1.10	Pre-submittal conference and evaluation interviews	✓	✓	✓
6.1.11	Stipends	✓	✓	✓
6.1.12	Identification of technical review committee	✓	✓	✓
6.1.13	Submittal and deliverable requirements	✓	✓	✓
6.1.14	Contacts information and communication method	✓	✓	✓
6.2.15	Forms	✓	✓	✓

Although both one-step and two-step procurement is introduced, this Guide suggests the use of a two-phase best-value procurement as explained in Chapter 4. Phase one uses a RFQ process to develop a short list of design-builders who then develop full proposals for the phase two RFP evaluation process.

6.1.1 Announcement of project solicitation

The announcement is formal statement of the contracting agency's intention to procure a project (products and services). At a minimum, the contracting agency provides a brief description of the project (name, location, type, etc), identification of the contracting and funding agencies, delivery method, procurement method, and the proposal submission date and location. The announcement is often preceded by a request for letters of interest (LOI) to gauge the industries appetite for proposing on the project. In the case of a two step procurement, LOI's are issued prior to the RFQ and in a one step procurement they are issued prior to the RFP. These documents should be advertised in a wide variety of industry publications to draw interest of potential participants and provide an equal opportunity to all interested parties. The key to writing a good announcement is including only the most important aspects of the project in concise manner.

6.1.2 Project description

The project description is one of the first elements in both the RFQ and RFP. The project description provides the essence of the project requirements. It outlines the location, facility type, size, function, required services, estimated cost, and completion date. Although it should provide sufficient details, it only needs to provide a summary level introduction to the project rather than describing it in detail.

The project description often contains:

- Project type, location, size, capacity and other physical characteristics;
- Special features of the project such as environmental constraints, community involvement, or special technical features;
- Description of the services design-builder will provide;
- Preliminary estimate and method of funding; and
- Preliminary project schedule.

6.1.3 Mandatory requirements

The contracting agency can require the proposers to provide proof of qualifications, insurance and bonding, licensure and registration, and other certifications as mandatory requirements at the time of qualification or proposal submittal. Some of the requirements are specific to public projects and some are derived from the contracting agency's preferences. Some examples of mandatory requirements of public transportation projects are:

- Minimum experience of design-build team and individuals on similar;
- Minimum insurance and bonding capacity;
- Required licensures, registrations, tax status; and
- Participation of Disadvantaged Business Enterprises (DBE).

6.1.4 Procurement schedule

The procurement schedule informs the proposers of dates for key procurement milestones. According to these dates, the design-build teams develop their own schedule for partnering agreements, subcontractor and supplier coordination, and preparation of proposal documents.

Key procurement milestones include:

- Issuance of RFQ ;
- Announcement of pre-qualified design-build firms;
- Issuance of design-build RFP package;
- Pre-proposal conference, interviews, discussions, and oral presentation (if required);
- Deadlines for proposals questions and alternative technical concepts from proposers;
- Last date for amendments, and other changes to design-build RP package from the agency;
- Final selection, award notification, and debriefing; and
- Expected date for issuance of notice to proceed.

In the case of a one step procurement, the milestones begin with the issuance of design-build RFP package. In the case of a two step procurement, agencies have found it useful to provide design-builders with a draft RFP for comment early in the procurement. Some agencies prefer to make this draft available to all proposers during the RFQ stage while others prefer to make the draft available to only the short-listed design-builders.

6.1.5 Pre-qualification requirements

In the case of a two step design-build procurement, the RFQ must provide proposers with a clear statement of the prequalification requirements and evaluation criteria. These prequalification requirements are similar to the requirements used to select a design consultant for a traditional design-build-build project with the addition of contractor prequalification requirements and design-build team specific requirements. Chapter 5 of this Guide discusses evaluation criteria and evaluation rating systems at length. Prequalification requirements vary on each project, but commonly used requirements include:

- Financial qualifications
- Key personal experience and qualifications
- Project management
- Quality management
- Safety record

6.1.6 Proposal requirements

In a best-value proposal, the proposal will consist of separate technical and price proposals. The technical proposal requirements in RFP specify the format, length, and level of detail for the proposal package as well as important documentation such as proof of bonding capacity, insurance, licensure, and other critical documentation as dictated by the project. The technical proposals may consist of text, drawings, graphs, photographs, tables, and any other means that to clearly describe the proposer's approach to the work.

The agency must be careful not to ask for any information in the technical proposal that is not required to either 1) evaluate the proposal or 2) create a binding contractual commitment for a specific project requirement. Design-build proposals are expensive to create and also expense to evaluate. Agencies should not put undue burden on the industry or their staff by requiring too much technical information in the proposal.

The following is a list of possible technical proposal requirements. Agencies may wish to develop a list of minimum proposal requirements, but they should resist making a comprehensive list of standard of proposal requirements because each project is unique.

- Design-build team organizational structure
  - Organizational structure
  - Project personnel control
  - Subcontracting control
- Project control plans or approaches
  - Quality management strategy for ***both*** design and construction
  - Schedule management strategy for timely completion of the project
- Strategies and procedures for services as required
  - Right of way purchase
  - Utility relocation
  - Permit acquisition and maintenance

  - Traffic control
  - Public relations
  - Safety
- Design strategy
  - Critical preliminary design such as essential pavement, bridge structure, geotechnical treatment method, and/or roadway elements
  - Specifications for critical proposed materials
  - Critical maintenance expectation and life cycle
  - Selected aesthetic features
- Construction strategy
  - Maintenance of traffic approach
  - Site safety approach
  - QA/QC plan

The price proposal includes a lump-sum price which inclusive of all physical project costs, fee for services, and profits. The price proposal should also include a detailed schedule of values for critical items or phases of work that are in the lump sum price. Unlike a traditional unit price bid, a lump sum price does not include a listing quantities and unit costs. For some items, the quantities are not available because the design is not complete. The agency must develop a pricing form with groups of activities for the design-builders to complete as a basis for payment during construction or negotiate this payment schedule after award.

6.1.7 Disqualification

The contracting agency may disqualify proposals which do not meet critical proposal requirements. The agency can evaluate some requirements as deficient but correctable if the proposal is ultimately selected, but the agency should also consider making some requirements a basis for disqualification. A disqualification clause in the RFP enables the agency to eliminate a non-responsive proposal by voiding and excluding the proposal from competition.

Some common items for disqualification include the following.

- Unjust conduct of the proposer
  - Communication between proposing party and the agency or evaluation committee
  - Unapproved changes to design, material, and major participants of design-build team
- Non-responsiveness of the proposal package
  - Illegible letters, figures, drawings
  - Failure to provide information as required in the RFP
  - Failure to meet minimum qualification of design-build team
  - Failure to meet required scope or quality in the proposed design and plan
  - Proposing a price above specified maximum amount
- Non-responsiveness of proposing procedure
  - Late and inappropriate submission of proposal
  - Failure to use a sealed container or to properly identify the Proposal

6.1.8 Selection criteria and award method

The contracting agency should explain the evaluation and award method clearly in the RFP. It should state the project goals, and then support these goals with a corresponding evaluation plan. The evaluation criteria ranking or weighting should be communicated so that the proposers can meet the agency's project goals. Chapter 5 of this Guide presents the details for planning the project evaluation and award.

6.1.9 Technical criteria

A set of technical criteria describes the requirements of the work under the contract. These are criteria that the design-builder must follow. Technical criteria include the project scope, design, construction, and performance criteria.

The project scope defines and identifies the work. It specifies the products and services which the design-builder must provide under the contract. The project scope is identified through text and drawings. Some agencies use the concept of basic configuration to define the project scope. The basic configuration defines most fundamental parameters of the facility which cannot be changed. It may specify item locations, overall project boundaries, vertical and horizontal alignment ranges and other items which cannot change. Basic configuration is discussed more in section 6.2.1.

The design and construction criteria are the requirements that the design-builder must adhere to in the process of design and construction. They regulate the process of production. In design-build, the agency should not specify the process; instead the agency oversees and regulates the process as described in the design and construction criteria. The followings are some of examples design and construction criteria

- Design criteria
  - Elements of design (design speed, super elevation, etc)
  - Design requirements (lane width, vertical clearance, traffic barrier, etc)
- Construction criteria
  - Quality management plan (QA/QC for design and construction)
  - Schedule of value (base schedule review and updating for measuring and controlling progress coordinated with time and cost)
  - Maintenance of Traffic parameters

Finally, the performance criteria specify the minimum performance level of the final product. The performance criteria are contractual obligations of the design-builder to meet or exceed. Details of performance criteria development are not in the scope of this Guide.

6.1.10 Pre-submittal conference and evaluation interviews

The contracting agency may choose to host a pre-submittal conference to explain the procurement process, project scope, and additional requirements to potential proposers. Also in the conference, the contracting agency can provide clarification on the RFP package. The pre-

submittal conference provides a chance to meet other parties in person and discuss about various issues of the project. The RFP should prescribe the meeting location, date, and any other instructions.

Interviews can be helpful evaluation tools for appropriate design-build projects, but they are by no means required. In the interview, proposers can highlight the strongest points or innovations in their proposals. The agency can also ask for clarifications to proposals. However, new information should not be presented or requested in interviews. The agency must publish the rules for the interviews and follow them precisely to avoid any procurement issues.

6.1.11 Stipends

Stipends are a necessity of two-phase procurement methodologies for transportation projects. Preparing a technical proposal is not like preparing a bid. Contractors and designers do not include these proposals in their "cost of doing business," as a contractor would for traditional bid preparation. Typical technical proposals require a substantial amount of design effort. Engineers do not build this design effort into their overhead pricing structure. They must be compensated for this design effort to survive. In return, the agencies get multiple competing designs where they traditionally have only one solution.

Both RFQ and RFP should discuss the intention of paying stipend, the amount of the stipend, and eligible conditions. It is important to express the agency's intention to pay stipend in the RFQ because stipend can be a factor in the entry decision of the potential proposers. The stipend clause is included also in RFP as a matter of contract. Section 6.2.15 discusses stipends in more detail.

6.1.12 Identification of technical review committee

Some RFQs and RFPs identify the technical review committee members. The purpose of committee identification is so that the proposers better know the level of technical detail to include in their proposal. Identification of the technical review committee varies from state to state. Some agencies have requirements for certain roles on the technical review committee such as a certain number or title of agency engineers and representatives from engineering or construction industry associations. The RFP can provide only the number and role of the committee members or it can provide a brief biographical sketch including name, title, education, experience, etc.

6.1.13 Submittal and deliverable requirements

The contracting agency requires the design-builder to submit various documents throughout during the procurement, design, and construction phases. Technical design submission, permit and right of way acquisition certificates, and quality certification of construction materials are a few examples. The RFQ/RFP should describe critical submittal requirements and specify due date, submission address, and number of copies if required. Although submission requirements are usually included in each corresponding section, it is convenient for both parties to list all the

requirements in an additional section with brief description, link to corresponding sections and due dates.

6.1.14 Contacts and communication method

There is no doubt that a good communication among project participants is a key to success of any project. Prior to the qualification statement or proposal submission, the proposers may want to contact the contracting agency for clarification, additional information, and any other reasons. Therefore the contracting agency should provide contact information of the department and officials in charge. Contacts and communication procedure for other relevant permitting agencies and local utility companies can be helpful.

6.1.15 Forms

The use of pre-qualification statement and proposal forms in the design-build RFQ and RFP is analogous to the use of bid forms in traditional project delivery. Proposers must submit agreements or certifying documents on a specific format with prescribed terms and conditions. Some typical design-build proposal forms are as follows.

- Proposal cover letter
- Price proposal form
- Proposal bond
- Information of participants of design-build team
- Information of key personnel
- Receipt of stipend agreement
- Escrow agreement

6.2 Design-build concepts and contract provisions

The design-build RFP package not only defines the procurement procedures, it forms the basis of the contract documents. The RFP is the most important contract document. It reflects the agency's intent for the project. In case of inconsistencies in contract documents or disputes, the RFP is highest in order of precedent among the contact documents. Therefore it is critical to identify key provisions clearly and specify them within the RFP.

This section introduces selected design concepts and contract provisions. Due to the variation in governing regulations, agency's preferences, and project characteristics, the concepts and provisions can vary substantially by project. The reader should understand that this Guide provides one of many methods only as a reference. The provisions are based on AASHTO highway specifications, Federal rules for design-build contracting, and selected project RFPs.

When appropriate, the Guide presents multiple approaches to provision writing. One critical variation is risk allocation. Alternative risk allocation language – depending upon whether the highway agency retains the risk or chooses to allocate some or all of it to the design-builder – often leads to a different approach to writing a provision. Therefore the reader should complete the project risk allocation process before proceeding to provision writing.

Table 6.2 lists the design-build concepts and provisions in this chapter.

Table 6.2: Table of Provisions

Section	Design-Build Provision
6.2.1	Basic Configuration
6.2.2	Alternative Technical Concepts
6.2.3	Betterments and Extra Work
6.2.4	Quality Management
6.2.5	Design Submittal, Review and Approval
6.2.6	Design Commitment
6.2.7	Engineer of Record
6.2.8	Differing Site Conditions
6.2.9	Environmental Permitting
6.2.10	Right of way
6.2.11	Utility Relocation
6.2.12	Order of Document Precedence
6.2.13	Design and Construction References
6.2.14	Ownership of Documents
6.2.15	Stipend
6.2.16	Payment Method
6.2.17	Progress Schedule
6.2.18	Project Acceptance
6.2.19	Non-Conforming Work
6.2.20	Traffic Control
6.2.21	Warranty

This Guide provides examples for each provision which were selected from RFQs and RFPs of existing projects. The examples are noted at the end of each provision discussion in this chapter and presented in Appendix C. The sources are listed in the References at the end of the Guide.

6.2.1 Basic Configuration

Overview

The basic configuration provision, which is also known as the basic technical concept, defines fundamental parameters of the project and is a critical provision in the contract documents. basic configuration is a very important aspect of highway design-build projects. It gives the design-builder leeway to make adjustments during final design that provide cost or schedule advantages to the design-builder, while maintaining compliance with project objectives, criteria and other contract requirements. Unlike the project description and scope, which are furnished to the proposers as information, the basic configuration is contractual obligations to which the design-builder must conform. From the agency's perspective, the "envelope" described by the basic configuration description provides important protection from responsibility for the complete accuracy of its preliminary design drawings. In writing the basic configuration, the agency

should avoid imposing unnecessary controls over the design that may lay liability for design defects on the agency and limit the contractor's flexibility for innovation.

Provision Development

The essence of writing the basic configuration provision is finding the appropriate balance between maintaining sufficient control over the base design and leaving enough room for innovative ideas. The agency should have a good understanding of project goals and risk allocation. They should not specify more than the most fundamental project constraints in the basic configuration. Additionally, the agency should specify how the design-builder can request a change to the basic configuration both before the receipt of proposals and after contract award (see also alternative technical concepts 6.2.2 and betterments 6.2.3). The agency has the sole discretion to accept or decline the changes through a proper review and approval process.

In developing the basic configuration provision, the agency must consider changes to basic configuration. For example, the agency must maintain approval rights for basic configuration changes that are proposed by the design-builder. Such changes would be approved via a change order, which may be a value engineering change (with shared savings) or a scope change. If the change order adjusts project scope (rather than incorporates a value engineering concept), any additional construction cost would be borne by the design-builder, and any construction cost savings would accrue solely to the agency. Additionally, any associated right-of-way cost, or schedule impacts and any environmental or other permitting risk would be borne by the design-builder when proposing a basic configuration change. Another category of basic configuration change is the "necessary change"; i.e., a change necessitated by agency-mandated design standards or other contract requirements. With a necessary change, the agency has the option of waiving the requirement that is forcing the basic configuration change, or of allowing the basic configuration change. If the agency allows a necessary change, then the agency is responsible for making an equitable adjustment in the design-builder's compensation and schedule. Additionally, with a necessary basic configuration change, the agency would be responsible for obtaining additional right-of-way and environmental or other required permits.

This Guide recommends the basic configuration provision include items such as:

- Project boundaries
  - Rights of way
  - Environmental constraints
- Horizontal and vertical alignment limits
- Critical project components
  - Interchanges
  - Ramps
  - Number of lanes
- Procedures for acceptance of alternative technical concepts and/or betterments in the proposal
- Procedures for proposing, reviewing, and accepting change order to basic configurations

There are two major issues when establishing a project boundary. One is the right of way. In case that the right of way is purchased prior to procurement, the agency should clearly define the

boundary in the basic configuration so that there will be no need for additional purchase of right of way. The other issue is environmental constraints. The project should be constrained so the impacts on the environment are limited within the permitted magnitude. The agency must consider the environmental impact of cut and fill, regulation on wetland protection, and many other project-specific concerns.

The horizontal and vertical alignment roughly describes the location of the facility. The horizontal alignment specifies starting and ending points and desired route. The vertical alignment lays provides the topographic plan of the facility. The basic configuration can provide ranges of acceptable alignments to provide flexibility while ensuring that the facility aligns with adjacent facilities and long range plans.

Critical project components such as interchanges, on and off ramps, and number of lanes are often included in the provision. The provision can also be performance-based, requiring certain traffic volumes and accessibility to certain locations rather than specifying the number of lanes and the location of interchanges. The minimum requirements specified in the basic configuration may not be omitted, altered, or substituted without approval.

The basic configuration provision should include information on the process of proposing, reviewing, and approving proposed changes to the basic configuration both via alternative technical and change order.

Examples

01- BC-01
02- BC-02

6.2.2 Alternative technical concepts

Overview

Alternative Technical Concepts (ATC) are the design-builder's proposed changes to agency supplied basic configurations, project scope, design or construction criteria. These changes provide a solution that is equal or better to the requirements in the RFP. In the broadest sense ATCs are similar to value engineering, but they are made as a part of the proposal before contract award. ATCs provide flexibility to the proposers in order to enhance innovation and achieve efficiency.

Agencies must also choose whether to make the ATC process open to all elements of the project of only selected areas where innovations are most likely to occur. Opening the process allows for more innovation but is costly for proposers to prepare and time consuming for agencies to review.

Provision Development
This Guide recommends the ATC provision include at a minimum the following information.

- Any review process during the procurement stage
- Submittal format for proposal
- Confidentiality guidelines

Submission of ACTs occurs with the proposal package. Appropriate forms for ACTs should be provided. ATCs require some type of review before incorporation into the design-builders proposal. However, the ATCs often include innovative ideas that hold a proprietary advantage. Most agencies allow for confidential discussions of ATCs during a window of time in the proposal process to provide the design-builder with feedback on whether an ATC will be acceptable in the proposal.

Examples
03- ATC-01
04- ATC-02

6.2.3 Betterments and extra work

Overview
A betterment is defined as any component or system, which exceeds the minimum requirements stated in the Request for Proposal. Betterments are included in the design-builders proposal. Betterments are proposed to make the proposal more competitive and are often tied to areas of importance specified by the agency in the evaluation plan. They may provide additional features and functions such as the capacity, capability, level of service, efficiency, duration and performance of the facility which is superior to agencies RFP requirements.

It is important to recognize that betterment should be an improvement, not merely a change, to the basic configuration. The basic configuration sets the boundary and the desired approximate location of the facility. The design-builder may submit an alternative technical concept proposal to change the basic configuration if the proposal provides equal or better value to the project. A betterment is distinguishable in that it adds improvements to the project requirements. Figure 6.1 is a simplified illustration the difference between alternative technical concepts and betterment relative to the basic configuration.

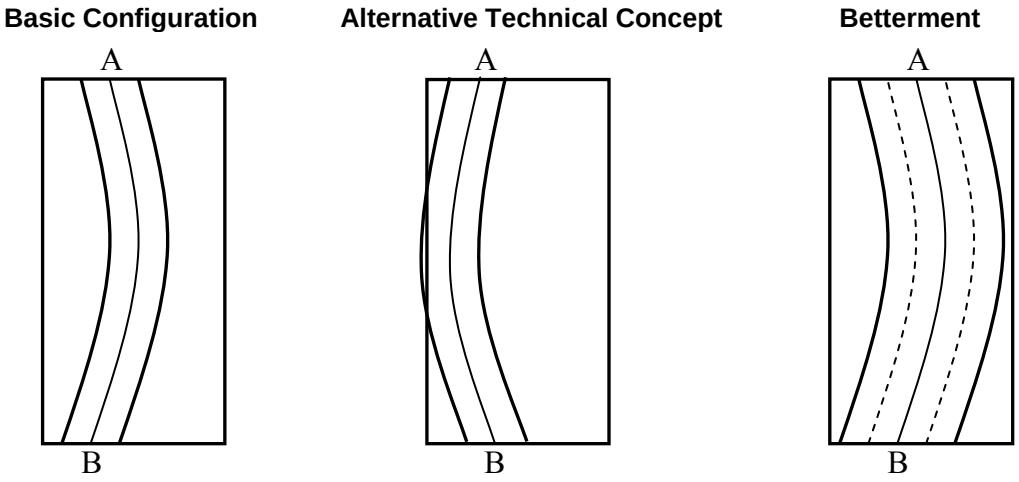


Figure 6.1: Illustration of Basic Configuration, Alternative Technical Concept and Betterments

In Figure 6.1, the agency specified a two lane road connecting point A to B slightly bending to the right in the basic configuration. In the process of preparing a proposal, the design-builder found an alternative layout that met the project goals but slightly exceeded the project boundary. The design-builder may submit an ATC proposal to change the basic configuration to bend to the left and extend slightly over the existing right of way boundary. Conversely, the design-builder may propose for four lane road a betterment to the required two lane to accommodate the expected increased traffic volume in the future. The contracting agency can either accept or decline both ATC and betterment proposal.

Provision Development

The key to writing a betterment provision is to require that the design-builder explicitly identify the betterment in their proposal. This identification will provide the agency evaluation team with a clear definition of the betterment. It will also ensure that the betterment becomes a requirement of the contract upon award.

Examples

05- Betterment-01

6.2.4 Quality Management

Overview

The scope of the quality management provision is very broad, and it is not the intent of this Guide to cover all the details. Instead, the Guide provides an overview of the fundamental components in the RFP provision. Figure 6.2 below shows some of the representative components of the quality management RFP provision.

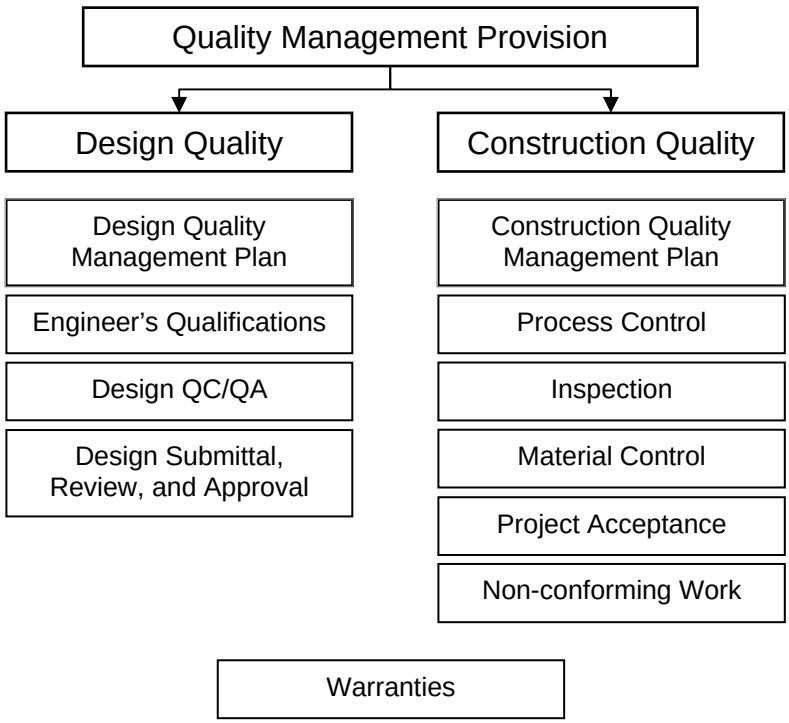


Figure 6.2: Basic Components of the Quality Management Provision

In order to assure design quality, the agency usually sets minimum requirement for the design-builder's engineers and reviews their qualifications in the evaluation plan. This step in the process is similar to that of the selection of an engineering firm. A more detailed discussion of selection criteria can be found in Chapter 5.

Likewise, the construction inspection and material-control components in the provision will not be technically different from the traditional contract clauses, with the exception of who is responsible for furnishing inspection and materials control (testing, approval, etc). Refer to "engineer of record" provision for further discussion. Other quality assurance components such as "design submittal, review and approval," "project acceptance," "non-conforming work", and "warranties" are discussed in separate sections within this chapter.

Many contracting agencies require the submission of the quality management plan as part of the technical proposal. Quality plans are commonly organized to include a basic framework of policies and an appended volume of quality procedures. RFPs generally specify the topics that must be addressed within a basic framework (e.g., ISO 9001 standards or similar) and also require procedures for specific key processes, such as training, procurement, and control of nonconforming product. The RFP should recognize that detailed procedures for other work processes can be developed and added to the plan as the project progresses, in accordance with guidelines and requirements set forth in the plan for incorporating new procedures. Thus, it is not necessary for a fully-complete quality plan (i.e., containing procedures for all work processes) to be submitted as part of the technical proposal.

The submission of the quality management plan as part of the technical proposal:

- Allows the agency to use it as a factor in the award decision;
- Encourages the design-builder to devise innovative strategies for quality management;
- Allows the agency to review the plan prior to award; and
- Obligates the design-builder to conform to the plan during design and construction.

Provision Development

The quality management plan provision consists of two primary elements. The first is the request for submission of a plan developed by the design-builder. The second is the listing of essential quality elements to which the agency requires the design-builder to conform. In other words, the agency may either ask the design-builder propose its own acceptable plan or specify the content and focus of the plan that the design-builder must achieve based on the agency's current quality management policy.

Under the assumption that the agency will decide to leave the planning to the design-builder, the provision should comprise, though not be limited to, the following:

- General Quality Management Plan
  - A formal statement requiring preparation and submission of a quality management plan as a part of the technical proposal
  - A statement that the plan will be used as a factor in the award decision (if applicable)
  - A statement that the design-builder is responsible to conform to the plan submitted and accepted
  - A list of Quality Assurance/Quality Control (QA/QC) references (published by various agencies)
- Design Quality Management Plan
  - QA/QC plan for preparing and checking all plans, calculations, and specifications
  - A statement that design checking should be performed independently from the original preparation of design
  - Qualifications of both the design developer and checker
    - Registered
    - Level of experience
- Construction Quality Management Plan
  - List of key quality personnel
    - Quality system manager, quality testing personnel, inspection personnel
    - Qualification and certification
    - Responsibility
    - Organization Chart
  - Testing and sampling method
  - Inspection method and frequency (or a schedule)
  - Process Controls
  - Acceptance Procedures
  - Management Reviews and Responsibilities
  - Identification and Control of Nonconforming Product
  - Training

The examples provided in the Appendix represent some quality improvement methods required by the contracting agencies. While quality control (QC) and quality assurance (QA) describes detailed method and process for achieving desired quality, quality management comprises not only QC/QA, but also recognizes the importance of quality policies and the allocation of quality responsibilities between the design-builder and agency.

Examples

06- QM-01 (Quality control requirement)
07- QM-02 (Quality management plan requirement)
08- QM-03 (QC/QA requirement)

6.2.5 Design Submittal, Review and Approval

Overview

Design submittal, review, and approval changes significantly from design-bid-build to design-build. The design is not complete at the time of project award and the design-builder is responsible for the detailed design as a deliverable of the contract. The design-build RFP must specify the submission, review, and approval process. These provisions should:

- Allows the agency to participate indirectly in design decisions;
- Motivate the design-builder to develop a high-quality design in order to obtain permission to proceed with construction;
- Provide a checkpoint for both parties to discover any defects in the design; and
- Enhance the communication between the agency and the design-builder.

Provision Development

The provisions specify what and when to submit designs to the agency and how the agency will review the design. Many variations to this provision are possible, but the essence of the provision should include the following.

- Formal statement of the requirements of design submission
- Description of review personnel and process
  - check if the design conforms to QA/QC plan
  - check if the design conforms to the requirements
- Type of design submission
  - Preliminary
  - Milestone (30%, 60%, 90%) design
  - Feature of work (foundation, earthwork, pavement, etc.)
  - Complete design (before review)
  - Final design (after review)
  - As-built

- Design review documents
  - Design plans and drawings
    - Design calculation
    - Specification
    - Other information on the design such as design participants, contacts, etc.
- Submission, review and approval schedule
- Process for changes

Examples

09- DSRA-01
10- DSRA-02
11- DSRA-03

6.2.6 Design Commitment

Overview

Since the design-builder is responsible for the details of the design, agencies avoid formally approving designs that are not yet complete. With approval comes liability for errors and omissions, something the agency is trying to avoid in design-build. However, when a design element is complete and submitted to the agency, the agency would like a commitment that the design-builder will construct the design as depicted.

Providing a design commitment means that the features of work conform to the design-builder contractor's budget, the schedule, and the quality requirements of the contract, and will be constructed as detailed in the final document. Figure 6.3 shows the point of time at which the design-builder declares the commitment for the design, prior to submitting the final design for review and approval.

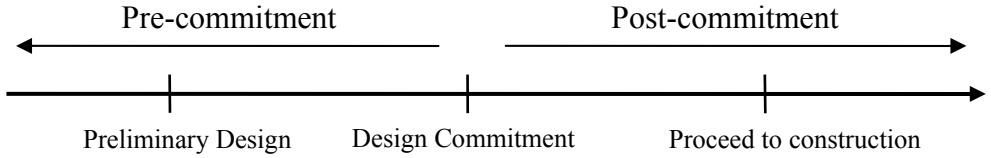


Figure 6.3: Design Commitment

Specifications become an approved construction document. In other words, the design product that the design-builder submits for approval is indeed the final design and, upon the agency's approval, they become the official contract documents the design-builder is obligated to conform to them. Design commitments are similar, but do not constitute a formal approval, which is typically held until all design, and often construction, is complete. Some of significant differences before and after the design commitment are listed below.

Table 6.3: Implications of Design Commitment

Pre-Commitment	Post-Commitment
Design-builder owns the details of design	The agency owns the intellectual property right on the design upon proper payment
Design-builder is free to make necessary changes to the design	Changes after design commitment require bilateral agreement.
Drawings and specifications are in working stage and subject to change as required by coordination with other disciplines or constraints imposed by budget and schedule.	Drawings and specifications are contract documents
	Purchasing decisions can be made
	Construction can be planned

Provision Development

The design commitment clause is often included within the design submittal requirement. The main function of the clause is setting a point in time at which the design is ready for construction. Therefore the clause should clearly inform the proposers what it means and how it has to be done.

The clause should include following or similar statements:

- Prior to the submission, the design must be
  - Reviewed for compliance by the design-builder's engineer
  - Equipped with all the features and ready for agency review
- Prior to Design Commitment
  - Design-builder contractor owns details of design
  - Design-builder contractor can change working drawings to accommodate budget and schedule constraints
- Upon the design commitment
  - Working drawings/specifications becomes the record drawings/specifications
  - Changes after require agency concurrence
  - The design-builder is responsible to construct conforming to the final design
- The intellectual property right on the design will be transferred to the agency when the design commitment is made and final design is submitted to the agency

Examples

12- DC-01

6.2.7 Engineer of Record

Overview

The engineer of record is the licensed engineer on the design-builder's team who is responsible for the design. Since the design-builder is responsible for the details of design and coordination with construction, it is convenient for the design-builder's engineer to be the engineer of record. The engineer of record is the single point of responsibility for all design decisions and design products for the design-build contractor and must supply the required professional liability insurance. The engineer of record has several responsibilities including design or review of the design, overseeing construction, ensuring that it is being installed as planned, and reporting to

the government that the project is complete, safe, and ready for occupancy. Therefore the engineer of record has both authority and obligation in the project.

There are however some issues with this concept in highway construction. One issue is the requirement for the state engineer (contracting agency's engineer) to be responsible for construction engineering and inspection. The design-build Federal rule does not allow the role of inspection to be performed by the design-builder's engineer despite of redundancy of some tasks. [49] Therefore, according to the federal rule for design-build highway projects, the contracting agency should utilize both engineer of record (design-builder's engineer) and state engineer (contracting agency's engineer). Engineer of record is mainly responsible for detail design, overseeing construction and preliminary inspection for substantial completion decision. State engineer is responsible for design review, owner's approval decision and final inspection of the work.

Provision Development

When employing the design-builder's engineer as the engineer of record, in the RFP, the contracting agency must request the engineer's qualification statement in the proposal. The engineer-of-record provision should also state the responsibilities of the design-builder's engineer. The following list shows some of most fundamental elements of the provision.

- Engineer's qualification – registration, experience, etc
- Requirement of professional liability insurance
- List of responsibilities as the designer
  - Design submittal for approval
  - Prepare as-built plan

Example

13- EOR-01
14- EOR-02

6.2.8 Differing Site Conditions

Overview

A differing site conditions clause specifies the procedure of requesting, reviewing, and approving additional cost and time for the construction in the event that the project encounters differing site conditions - which means that the actual conditions are substantially different from those originally anticipated in the proposal. In design-bid-build delivery, the risk of differing site conditions usually lies with the agency. Agencies have found that contractors have to include too much contingency in their bids if they are required to own the risk for differing site condition.

Some agencies may choose to allocation the risk for differing site conditions to the design-builder when they require that the design-builder conduct the geotechnical site investigation. The agencies realize that they are paying to allocate this risk and responsibility to the design-

[49] Department of Transportation, Federal Highway Administration, 23 CFR Parts 627, et al., Design-Build Contracting; Final Rule. Federal Register, Vol. 67, No. 237, December 10, 2002.

builder in a lump sum contract, but they choose to do it for reasons of cost certainty or simply do to a lack of time for geotechnical investigation.

As discussed in Chapter 4, this Guide strongly suggests that the agencies retain the risk for differing site conditions unless there are extenuating project circumstances.

Provision Development

Risk is on the agency

The differing site conditions provision includes:

- Definition of differing site conditions
  - Statement of definition
  - Types of events that are considered as differing site conditions
- Contracting agency's responsibilities
- Design-builder's responsibility
  - Contractor's burden of proof
  - Additional sub-surface investigations

Risk is on the design-builder

The differing site conditions provision includes:

- Clear statement that the agency is not liable for any differing site condition risk and will not grant any extra cost or time extension to the design-builder
- Announcement that the geotechnical report and other information supplied by the agency is only for reference

Examples

15- DSC-01
16- DSC-02

6.2.9 Environmental Permitting

Overview

Obtaining requisite environmental permits in timely manner is one of important keys to project success. Delays in environmental permitting can directly lead to project delay and cost overrun. There are two major difficulties in permit acquirement. One is the uncertainty and associated risk of permit acquisition. Similar to the risk of differing site conditions where the underground conditions are technically unforeseeable, the impact on environment is difficult to estimate. The other difficulty is the time consuming nature of the process. The environmental permit acquisition process typically takes significant time and effort. When the design deviates from the original plan due to an unavoidable reason, some permits have to be reissued before the construction can be resumed. In addition to the cost of redoing the work, the impact of increased performance time can impact the project significantly.

In traditional design-bid-build projects, most responsibilities and risks of environmental permitting are borne by the agency, because the design is completed before construction under the agency's supervision. Additionally, the agency typically has more experience and control in acquiring permits and is thus less vulnerable to the risks. One other reason is that the

environmental permit acquisition has to start early in the project is due to the time consuming nature of the process. The agency must assure itself that it can acquire the actual permits before awarding the construction contract.

The conditions are different in design-build delivery, where the project is procured at earlier stage of the process and the design-builder has more control over the design. In other words, design-build delivery provides agencies the option of shifting responsibilities and risks to the design-builder in exchange for potentially increased costs. Design-build delivery also limits the agency's control in obtaining some environmental permits when the design is incomplete at the procurement stage.

One option is to break down the task or environmental permitting and allocate it between the agency and the design-builder on an item by item basis. Figure 6.4 below demonstrates a simple case with four different environmental permits. Usually wetland-mitigation permits cover broader project areas and the agency may start the permit acquisition process at an earlier stage before the design is complete. However some permits relate to construction impact on the environment (waste disposal, demolition, debris, dredging, etc) and require more a detailed design and construction plan. Therefore, these permits are often obtained after the detailed design is done, which means that the design-builder's decisions on the design and construction method influence the outcome of the process. For this reason, the contracting agency may choose to break down the permitting responsibilities and allocate them accordingly. In Figure 6.4, the agency acquires a wetland-mitigation permit and requires the design-builder to acquire others as more detailed design is completed.

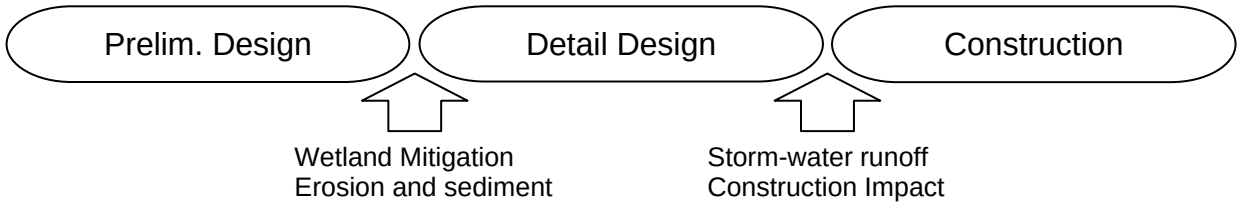


Figure 6.4: Environmental Permitting

Provision Development

Risk on the agency

Despite the flexibility design-build offers, most contracting agencies provide environmental permits and retains the risk. If the agency chooses this option, the provision in the RFP should include the following at minimum.

- A statement that the contracting agency has obtained or will obtain necessary permits.
- List of permits that has been acquired or will be acquired with expectation date.
- A request for the design-builder's commitment to ensure that the project is designed and constructed in conformance with the conditions specified in the permit.

- A statement clearly defining which party is responsible for the extra cost and time in case there is any significant variation to the anticipated preliminary design and re-applying for the permit is unavoidable.

Risk on the design-builder
The contracting agency may also choose to shift responsibilities to the design-builder. Utilizing this option will minimize the agency's risks due to the permitting, but the agency will likely have to pay a risk premium to the design-builder. If the agency chooses this option, the provision in the RFP should include following at minimum.

- A formal statement that the design-builder is responsible for obtaining all the necessary environmental permits.
- Clear statement showing who is responsible for paying fees and fines of acquisition process.
- List of permits to be obtained.
- List of references of applicable laws and regulations.
- Information on governing agencies.

Risk is broken down and allocated to both parties
Instead of leaving all responsibilities to one party, some permits can be assigned to one party while others are assigned to the other. Usually multiple environmental permits are required for a project. Permits vary in terms of the issuing agency, required supplemental documents, the point in time of submission, etc. When breaking down the permitting responsibilities and assigning them, the agency should consider which party is can more easily handle for each responsibility.

If the agency chooses this option, the provision should include all the items listed for both sections - "responsibility is on the agency" and "responsibility is on the design-builder."

Examples
17- EP-01 (Risk on the agency)
18- EP-02 (Risk on the design-builder)
19- EP-03 (Risk allocated to both parties)

6.2.10 Right of Way

Overview
Right of way is the privilege to pass over another person's land, as granted by the agency. As stated in the Uniform Act[50], the government agency owns the right to acquire real estate, right of way, and construction easement of the land for the usage as a highway corridor, railroad, and other public facilities in exchange for an appropriate compensation according to the eminent domain of federal law. Rights of way are purchased prior to the construction of a new road, and usually enough extra land is purchased for the purpose of utilizing it as additional construction space, future expansion and building mitigation features such as sound walls, retaining walls, and others.

[50] FHWA (1970). http://www.fhwa.dot.gov/realestate/act.htm

Historically right of way is purchased by the contracting agency prior to the procurement of the project. AASHTO requires the state transportation agencies to secure all rights of way before the construction begins.[51] Even with the introduction of design-build, this custom has not been altered much. FHWA recommends that it is more reasonable for the government agency to purchase rights of way because it has more power and control over the task. However, in design-build, FHWA offers the option of assigning right of way acquisition to the design-builder. Hence the contracting agency has an option to either take or shift the responsibility to the design-builder, even for a federal project.

Provision Development

Risk on the agency

When the agency decides to take the responsibilities and has purchased all the rights of way needed for the project, the provision should include the following.

- A statement that the right of way acquisition is complete or all necessary arrangements have been made for the completion in near future
- Identification of parcels right of way that have or have not been purchased
- Responsibilities of the agency
  - Providing schedule of acquisition
  - Responsibility for the agency-driven and value-adding changes
- Responsibilities of the design-builder
  - Must make every effort to design the required facilities on the available right of way
  - Method for submitting a proposal for new right of way acquisition if design cannot be constrained to available right of way
  - Reimbursing of additional cost due to the contractor-driven changes
- Conditions for proposing and approving of additional right of way purchase
- Process and responsibilities, for extra cost and time, of additional right of way purchase

Risk on the design-builder

The agency can choose to shift the right of way responsibility to the design-builder in exchange for additional price and fee. In this case the provision should be written more carefully to explain details of the acquisition process since most design-builders are relatively inexperienced in right of way tasks. If the agency elects to include right of way as part of the design-builder's scope of work, the Request for Proposals document must include the following.

- A statement that the design-builder has full risk and responsibility for right of way acquisition
- A statement concerning scope and current status of the required services (list of parcels purchased and have to be purchased by the design-builder)
- A statement requiring compliance with relevant laws and regulations (Uniform relocation and Real Property Acquisition Policies Act of 1970)
- Payment method and schedule for acquisition cost and service fee

[51] American Association of State Highway and Transportation Officials. (1998). "Guide Specifications For Highway Construction."

- Purchasing processes
  - Appraisal
  - Negotiation
  - Relocation assistance
- Required submittals
  - Title certificate

References

Governing Regulations

- FHWA Design-Build Contracting Rules
  - FHWA recommends that it is more reasonable to allocate right of way risk to the contracting agency because the agency has powers (such as the right of eminent domain) while private organizations do not.
  - FHWA allows assignments of certain right of way related responsibilities to the design-builder
  - 710.313 (Right of way and land acquisition/design-build project)
- AASHTO Guide Specifications
  - The agency should secure rights of way before construction begins

Examples

20- ROW-01 (Risk on the agency)
21- ROW-02 (Risk on the agency)
22- ROW-03 (Risk on the design-builder)

6.2.11 Utility Relocation

Overview

After all the rights of way are purchased for a project, all the utility components within the right of way have to be removed or relocated to facilitate safety measures and performance of the construction. The utility relocation is basically a two-step process. The first step is to identify existing utilities within the right of way and the second is to remove or relocate the utilities to other locations. The agency or other responsible party should identify existing utilities and notify the utility owner – utility companies, pipeline owners and other utility agencies for agreement for relocation. The utility relocation should be completed prior to the construction in order to minimize damage to the utility, delay and extra cost.

Provision Development

Both FHWA and AASHTO specifications provide flexibility in allocation of this task to the contracting agency, design-builder or utility owner.

Risk on the agency
When the agency decides to take the responsibilities, the provision should include:

- A statement that the utility relocation has been or will be completed prior to the construction;
- List of utilities found and relocated; and
- A proposed process for resolving newly discovered utilities within the site.

Risk on the design-builder
In current practice, the agency often provides information on the existing utilities and requires the design-builder to be responsible for contacting the utility owner, coordinating the relocating and covering the cost. If the agency chooses to shift the responsibility to the design-builder, the provision in the RFP should include the following at a minimum.

- A statement that the design-builder is responsible for utility relocation tasks such as identifying existing utilities, contacting and reaching agreements with the utility owners, coordinating relocation and covering the expenses, etc.
- The best available information (a list of items to be relocated) on identified utilities along with a "use as reference only" statement.
- A list of rules, regulations and reference documents regarding utility adjustment.
- Requirement of notification of each utility owner for any service interruption.
- A statement that the design-builder is responsible for any damages to the utility.
- Process and responsibility for damages due to the newly discovered utility items.
- Process of resolving conflict with the utility owner.

Examples
23- UR-01
24- UR-02

6.2.12 Order of Document Precedence

Overview
Design-build contract documents include the RFP, addenda, the design-builder's proposal, and applicable industry standards (refer to Figure 3.2). These documents are prepared by both the agency and the design-builder. The agency expresses project goals and requirements in the RFP, and the design-builder responds with a proposal to complete design and construction of the work. In case unavoidable circumstances arise or possible improvements are found during the procurement process, the issues addenda and amendments, and these changes also become a part of the contract document. Also industry standards play a more important role in design-build due to the incomplete nature of design at the time of contracting.

With so many documents in the design-build contract, conflicts are almost certain to arise. In order to define a clear direction and avoid litigation, RFPs must include an order of document precedence. The order of document precedence provision specifies which contract document is precedent over others in case there is conflict among them.

Provision Development
The following are essential components of the order of document precedence provision.

- List of documents in descending order of precedence
- Exceptions to the order of precedence
- Process for reporting conflicts

Examples
25- ODP-01
26- ODP-02
27- ODP-03
28- ODP-04

6.2.13 Design and Construction References

Overview
It is not unusual for the project RFP to reference general standard drawings, specifications, and design and construction manuals. The use of design and construction references such as industry standard specifications is more critical for a design-build project where the agency does not have much control over the design. Alternative to the direct control over the design, the agency often requires the design to be done in accordance with industry standards. The design and construction references provision in the RFP specifies the obligation of the design-builder to design and build the project according to these references.

Provision Development
Essentially the provision should state that the design-build firm is responsible for designing in accordance with the applicable industry standards. The provision should also provide a list of references developed and published by the contracting agency and other agencies. The reference list must be organized properly to help the readers find appropriate references.

If necessary, the provision should also provide clarification and the interpretation of the documents. Industry standards tend to use rather general terms and often need to be specified to the project. In addition many standards are developed to fit design-bid-build projects, and the terms used may not fit design-build projects as well. As an example, the term "drawing" can be interpreted to refer to both the drawing of the agency supplied preliminary design in the RFP and the design in the proposal, therefore it is important to clarify such vocabulary.

Finally, the order of document precedence is also important among various reference documents. It is very likely that one reference may conflict with another. When listing the various references, it is a good idea to list them in order of document precedence.

The following list is the summary of essential contents of the provision.

- A statement that the design-build firm is responsible for designing in conformance with the industry standards provided
- A list of applicable references

- Clarifications on the interpretation of the references
- The order of document precedence among various references

Examples

29- REF-01
30- REF-02
31- REF-03
32- REF-04

6.2.14 Ownership of Documents

Overview

Assuming that the agency has the right, and the relationship between the agency and the design-builder has ended, the ownership of documents provision plays an important role in deciding the rightful owner of the documents. This clause formally states who owns the documents - especially the design - at the event of termination of the relationship.

The ownership of documents provision is common in contracts between the agencies and the engineers and therefore most parties have experience with it. However, in design-build, where the agency has a single contract for both design and construction services, the approach to clause development must be different. Additionally, the fact that the agency develops only part of the design makes the document ownership more ambiguous. In order to avoid any confusion or possible dispute, the question of document ownership should be clearly defined in the RFP.

Provision Development

The essence of the ownership of documents provision is to identify all variations of document type, occasion of termination and accountability, and to affirm clearly who owns the documents in each case. The following figure illustrates possible variations.

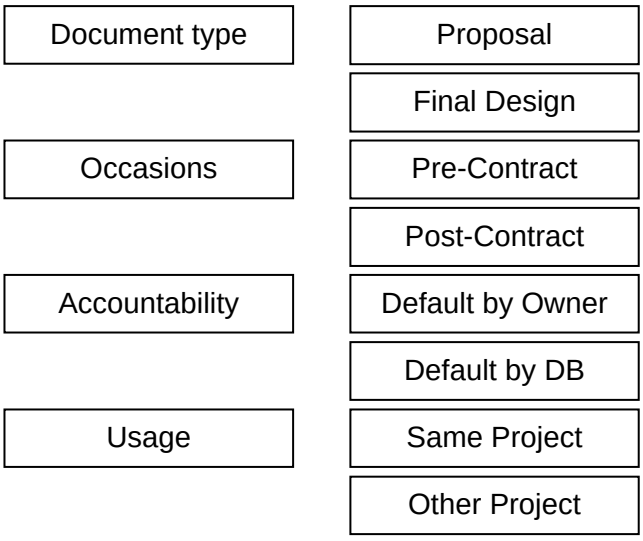


Figure 6.5: Variations of Contract Documents Relating to Ownership

The variations by the document type and occasion are closely related. The early termination (pre-contract) often occurs after the award due to failure in negotiation. In this case, the document of interest is the design-builder's proposal. Most of the time, the agency specifies that it holds the title on the proposal in exchange for a stipend (see 6.2.15). In cases of post-contract termination, the ownership of the design and other product is vague unless it is well defined in the RFP. The agency may either renounce ownership of the documents or gain the right in exchange for suitable compensation of the design-builder.

Standard contracts such as AIA, EJCDC and AGC allocate the ownership of the documents differently based on their usage of the documents. If the documents are to be used for the original project, most of standard contracts favor the agency, but they do not if they are to be used on other projects. Such variation also exists on the bases of the accountability for termination.[52] If the default is by the agency, agency may not be eligible for the ownership.

The other considerations in developing the clause are summarized in the list below.

- Clear statement of the ownership of the project documents for each variation
- Negotiation process of compensation for completed work

Examples

33- OD-01
34- OD-02
35- OD-03

6.2.15 Stipend

Overview

A stipend is a paid to unsuccessful firms for development of a responsive proposal. Some RFPs use other vocabulary such as "honoraria", but the FHWA design-build rule recognizes that the term "stipend" is currently being used more widely in the industry, so this Guide also uses that term.

A design-build proposal can include preliminary design, a construction plan, outline specifications, and a price proposal. Naturally it is much more expensive to develop such a proposal than it is to simply estimate the construction costs based on a complete set of bidding documents and prepare a price proposal for bid. In order to partially compensate for this effort, the contracting agency may elect to pay a stipend to unsuccessful offerors who have submitted responsive proposals. The FHWA recommends the use of stipends on large projects where there is substantial opportunity for innovation and the cost of submitting a proposal is significant.

[52] Beard, J. L., Loulakis, M. C., and Wundram, E. C. (2001). *Design-build: planning through development*, McGraw-Hill, New York.

The use of stipends can:

- Encourage competition;
- Reduce risk by partially compensating unsuccessful offerors;
- Ensure that smaller companies are not put at a competitive disadvantage; and
- Allow agencies to retain the right to use innovative or creative ideas from proposals either unselected or terminated by the agency as an exchange for the stipend.

The FHWA recommends that the stipend amount be one half or one third of the cost of the proposal development. Typical stipend amounts are roughly 0.2% of the total project cost.[53] However, the amount of the stipend is very project-specific and is strictly the agency's decision.

Provision Development

If the contracting agency decides to use a stipend, the RFP should have a clause describing the amount, conditions, and the process of distribution. The stipend clause should include the following at a minimum.

- Agency's commitment to pay stipend
- The amount and timing of stipend payment
- Conditions to qualify for stipend
  - Submission of a responsive proposal
  - The proposal meets a minimum quality
- Agreement form
  - Exchange certain rights in the intellectual property

Examples

36- STP-01
37- STP-02

6.2.16 Payment method

Overview

The primary payment method for design-build highway projects is a lump sum method. This varies from traditional design-bid-build projects which use unit price payment methods. Most agencies need to develop mechanisms to request lump sum bids and make progress payments. The FHWA's design-build contracting rule requires the contracting agency to define the procedures for making progress payments on lump-sum contracts in the RFP. The key to writing a successful lump sum payment provision is to request a payment schedule, or schedule of values, that protects the agency for paying too much before work is complete and also does not create undue burden for administering the payments.

[53] Department of Transportation (2002). Federal Highway Administration, 23 CFR Parts 627, et al., Design-Build Contracting; Final Rule. Federal Register, Vol. 67, No. 237, December 10, 2002.

Provision Development

The lump sum contract is based on a fixed price for the work. Therefore the most fundamental component of the provision is the official statement of the amount. In the RFP provision, the amount is usually omitted, to be proposed later by the selected design-builder. Some RFPs specify the maximum contract amount so the bid price does not exceed the funds available to the agency and enhances design competition on a fixed price.

In addition to the contract amount, there are many other issues that should be explained in the provision:

- Declaration of initial contract price
- Reimbursable amount and description of reimbursable items
- Compensation for changes to the project scope
- Retention and right to withhold payment
- Progress payment – schedule, measurement, etc.
- Limitations on payment
- Invoicing and payment
- Project acceptance and final payment
- Payment for design
- Retainage on design and construction

The design-builder proposes the initial contract price in their price proposal. It is the compensation for all the products and services specified in the RFP, the proposal, and any changes made prior to the contracting, including alternative technical concepts and betterments that the agency accepts. In the language of the provision, the scope and definition of the total price should be clearly stated.

An allowance is a sum of money set aside for any items that have not been specified in the contract. The amount of allowance tends to be higher and more important in design-build due to the early stage of design development.

In the case that reimbursable items are required, they payment provisions must be specified. For example, utility relocation and new utility installation cost is often reimbursable from the utility owner. For such items, the RFP provision should specify the list of reimbursable items, their amount, and the requesting and reviewing process.

The payment provision also specifies the amount and process for additional compensation for agency-proposed, consented, or unavoidable changes of scope. Often the extra payment due to scope change is handled along with others issues, such as change orders, in the change provision. The issue of extra payment should be mentioned in the payment clause, even if it is repeated, or directed to the appropriate section.

The retention clause permits the agency to hold some percentage of the total price (usually 5% to 10%) until the project is completed and accepted to ensure the continuous effort of the contractor until the completion of the project. However, retention on design service fee should be released

when the plans and specifications have all been issued for construction. Also the right-to-withhold-payment clause should include a list of occasions that are applicable, such as defects.

Once the contractor has completed the project (or a significant item in the project), an invoice is sent to the agency requesting final payment. This clause specifies the format and contents of the invoice. Some RFPs supply a standard form for the use of the proposors. The clause also specifies how many days after the receipt of a responsive invoice the actual payment will be made.

When the project is completed and accepted by the agency, the final payment is made. For the project to be accepted, and to receive final payment, the contractor should supply all the necessary products, documents, permits and applications for examination.

Examples

38- PAY-01
39- PAY-02
40- PAY-03

6.2.17 Progress Schedule

Overview

The RFP schedule provision typically require the design-builder to prepare a base-line schedule and continuously update and report on the progress, which is referred to as a progress schedule. This progress schedule relates to the schedule of values mentioned in the previous section.

Not unlike traditional delivery, the design-builder submits a base-line schedule shortly after receiving the notice to proceed. Upon the approval of the contracting agency, the schedule becomes the official contract schedule. The main functions of the contract schedule are to plan for efficient contract execution, monitor the project for payments, and provide communication between parties.

As the project progresses, the base-line schedule needs to be updated. The progress schedule provision defines the submission timing, coverage, and associated payment procedures. Of particular interest in the progress schedule is the payment. The contractor's progress schedule is used to identify the quantity of materials and associated cost for each major work task, thus establishing the basis for measuring completion of work and making payments to the design-builder. It is important to include a detailed set of design activities and relate them with their associated construction activities to ensure that the design-builder is properly managing the project and that disruptions in the design process can be tracked to potential delays in the completion of construction.

Provision Development

The schedule provision consists of three parts -- scheduling, measurement, and invoicing procedure.

- Scheduling Method

- Measurement of work completed
- Procedure of invoicing/receiving payment

The scheduling method applies to both contract schedule and progress schedule. AASHTO requires the contractor to provide a cost and resource loaded schedule to establish critical construction operations. All the activities should be identified in terms of precedence relationship, duration, estimated and actual start/finish date and float.

The measurement provision describes how the work will be measured and paid for. The provision specifies the measuring formula and units to which the design-builder should conform in order to receive partial payment.

The procedures for submitting progress schedule, invoicing for payment, and conditions of receiving should be included in the provision. In contracts that have separate payment plans for contingency/allowable items, this provision should also specify both procedures separately if there is any difference in measuring and compensating.

Examples
41- PS-01

6.2.18 Project Acceptance

Overview
When all work is completed, the work shall be reviewed by the agency to ensure the desired quality and performance in accordance with the RFP requirements. All the work completed should be accepted by the contracting agency prior to the contractor's eligibility for full payment for the work performed.

In design-build, the design must also be accepted to be eligible for payment for design service. The design acceptance occurs concurrently with construction acceptance, and is made upon the submission of as-built design.

Provision Development
Upon the substantial completion of the project, the design-builder notifies the contracting agency of the need for examination and acceptance of the project. The acceptance of design, materials, and construction process occurs throughout the project. However, the acceptance after the completion of the entire project carries the special meaning of final acceptance, and the design-builder is thereby entitled to final payment and is free of obligations other than warranted work.

The project-acceptance provision should include the following in progression:

- Conditions of substantial completion
- Procedure and required documents upon reporting substantial completion
- Examination method and bases of acceptance
- Non-conforming work
- Notice of final acceptance

- Final payment

Substantial completion means the project is completed in the design-builder's perspective. It does not mean the project is truly completed. The project is completed when the contracting agency accepts it. . The provision specifies what conditions have to be met for the project to be considered substantially completed and ready to be reported. The conditions can vary due to their dependency upon the project scope and expectations, but in most cases, the criteria for substantial completion are met when the design-builder can ensure the following:

- The project is completed except for final cleanup and check up items originally scheduled to follow final acceptance.
- All the works specified in the contract document have been performed correctly.
- All the works have been performed at or above the levels specified by the contract document and industry standards. .
- All the necessary government permits have been acquired
- The project is free from offsite problems such as damage to other properties and injury of any person.
- The project is ready to be opened to the public.

The bases of acceptance are also explained in the provision. The test method and minimum performance levels are mostly based on the performance criteria specified in the RFP, the design-builder's proposal and the approved contract design documents.

As a result of the examination on the project, either final acceptance or partial acceptance is issued to the design-builder. When all the work is determined complete by the contracting agencies and the project is accepted, the contractor is notified in writing and the contractor relieved of further responsibilities. In cases of partial payment, the contracting agency notifies the design-builder of specific defective items. Partial acceptance and non-conforming work will be discussed further in the next section.

Examples

42- ACC-01
43- ACC-02
44- ACC-03

6.2.19 Non-conforming Work

Overview

Non-conforming work is any work performed that does not meet the requirements of the contract documents. "Work" refers to all products and services the design-builder has agreed to perform, including design, materials, construction process, equipment and non-physical-product services such as permit acquisition, traffic control, etc. The contract documents in design-build refer to drawings and specifications in the RFP and proposal, referenced standards, applicable codes, and other contractual requirements.

The major function of the non-conforming work provision is to specify what has to be done to the non-conforming works and that are discovered prior to acceptance of the project. AASHTO highway specifications identify three possible remedies for the defects discovered.[54]

- If the work fails to meet the contract requirements but is adequate to serve the design purpose,
  - The agency decides that the item serves the purpose although it does not meet the requirement
  - The work remains in place
  - The agency decides the extent to which the work will be accepted
  - The agency documents the basis of acceptance by change order and adjustment of contract price
- If the work fails to meet the contract requirements and is inadequate to serve the design purpose,
  - The agency decides that the item does not serve the design purpose.
  - The item is removed and replaced or corrective work is done at no cost to the agency.
- If there are contract provisions to accept an item not complying fully with the requirement,
  - The pay-adjustment factor should be included in the appropriate subsections on measurement and payment.
  - The price is adjusted according to the pay adjustment factor.

Provision Development

The non-conforming work provision specifies what has to be done in the following three cases.

- Non-inspected work
  - This refers to work completed but not inspected.
  - Prior to final acceptance, the non-inspected work should be uncovered and inspected.
  - The contractor is responsible for any delay.
- Unauthorized work
  - This refers to the work done by the contractor but not pre-approved by the agency and not included in the contract documents.
  - The contracting agency is not liable for extra cost and time for such work.
  - If the work does not conform to the minimal requirements, the contractor is liable for corrective work without compensation.
- Unaccepted work
  - The work is complete (authorized, performed, and inspected) but does not conform to the quality, purpose or the contractual function.

There are two possible remedies for non-conforming work.

- Corrective work
  Upon the engineer's or contracting agency's decision to take corrective action, the

[54] American Association of State Highway and Transportation Officials. (1998). "Guide Specifications for Highway Construction."

contractor is responsible for repair, removal, reinstallation, and re-inspection in terms of cost and time.

- Accepted at adjusted payment -- deduction from total price
  The contracting agency may choose to accept the work in place but at an adjusted (lower) price. This provision should specify an appropriate pay adjustment factor to be used in such a circumstance.

The non-conforming work provision should also specify appropriate remedies for damages to the agency and to the public.

- Damages to the agency
  Environmental cost, penalties, missed opportunities, compensation for extra work by department staff, etc.
- Damages to the public
  User cost, inconvenience, disadvantage business compensation, etc.

Examples

45- NCW-01
46- NCW-02
47- NCW-03
48- NCW-04

6.2.20 Traffic Control

Overview

Traffic control is particularity important in an expansion project where significant traffic exists during construction. As the number of expansion projects is increasing, the importance of traffic control is also increasing. It can minimize user cost, inconvenience, and accidents. In addition to temporary traffic control during construction, designing permanent traffic control features is important factor to project performance. Efficient traffic flow should be one of main considerations in design decisions.

The traffic control plan is often included in the technical proposal and evaluated as a part of the selection decision in order to encourage competitors to put the necessary effort into developing a viable plan. If the full plan is not reasonable to include in the proposal, partial plans or an overall approach to the maintenance of traffic may be required.

Provision Development

The traffic control provision includes followings

- Submittal of traffic management plan
  - Scored as a part of the selection decision
  - Reviewed for agency's approval
- Contents and method of traffic management planning
  - Plan for after-construction permanent traffic flow
  - Plan for during-construction temporary traffic flow

- Traffic control analysis
  - Worksite and detour route
  - Simulation, traffic volume forecast
- Traffic control devices
  - Permanent and temporary signing, pavement marking, intelligent traffic system (ITS) devices, etc.
- Restrictions
  - Time restrictions (peak hour, holiday, etc)
  - Space restrictions (spacing from opened lane to construction site)
- Required mitigation services
  - Patrolling
  - Accident, emergency management
- Lane rental
  - Liquidated damage clause

Examples

49- TC-01
50- TC-02

6.2.21 Warranty

Overview

The FHWA's design-build rule leaves the decision authority of warranty purchase to the contracting agency under the condition that the purchased warranties:

- are short term;
- are not the sole means of acceptance;
- do not include items of routine maintenance which are not eligible for Federal participation; and
- include the quality of workmanship, materials and other specific tasks identified in the contract.

Therefore the contracting agency may purchase warranties on desired items, periods, conditions, and criteria. However, the contracting agency must confirm if any of the state governing regulations requires or limit the use warranty in the project.

The one significant difference in using warranty in design-build from design-bid-build is the use of performance criteria. The Texas DOT suggested that there is a significant difference between the use of warranties on a traditional design-bid-build project and a design-build project.[55] It suggests that a warranty identifying specific pieces of the work may limit innovation opportunity and shift the risk to the contracting agency, thereby nullifying critical benefits of design-build. Therefore the warranty criteria should be performance based and provided in the RFP documents.

[55] Department of Transportation, Federal Highway Administration, 23 CFR Parts 627, et al., Design-Build Contracting; Final Rule. Federal Register, Vol. 67, No. 237, December 10, 2002.

Provision Development

The warranty provision includes followings

- List of warranty item(s)
  - Facility type (Pavement, painting, etc)
  - Location (Section, street name, etc)
  - Warranty coverage (Material, workmanship, performance, etc)
  - Warranty period (each warranty may have different period)
- Warranty bond
  - Required bond submittals (certificate, bond type, etc)
  - Coverage amount
- Performance warranty criteria
  - Testing, measuring method
  - Allowable level
  - Corrective action
- Inspection
  - Period
  - Defect reporting, appealing, dispute resolution procedures

Examples

51- WA-01
52- WA-02

APPENDIX A: Referenced Design-Build Guidelines, RFQs and RFPs

Design-Build Guidelines

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RFQs and RFPs

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Florida Department of Transportation. (2000d). "US 1 (SR 5)." *Request for proposal*, Contract No. E-5E56; Financial Project No. 404121-1-52-01, Florida Department of Transportation.

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APPENDIX B: Design-Build Responsibility and Risk Allocation Matrix

Design-build risks	Owner	Design-builder
Design		
Definition of Scope		
Project Definition		
Establishing Performance Requirement		
Preliminary survey/base map		
Geotech Investigation - based on preliminary design in RFP.		
Geotech Investigation - based on proposal		
Establish/Define initial subsurface conditions		
Init proj Geotechnical Anal/Report based on preliminary design		
Proposal specific Geotechnical Analysis/Report		
Plan conformance with regulations/guidelines/RFP/proposal		
Plan accuracy		
Design Criteria		
Conformance to Design Criteria		
Design Review Process		
Owner Review Time		
Design QC		
Design QA		
Changes in Scope		
Constructability of Design		
Efficacy of Design		
Contaminated Materials		
Right of Way		
Establishing R/W Limits		
Access Hearings/Findings and order		
R/W Plan Approval		
Appraisal/Review		
Establish Just Compensation		
Acquire Right of Way		
Construction Easements		
Permanent Easements		
Condemnation		
Complete Relocation		
Take Possession		
Certification		
Additional R/W purchase due to alignment change		
Environmental		
Define Initial Project environmental impacts		
Define parameters for impacts		
Environmental Investigation		
Environmental Permits		
Environmental Mitigation		
Environmental Compliance		
Known Hazardous Waste – mitigation		
Unknown/nondefined hazardous waste – mitigation		

Obtain Environmental Approvals - Const. related		
Utility relocation, local agency permit, third-party, public		
Identification of initial local agency impacts		
Obtaining initial local agency permits		
Establishing initial local agency requirements		
Establishing final/actual local agency impacts		
Modifications to existing local agency permits		
Identification of initial utility impacts from preliminary des		
Establish initial utility locations / conditions		
Defining required utility relocations from preliminary des		
Relocation of utilities prior to contract		
Relocation of utilities under agreement during contract		
Modified agreement with private utility		
Modified agreement with public utility		
Damage to utilities under construction		
Payment to utility owners		
Verification of Utility Locations/Conditions		
Coordination with Utility Relocation Efforts during contract		
Unforeseen delays due to utility owner and third-party		
Utility/Third Party Delays resulting from proposal/modified design		
Betterment to utility		
Other work/Coordination		
Third Party Agreements (Fed, Local, Private, etc.)		
Coordinating with Third Parties under agreement		
Coordination/collection for third party betterments		
Coordination with Other Projects		
Coordination with Adjacent Property Owners		
Performance of utility work		
Coordinating with other government agencies (FHWA, etc.)		
Community relations		
Public safety		
Construction		
DBE compliance		
Safety / Safety QA		
Construction Quality/Workmanship		
Schedule		
Materials Quality		
Materials documentation		
Material availability		
Initial performance requirements of QA Plan		
Final Construction/Materials QC/QA Plan		
Construction/Materials QA		
Construction QC		
Construction QA Procedural compliance auditing		
Construction IA testing/inspection		
Construction Staking		
Erosion Control		
Spill Prevention		
Accidents within work zone / liability		
Third Party Damages		
Operations and Maintenance During Construction		

Maintenance under Construction - new features		
Maintenance under Construction - exist. features		
Extraordinary Maintenance		
Maintenance of Traffic		
Quantity/Cost of WSP Callbacks		
Availability of WSP Callbacks		
Damage to Utilities under Construction		
Falsework		
Shop Drawings		
Equipment failure/breakdown		
Work Methods		
Early Construction / At Risk Construction		
Community Relations		
Performance of defined mitigation measures		
Warranty		
Force Majeure / Acts of God		
Strikes/Labor Disputes - on site labor		
Ordinary weather condition		
Extraordinary weather condition		
Tornado/Earthquake		
Epidemic, terrorism, rebellion, war, riot, sabotage		
Archaeological, paleontological discovery		
Suspension of any environmental approval		
Changes in Law		
Lawsuit against project		
Storm/Flooding		
Fire or other physical damage		
Differing Site Conditions/Changed Conditions		
Changed Conditions		
Differing Site Conditions		
Completion and Warranty		
Establishment/definition of any risk pool		
Long term ownership / Final Responsibility		
Insurance		

Adopted from Washington DOT's Design-Build Responsibility/Risk Allocation Matrix and Colorado DOT's Southeast Multi-Modal Corridor Project's Contractual Responsibility Allocation Chart.

Design-Build Responsibility/Risk Allocation Matrix – Washington DOT

RISK	Design-Bid-Build			Change	Design-Build	
	Owner	Shared	Contractor		Owner	Design-builder
Design Issues						
Definition of scope	X				X	
Project definition	X				X	
Establishing performance requirement	X				X	
Preliminary survey/base map	X				X	
Geotech investigation - Initial borings based on prelim. des.	X				X	
Geotech investigation - Initial borings based on proposal	X			→		X
Establish/define initial subsurface conditions	X				X	
Initial project Geotechnical Analysis/Report based on prelim. des.	X				X	
Proposal specific Geotechnical Analysis/Report	X			→		X
Plan conformance with regulations/guidelines/RFP	X			→		X
Plan accuracy	X			→		X
Design Criteria	X				X	
Conformance to Design Criteria	X			→		X
Design Review Process	X			→		X
Design QC	X			→		X
Design QA	X			→		X
Owner review time	X				X	
Changes in scope	X				X	
Constructability of design	X			→		X
Contaminated materials	X				X	

RISK	Design-Bid-Build			Change	Design-Build	
	Owner	Shared	Contractor		Owner	Design-builder
Local Agency, Utility, and Railroad Issues						
Identification of initial local agency impacts	X				X	
Obtain initial local agency permits	X				X	
Establish initial local agency requirements	X				X	
Establish final/actual local agency impacts	X			→		X
Modifications to existing local agency permits	X			→		X
Identification of initial utility impacts from preliminary design	X				X	
Establish initial utility locations/conditions	X				X	
Define required utility relocations from preliminary design	X				X	
Relocation of utilities prior to contract	X				X	
Relocation of utilities under agreement during contract			X			X
Modified agreement with private utility based on final design	X			→		X
Modified agreement with public utility based on final design	X			→		X
Damage to utilities under construction			X			X
Verification of utility locations/conditions	X			→		X
Coordination with utility relocation efforts during contract		X		→		X
Unforeseen delays - utility/third party	X				X	
Utility/third party delays resulting from proposal/modified design	X			→		X
Identification of RR impacts based on preliminary design	X				X	
Obtain initial RR agreement based on preliminary design	X				X	
Coordination with RR under agreement	X			→		X
Other work/coordination		X		→		X
Third Party Agreements (federal, local, private, etc.)	X				X	
Coordination with third parties under agreement		X		→		X
Coordination/collection for third party betterments		X		→		X
Coordination with other projects		X		→		X
Coordination with adjacent property owners		X		→		X

RISK	Design-Bid-Build			Change	Design-Build	
	Owner	Shared	Contractor		Owner	Design-builder
Construction						
DBE compliance			X			X
Safety/Safety QA			X			X
Construction quality/workmanship			X			X
Schedule			X			X
Materials quality			X			X
Materials documentation			X			X
Material availability			X			X
Initial performance requirements of QA Plan	X				X	
Final construction/materials QC/QA Plan	X			→		X
Construction/materials QA	X			→		X
Construction QC			X			X
Construction QA procedural compliance auditing	X			→		X
Construction IA testing/inspection	X				X	
Construction staking		X		→		X
Erosion control		X		→		X
Spill prevention		X		→		X
Accidents within work zone/liability			X			X
Third party damages			X			X
Operations and maintenance during construction			X			X
Maintenance under construction - new features			X			X
Maintenance under construction - existing features			X			X
Maintenance of traffic		X		→		X
Quantity/cost of WSP callbacks	X			→		X
Availability of WSP callbacks	X				X	
Damage to utilities under construction			X			X
Falsework			X			X

RISK	Design-Bid-Build			Change	Design-Build	
	Owner	Shared	Contractor		Owner	Design-builder
Shop drawings			X			X
Equipment failure/breakdown			X			X
Work methods			X			X
Early construction/at risk construction		X		→		X
Community relations	X				X	
Performance of defined mitigation measures	X			→		X
Warranty	X			→		X
Force Majeure/Acts of God						
Strikes/labor disputes – on-site labor	X			→		X
Tornado/earthquake	X				X	
Epidemic, terrorism, rebellion, war, riot, sabotage	X				X	
Archaeological, paleontological discovery	X				X	
Suspension of any environmental approval	X				X	
Changes in law	X				X	
Lawsuit against project	X				X	
Storm/flooding	X				X	
Fire or other physical damage	X				X	
Differing Site Conditions/Changed Conditions						
Changed conditions	X				X	
Differing site conditions	X				X	
Completion and Warranty						
Establishment/definition of any risk pool	X				X	
Long term ownership/Final responsibility	X				X	
Insurance			X			X

APPENDIX C: Contractual Provision Examples

CODE	CLAUSE TYPE	AGENCY	YEAR
001-BC-01	Basic Configuration	Washington DOT	2005
002-BC-02	Basic Configuration	Florida DOT	2000
003-ATC-01	Alternative Technical Concepts	ACTA	1998
004-ATC-02	Alternative Technical Concepts	Minnesota DOT	2001
005-BET-01	Betterment	FHWA (U.S. DOT)	2000
006-QM-01	Quality Management	Florida DOT	2000
007-QM-02	Quality Management	Maine DOT	2003
008-QM-03	Quality Management	Washington DOT	2000
009-DSRA-01	Design Submittal, Review & Approval	Arizona DOT	2000
010-DSRA-02	Design Submittal, Review & Approval	Washington DOT	2004
011-DSRA-03	Design Submittal, Review & Approval	FHWA (U.S. DOT)	2001
012-DC-01	Design Commitment	USAID	
013-EOR-01	Engineer of Record	Minnesota DOT	2001
014-EOR-02	Engineer of Record	Washington DOT	2005
015-DSC-01	Differing Site Condition	Colorado DOT	2000
016-DSC-02	Differing Site Condition	South Dakota DOT	2000
017-EP-01	Environmental Permitting	Florida DOT	2001
018-EP-02	Environmental Permitting	Florida DOT	
019-EP-03	Environmental Permitting	Maryland DOT	1998
020-ROW-01	Right of Way	South Dakota DOT	2000
021-ROW-02	Right of Way	Washington DOT	2000
022-ROW-03	Right of Way	South Carolina DOT	1999
023-UR-01	Utility Relocation	Maine DOT	1997
024-UR-02	Utility Relocation	North Carolina DOT	2002
025-ODP-01	Order of Document Precedence	Washington DOT	2000
026-ODP-02	Order of Document Precedence	Maine DOT	2003
027-ODP-03	Order of Document Precedence	Colorado DOT	2000
028-ODP-04	Order of Document Precedence	Washington DOT	2005
029-REF-01	Reference Documents	Maryland DOT	1998
030-REF-02	Reference Documents	Minnesota DOT	2001
031-REF-03	Reference Documents	Arizona DOT	1997
032-REF-04	Reference Documents	ACTA	1998
033-DO-01	Ownership of Documents	Colorado DOT	2000
034-DO-02	Ownership of Documents	Minnesota DOT	2001
035-DO-03	Ownership of Documents	New Mexico DOT	2001
036-STP-01	Stipend	Minnesota DOT	2001
037-STP-02	Stipend	Maine DOT	1997
038-PAY-01	Payment Method	Maine DOT	2003
039-PAY-02	Payment Method	Florida DOT	2001
040-PAY-03	Payment Method	FHWA (U.S. DOT)	2001
041-PS-01	Progress Schedule	Washington DOT	2004
042-ACC-01	Project Acceptance	FHWA (U.S. DOT)	2001
043-ACC-02	Project Acceptance	South Dakota DOT	2000
044-ACC-03	Project Acceptance	Maine DOT	2003
045-NCW-01	Non-conforming Work	Maine DOT	2003

CODE	CLAUSE TYPE	AGENCY	YEAR
046-NCW-02	Non-conforming Work	ACTA	1998
047-NCW-03	Non-conforming Work	South Dakota DOT	2000
048-NCW-04	Non-conforming Work	Washington DOT	2004
049-TC-01	Traffic Control	Colorado DOT	2000
050-TC-02	Traffic Control	Florida DOT	2001
051-WA-01	Warranty	Washington DOT	2000
052-WA-02	Warranty	FHWA (U.S. DOT)	2001

Clause Code:	001-BC-01
Clause Type:	Basic Configuration
Project Name:	Interstate 405 Corridor Project
Owner Name:	Washington DOT
Year Published:	2005

0-02.3 BASIC CONFIGURATION

The following design components shall be deemed Basic Configuration elements for the Project. The descriptions in this section are not intended to describe the scope of work, rather specific features and tolerances for defining the Basic Configuration.

Horizontal and Vertical Roadway Alignments:
The Horizontal and Vertical Roadway Alignments shall be as defined on the Alignment and Paving Plans and Profile and Superelevation Plans respectively. Horizontal Alignments may be adjusted by up to ten feet, and Vertical Alignments may be adjusted by up to two feet in any direction, providing that all of the following conditions are met: 1.) The final Cut/Fill limits remain within the Impact Area Line as shown on the Conceptual Plans, 2.) The adjustments do not result in the need to acquire additional right-of-way, 3.) The adjustments do not result in net increases to impacts of wetlands, wetland buffers, or other environmentally sensitive areas that are depicted on the Conceptual Plans, and 4.) All other design standards and criteria are met, or exceeded as described in the Contract Documents.

Noise Walls:
Horizontal and vertical noise wall alignments shall be as defined on the Alignment and Paving Plans, and Retaining and Noise Wall Profile Plans. At a minimum, noise walls N3, R2 and U4 must be constructed to the horizontal and vertical limits depicted on the Conceptual Plans. Noise wall alignments may be adjusted by up to four feet in offset to the roadway, but the limits and top of wall profile shall not be reduced from that shown in the Conceptual Plans. If the Design-Builder chooses to shift the roadway horizontal alignment by more than two feet, and/or the roadway vertical profile by more than one foot, a new or supplemental noise analysis report must be submitted to WSDOT for approval. The Design-Builder shall be responsible for the design and construction of all additional noise barriers that any noise study supplements indicate are necessary to meet the noise abatement standards described in the Contract Documents. In no circumstance can the basic configuration of the noise walls, as depicted on the Conceptual Plans, be reduced except that the top of wall elevations may be reduced to a minimum of 10-feet above the nearest edge line if supported by the supplemental noise analysis report.

NE 116th Street Interchange Type:
The interchange type selection of a ½ Single Point Urban Interchange at NE 116th Street/ I-405 is a basic configuration element. Design refinements are encouraged by the Design-Builder within the parameters of the other basic configuration elements as described in this section. An alternative interchange type may be developed and submitted for approval to WSDOT, but the following conditions must be met: 1.) Alternative designs must demonstrate forward compatibility with the I-405,SR520 to SR522 Stage 2 and Implementation Plan projects. This will require full development of a channelization plan for approval for each of the two future projects, and an interchange type selection submittal. 2.) A supplemental traffic analysis report must be submitted to WSDOT for approval as part of the interchange type selection submittal, 3.) A supplemental noise study report must be submitted for approval, and 4.) Renderings for the bridge over NE 116th Street must be developed to solicit Context Sensitive Solutions from WSDOT and the City of Kirkland Advisory Committee.

Clause Code:	002-BC-02
Clause Type:	Basic Configuration
Project Name:	Hathaway Bridge
Owner Name:	Florida DOT
Year Published:	2000

2. Geometric

A) Horizontal Alignment
The concept for the project shall be in general conformance to the concept alternatives in Preliminary Engineering Report. The existing bridge will remain in place until four lanes of traffic can be accommodated on the new structure(s). Alternate alignments may be considered. The alignment must have an approach roadway alignment meeting all AASHTO and FDOT geometric requirements and having no adverse impact on the functioning of the current traffic or the right of way. The alignment must also be coordinated with design of Thomas Drive intersection.

B) Minimum Clearances
Low member elevation will be not less than 12' above Mean High Water. The minimum vertical and horizontal clearance envelope for the proposed main channel span is 65' above mean high water elevation and a horizontal clearance of 287.33 ft. as currently exists.

C) Typical Section
Each bridge typical section shall consist of four 12' lanes, a 10' right shoulder, a 10' left shoulder, traffic railing barriers and 8' pedestrian/bikepath with handrails.

D) Project Limits
Final project limits, must be determined by the Design/Build Team. The construction will not be outside of the existing right-of-way.

Clause Code:	003-ATC-01
Clause Type:	Alternative Technical Concepts
Project Name:	Alameda Corridor—Mid-Corridor Project
Owner Name:	ACTA (city of Long beach & Los Angeles)
Year Published:	1998

2.6 BASE TECHNICAL CONCEPT; ALTERNATIVE TECHNICAL CONCEPTS

2.6.1 BTC/ATCs

The "Base Technical Concept" or "BTC" shall mean a trench wall system comprised of a concrete, top-strutted, solid bottom, cast-in-drilled-hole (CIDH) piles, with a continuous concrete face (cast-in-place, precast, or shotcrete) structurally connected to the CIDH piles as generally described in TP 12. The Trench shall include waterproofing and structural components as required to prevent infiltration and inflow of ground and surface water. The BTC also includes bridges and open, multi-channel drainage systems as generally described in TP 12. Bridge structures shall be concrete, cast-in-place or precast.

An "Alternative Technical Concept" or "ATC" shall mean any proposed alternative concept to the BTC that meets the requirements of the Contract Documents and has been used elsewhere successfully under similar circumstances for similar applications.

The BTC will be a Contract requirement except to the extent it is superseded (in whole or in part) by one or more pre-approved ATCs.

2.6.2 Pre-Proposal Submission of ATCs

As a condition precedent to submitting an Option Proposal, the proposer shall submit five copies of a narrative description of and technical information, including drawings, for the ATC for review and comment by ACTA. The submission shall be delivered to ACTA's offices at One Civic Plaza, Suite 650, Carson, California 90745, Attention: General Manager, no earlier than March 2, 1998 and no later than 5:00 p.m. on May 1, 1998. The submission must describe:

- the general configuration of the ATC;
- the locations where the ATC will be used on the Project;
- any special maintenance requirements associated with the ATC;
- basis of analysis;
- proposed construction equipment layout and construction plan including impacts to rail and vehicle traffic;
- proposed bridge types; and
- other projects where the ATC has been used and how the ATC has affected maintenance of those projects.

2.6.3 ACTA's Review of ATCs

ACTA will use an independent panel to review the ATCs and provide recommendations to ACTA. The Alameda Corridor Engineering Team will provide technical support. ACTA may request additional information at any time and will, in each case, return comments to each proposer within 30 days after receipt of the ATC and all requested information. ACTA's comments will be limited to one of the following statements:

- the ATC is acceptable;
- the ATC is unacceptable; or
- identification of any conditions which must be met in order to make the ATC acceptable.

ACTA's acceptance of an ATC shall not be considered a guaranty that an Option Proposal incorporating the ATC will be accepted. Option Proposals will be evaluated based on the criteria set forth in Section 2.10.

Clause Code:	003-ATC-01
Clause Type:	Alternative Technical Concepts
Project Name:	Alameda Corridor—Mid-Corridor Project
Owner Name:	ACTA (city of Long beach & Los Angeles)
Year Published:	1998

ACTA's rejection of an ATC will not entitle the proposer to an extension of the Proposal Date or the date the ATCs are due.

ACTA anticipates that the comments provided to each proposer will be sufficient to enable the proposer to make any necessary changes to its ATC. However, if a proposer wishes additional clarification regarding necessary changes, the proposer may provide a written request for clarification to the General Manager.

Clause Code:	004-ATC-02
Clause Type:	Alternative Technical Concepts
Project Name:	T.H. 100–DULUTH ST.
Owner Name:	Minnesota DOT
Year Published:	2001

16—DESIGN-BUILDER INNOVATION

The Department encourages the Design-Builder to submit innovative design or construction concepts and techniques or alternative staging and sequencing plans, as described in Section 3.5.2.2 (Design-Builder Innovation), Part II (Instructions to Proposers).

Costs.

Because this project will be awarded on the basis of a low bid, the Design-Builder must bid the Base Plan as provided by the Department, and shall not include the cost of any innovations in its lump sum price. If the Department, at its sole discretion, chooses to accept and use any Design-Builder-proposed innovation(s), it will negotiate a supplemental agreement with the Design- Builder after Contract award.

Submittal Requirements.

The Design-Builder shall:

- Identify and describe any aspects of its design or construction elements that it considers to be innovative.
- Describe creative or innovative ways in which the design or construction aspects will benefit the traveling public and the Project.
- Identify and evaluate any deviations from the established design criteria or Base Plan that are recommended by the Proposer, and clearly list the advantages and disadvantages of each.

Clause Code:	005-Betterment-01
Clause Type:	Betterment
Project Name:	PROJECT PRA-NPS 3P13 NATCHEZ TRACE PARKWAY
Owner Name:	FHWA
Year Published:	2000

STC03 PROPOSED BETTERMENTS

(a) The minimum requirements of the contract are identified in the Request for Proposal. All betterments offered in the proposal become a requirement of the awarded contract.

(b) A "Betterment" is defined as any component or system, which exceeds the minimum requirements stated in the Request for Proposal.

Clause Code:	006-QM-01
Clause Type:	Quality Management (Quality control)
Project Name:	Hathaway Bridge Project
Owner Name:	Florida DOT
Year Published:	2000

The DESIGN BUILD FIRM should develop Quality Control Plans for each of the following:

Design

- The DESIGN BUILD FIRM will be responsible for the professional quality, technical accuracy and coordination of all surveys, designs, drawings, specifications and other services furnished by the DESIGN BUILD FIRM under this contract.
- The DESIGN BUILD FIRM will describe how the checking and review processes are to be documented to verify that the required procedures were followed. The Quality Control Plan utilized by the DESIGN BUILD FIRM will be specifically designed for this project. All information as specified by the DEPARTMENT'S District Three.
- Quality Control Plan will be submitted with each Phase Review. The responsible Professional Engineer or Professional Surveyor that performed the Quality Control review will sign a statement certifying the review was conducted.
- The DESIGN BUILD FIRM will, without additional compensation, correct all errors or deficiencies in the designs, drawings, specifications, construction and/or other services.

Construction Methods and Materials

The DESIGN BUILD FIRM will be responsible for development and implementation of a materials and construction methods Quality Control Program in accordance with Quality Control Specifications. This program is to be used to confirm the quality, strength, and suitability of all products and the quality of construction methods used to build the project. This program shall confirm that the project is built in accordance with the design requirements and specifications.

Clause Code:	007-QM-02
Clause Type:	Quality Management (Quality management plan)
Project Name:	RFP Standard form
Owner Name:	Florida DOT
Year Published:	2004

T. Quality Management Plan (QMP):

1. Design:
The Design-Build Firm shall be responsible for the professional quality, technical accuracy and coordination of all surveys, designs, drawings, specifications, geotechnical and other services furnished by the Design-Build Firm under this contract.
The Design-Build Firm shall provide a Design Quality Management Plan, which describes the Quality Control (QC) procedures to be utilized to verify, independently check, and review all design drawings, specifications, and other documentation prepared as a part of the contract. In addition the QMP shall establish a Quality Assurance (QA) program to confirm that the Quality Control procedures are followed. The Design-Build Firm shall describe how the checking and review processes are to be documented to verify that the required procedures were followed. The QMP may be one utilized by the Design-Build Firm, as part of their normal operation or it may be one specifically designed for this project. The Design-Build Firm shall submit a QMP within 15 working days of the written Notice to Proceed. A marked up set of prints from the Quality Control review will be sent in with each review submittal. The responsible Professional Engineers or Professional Surveyor that performed the Quality Control review, as well as the QA manager will sign a statement certifying that the review was conducted.
The Design-Build Firm shall, without additional compensation, correct all errors or deficiencies in the surveys, designs, drawings, specifications and/or other services.
No fabrication, casting, or construction will occur until all related design review and shop drawing review comments are resolved.

2. Construction:
The Design-Build Firm shall be responsible for developing and maintaining a Construction Quality Control Plan in accordance with Section 105 of Standard Specifications which describes their Quality Control procedures to verify, check, and maintain control of key construction processes and materials. The sampling, testing and reporting of all materials used shall be in compliance with the Sampling, Testing and Reporting Guide (STRG) provided by the Department. The Design-Build Firm will use the Department's database(s) to allow audits of materials used to assure compliance with the STRG. The Department has listed the most commonly used materials and details in the Department's database. When materials being used are not in the Department's database list, the Design-Build Firm shall use appropriate material details from the STRG to report sampling and testing. Refer to the "Access Instruction for LIMS" (http://www.dot.state.fl.us/statematerialsoffice/administration/programs/guidelines/limsaccess.pdf) for more information on how to gain access to the Department's databases.

Prepare and submit to the Engineer a Job Guide Schedule (JGS) using the Laboratory Information Management System (LIMS), 15 working days prior to commencement of Construction. Update the Job Guide Schedule in LIMS and submit it to the Engineer prior to each monthly progress estimate. The Department may not authorize payment of any progress estimate not accompanied by an up-to-date Job Guide Schedule. Maintain the Job Guide Schedule in LIMS throughout the project including the quantity placed since the previous submittal, and total to date quantity and any additional materials placed. Do not commence work activities that require testing until the Job Guide Schedule has been reviewed and

Clause Code:	007-QM-02
Clause Type:	Quality Management (Quality management plan)
Project Name:	RFP Standard form
Owner Name:	Florida DOT
Year Published:	2004

accepted by the Engineer. At final acceptance, submit a final Job Guide Schedule that includes all materials used on the project in the same format as the monthly reports.

Clause Code:	008-QM-03
Clause Type:	Quality Management (QC/QA)
Project Name:	Thurston Way Interchange
Owner Name:	Washington DOT
Year Published:	2000

SECTION 1100 DESIGN-BUILD QC/QA PLAN REQUIREMENTS 1

1110 Description
The Design-Build QC/QA plan, submitted as part of the Best and Final Proposal, must be approved by WSDOT prior to contract execution. This approval will occur after selection in order to allow minor modifications to the plan if necessary. No Work activities may proceed until the Design-Builder's Quality Control Plan has been approved in writing by WSDOT. The plan shall detail how the Design-Builder will provide quality control (QC) and quality assurance (QA) for both the design and construction elements of the project, obtain samples for Design-Builder (D-B) quality control testing, perform tests for Design-Builder quality control, provide inspection, and exercise management control (i.e. quality assurance testing) to ensure that work conforms to the contract requirements. The following WSDOT and AASHTO publications should be consulted in preparing the Design-Build QC/QA Plan:
<omitted>

1120 Design-Builder QC/QA Staff
1120.01 Design-Builder Quality System Manager
1120.02 Design-Builder Design QC/QA Manager
1120.03 Design-Builder Construction QC/QA Manager
1120.04 Quality Testing Supervisor
1120.05 Testing Technicians
1120.06 Inspection Technicians

1130 Design QC/QA Plan Requirements
1130.01 General
The quality control and quality assurance procedures for each type of Design Document and Construction Document shall be organized by engineering discipline (such as structural, civil and utilities). These procedures shall specify measures to be taken by the Design-Builder (1) to ensure that appropriate quality standards are specified and included in the Design Documents and Construction Documents and to control deviations from such standards, it being understood and agreed that no deviations from such standards shall be made unless they have been previously approved by WSDOT at WSDOT's sole discretion, and (2) for the selection of suitability of materials, and elements of the Work that are included in the Project. 40
The Design QC/QA Plan shall include the following:
Quality control and quality assurance procedures for preparing and checking all plans, calculations, drawings and other items submitted, to ensure that they are independently checked and back-checked in accordance with generally accepted architectural and engineering practices, by experienced architects and engineers, respectively. The originator, checker and back-checker shall be clearly identified on the face of all submittals. Specific procedures for verifying computer programs used shall also be included. Plans, reports and other documents shall be stamped, signed and dated by the responsible Washington registered architect or engineer where required under the Contract Provisions, under generally accepted architectural or engineering practices or by applicable laws
<Omitted>

Clause Code:	009-DSRA-01
Clause Type:	Design Submittal, Review and Approval
Project Name:	Cortaro road
Owner Name:	Arizona DOT
Year Published:	2000

1060 Reviews and Submittals
A. Review and coordination of the Design-Build Firm's work by AZDOT will continue through the project. The Design-Build Firm may continue its design efforts while design submittals are being reviewed by AZDOT. Doing so however in no way relieves the Design-Build Firm of the responsibility to incorporate review comments into the design, nor does it entitle the Design-Build Firm to any additional design fees as a result of making changes due to review comments.
B. Submittals for review shall be made when the studies and/or plans have been developed to the following levels of completion:
a) Preliminary design (First Submittal) (Stage III/ Project Development Process Manual)
b) Final design (Final Submittal) (Stage IV / Project Development Process Manual)
c) As-Built Plans
<Omitted>

1064 Preliminary Design Submittal
A. All documents shall be developed to the Stage review detail identified in the Project Development Process Manual.
B. A design review will be held at the project site following submittal of the preliminary plans. Three weeks will be required for AZDOT review of the preliminary submittal.
<Omitted>

1065 Final Design Submittal
A. Construction can be implemented in phases or as a total project. Following the preliminary submittal review, final submittal(s) can be made for any logical grouping of features or all construction. A sealed set of plans and technical specifications will be required for each phase before construction for that phase can begin. Coordination of plans for continuity shall be the responsibility of the Design-Build firm.
B. At the completion of this phase, the design, plans, and Technical Specifications shall be 100 percent complete. The following material shall be submitted for completion of the project:
C. The following material shall be completed, checked, and submitted:

1069 As-Builts
A. Following construction the Design-Build Firm will submit a reproducible set of as-built plans. The plans should include normal AZDOT summary sheets for permanent features left by construction.
B. An estimate of the contract time for the project construction
C. Final survey computations and original field books
D. Approved environmental permits if required
E. Return any documents and other materials provided for use on this project.

Clause Code:	010-DSRA-02
Clause Type:	Design Submittal, Review and Approval
Project Name:	Everett HOV Design-build Project
Owner Name:	Washington DOT
Year Published:	2004

2.18.7 Submittals and Reviews

2.18.7.1 Design Reviews
Design reviews shall be in accordance with RFP Section 2.26.5 (Submittals), and the submittal requirements below shall be incorporated into the requirements of Section 2.26.5 (Submittals). 2.26.5.6.8 Design Reviews

2.26.5.6.8.1 General
DQA Review. The DQA Manager will review all designs to ensure the development of the plans and specifications are in accordance with the requirements of the Contract. Department Review. The Department will audit, as needed, the DQA processes and Design Documents to verify compliance with the Contract Documents. The Department will be invited to attend all reviews. Participation. Require, at a minimum, that the engineer-in-responsible-charge of the Work and the appropriate design manager(s) for the discipline(s) involved in the design (e.g., structures design manager and highway design manager) be present for and participate in all reviews. Document Copies. For any type of review, the Department reserves the right to take to its offices copies of Design Documents being reviewed for further review and examination.

2.26.5.6.8.2 Oversight Reviews

2.26.5.6.8.3 Milestone (30%, 60%, and 90%) Reviews

2.26.5.6.8.4 100 % Design Reviews

2.26.5.6.8.5 Release for Construction Review

2.26.5.6.8.6 Final Design Review for Design of Entire Project
Final Design Submittal. When construction of the entire project is completed, prepare a formal final design submittal for the entire project that includes:
a. All design plans
b. Design calculations
c. Design reports
d. Specifications
e. Estimated quantities
f. Electronic files, in the format(s) specified in the Proposal documents
g. All as-built information
Department Acceptance of Final Design. All plans, reports, and specifications shall be signed and stamped by the engineer-in-responsible-charge. The Department will conduct its review and accept or reject the final design package within 20 Working Days of receipt of the final design documents.

2.26.5.6.9 Design Review Documentation
Records. Prepare a written record of each design review, including informal oversight reviews:
a. List the participants in each review or visit.

Clause Code:	010-DSRA-02
Clause Type:	Design Submittal, Review and Approval
Project Name:	Everett HOV Design-build Project
Owner Name:	Washington DOT
Year Published:	2004

b. Report all items discussed.
c. Identify discrepancies noted and report corrective action(s) taken or planned.
d. Identify follow-up action items, due dates, and the responsible party.
e. Identify items needing resolution and time constraints for resolution.
< Omitted>

Clause Code:	011-DSRA-03
Clause Type:	Design Submittal, Review and Approval
Project Name:	Natchez Trace Parkway
Owner Name:	U.S. Department of Transportation
Year Published:	2001

153.03 Periodic Review of Design Work.
Submissions of drawings, specifications and computations as specified in the Submittals and Review Section shall be accompanied by documentation confirming that the Contractor has fully applied and carried out the approved Design Quality Assurance and Control Plan. This documentation shall include all appropriate Design Documents and Construction Documents, including design criteria, reports, drawings, schematics, calculations, tables, plan sheets, etc., including columns for checking, revising , back-checking and other quality control reviews. Documentation of conformance to the design Quality Assurance and Control Plan is a requisite element of each submittal and design review and any submittal not accompanied by sufficient verification of the application of quality assurance and control procedures will be returned to the Contractor. The Contractor shall provide with each design review submittal a written certification that the submittal complies with the Design Quality Assurance and Control Plan in all respects, unless exempted by prior written authorization by the Government.

153.04 Design Quality Review.
Prior to the submittal of final Design Documents and Construction Documents to the Government, the Contractor shall complete quality assurance and control review with architects and engineers experienced in the appropriate disciplines(s). The review shall verify that the Design Documents and Construction Documents were prepared in such a manner as to ensure that they will be acceptable to the Government, as well as the Contractor. The criteria used in such review shall include (1) conformity of the final Design documents and Construction Documents with the Contract Documents; (2) assurance that all materials, equipment and elements of the Work provided for in such documents which shall be incorporated into the Project have been provided for and designed to perform satisfactorily for the purpose intended; (3) the appearance, organization, technical and grammatical accuracy of such documents; (4) verification that such documents have been checked and signed by the drafter, designer, checker and reviewers; (5) where required under the Contract, generally accepted architectural or engineering practices or applicable law, verification that such documents have been stamped, signed and dated by the responsible registered civil engineer or architect; and (6) assurance that such documents fully provide for constructability, compatibility of materials and conformity to acceptance criteria for inspections and tests as provided in the Contract.

153.05 Design Changes. Changes, including field changes, in the design of the project or any portion thereof as shown on the Project Design Documents, shall be subject to design quality assurance and quality control measures and procedures commensurate with those applied to the original design of the portion of the Project being changed.

Clause Code:	012-DC-01
Clause Type:	Design Commitment
Project Name:	
Owner Name:	USAID
Year Published:	

H.8a DESIGN COMMITMENT

- The DB contractor owns the details of design during the project and may change them on working drawings and specifications as required to meet budget and schedule constraints. DB contractor can change working drawings to accommodate budget and schedule constraints.
- The Engineer of Record shall establish a drawing and specification numbering system that clearly labels each design product and indicates whether the specific item is a working document subject to unilateral change or a final document. Final documents have been priced, scheduled, and approved by the DOR for construction.
- Once a document has been identified as a final document, then design commitment will have occurred by the DB contractor. Design commitment means that the feature of work conforms to the DB contractor's budget, schedule, the quality requirements of the contract, and will be constructed as detailed in the final document. Design commitment must be made prior to submitting a feature of work for final review and approval by the government. The DOR will sign and seal all final drawings and specifications.
- Any changes to documents for which design commitment has been made will require approval of the government.

Clause Code:	013-EOR-01
Clause Type:	Engineer of record
Project Name:	SP 7408-29
Owner Name:	Minnesota DOT
Year Published:	2001

Offer Letter

Items in Letter. The bidder will prepare and submit an offer letter that reflects the bidder's interest in the project and includes, at a minimum, the following items:

- Full company or joint venture name and address
- Name of the contact person to whom the Department will address all communications
- regarding the RFP and project (and his/her telephone numbers, fax numbers, and/or email
- addresses)
- An organizational chart for the proposed design-build team
- A basic project schedule for the work that reflects the major elements of the work, milestone dates for each element, and the overall project completion date
- Attached Resumes. Resumes of the following key personnel will be attached to the letter::
  - Design Build Manager (overall manager)
  - Design Manager (engineer of record)
  - Lead Bridge Engineer
  - Construction Quality Manager
  - Chief Construction Inspector
  - Traffic Control Supervisor

Clause Code:	014-EOR-02
Clause Type:	Engineer of record
Project Name:	Interstate 405 Corridor Project
Owner Name:	Washington DOT
Year Published:	2005

The Engineer-of-Record shall be registered as a Structural Engineer in the state of Washington. The Engineer-of-Record's original signature, date of signature, original seal, registration number, and date of expiration shall appear on new and revised plan sheets. Plans shall be submitted on 11"x17" white bond paper. Computer aided drafting (CAD) files shall be prepared using AutoCAD or MicroStation in accordance with WSDOT Bridge Design Manual.

The Design-Builder shall prepare all new and revised plan sheets in accordance with the Plans Preparation Manual, Section 440 through 460, and Division 5 and 6. A Professional Engineer's original signature, date of signature, original seal, registration number, and date of expiration shall appear on the all-new and revised plan sheets. The engineer-of-record shall be registered as a civil engineer in the state of Washington. Plans shall be submitted on 11"x17" white bond paper and in electronic format on a CDROM.

Request for Approval of Material (RAM) - The RAM shall be used when the Design-Builder elects not to use the QPL or the material is not listed in the QPL or not shown on the sealed plans and specifications. The RAM shall be prepared by the Design-Builder and submitted to the Engineer of Record for approval before the material is incorporated into the work. Approval of the material does not constitute acceptance of the material for incorporation into the work. The Construction QA Manager shall ensure that the acceptance

For all materials that are not addressed by WSDOT standards, material-testing specifications, testing procedures, and frequencies will be determined by the Materials Quality Assurance Team with concurrence of the Engineer of Record.

Clause Code:	015-DSC-01
Clause Type:	Differing Site Condition
Project Name:	Southeast corridor muti-modal project
Owner Name:	Colorado DOT
Year Published:	2000

12.2 Differing Site Conditions

12.2.1 Definition
The term "Differing Site Conditions" shall mean (a) subsurface or latent conditions encountered at the exact boring holes identified in the geotechnical reports included in Book 3, which differ materially from those conditions indicated in the geotechnical reports for such boring holes, or (b) physical conditions of an unusual nature, differing materially from those ordinarily encountered in the area and generally recognized as inherent in the type of work provided for in the Contract. The term shall specifically exclude all such conditions of which Contractor had actual or constructive knowledge as of the Proposal Due Date. The foregoing definition specifically excludes (x) Utility facilities, (y) Hazardous Substances and (z) any conditions which constitute or are caused by a Force Majeure event.

12.2.2 Responsibilities of CDOT/RTD
Upon Contractor's fulfillment of all applicable requirements of Sections 5.3 and 13, and subject to the limitations contained therein, CDOT/RTD shall be responsible for, and agrees to issue Change Orders, (a) to compensate Contractor for additional costs (excluding delay and disruption damages) directly attributable to changes in the scope of the Work arising from Differing Site Conditions, and (b) to extend the Completion Deadlines as the result of any delay in the Critical Path caused by any such conditions.

12.2.3 Burden of Proof
Contractor shall bear the burden of proving that a Differing Site Condition exists and that it could not reasonably have worked around the Differing Site Condition so as to avoid additional cost. Each request for a Change Order relating to a Differing Site Condition shall be accompanied by a statement signed by a qualified professional setting forth all relevant assumptions made by Contractor with respect to the condition of the Site, justifying the basis for such assumptions, explaining exactly how the existing conditions differ from those assumptions, and stating the efforts undertaken by Contractor to find alternative design or construction solutions to eliminate or minimize the problem and the associated costs.

Clause Code:	016-DSC-02
Clause Type:	Differing Site Condition
Project Name:	I-229 Corridor Reconstruction From Western to Benson
Owner Name:	South Dakota DOT
Year Published:	2000

6) Differing Site Conditions.
Subject to the limitations contained in this section, and upon Design/Builder's fulfillment of the requirements regarding requests for Change Orders, Department shall be responsible for, and agrees to issue Change Orders for additional costs and/or time extensions due to changes in the Work directly attributable to differing site conditions and not reasonably avoidable by Design/Builder.

7) Burden of Proof.
Design/Builder shall bear the burden of proving that a differing site condition exists and that it could not reasonably have worked around the differing site condition so as to avoid additional cost. Each request for a Change Order shall be accompanied by a statement signed by a qualified professional setting forth all relevant assumptions made by Design/Builder with respect to the condition of the site, justifying the basis for such assumptions and explaining exactly how the existing conditions differ from those assumptions, and stating the efforts undertaken by Design/Builder to find alternative design or construction solutions to eliminate or minimize the problem and the associated costs. For differing site conditions involving utilities, Design/Builder shall accept all responsibility for existing utilities.

Clause Code:	017-EP-01
Clause Type:	Environmental Permitting
Project Name:	I-4 (SR 400) SIX LANING
Owner Name:	Florida DOT
Year Published:	2001

8. Environmental Services / Permits

a. State and Federal Permits - The Florida FDOT has obtained State and Federal environmental permits required for this project based upon the preliminary design concept as defined in the RFP. The DESIGN/BUILD FIRM must ensure that the project is constructed and maintained in conformance with the conditions specified in the attached permits issued by the St. Johns River Water Management District (SJRWMD), U.S. Army Corps of Engineers (USACOE), and the U.S. Coast Guard (USCG) until time of final acceptance.
If the DESIGN/BUILD FIRM proposes a concept that requires a modification of the permitted design concept, the DESIGN/BUILD FIRM shall be responsible for obtaining the required permit modifications in accordance with State and Federal regulations. This responsibility includes payment of any applicable permitting fees. The DESIGN/BUILD FIRM will be required to coordinate all permit modifications with the FDOT. The DESIGN/BUILD FIRM shall submit requests for permit modifications to State and Federal regulatory agencies only upon review and approval from the FDOT.
The DESIGN/BUILD FIRM shall obtain any permits required if dredging for construction access is proposed.
The DESIGN/BUILD FIRM shall be responsible for any fines and permit violations, including all non-compliance issues, related to the DESIGN/BUILD FIRM'S failure to adhere to specific conditions in the attached permits.

b. Endangered Species - The DESIGN/BUILD FIRM must comply with conditions specified in the SJRWMD and USACOE permits regarding the protection and precautionary guidelines for the Gopher Tortoise, Florida Manatee, and Eastern Indigo Snake.
The DESIGN/BUILD FIRM must coordinate on site with the FDOT'S Environmental Management Office (EMO) before initiating construction and maintain coordination throughout the project. The DESIGN/BUILD FIRM shall immediately contact the EMO Office if any federal or state-listed animal species is observed within the project limits.

c. Archeological Resources - The DESIGN/BUILD FIRM must comply with conditions specified in Midden Site restrictions attached to this document regarding the construction methodologies and precautionary guidelines for archeological resources that may be present.

Clause Code:	018-EP-02
Clause Type:	Environmental Permitting
Project Name:	Master Design-build RFP
Owner Name:	Florida DOT
Year Published:	

K. Environmental Permits:

1. Storm Water and Surface Water:

Plans shall be prepared in accordance with Chapter 62, Regulation of Storm water Discharge, Florida Administrative Code.

2. Permits:

All applicable data shall be prepared in accordance with Chapter 403. Florida Statutes, Chapter 62-3, 62-4, 62-12, Florida Administrative Code; Rivers and Harbors Act of 1899, Section 404 of the Clean Water Act, and parts 114 and 115, Title 33, Code of Federal Regulations. In addition to these Federal and State permitting requirements, any dredge and fill permitting required by local agencies shall be prepared in accordance with their specific regulations. Acquisition of the general permits will be the responsibility of the Design-Build Firm. Preparation of complete permit packages will be the responsibility of the Design-Build Firm. The Design-Build Firm will obtain permits while acting as an authorized agent for the "Department". If any agency rejects or denies the permit application, it is the Design-Build Firm's responsibility to make whatever changes necessary to ensure the permit is approved.

The Design-Build Firm will be required to pay all permit fees. Any fines levied by permitting agencies shall be the responsibility of the Design-Build Firm.

Clause Code:	019-EP-03
Clause Type:	Environmental Permitting
Project Name:	US-113 from US-50 to MD 589 in Worcester County, MD
Owner Name:	Maryland DOT
Year Published:	1998

Permits:
The Administration has obtained the conditional environmental permits for wetlands for this project based on the preliminary plans and contingent upon the submission of a completed permit application and plans that are consistent with the plans for which the conditional approval was given. Changes to the plans might result in revocation of this conditional approval, in which case the Design/Build Team is responsible for the complete process of obtaining these permits.
Erosion and Sediment Control and Storm water Management approvals shall be obtained by the Design/Build Team.

04.3 Environmental Permits

As part of this RFP/IFB, the Administration is providing the following conditional permits and approvals based on the preliminary plans:

- Army Corps of Engineers, Wetland Permit;
- MDE Non-tidal Wetlands and Waterways Permit;
- Storm Water Management Letter of Intent;
- Maryland Historic Trust Approval; and

With regard to SWM, the Administration will supply a Letter of Intent only. This letter is based on the waivers applied for in the Preliminary SWM Report. The Design/Builder shall obtain final SWM approvals. The Design/Builder shall coordinate all submittals directly with MDE and submit copies of each submission including the MDE comment letter and Design/Build Team comment letter to SHA Hydraulics Division at the time of each submission with MDE.
With regard to Erosion and Sediment Control (E&SC), the Design/Builder shall obtain final MDE approvals. The Design/Builder shall coordinate submittals directly with MDE and copy SHA Hydraulics Division as stated above.
The Design/Builder shall procure all other approvals, permits and licenses, including E&SC approval, pay all charges, fees and taxes and give all notices necessary or appropriate for the prosecution of the Work. The Design/Builder cannot alter the preliminary plans in such a manner that increases wetland or waterway impacts. Upon final acceptance of the constructed highway, completion of as-built plans and approval of a permit modification by the COE and MDE, the Contractor will be reimbursed for any wetland or waterway impact reduction in increments of 0.25 acre. The reimbursement only pertains to reduced impacts within the Administrations right-of-way. This determination will be made by comparing the impacts determined in the as-built plans against the impacts permitted by COE/MDE in the initial Nontidal Wetlands and Waterways Permit, less the isolated areas beyond the Administrations right-of-way. This incentive will be paid at $35,000 per acre saved.
The Administration will be responsible for obtaining the Reforestation Permit. No reforestation work will be required of the Design/Build Team.

Clause Code:	020-ROW-01
Clause Type:	Right of way
Project Name:	IM 229-2(50)2
Owner Name:	South Dakota DOT
Year Published:	2000

7.18 Furnishing of Right-of-Way
The scope of the I-229 Project is to develop the Project entirely within the existing ROW.

A. Acquisition and Conveyance of Real Property. Department has identified property to be used for the Project, the boundaries of which are the existing ROW. The planned ROW limits shall be revised in connection with any Department-directed change, or may be revised in connection with any Design/Builder-directed change affecting the ROW required for the Project.

B. Department Responsibilities. The schedule for acquisition of real property by the Department is according to the standard process and time frame for SDDOT.

C. Requirements Applicable to Design/Builder.

1) The design of the Project furnished by Design/Builder shall not require Department to acquire any real property, except as agreed by Department concerning Value Engineering.

2) Design/Builder shall reimburse Department for the costs (including attorney's fees) of acquiring any real property outside of the planned ROW limits that Design/Builder determines is necessary or advisable in order to complete the Project. This includes obtaining any necessary temporary construction easements and ensuring that all property needed for temporary utility facilities is obtained, excluding, however, any real property required as the result of a Department directed change. Department may deduct such amounts from payments otherwise owing hereunder, or may invoice Design/Builder. Design/Builder shall reimburse Department for any such amounts paid by Department within 10 days after receipt of an invoice from Department therefor. In the event that Design/Builder may wish to request Department to acquire a particular parcel of real property that is outside the planned ROW limits, Design/Builder shall not negotiate with the owner(s) of such interests except in compliance with the Uniform Relocation Act.

3) Design/Builder shall prepare all documents for the ROW and easements provisions and shall deliver them to Department in sufficient time to allow review and approval prior to the date the transfer is scheduled to occur.

Clause Code:	021-ROW-02
Clause Type:	Right of way
Project Name:	Thurston Way
Owner Name:	Washington DOT
Year Published:	2000

475 Right-Of-Way
The Design Builder shall verify right-of-way boundaries prior to utilization of right-of-way areas outside of existing fence line. Areas that are not fenced shall be verified as right-of-way if work is to be done outside of the existing roadway prism. If additional right-of-way is requested by the Design-Builder as a value added element of the project, WSDOT will review a request, prepared in accordance with General Requirement subsection 1-04.4. The cost of additional value added right-of-way shall be borne by the Design-Builder. Schedule impacts shall also be borne by the Design-Builder unless WSDOT determines that it is in the best interests of the public to change the contract terms.

475.01 Right-of-Way Requirements Determination
The Design-Builder shall determine the requirements for new right-of-way rights. Right-of-way rights can include, but are not limited to, new right of way, access rights, and slope or temporary construction easements. The Design-Builder shall submit to WSDOT, in writing, the preliminary right-of-way requirements. The new right-of-way requirements shall be submitted in triplicate to WSDOT for review and shall include the following
A. A letter indicating the project name, contract number, project location, originator of report (Firm's Name), submittal date and submittal type.
B. A plan of sufficient scale and detail to show the existing and proposed roadway right-of-way and proposed easements.
C. Type of acquisition required including estimates of the final right-of- way with enough definition to identify all ownership's that will be affected. The preliminary requirements should be large enough to 17 cover all possible right-of-way needs.

475.02 Right-of-Way Acquisition
If new right-of-way is required or determined to be acceptable for the project, WSDOT will acquire all necessary rights for right-of-way and easements. Based on the requirements provided by the Design-Builder,
WSDOT will
A. Approve final right-of-way plans and associated documents prepared by the Design-Builder necessary for right-of-way acquisition
B. Acquire necessary right-of-way.
C. Obtain the necessary authority to proceed with the various phases of property acquisition. 28
D. Prepare the necessary data for project clearance letters.
After revised Right of Way Plans have been approved by WSDOT, WSDOT will require five (5) months to acquire additional right-of-way that does not require relocation, or litigation, and nine (9) months to acquire right-of-way that does require relocation, or litigation. Right-of-way Plan approval by WSDOT will take six (6) weeks after receipt of a completed revised Right of Way Plan from the Design-Builder.

Clause Code:	022-ROW-03
Clause Type:	Right of way
Project Name:	Carolina Bays Parkway
Owner Name:	South Carolina DOT
Year Published:	1999

Right-of-Way Acquisition Services

The Contractor, acting as an agent on behalf of the State of South Carolina shall provide right of way acquisition services for the Carolina Bays Parkway. Right of way acquisition services shall include appraisal, appraisal review, negotiation, relocation assistance services, expert testimony, and legal services. SCDOT will retain authority for approving just compensation, relocation benefits and settlements. The Contractor shall carry out the responsibilities as follows:

a) Acquire property in accordance with all Federal and State laws and regulations, including but not limited to the Uniform Relocation and Real Property Acquisition Act of 1970, as amended (the "Uniform Act") and the South Carolina Eminent Domain Procedure Act ("The Act"). The acquisition of property shall follow the guidelines as established by the Department and other State and Federal guidelines, which are required.

b) SCDOT will designate a hearing officer to hear any relocation Assistance appeals. SCDOT agrees to assist with any out of state relocation by persons displaced within the rights of way by arranging with such other state(s) for verification of the relocation assistance claim.

c) Submit procedures for handling right of way acquisitions and relocations to the SCDOT for approval prior to commencing right of way activities. These procedures are to show the Contractor's methods including the appropriate steps and word flow required for appraisal, acquisition, and relocation.
<Omitted>

d) Submit a project specific acquisition and relocation plan for SCDOT approval. The plan should identify a schedule of right of way activity including the specific parcels to be acquired and all relocations.
<Omitted>

e) Submit a rights of way project tracking system and rights of way quality control plan to the SCDOT for review prior to commencing right of way activities. SCDOT standard forms and documents will be used to the extent possible.

f) Provide an on site Right of Way Office with a toll fee telephone number for landowners and displaced persons to call. The office shall be open during hours that are convenient to the property owners and displaced persons until all right of way acquisitions and relocations are complete.
<Omitted>

g) Provide a current title certificate for each parcel as of the date of closing or the date of filing of the Condemnation Notice.

h) Prepare appraisals in accordance with the Department's Appraisal Manual. The Contractor's appraiser must be on the Department's approved appraisal list.

i) Provide appraisal reviews complying with technical review guidelines of SCDOT Appraisal Manual

Clause Code:	022-ROW-03
Clause Type:	Right of way
Project Name:	Carolina Bays Parkway
Owner Name:	South Carolina DOT
Year Published:	1999

and make a recommendation of just compensation. The reviewer shall be approved by SCDOT.

j) Make direct payments of benefits to property owners for negotiated settlements, relocation benefits, payments for settlements of condemnation cases,
<Omitted>

k) Prepare, obtain execution of, record documents conveying title to such properties to SCDOT with Register of Deeds, and deliver all executed and recorded general warranty deeds to SCDOT.
<Omitted>

l) Because these acquisitions are being made as agent on behalf of the State of South Carolina, SCDOT shall make the ultimate determination in each case as to whether settlement is appropriate or whether the filing of a condemnation action is necessary, taking into consideration the recommendations of the Contractor.
<Omitted>

Clause Code:	023-UR-01
Clause Type:	Utility relocation
Project Name:	Woolwich Bridge
Owner Name:	Maine DOT
Year Published:	1997

12.8.3 Utilities

A. Introduction
This section provides information on the Design-Builder's responsibilities as they relate to existing utilities, the manner in which utilities are to be protected, relocated, and coordinated into the construction, and who will be responsible for the work.

B. List of Utilities and Contacts
The following is a list of utilities and their contacts involved within the limits of this project are as follows:
<Omitted>

C. Utility Coordination
The Design-Builder will be responsible for coordinating all utility work that may be necessary to complete the project.
<Omitted>

D. Relocation of Utilities
The Design-Builder will notify affected utility companies and other parties in order that all necessary adjustments of private and public utility fixtures and appurtenances within the limits of construction are made as soon as practicable. Adjustments may include temporary or permanent relocation's which are required in the Design-Builders opinion to permit convenient and safe construction of the project and any unforeseen conditions regarding an effected utility.
<Omitted>

E. Utility Relocation Financial Responsibility
Pipe lines, gas lines, wire and cable lines, sewer lines, service connections, water and gas meter boxes, water and gas valve boxes, light standards, cable ways, signals, manholes and all other utility fixtures and appurtenances within the limits of the proposed construction will be adjusted by the owners without expense to the Design-Builder or Department unless otherwise provided.
<Omitted>

F. Design-Builder's Responsibility for Utility Property and Services

When blasting, the Design-Builder in addition to any other notice that may be required, shall notify an authorized representative of each utility having a plant close to the site no later than 3:00 P.M. on the working day (Monday through Friday) before it intends to blast. Notice shall state the approximate time of the blast.
<Omitted>

Clause Code:	024-UR-02
Clause Type:	Utility relocation
Project Name:	US64
Owner Name:	North Carolina DOT
Year Published:	2002

R/W UTILITY SCOPE OF WORK:

Overview:
The Design Build Firm shall be responsible for coordinating all utility relocations. Coordination shall include any necessary utility agreements when applicable. The Firm will be responsible for non-betterment utility relocation cost when the utility company has prior rights of way/ compensable interest. The utility company will be responsible for the relocation cost if they can not furnish evidence of prior rights of way or a compensable interest in there facilities. Preparation for relocating utilities within the existing or proposed highway Rights of Way.

A. The Design Build Firm will be required to use the guide lines as set forth in the following:
<Omitted>

B. NCDOT will provide the best available information pertaining to the existing utilities. The Design Build Firm will be responsible for confirming the location of the utilities, type of facility and identify the utility owner in order to coordinate the relocation of any utilities in conflict with the project.

ARRANGEMENTS FOR PROTECTION OR ADJUSTMENTS TO EXISTING UTILITIES

A. The Design Build Firm will make the necessary arrangements with the utility owners for adjustments, relocating or removals where the Firm and Utility Company determine that such work is essential for safety measures and performance of the required construction

B. In the event of a utility conflict, the Design Build Firm will request that the utility company submit relocation plans (Construction Plans to be provided by the Design Firm to Utility owners) showing existing utilities and proposed utility relocation for approval by the NCDOT.

C. The cost in relocating utilities due to the highway construction will be the responsibility of the Design Build Firm except when the utility company does not have compensable interest in their existing facilities. A compensable interest is identified as follows:

(1) Existing or prior easement rights within the ROW of the project, either by recorded right of way or adverse possession (Utility occupying the same location for twenty (20) plus years outside the existing highway rights of way).

(2) Entities covered under General Statute 136-27. 1. Statute requires the NCDOT to pay the non-betterment cost for certain water and sewer relocations.

D. If the Design Build Firm elects to make arrangements with a utility company to incorporate a new utility installation or relocation as part of the highway construction, the utility work done by the firm and the associated cost for the work will be negotiated and agreed upon between the firm and the utility company.

Clause Code:	024-UR-02
Clause Type:	Utility relocation
Project Name:	US64
Owner Name:	North Carolina DOT
Year Published:	2002

E. The Design Build Firm will be required to utilize the NCDOT Standard Utility Encroachment Agreements as necessary in relocating utilities. The Encroachment Agreements will be used under the following conditions
<Omissions>

Clause Code:	025-ODP-01
Clause Type:	Order of Document Precedence
Project Name:	Thurston Way
Owner Name:	Washington DOT
Year Published:	2000

1-04.2 Coordination of Contract Documents, Plans, Special Provisions, Specifications, and Addenda

This Section is revised to read:

The Contract Provisions, as defined in Section 1-01.3 (excluding the Best and Final Proposal), complement each other in describing the complete work. Any requirement in one part binds as if stated in all parts. The Design-Builder shall provide any work or materials clearly implied in the contract even if the contract does not mention it specifically.

Any inconsistency in the parts of the contract shall be resolved by following this order of precedence (e.g., 1 presiding over 2, 3 and 4; 2 20 presiding over 3, and 4; and so forth):

1. Addenda,
2. Special Provisions within the Request for Proposal,
3. Revisions o the Standard Specifications for Design-Build
4. Division 1 of the Standard Specifications
5. Contract Plans within the Request for Proposal
6. Scope of Work

This order of precedence shall not apply when work is required by one part of the contract but omitted from another part or parts of the contract. The work required in one part must be furnished even if not mentioned in other parts of the contract. If any part of the contract requires work that does not include a description for how the work is to be performed, the work shall be performed in accordance with standard trade practice(s). For purposes of the contract, a standard trade practice is one having such regularity of observance in the trade as to justify an expectation that it will be observed by the Design-Builder in doing the work. In case of any ambiguity or dispute over interpreting the contract, the Engineer's decision will be final as provided in Section 1-05.1.

Clause Code:	026-ODP-02
Clause Type:	Order of Document Precedence
Project Name:	Design-Build RFP Form
Owner Name:	Maine DOT
Year Published:	2003

101.3.6 Priority of Conflicting Contract Documents.
If the Design-Builder discovers any ambiguity, error, omission, conflict, or discrepancy ("ambiguity, etc.") related to the Contract Documents that may significantly affect the cost, quality, Conformity, or timeliness of the Work, the Design-Builder must comply with Subsection 104.3.3 - Duty to Notify Department If Ambiguities Discovered. In the case of ambiguity, etc., the following components of the Contract Documents shall control in the following descending order of priority:

A. Contract Modifications;
B. Agreement;
C. Design Documents, with specifications contained therein having precedence over plans and excluding any deviations from the requirements of the other Contract Documents contained therein which have not been approved in writing by the Department;*
D. Proposal, to the extent that it meets or exceeds the requirements of the other Contract Documents; and
E. Standard Specifications.

< Note that Main DOT did not use the concept of reference documents in this RFP. Design documents should not be a reference document. When applying the concept of reference documents, design documents should not be included in the order of precedence. They must be prepared by the design-builder to comply with the other contract documents.>*

Clause Code:	027-ODP-03
Clause Type:	Order of Document Precedence
Project Name:	Southeast corridor muti-modal project
Owner Name:	Colorado DOT
Year Published:	2000

1.3 Order of Precedence

Each of the Contract Documents is an essential part of the Contract, and a requirement occurring in one is as binding as though occurring in all. The Contract Documents are intended to be complementary and to describe and provide for a complete contract. In the event of any conflict among the Contract Documents, the Design-Build Contract (including all exhibits) shall control, as it may be revised by Change Orders and amendments. With respect to the other Contract Documents, the order of precedence shall be as set forth below:

(a) Book 2, Section 1 (excluding appendices and exhibits thereto) (Scope of Work)

(b) Book 2 (remaining sections including all appendices and exhibits to Section 1 and the remaining sections) (Technical Criteria)

(c) Book 3 (Applicable Standards)

(d) Book 4 (Contract Drawings and ROW Plans)

(e) The Proposal Documents, to the extent that they meet or exceed the requirements of the other Contract Documents. (In other words, if the Proposal Documents include statements that can reasonably be interpreted as offers to provide higher quality items than otherwise required by the Contract Documents or to perform services in addition to those otherwise required, or otherwise contain terms which are more advantageous to CDOT/RTD than the requirements of the other Contract Documents, Contractor's obligations hereunder shall include compliance with all such statements, offers and terms.)

Notwithstanding the foregoing, in the event of a conflict among any standard or specification applicable to the Project established by reference contained in the Contract Documents to a described publication, CDOT/RTD shall have the right to determine in its sole discretion which provision applies regardless of the order of precedence of the documents in which such conflicting provisions are referenced. Contractor shall request CDOT/RTD's determination respecting the order of precedence among conflicting provisions promptly upon becoming aware of any such conflict.

Clause Code:	028-ODP-04
Clause Type:	Order of document precedence
Project Name:	Interstate 405 Corridor Project
Owner Name:	Washington DOT
Year Published:	2005

1-03.2 Order of Precedence

Should conflicts appear between any of the following parts of the Contract, a listed part shall take precedence over all those listed below it.

- Change Orders and Supplemental Agreements.
- The Contract Form
- WSDOT identified betterments from the design-builder's Proposal listed on the Contract Form
- General Provisions – (RFP Chapter 1)
- Technical Provisions – RFP Chapter 2
- Regional General Special Provisions (RFP Appendix B1)
- General Special Provisions as identified in (RFP Appendix B2)
- Amendments to the Standard specifications as identified in (RFP Appendix B3)
- Division two through nine of the Standard Specifications for Road, Bridge, and Municipal construction (RFP Appendix B4)
- All other RFP Documents listed as Contract Documents
- WSDOT Standard Plans
- Design-Builder's Proposal Documents

Notwithstanding the order of precedence listed above:

1. Additional details and more stringent requirements contained in a lower priority document will control unless the requirements of the lower priority document present an actual conflict with the requirements of the higher level document.
2. In the event of a conflict among any Mandatory Standards, WSDOT shall have the right to determine in its sole discretion which provision applies regardless of the order of precedence of the documents in which such standards are referenced. Design-Builder shall request the WSDOT determination respecting the order of precedence involving Mandatory Standards promptly upon becoming aware of any such conflict.

On plans, working drawings, and standard plans, calculated dimensions shall take precedence over scaled dimensions.

Clause Code:	029-REF-01
Clause Type:	Reference documents
Project Name:	US-113 from US-50 to MD 589 in Worcester County, MD
Owner Name:	Maryland DOT
Year Published:	1998

02 Construction Standards

02.1 Conformance with Contract and Proposal

All construction, construction-related work, and all other work must substantially conform to the Contract, to the Proposal submitted by the Design/Builder and to the construction plans prepared.

02.2 Book of Standards

Details and dimensions of drainage structures, TCP's, traffic barriers, etc., shall comply with the Administration's "Book of Standards, Highway and Incidental Structures."

02.3 Industry Standards

Industry standards, such as ASTM and AASHTO, that are referenced in the Administration's or Utility and utility owners' specifications and standards shall also be met. If an item of work is not covered by the Administration's specifications and standards, the materials and construction methods used shall meet the appropriate, nationally accepted industry standards.

Clause Code:	030-REF-02
Clause Type:	Reference Documents
Project Name:	Duluth Street
Owner Name:	Minnesota DOT
Year Published:	2001

1.1.3 Design References

1.1.3.1 Mn/DOT References
All design and construction must be performed in accordance with the Minnesota Department of Transportation (Mn/DOT) *Standard Specifications for Construction, 2000 Edition* (sometimes referred to as "Standard Specifications") and the current editions of the following Mn/DOT engineering manuals:

- Bituminous
- Bridge Aesthetics
- Bridge Construction
- Bridge Design
- Bridge Details – Parts I and II, English
- Concrete
- Drainage
- Geotechnical and Pavement
- Grading and Base
- Laboratory
- Minnesota Manual of Uniform Traffic Control Devices (MMUTCD)
- Road Design – Parts I and II, English
- Standard Plans – English
- Standard Plates – English
- Standard Signs – Parts I, II, and III
- Technical – 2nd Edition
- Traffic Engineering

1.1.3.2 Mn/DOT Website
Ordering information for the above manuals, specifications, and plans is available on the Department's website: http://www.dot.state.mn.us/mapsales.

1.1.3.3 Mn/DOT Technical Memoranda
All active Mn/DOT technical memoranda apply to this project.

1.1.3.4 AASHTO "Green Book"
Certain elements of the scope of work may refer to *A Policy on Geometric Design of Highway and Streets*, 1990, published by the American Association of State Highway and Transportation Officials.

Clause Code:	031-REF-03
Clause Type:	Reference Documents
Project Name:	Cortaro Road Interchange
Owner Name:	Arizona DOT
Year Published:	1997

200 DESIGN REFERENCES

The following documents are design references developed and published by AZDOT and other agencies and adopted by AZDOT for use in the design of this project. Included in this listing by agency are standards, specifications, manuals, policies, guides, procedures, and environmental regulations which shall be applied to the various aspects of the project. The Design-Build Firm is advised that while possession of all of these documents is not necessary to successfully complete the project, the Design-Build Firm is responsible for designing in accordance with the applicable documents and current revisions and supplements thereto. AZDOT Engineering Records' publication numbers, where applicable, are in parentheses.

210 AZDOT Publications (Use current editions)

211 Standard Drawings
A. Construction Standard Drawings (31-079)
B. Structures Section Standard Drawings (31-080)
C. Traffic Signals and Lighting Standard Drawings (31-084)
D. Signing and Marking Standard Drawings (31-083)
E. Standards for Right-of-Way Plans
F. CADD Standards (31-060)

212 Specifications
A. Standard Specifications for Road and Bridge Construction (31-082)
B. Photogrammetry and Mapping Standard Specifications (31-063)
C. Stored Specifications, revised to date, as held and issued by Contracts and Specifications Services.
D. Aerial Mapping Specifications, August 20, 1993

213 Manuals

A. Manual of Field Surveys (31-059, REV 7-93)
B. AZDOT TramcControl Supplement Vl to the MUTCD 31-088
C. Right-of-Way Section, Volume V of AZDOT Manual
D. Approved Signs 31-087
E. Reinforced Concrete Box Culvert Manual (31-019)
F. Hydrologic and Hydraulic Training Session Manual (31 -013)
G. Materials Preliminary Engineering and Design Manual (31-017)
H. Materials Testing Manual (31-016)
I. Materials Policy and Procedure Directives Manual (31-011)

Clause Code:	032-REF-04
Clause Type:	Reference Documents
Project Name:	MID-CORRIDOR DESIGN-BUILD PROJECT
Owner Name:	ALAMEDA CORRIDOR TRANSPORTATION AUTHORITY
Year Published:	1998

1.6 Referenced Standards and Specifications

1.6.1 Except as otherwise specified in the Contract Documents or otherwise directed by ACTA, material and workmanship specified by the number, symbol or title of any standard established by reference to a described publication affecting any portion of the Project shall comply with the latest edition or revision thereof and amendments and supplements thereto in effect on the Proposal Date.

1.6.2 In interpreting Referenced Standards, the following apply:
(a) References to the project owner shall mean ACTA or the Local Agency, as applicable.
(b) References to the Engineer in the context of provider of compliance judgment may mean Contractor's QA Manager or it may mean an ACTA representative, depending on the context, as determined by ACTA in its sole discretion.
(c) References to "Plan(s)" shall mean the By-pass Track/Storage Track Design or the Design Documents, depending on the context.
(d) Cross-references to measurement and payment provisions contained in the Referenced Standard shall be deemed to refer to the measurement and payment provisions contained in the Design/Build Contract and Technical Provisions.

Clause Code:	033-DO-01
Clause Type:	Ownership of documents
Project Name:	Southeast corridor muti-modal project
Owner Name:	Colorado DOT
Year Published:	2000

5.9 Ownership of Proposals

All documents submitted by the Proposer in response to this RFP shall become the property of CDOT/RTD and shall not be returned to the Proposer. The concepts and ideas in the information contained in the Proposal, including any proprietary, trade secret or confidential information (exclusive of any patented concepts or trademarks), submitted by the Proposer shall also become the property of CDOT/RTD (i) if submitted by the successful Proposer, upon award and execution of the Contract; and (ii) if submitted by an unsuccessful Proposer, upon payment of the Stipend.

Clause Code:	034-DO-02
Clause Type:	Ownership of documents
Project Name:	T.H. 100–DULUTH ST.
Owner Name:	Minnesota DOT
Year Published:	2001

10.2. Intellectual Property Rights

(A) Intellectual Property Rights
The State owns all rights, title, and interest in all of the intellectual property rights, including copyrights, patents, trade secrets, trademarks, and service marks in the Works and Documents created for the above-referenced state project and paid for under this contract. Works means all inventions, improvements, discoveries (whether or not patentable), databases, computer programs, reports, notes, studies, photographs, negatives, designs, drawings, specifications, materials, tapes, and disks conceived, reduced to practice, created or originated by the Design-Builder, its employees, agents, and subcontractors, either individually or jointly with others in the performance of this contract. Works includes "Documents."

Documents are the originals of any databases, computer programs, reports, notes, studies, photographs, negatives, designs, drawings, specifications, materials, tapes, disks, or other materials, whether in tangible or electronic forms, prepared by the Design-Builder, its employees, agents, or subcontractors, in the performance of this contract. The Documents will be the exclusive property of the State and all such Documents must be immediately returned to the State by the Design-Builder upon completion or cancellation of this contract. To the extent possible, those Works eligible for copyright protection under the United States Copyright Act will be deemed to be "works made for hire." The Design-Builder assigns all right, title, and interest it may have in the Works and the Documents to the State. The Design-Builder must, at the request of the State, execute all papers and perform all other acts necessary to transfer or record the State's ownership interest in the Works and Documents.

Clause Code:	035-DO-03
Clause Type:	Ownership of documents
Project Name:	US 70 HONDO VALLEY
Owner Name:	New Mexico DOT
Year Published:	2001

4.5 CONTENT OF SOQ

This section describes the specific information that must be included in the SOQ. An outline of the required format for the SOQ is provided in **Appendix B**. Required forms for the SOQ are contained in **Appendix C**. Electronic copies of the forms are available. Any modification to the forms may result in the SOQ being declared non-responsive. Offerors should provide brief, concise information that addresses the objectives and the requirements of the Project consistent with the evaluation factors described in **Section 3.3**. Lengthy narratives containing extraneous information are discouraged.

All materials submitted in response to this RFQ will become property of the State and will become public record after the evaluation process is completed and the Contract is awarded. If the Offeror submits information in an SOQ or a Proposal that it believes to be proprietary information, the Offeror must:

Clause Code:	036-STP-01
Clause Type:	Stipend
Project Name:	T.H. 100 – DULUTH STREET
Owner Name:	Minnesota DOT
Year Published:	2001

9.6 Stipends

Mn/DOT will award a stipend of 0.2% of Mn/DOT's estimated cost of design and construction to each short-listed, responsible Proposer that provides a responsive but unsuccessful technical and price proposal. If Mn/DOT does not award a contract, Mn/DOT will award the stipend to each short-listed Proposer. If Mn/DOT cancels the contract after release of the RFP but before reviewing the technical proposals, Mn/DOT will award each short-listed Proposer a stipend. In consideration for paying the stipend, Mn/DOT may use any ideas or information contained in the proposals in connection with any contract awarded for the project or in connection with a subsequent procurement, without any obligation to pay any additional compensation to the unsuccessful short-listed Proposers.

Mn/DOT must pay the stipend to each eligible Proposer within 90 days after the award of the contract or the decision not to award a contract. If an unsuccessful short-listed Proposer elects to waive the stipend, Mn/DOT may not use ideas or information contained in that Proposer's proposal. Upon the request of Mn/DOT, a Proposer that waived a stipend may withdraw the waiver, in which case Mn/DOT will pay the stipend to the Proposer and thereafter may use ideas and information in the Proposer's proposal. To award the stipend, Mn/DOT will use a professional and technical services contract that will establish the term, duties, consideration, and payment of the lump sum stipend.

STIPEND FOR DESIGN-BUILD PROJECT PROPOSAL SUBMISSION

This contract is between the State of Minnesota, acting through its Commissioner of Transportation ("State") and _____ (Design-Builder), a _____, at _____.

RECITALS

Under Minnesota Statutes §15.061 the State is empowered to engage such assistance as deemed necessary. Minnesota Statutes §161.3412 and §161.3426 authorize the Commissioner of Transportation to award design-build contracts for transportation projects on either a "best value" or "low bid" basis. Design-build contracts may be awarded by a process that includes "shortlisting" proposers and permitting such "short-listed" proposers to develop and submit detailed proposals. Minnesota Statutes §161.3426, subdivisions 3 and 4, permit the Commissioner, in certain circumstances, to pay a stipulated fee to each short-listed responsible proposer who provides a responsive but unsuccessful proposal.
The Design-Builder was short-listed as a proposer and submitted a proposal for the design-build project identified as State Project 2735-172, Trunk Highway 100—Duluth Street Design-Build Project. The State's selection committee has determined that Design-Builder is a responsible proposer who has submitted a responsive proposal. The State has, however, awarded the contract to another proposer. The Design-Builder wishes to receive the stipend permitted by law, in exchange for granting the State certain rights in the intellectual property contained in the Design- Builder's proposal

Clause Code:	037-STP-02
Clause Type:	Stipend
Project Name:	WOOLWICH BRIDGE
Owner Name:	Maine DOT
Year Published:	1997

5.5.2 Payment of Stipend

All Proposers that submit responsive Proposals that were not selected by the Department and that have not forfeited their Proposal Guaranty shall be paid a Stipend in the amount of $ 60,000 within thirty (30) days of the execution of the Contract or the rejection of all Proposals, as applicable. All Proposers that submit nonresponsive Proposals or that have forfeited their Proposal Guaranty for any reason shall have no claim to a Stipend or compensation in any form based upon any legal or equitable theory.

Clause Code:	038-PAY-01
Clause Type:	Payment method
Project Name:	I-295 Commercial Street Connector
Owner Name:	Maine DOT
Year Published:	2003

SECTION 108 - PAYMENT
Scope of Section. This Section contains general provisions related to payment including measurement of quantities, progress payment, retainage, the right to withhold payment, and other payment-related terms.

108.1 Payment.
108.1.1 Lump Sum Price. Unless expressly provided elsewhere in this Contract, payment for all Work within the Scope of Work shall be included in the Lump Sum Price shown on the Price Proposal Form.
108.1.2 Scope of Payment.
108.1.3 Cost Breakdown.
108.1.3.1 Submittal..
108.1.3.2 Review and Approval.
108.1.3.3 Justification of Cost Breakdown or Projected Schedule of Payments.

108.2 Measurement of Quantities for Payment.
108.2.1 Use of Plan Quantities.
108.2.2 General Measurement Provisions.
108.2.3 Provisions Relating to Certain Measurements: Length, Area, Volume, Mass

108.3 Progress Payments.
108.3.1 Application for Progress Payment.
108.3.2 Payment.
108.3.3 Mobilization Payments

108.4 Retainage.

108.5 Payment for Materials Obtained and Stored.
108.5.1 Materials Not Delivered.
108.5.2 Price Adjustment for Hot Mix Asphalt

108.6 Right to Withhold Payments. The Department may withhold payments claimed by the Design-Builder on account of:

108.7 Taxes, Fees, Allowances, and Notices.

108.8 Damages for Non-Conforming Work

108.9 Final Payment.

108.10 General Payment Provisions.
108.10.1 Full Compensation
108.10.2 No Inflation Adjustments/Interest.

Clause Code:	038-PAY-01
Clause Type:	Payment method
Project Name:	I-295 Commercial Street Connector
Owner Name:	Maine DOT
Year Published:	2003

108.10.3 Amounts Due the to Department

<omitted>

Clause Code:	039-PAY-02
Clause Type:	Payment method
Project Name:	I-4 (SR 400) Six Laning
Owner Name:	Florida DOT
Year Published:	2001

L. Payout Schedule/Schedule of Values

The DESIGN/BUILD FIRM will be responsible for invoicing the FDOT based on current invoicing policy and procedure. Invoicing will be based on the completion or percent completion of major, well-defined tasks less retainage as defined in the schedule of values. Final payment will be made upon final acceptance by the FDOT of completed construction and "as-built" plans. Tracking DBE participation will be required under normal procedures according to the CPAM. The DESIGN/BUILD FIRM must submit the payout schedule/schedule of values to the FDOT for approval. No invoices shall be submitted prior to FDOT approval of the payout schedule/schedule of values.

Upon receipt of the invoice, the District Interstate Resident Engineer and FDOT Project Administrator will make judgment on whether or not work of sufficient quality and quantity has been accomplished by comparing the reported percent complete against actual work accomplished.
Major tasks to be included in the payout schedule/schedule of values are listed below. These tasks can be broken out into components, such as individual bridges, station limits of roadway, or location of retaining wall. Other costs are incidental and should be incorporated into the items listed in the schedule of values.

- Design Survey Complete
- Materials Quality Tracking System Complete
- Geotechnical Investigation Complete
- Clearing and Grubbing Complete
- Construction Mobilization Complete
- Embankment/Excavation Complete
- Foundation Design Complete
- Foundation Construction Complete
- Substructure Design Complete
- Substructure Construction Complete
- Superstructure Design Complete
- Superstructure Construction Complete
- Walls Design Complete
- Walls Construction Complete
- Roadway Design Complete
- Roadway Construction Complete
- Signing and Pavement Marking Design Complete
- Signing and Pavement Marking Construction Complete
- Intelligent Transportation System Design Complete
- Intelligent Transportation System Construction Complete
- Landscape Design Complete
- Landscape Construction Complete
- Maintenance of Traffic Design Complete
- Service Patrol Active
- Maintenance of Traffic Set-Up (per duration)
- Erosion Control Complete

Clause Code:	039-PAY-02
Clause Type:	Payment method
Project Name:	I-4 (SR 400) Six Laning
Owner Name:	Florida DOT
Year Published:	2001

- Additional Milestones as determined by the DESIGN/BUILD FIRM
- Final Acceptance

Clause Code:	040-PAY-03
Clause Type:	Payment method
Project Name:	Natchez Trace Parkway (PRA-NPS 3P13)
Owner Name:	U.S. DOT - FHWA
Year Published:	2001

Section 109. – MEASUREMENT AND PAYMENT

109.01 Scope of Payment.
The proposal and subsequent contract will establish a lump sum price for completion of the work, a unit price and not to exceed quantity for each statistically accepted item, and a unit price for each contingency item.

109.02 Progress Payments.
Prompt Payment for Construction Contracts are supplemented as follows.

(a) General. Submit the following with the Monthly Update Revision required

(b) Lump Sum Bid Items. Payment for Lump Sum Bid Items will not exceed the corresponding price estimated in the contract.

(1) Statistically Accepted Bid Items.
(2) Contingent Fee Bid Items.
(3) Measurement Terms and Definitions.

(a) Cubic meter (m3). (b) Each. One entire unit. (c) Hectare (ha). (d) Hour. (e) Kilogram (kg). (f) Kilometer (km). (g) Liter (L). (h) Lump sum. (k) Square meter (m2).

(4) Weighing Procedures and Devices. When material is proportioned or measured and paid for by mass, provide one of the following:

(a) Commercial weighing system
(b) Invoices.
(c) Project weighing system.
(5) Receiving Procedures.

<omitted>

Clause Code:	041-PS-01
Clause Type:	Progress Schedule
Project Name:	Everett HOV Design-build Project
Owner Name:	Washington DOT
Year Published:	2004

1-08.3 CONTRACT SCHEDULE

Within 14 days of the effective date of the Notice to Proceed, the Design-Builder shall submit a preliminary 90-day look-ahead schedule in order to facilitate early Project planning and mobilization. This look-ahead schedule need not be resource-loaded, but must be sufficiently detailed to facilitate an understanding of the Design-Builder's Project mobilization plans and the consistency of those plans with overall Project schedule goals.

Within 30 days after the effective date of the Notice to Proceed, the Design-Builder shall prepare and submit for WSDOT approval a critical path method baseline Contract Schedule. The scheduling software that will be utilized by WSDOT on this project is Primavera Project Planner (P3EC) by Primavera Systems, Inc. Notwithstanding any other provision in the contract, schedules submitted for this project must be prepared using either Primavera P3EC or Primavera SureTrak files saved in Concentric P3EC format. The Design-Builder shall provide electronic files saved in a format that is compatible with WSDOT's current software version. Submission of data from another software system where data conversion techniques or software is used to import into Primavera's scheduling software is not acceptable and will be cause for rejection of the submitted schedule.

The baseline Contract Schedule shall be cost and resource loaded, and shall include, in addition to construction activities, activities for design Work, submittal review, utility relocations, and other activities required to be performed by the Design-Builder or others in order to achieve Completion. The Design-Builder shall allocate the total Contract Price among the activities scheduled on the Contract Schedule so that each activity has a price which accurately shows the amount payable to the Design-Builder for such activity. The price for each activity shall account for any limitations relating to payment for specific activities contained herein. The sum of the prices of all activities in the Contract Schedule shall equal the total Contract Price. Once the Contract Schedule has been approved, no changes to any allocated amount may be made without WSDOT approval.
<Omitted>

Clause Code:	042-ACC-01
Clause Type:	Project Acceptance
Project Name:	Natchez Trace Parkway (PRA-NPS 3P13)
Owner Name:	U.S. Department of Transportation
Year Published:	2001

Section 106. – ACCEPTANCE OF WORK

106.01 Conformity with Contract Requirements.

- References to standard test methods of AASHTO, ASTM, GSA, and other recognized standards
- Perform work according to the contract requirements. Perform all work to the lines, grades, cross-sections, dimensions, and processes or material requirements shown on the plans or specified in the contract.
- The Government may inspect and/or conduct verification sampling and testing on all work at any time before final acceptance of the project.
- Acceptable work conforming to the contract will be paid for in accordance with Section 109. to 106.05 inclusive.
- Remove and replace work that does not conform to the contract, or to prevailing industry standards where no specific contract requirements are noted at no cost to the Government.

As an alternative to removal and replacement, the Contractor may submit a written request to:
(a) Have the work accepted at a reduced price, or
(b) Be given permission to perform corrective measures to bring the work into conformity.
The request shall contain supporting rationale and documentation. Include references or data justifying the proposal based on an evaluation of test results, effect on service life, value of material or work, quality, and other tangible engineering basis.

106.02 Visual Inspection.
106.03 Certification.
(a) Production certification.
(b) Commercial certification.
106.04 Measured or Tested Conformance.
106.05 Statistical Evaluation of Work and Determination of Pay Factor (Value of Work).
106.06 Inspection at the Plant.

106.07 Partial and Final Acceptance.

(a) Partial acceptance.
When a separate portion of the project is completed, a final inspection of that portion may be requested. If the portion is complete and in compliance with the contract, it will be accepted, and the Contractor will be relieved of further responsibility for maintenance of the completed portion. Partial acceptance does not void or alter any of the terms of the contract. When public traffic is accommodated through construction and begins using sections of roadway as they are completed, continue maintenance of such sections until final acceptance.

(b) Final acceptance.
When notified that the entire project is complete, an inspection will be scheduled. If all work is determined complete, the inspection will constitute the final inspection, and the Contractor will be notified in writing of final acceptance as of the date of the final inspection. Final acceptance relieves the

Clause Code:	042-ACC-01
Clause Type:	Project Acceptance
Project Name:	Natchez Trace Parkway (PRA-NPS 3P13)
Owner Name:	U.S. Department of Transportation
Year Published:	2001

Contractor of further responsibility for the maintenance of the project.
If the inspection discloses any unsatisfactory work, the Contractor will receive a list of the work that is incomplete or requires correction. Immediately complete or correct the work. Furnish notification when the work has been completed as provided above.
<omitted>

Clause Code:	043-ACC-02
Clause Type:	Project Acceptance
Project Name:	Interstate 229 (IM229-2(50)2)
Owner Name:	South Dakota DOT
Year Published:	2000

9.9 Acceptance and Final Payment

A. Substantial Completion. Design/Builder shall provide notice to Department when all of the following have occurred:
1) Design/Builder has completed the Project (except for punch list items, final cleanup and other items included in the requirements for final acceptance);
2) Design/Builder has ensured that all construction associated with the Project has been performed in accordance with the requirements of the Contract Documents;
3) Design/Builder has ensured that the Project may be operated without damage to the Project or any other property on or off the site, and without injury to any person; and
4) Design/Builder has ensured that the Project is ready to be opened for public traffic.

B. As promptly as is practicable after receipt of Substantial Completion, and in no event later than 30 days thereafter, Department shall advise Design/Builder in writing of any of the following of which Department then has knowledge: (a) defects in the Work, and/or (b) deficiencies in the Project relating to any of the items described in clauses (1), (2), (3) or (4) above, and/or (c) deviations of any installed Equipment, Materials and workmanship from the requirements of the Contract Documents. Design/Builder shall, at its own cost and expense, promptly correct such defects, deficiencies and deviations.

C. Substantial Completion of the Project shall be deemed to have occurred when:
1) Design/Builder has corrected all defects, deficiencies and deviations with respect to the Project and Department has notified Design/Builder in writing of its acceptance (or waiver pending final acceptance) of such corrections; provided that final cleanup and the items described in 3, below, shall not be required to be performed as a condition to Substantial Completion;
2) Design/Builder has received all applicable governmental approvals required to be obtained by Design/Builder;
3) A punch list for the Project and a list of safety committee review comments to be performed after opening of the Project has been mutually agreed to by Department and Design/Builder;
4) The Project is ready to be opened for public traffic.

1.102 Statistically Based Acceptance - Acceptance of the Quality Control test results through statistical comparison with results of the Verification Tests.

D. Design Acceptance
Acceptance of design will occur essentially at the time of acceptance of construction. The Design/Builder shall submit all as-builts as well as those documents required for final design approval as a condition of acceptance of design and construction.

Clause Code:	044-ACC-03
Clause Type:	Project Acceptance
Project Name:	I-295 Commercial Street Connector
Owner Name:	Maine DOT
Year Published:	2003

107.8.5 Final Acceptance.
Upon receipt of the Closeout Documentation, exclusive of the
All Bills Paid and Request for Final Payment Letters, the Department will notify the Design-Builder in writing that the Project is Complete and finally accepted ("Final Acceptance"), subject to the Design-Builder's warranty obligations set forth in the Contract. Within 75 Days of the receipt of the documents required by Subsection 107.8.4, the Department will advise the Design-Builder in writing of the Final Quantities if applicable, and any damages to be assessed for the Project. The Design-Builder shall resolve any Project issues that remain and provide the All Bills Paid and Request for Final Payment Letters to the Department within 30 Days. The Department will make Final Payment, including the release of all remaining retainage, and release any escrowed Proposal documents within 20 Days of receipt of the above letters, which complete the Closeout Documentation.

For a related provision, see Section 108.9 – Final Payment. If the Design-Builder fails to resolve issues and deliver Closeout Documentation within the 30 Days provided in this section, the Department may provide a final notice informing the Design-Builder in writing that unless the Design-Builder Delivers all Closeout Documentation within 30 Days of the date of Receipt of final notice, the Design-Builder shall be in Default under the Contract. The Design-Builder shall become ineligible to propose on any Department Contracts. The Department may then pursue all remedies provided by the Contract or by law, including withholding Final Payment. For a related provision, see Section 102.1 – Eligibility to Submit a proposal.

Clause Code:	045-NCW-01
Clause Type:	Non-conforming work
Project Name:	I-295 Commercial Street Connector
Owner Name:	Maine DOT
Year Published:	2003

106.6 Non-Conforming Work.
A non-conformance shall be defined as any condition in equipment, materials, or processes which does not comply with required drawings, specifications, codes, standards, documentation, records, procedures, or contract requirements which cause the acceptability of equipment, materials, or processes to be unacceptable or indeterminate. Non-conforming product shall be reviewed in accordance with documented procedures, and if required:
A. Reworked to meet the specified requirements;
B. Reworked in accordance with a Department approved rework procedure;
C. Regarded for alternative applications; or
D. Rejected or scrapped.
Repaired and/or reworked product shall be re-inspected in accordance with the QCP and/or other documented procedures If the Department determines that non-conforming work substantially conforms to the Contract, the Department may accept the non-conforming work, provided that the Department may require a credit to the Department to be deducted from amounts otherwise due the Design-Builder. If the Department and Design-Builder cannot agree to the amount of the credit, the work shall be unacceptable work.

106.6.1 Unacceptable Work. The Design-Builder shall remove, replace, or otherwise correct all unacceptable work as directed by the Department at the expense of the Design-Builder, without cost or liability to the Department.

106.6.2 Unauthorized Work.
Prior to Final Acceptance and upon written order by the Department, the Design-Builder shall remove or uncover unauthorized work. After examination, the Design-Builder shall rebuild the uncovered work to a condition conforming to the Contract at the expense of the Design-Builder and without cost or liability to the Department. Any delay arising from unauthorized work shall be an inexcusable delay.

106.6.3 Uninspected Work.
Prior to Final Acceptance and upon written order by the Department, the Design-Builder shall uncover uninspected work. After examination, the Design-Builder shall rebuild the uncovered work to a condition conforming to the Contract.

108.8 Damages for Non-Conforming Work. If the Design-Builder performs Non-conforming Work that causes the Department to incur costs including environmental costs or penalties, failure of the Federal Highway Administration to participate in certain costs for reasons due to the Design-Builder's performance, Departmental staff time related to the non-Conformity, penalties, or other damages of any nature whatsoever ("Damages"), then the Design-Builder shall be liable to the Department for such Damages. The Department, at its option, and without liability, may deduct such Damages from amounts otherwise due the Design-Builder and/or postpone disbursement of Progress Payments until the non-Conformity is corrected.

Clause Code:	046-NCW-02
Clause Type:	Non-conforming work
Project Name:	Mid-corridor Design-build Project
Owner Name:	Alameda Corridor Transportation Authority, Oregon
Year Published:	1998

6.5 Correction of Nonconforming Work

Nonconforming Work is Work that ACTA determines does not conform to the requirements of the Contract Documents. Nonconforming Work shall be removed and replaced so as to be acceptable to ACTA, at Contractor's cost; and Contractor shall promptly take all action necessary to prevent similar deficiencies from occurring in the future. The fact that ACTA may not have discovered the nonconforming Work shall not constitute an acceptance of such nonconforming Work. If Contractor fails to correct any nonconforming Work within ten days of receipt of notice from ACTA requesting correction, then ACTA may cause the nonconforming Work to be remedied or removed and replaced and may deduct the cost of doing so from any moneys due or to become due Contractor and/or obtain reimbursement from Contractor for such cost.

Clause Code:	047-NCW-03
Clause Type:	Non-conforming work
Project Name:	Interstate 229
Owner Name:	South Dakota Department of Transportation
Year Published:	2000

5.12 Removal of Unacceptable and Unauthorized Work

Work which does not conform to the requirements of the Contract will be considered unacceptable, and will be accepted or rejected under the provisions of Section 5.3. Unacceptable Work, resulting from any cause, shall be removed immediately and replaced in an acceptable manner at the Design/Builder's expense.

Work done without authorization beyond the lines shown on the Construction Documents, or Extra Work done without authority, will not be paid for under the provisions of the Contract. At the Engineer's order, the Design/Builder shall immediately remedy, remove or dispose of unacceptable Work or Materials, and all costs shall be at the Design/Builder's expense.

Clause Code:	048-NCW-04
Clause Type:	Non-conforming work
Project Name:	Everett HOV Design-build Project
Owner Name:	Washington Department of Transportation
Year Published:	2004

1-05.6 INSPECTION OF WORK AND MATERIALS
<Omitted>
WSDOT may request remedies for Nonconforming Work and/or identify additional Work which must be done to bring the Project into compliance with Contract requirements at any time prior to Final Acceptance, whether or not previous oversight, spot checks, audits, tests, Acceptances or Approvals were conducted by WSDOT or any such Persons. Design-Builder shall not be relieved of obligations to perform the Work in accordance with the Contract Documents, or any of its Warranty obligations, by Request for Proposals, oversight, spot checks, audits, reviews, tests, inspections, acceptances or approvals performed by any Persons, or by any failure of any Person to take such action.

1-05.7 REMOVAL OF DEFECTIVE WORK
WSDOT will not pay for defective work, including any work and/or materials that do not conform to the Contract. At WSDOT's order, the Design-Builder shall immediately remedy, remove, replace, or dispose of defective Work or materials and bear all costs of doing so. Design-Builder shall promptly take all action necessary to prevent similar deficiencies from occurring in the future. The fact that WSDOT may not have discovered the Nonconforming Work shall not constitute an Acceptance of such Nonconforming Work. If Design-Builder fails to correct any Nonconforming Work within ten days of receipt of notice from WSDOT requesting correction (or, for Nonconforming Work which can not be corrected within ten days, if Design-Builder fails to begin correction within ten days of receipt of such notice and diligently prosecute such correction to completion), then WSDOT may cause the Nonconforming Work to be remedied or removed and replaced, and may deduct the cost of doing so from any payment due or to become due Design-Builder and/or obtain reimbursement from Design-Builder for such cost.

Clause Code:	049-TC-01
Clause Type:	Traffic control
Project Name:	Southeast Corridor Multi-modal Project
Owner Name:	Colorado department of transportation
Year Published:	2000

2.0 METHOD OF HANDLING TRAFFIC REQUIREMENTS

2.1 Scope

The Contractor shall provide for the maintenance of traffic through the Project area and all other areas affected by construction activities to maximize the safe and efficient movement of people, goods and services while minimizing negative impacts to residents, commuters and businesses. For the purpose of this Section, the Project area is defined as:

1. I-25 from Broadway to Lincoln Avenue and I-225 from I-25 to Parker Road.
2. Adjacent routes along which project-related construction will occur (i.e. roadways which will be disrupted by utility relocations, LRT construction, park-n-Ride construction, etc.).
3. Detour routes, diversion routes, and alternate routes marked or otherwise used for the maintenance of traffic related to the project.

The Contractor shall develop Traffic Management Strategy Reports (TMSRs) and Traffic Control Plans (TCPs) that shall meet the requirements of CDOT and Local Agencies. Prior to implementation of traffic management strategies and control plans, the Contractor shall submit TMSR's for Acceptance and TCP's for the review of the SEC Representative. Local Agencies shall review TMSR's and TCP's within and affecting their jurisdictions and shall approve any permits that are required by applicable ordinances of these Local agencies. Protocol, submittal, review and Acceptance procedures, practices and policies specified in the Contract Document apply. The SEC Representative may review TCP's and Accept TMSR's, but will not direct the Work of the Contractor. Acceptance by the SEC Representative will not relieve the Contractor from performing Contract obligations delineated in the Contract.

The Contractor shall develop and furnish:

1. Traffic Management Strategy Reports (TMSRs) to identify, address and resolve traffic impact issues within construction zones and all other areas affected by construction activities (i.e. detours).
2. Traffic Control Plans (TCPs) for Work Sites and detour routes.
3. An Incident Management Plan for the Project.
4. Courtesy Patrol for the Project.
5. Secure Internet site for information sharing among traffic and emergency management centers.
6. Access permits for permanent driveway changes.
7. Signing plans.
8. Pavement marking plans.
9. Temporary traffic signalization plans.

The Contractor shall construct all necessary traffic mitigation to maintain local access and circulation. In conjunction with this requirement, the Contractor shall furnish the SEC Representative, CDOT, and Local Agencies with all necessary documentation required for traffic management and control.

Clause Code:	050-TC-02
Clause Type:	Traffic control
Project Name:	I-4 (SR 400) Six Lanning
Owner Name:	Florida department of transportation
Year Published:	2001

7. Traffic Control Plan

a. Traffic Control Analysis - The DESIGN/BUILD FIRM shall design a safe and effective Traffic Control Plan to move vehicular and boat traffic during all phases of construction. The areas shall include, but are not limited to, construction phasing, utility relocation, drainage structures, signalization, ditches, front slopes, back slopes, drop offs within clear zone, and traffic monitoring sites.
<Omitted>

b. Traffic Control Plans - The DESIGN/BUILD FIRM shall utilize Index series 600 of the Florida Department of Transportation's Roadway and Traffic Design Standards where applicable. Should these standards be inadequate a detailed traffic control plan shall be developed. The DESIGN/BUILD FIRM shall prepare plan sheets, notes, and details to include the following: Typical Section sheet(s), General Notes and Construction Sequence sheet(s), Typical Detail sheet(s), Traffic Control Plan sheet(s).
The DESIGN/BUILD FIRM shall prepare additional plan sheets such as cross sections, profiles, drainage structures, retaining wall details and sheet piling as necessary for proper construction and implementation of the Traffic Control Plan.

c. Roadway Traffic Control Restrictions - There will be NO LANE CLOSURES ALLOWED between the hours of 5:30 AM TO 10:00 PM. Ramp closures are not allowed in the same direction on consecutive interchanges. A lane may only be closed during active work periods. Rolling barricades will be allowed during the approved lane closure hours. All lane closures, including ramp closures, must be reported to the local emergency agencies, the media and the District Five Information Officer. Also, the DESIGN/BUILD FIRM shall develop the project to be able to provide for all lanes of traffic to be open in the event of an emergency or if the lane closure causes a driver delay greater than 20 minutes.
A damage recovery/user cost will be assessed against the DESIGN/BUILD FIRM if all lanes are not open to traffic during the times as shown above. Costs will be assessed beginning at the appropriate time as shown above and continue until all lanes are open as recorded by the FDOT'S Project Representative.

This assessment will be in the following amounts:
First 15 minutes and under: $2,000
Each additional 30-minute period or portion thereof: $3,000
Such costs shall not exceed $ 10,000 over a 24-hour period.

At the discretion of the FDOT'S Project Representative, damage recovery/user cost shall not be assessed for failure to open lanes if such cause is beyond the control of the DESIGN/BUILD FIRM, i.e., catastrophic events, accidents not related or caused by the DESIGN/BUILD FIRM'S operations. The FDOT shall have the right to apply as payment on such damages any money that is due to the DESIGN/BUILD FIRM by the FDOT.
The DESIGN/BUILD FIRM shall coordinate lane closures with all local agencies to avoid conflict with special events.

d. <Omitted>

Clause Code:	050-TC-02
Clause Type:	Traffic control
Project Name:	I-4 (SR 400) Six Lanning
Owner Name:	Florida department of transportation
Year Published:	2001

e. Service Patrols – The DESIGN/BUILD FIRM shall provide wrecker service within the project limits while construction workers are at the project site. The only exceptions shall be off-site pond construction and St Johns River Bridge foundation construction. A minimum of two wrecker trucks shall be present and available within the project limits at all times wrecker service is required.
<Omitted>

f. The DESIGN/BUILD FIRM shall develop an incident response plan. The plan must address the actions that will be taken and the responsibilities of all field personnel in the event of an incident that creates life-threatening conditions for construction field personnel or the traveling public. Specific contact names and phone numbers shall be included.

g. Other Design Requirements – A minimum offset of 2 feet shall be provided between the travel lane and any temporary barriers or barricades used on the project.

Clause Code:	051-WA-01
Clause Type:	Warranty
Project Name:	Thurston Way Interchange
Owner Name:	Washington Department of Transportation
Year Published:	2000

SECTION 1300 PRODUCT WARRANTY PROVISIONS

The Design-builder shall warrant the new pavement sections for the mainline and ramps.

1310 General

The Design-Builder shall furnish, as part of the BAFP, a letter signed by an authorized representative stating that the Design-Builder shall warrant materials, work, and performance as described by this specification. The Design-Builder shall be responsible for the pavement performance and warranty work for a period of five years following final acceptance of the project by WSDOT. The term Final Acceptance as used in this specification does not include the warranty period. Upon final acceptance of the project, the necessary warranty bond for the pavement item(s) shall be in effect for the total five year warranty period. The warranty bond shall be in the amount of $200,000. The bond shall insure the proper and prompt completion of required warranty work following completion of the pavement, including payments for all work performed, equipment and materials used in accordance with this specification. The extent of warranty work and the Design-Builder's liability for the work that may be required by these warranty provisions is not limited by the warranty bond amount.

The warranty bonds shall be one of the following:
A. A single term five year warranty bond that will be in effect for the entire warranty period
B. Certification from the Design-Builder and its bonding agency that the contract bond for the project will remain in effect for a period of one year beyond final acceptance of the project and will include warranty work as described herein. Warranty bonds extending beyond that period will be supplied by the contractor. The contractor will provide a two year renewable, non-cumulative warranty bond for two consecutive terms. Failure on behalf of the contractor or its surety to renew this warranty bond will result in a 20% payment of the face amount of the contract bond to WSDOT and the contractor shall be considered in default.

1320 Performance

The parameters that will be used by WSDOT to evaluate performance of all constructed pavements for this project are ride quality, pavement friction, pavement surface condition, structural capacity and material quality. These parameters will be measured and evaluated by WSDOT after construction, annually (February through May) and prior to expiration of the warranty period. WSDOT will supply the Design Builder, in writing, the results of the pavement condition survey within 30 days of survey completion. At least 60 days prior to the expiration of the warranty or at any time deemed necessary by the Engineer, the Engineer will notify the Design-Builder in writing if the pavement distress exceeds the criteria outlined in Tables 2 or 3 below, as applicable. The Design-Builder will not be held responsible for distresses that are caused by factors beyond the control of the Design-

TABLE 2. Required Corrective Actions for Pavement Distress Levels – Asphalt Concrete Pavements

Distress Type	Allowable Level of Severity	Allowable Extent of Severity	Corrective Action
Rutting and Wear	Less 1/4 inch	Project length	Mill and fill with 2 inches of asphalt concrete pavement required
Alligator Cracking	Less than1/4 inch	Less than ten percent of project length of both wheel paths	Pavement repair required
Longitudinal Cracking	Less 1/4 inch	Less than 100 percent of project length (single crack)	Crack seal required
Transverse Cracking	Less 1/4 inch	Less than 4 cracks per 100 feet	Crack seal required

Clause Code:	051-WA-01
Clause Type:	Warranty
Project Name:	Thurston Way Interchange
Owner Name:	Washington Department of Transportation
Year Published:	2000

Builder. 1
A finding that the distress is due to factors outside the control of the Design-Builder shall be based on evidence submitted by the Design-Builder to the Engineer. If the Engineer does not agree with the Design-Builder then the Dispute Resolution provisions as outlined in Special Provision Section 1-04.5 will be followed. Within 45 days of receiving notice, the Design-Builder shall commence to undertake the warranty work, submit a plan for completing the work within the following nine months, and/or provide written objection if the need for warranty work is contested.
<Omitted>

Clause Code:	052-WA-02
Clause Type:	Warranty
Project Name:	Natchez Trace Parkway (PRA-NPS 3P13)
Owner Name:	U.S. Department of Transportation
Year Published:	2001

STC07 WARRANTY OF CONSTRUCTION

(a) In addition to any other warranties in this contract, the Contractor warrants, except as provided in paragraph (i) of this clause, that work performed under this contract conforms to the contract requirements and is free of any defect in equipment, material, or workmanship performed by the Contractor or any subcontractor or supplier at any tier.

(b) Except as noted below, this warranty shall continue for a period of 1 year from the date of final acceptance of the work. If the Government takes possession of any part of the work before final acceptance, this warranty shall continue for a period of 1 year from the date the Government takes possession. The warranty period for the below listed items shall be as noted:
(1) Asphaltic Concrete – 3 years
(2) Portland Cement Concrete – 5 years
(3) Pavement Markings – 2 years
(4) Sign Sheeting – 7 years

(c) The Contractor shall remedy at the Contractor's expense any failure to conform, or any defect. In addition, the Contractor shall remedy at the Contractor's expense any damage to Government-owned or controlled real or personal property, when that damage is the result of
(1) The Contractor's failure to conform to contract requirements; or
(2) Any defect of equipment, material, or workmanship.

(d) The Contractor shall restore any work damaged in fulfilling the terms and conditions of this clause. The Contractor's warranty with respect to work repaired or replaced will run for 1 year from the date of repair or replacement.

(e) The Contracting Officer shall notify the Contractor, in writing, within a reasonable time after the discovery of any failure, defect, or damage.

(f) If the Contractor fails to remedy any failure, defect, or damage within a reasonable time after receipt of notice, the Government shall have the right to replace, repair, or otherwise remedy the failure, defect or damage at the Contractor's expense.

(g) With respect to all warranties, express or implied, from subcontractors, manufacturers, or suppliers for work performed and materials furnished under this contract, the Contractor shall
(1) Obtain all warranties that would be given in normal commercial practice;
(2) Require all warranties to be executed, in writing, for the benefit of the Government, if directed by the Contracting Officer; and
(3) Enforce all warranties for the benefit of the Government, if directed by the Contracting Officer.

(h) In the event the Contractor's warranty under paragraph (b) of this clause has expired, the Government may bring suit at its expense to enforce a subcontractor's, manufacturer's, or supplier's warranty.

Clause Code:	052-WA-02
Clause Type:	Warranty
Project Name:	Natchez Trace Parkway (PRA-NPS 3P13)
Owner Name:	U.S. Department of Transportation
Year Published:	2001

(i) Unless a defect is caused by the negligence of the Contractor or subcontractor or supplier at any tier, the Contractor shall not be liable for the repair of any defects of material furnished by the Government nor for the repair of any damage that results from any defect in Government-furnished material or design.

(j) This warranty shall not limit the Government's rights under the Inspection and Acceptance clause of this contract with respect to latent defects, gross mistakes or fraud.