



State of Alaska  
Department of Transportation  
and Public Facilities



# GUIDEBOOK FOR DESIGN-BUILD HIGHWAY PROJECT DEVELOPMENT

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# **Alaska Manual for Design-Build Highway Project Development**

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# 1. Introduction

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- 1.1. Introduction
- 1.2. Purpose of Manual
- 1.3. DOT&PF's Position on Basic Design-Build Elements
- 1.4. Design-Build Project Delivery Process

## 1.1. Introduction

Design-build is a method of project delivery in which DOT&PF executes a single contract with one entity (the design-builder) for design and construction services to provide a finished product.

This method is not appropriate for all projects, but when the right projects are selected, design-build may offer significant benefits for the Department and the public.

*It is particularly important that DOT&PF staff be able to define the basic objectives of the design-build project very early in the process.* This includes physical components, operational requirements, and performance expectations. It is necessary to describe the project in such a way that the design-builder has enough information to deliver the intended project.

The design-builder will be starting the project with conceptual plans and will complete the design with limited DOT&PF involvement in the design process. Correspondingly, the design-builder will propose the total project price based on only the conceptual plans, defined objectives and performance specifications. The proposal will reflect the product that the design-builder intends to deliver to meet the Department's objectives and requirements.

## 1.2. Purpose of Manual

This manual has been prepared as a comprehensive reference for the project manager and project engineer who are responsible for developing and administering a project using design-build contracting. It also may be useful to project team members who will be involved in the process. Commonly asked questions are answered in the context of DOT&PF's traditional design-bid-build process versus design-build contracting procedures.

DOT&PF's design-build process encourages program management, project managers, and project teams to make careful selections: first, with projects suitable for design-build; second, with language to define the

project; and third, with criteria to evaluate design-builders, their proposals, and their performance. The following chapters of this manual contain an explanation of how these and other tasks are accomplished.

## 1.3. DOT&PF's Position on Basic Design-Build Elements

DOT&PF's process for design-build contracting is based on two primary principles:

1. Use the Department's existing systems to the fullest extent possible, changing or adding only as necessary to facilitate the design-build method of contracting; and
2. Make it work satisfactorily for all parties involved, including DOT&PF, consultant design firms, construction contractors, bonding and insurance companies, local jurisdictions, and other affected state and federal agencies.

DOT&PF's position statements are as follows:

- **Decisions.** The decision to use design-build contracting should be made in two steps with the final determination to issue a design-build contract occurring after the project scope is adequately developed and a risk analysis completed. Regional Directors will select candidate projects from the State Transportation Improvement Program (STIP) followed by a preliminary investigation by the project manager and project team. The project team will develop the initial risk assessment and probable allocation matrix to be used in making the initial concept recommendation. The Chief Contracts Officer makes the final decision to use design-build on the candidate project.
- **Funding.** Funding must be committed to allow detailed scoping and development of the project and to make payments to the design-builder for both design and construction. The project schedule is typically accelerated by design-build delivery, with design and construction occurring at the same time. Further, funding for design-build becomes fully committed very early in the project schedule. *Carefully consider funding constraints.*
- **Environmental.** DOT&PF will obtain environmental clearances required for permanent

project features, or for known temporary construction impacts. DOT&PF is responsible for complying with state and federal requirements and must be signatory on many documents, such as records of decision and permit applications. Although design-builders must provide information to support a permit application, they cannot control the actions or timing of third party regulatory agencies. For most projects, DOT&PF should provide allowances for the required application time as the resulting risks to the design-builder could be significant and could result in higher proposal prices. However, permits required for construction trades or for temporary construction impacts of convenience will be assigned to the design-builder. The intent is to provide sufficient permits to construct the department's conceptual design.

- **Public.** The risk of public endorsement should be borne by the Department, because the Department has the most expertise in this area. Once the public has accepted a project, the design-builder will participate in a public involvement program that requires ongoing information and communication.
- **Detail.** In general, DOT&PF should have minimal involvement in project design. Environmental requirements and risk definition may require DOT&PF to carry some portions of the design further than others. If DOT&PF develops the project too far, then the opportunity to innovate and/or save time and possibly money may be reduced significantly or lost.
- **Geotechnical.** DOT&PF may conduct preliminary geotechnical investigations and provide data to the proposers. DOT&PF will define the requirements for geotechnical investigation and include them in the scope of work. The proposers may have an opportunity to request supplemental information during preparation of their proposal if deemed appropriate by the project team. If the department offers no supplemental program, each proposer will need to obtain all data required. Ultimately, DOT&PF will be responsible for changed and differing site conditions, so it may be necessary to establish a baseline for design-builders to develop their technical and price proposals.
- **Right-of-way.** For most projects, right-of-way acquisitions required for the project will be complete, or imminent, prior to award of a design-

build contract. The design-builder may identify additional beneficial or necessary right-of-way needs and provide the supporting plans. The department will assess the value or need of obtaining additional right-of-way prior to proceeding with the acquisition process. Adjustments to the contract may be made if the additional right-of-way is necessary or beneficial to complete the project.

- **Interagency.** Inter-governmental agency agreements necessary for the completion of a design-build project will in most cases be obtained by DOT&PF, prior to award of the contract to ensure that all commitments and requirements of the parties are known when the proposals are prepared. However, in some instances it may be advantageous to make such agreements part of the design-builder's scope of work.
- **Utilities/Railroads.** DOT&PF will obtain most project agreements with utility companies, either formal or informal, for relocation of their facilities prior to advertisement. However, sometimes it may be best to make such agreements part of the design-builder's scope of work. The design-builder will coordinate arrangements for the actual construction work associated with the relocations to match his or her intended work program. When the construction work/coordination is allocated to the design-builder, it is imperative that the control of the work also lies with the design-builder.
- **Unforeseen Conditions.** Unexpected conditions arising during contract execution will remain DOT&PF's responsibility and should be treated as changed conditions. Examples include differing site conditions, hazardous materials, cultural resource sites, endangered species, or other environmental issues. The department will develop, direct, manage, and monitor the performance of any mitigation plans required by the discovery.
- **Warranties.** Product warranties may be used to ensure project quality. Because many of the quality assurance/quality control processes traditionally done by DOT&PF are transferred to the design-builder, warranties can ensure that high quality standards are being met. The RFP should have clearly defined performance measures for all warranted items.

- **QC/QA.** DOT&PF will provide oversight during design and construction in a way that satisfies federal quality assurance requirements.

## **1.4. Design-Build Project Delivery Process**

### **1.4.1 Contrasting Design-Build and Design-Bid-Build**

Delivering a project using design-build contracting eliminates very few steps when compared to the typical DOT&PF design-bid-build process. The same project work tasks and products are required whether performed by DOT&PF or the design-builder. The timing, order, and level of task detail performed are what make design-build contracting different from design-bid-build. The design-build process shifts some tasks and responsibility from DOT&PF to the design-builder. The shift can change the order and development detail of the tasks and thus must be reflected in the process.

The most significant difference in the development of a project using design-build versus using design-bid-build is in the documents developed by the project team. Instead of final plans and specifications, the project team is, for the most part, delivering a scope of work, which is the description of the final constructed project. This complete description must be established near the beginning of the process.

DOT&PF has identified two processes for selecting candidate projects for design-build contracting: a programmatic approach and an in-process approach.

### **1.4.2 Programmatic Approach**

The primary process (programmatic) focuses on selecting candidate projects from an initial screening of the State Transportation Improvement Program (STIP).

Nominate projects with attributes that provide significant benefit from using an alternative form of contracting such as design-build. Once identified, develop and evaluate the project scope to confirm that the benefits are real and risks are manageable.

### **1.4.3 In-Process Approach**

The secondary approach (in-process) selects a project already under development in the conventional design-bid-build development process that yields some benefit that makes converting to design-build attractive.

### **1.4.4 Process**

The process shown in Appendix A (Design Build Process Chart) delineates generic steps to selecting appropriate projects, developing the project and necessary documents, conducting the selection process, and overseeing contract execution. However, each design-build project will be unique, so evaluate the appropriateness of the detailed steps. The chart addresses:

1. The generic definition of the existing design-build process and its major tasks
2. The delineation of major tasks and products
3. The expected responsibility for their completion (DOT&PF vs. design-builder)

The general design-build process includes:

- Project identification as design-build candidate
- Project attribute assessment and risk assignment
- Team formulation
- Project scope definition
- Data gathering
- Final decision to use design-build contracting
- Request for Proposal preparation
- Selection of design-builder
- Administration of contract

Center the project team's focus on identifying, assessing, and allocating the project risk to the party best able to manage it.

As shown on the process chart, DOT&PF will usually retain such high-risk areas as environmental studies, public involvement, right-of-way acquisition, and interagency agreements. By allocating these risks to the department, all tasks associated with the preparation of the basic project conceptual design (design decisions) still belong to the department. Thus, design-builder creativity options are normally limited to final design and construction.

At the initiation of the project analysis, the regional project teams will perform an analysis of the candidate design-build project. Gather enough information and perform analysis sufficient to determine if the project risks are manageable and to what extent they should be

allocated to the design-builder. After all risk decisions are made and documented, submit the project documentation to the Chief Contracts Officer for approval to continue design-build development. Once the Chief Contracts Officer's approval is granted, document the risk allocation in the contract provisions, complete the project definition, advertise the project, and begin the selection process.

The selection process described in this manual consists of two steps and is intended to result in a proposal that represents the best value to the public. The first step is a qualification process based on proposer experience and project understanding and results in a short list selection of the top proposers. Final proposals are then solicited from the short list. The proposal with the highest final score (a combination of the technical score and price), is awarded the contract. Other selection methods are common and may be used with approval from the Chief Contracts Officer. The Regional Contracts Section and the Regional Design-Build Coordinator can assist in planning the selection process and developing the appropriate documents.

The final phase of the process involves executing the contract. DOT&PF will perform administrative functions as described by the contract provisions. The Design-Builder will be responsible for controlling and assuring the quality of their work. DOT&PF will be responsible for independently assuring that the work produced conforms to the contract requirements.

The following sections summarize the issues related to each major task and recommend ways to address them. The sections attempt to answer the detailed questions related to selecting a project, developing the scope, assembling the RFP Package, selecting a design-builder, and executing a design-build project contract.

## 2. Project Selection

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- 2.1. Decision-Making Process
- 2.2. Assess Project Benefits
- 2.3. Assess Project Risks
- 2.4. FHWA Involvement

### 2.1. Decision-Making Process

To fully determine if design-build contracting is appropriate, the scope of the project has to be fully known and the expected outcomes adequately defined.

*Use the preliminary project scope to screen the potential candidate projects with the assistance of regional staff.*

Benefit-oriented criteria are first used to determine which projects appear to be likely candidates for design-build contracting. *An identified design-build candidate will require special funding considerations to ensure both design and construction is programmed according to the preliminary project schedule.*

The benefit oriented screening process is the first step in project evaluation. The second step involves performing a detailed project scope evaluation for fatal flaws that make design-build contracting too risky for either DOT&PF or the design-builder.

Funding must be available for the entire project from the outset. The project becomes a binding contract very early on and cannot be easily delayed by DOT&PF. This commitment limits DOT&PF's flexibility within the overall program.

Public endorsement of the project should also be considered early on. A controversial project may require that DOT&PF maintain more direct project control than is likely to be available on a design-build contract.

The alternative process for identifying candidate design-build projects is initiated by the regional director or project manager during the initial stages of design for a conventional design-bid-build project. Unexpected findings or circumstances may make a project not previously identified as a design-build candidate more attractive. The project team must carefully weigh the cost and benefits of the partially developed project. A developed project may provide DOT&PF more control at the expense of potential innovation and project flexibility.

### 2.2. Assess Project Benefits

The objective of design-build contracting is to deliver projects better, faster, with fewer Department resources than the conventional design-bid-build method. This objective is likely to be achieved, however, only if certain characteristics are used in the selection process, as described below. Use these benefit-oriented project evaluation guidelines to assess if design-build is appropriate. The primary questions to ask are:

- Can significant time savings be realized through concurrent activities?
- Will higher quality products be realized from designs tailored to contractor capability?
- Do DOT&PF staff resource constraints impact project schedule?
- Will there be less impact on the public with the use of expedited construction processes?

Weigh the project goals, potential benefits, and probable risks carefully and determine if design-build contracting is the appropriate method. Candidate projects must be examined for unusual or unique requirements that could be effectively addressed by a Design-Builder. Examples of this may include, severe right-of-way limitations, extensive traffic handling, narrow construction windows, time sensitive staging, and so on. The following subsections further define the benefit criteria to use in screening for candidate projects.

#### 2.2.1 Completion Schedule

The overall project delivery schedule is generally the overriding reason for using design-build contracting. By combining design and construction under one contract, the work can be executed concurrently, thus saving calendar time in the delivery of the project. Remember, when selecting a shorter project time the overall project duration may decrease but the actual construction time may be relatively similar. A secondary advantage is that the designer and builder work together, with each working to suit the other's capabilities and methods, which could shorten the actual construction window. This can result in less impact to the public and may even reduce total costs.

If there are outside constraints which could impact project delivery (environmental permits, extensive right of way acquisition, complex third party agreements) then it is possible that delays in addressing these constraints could eliminate any potential schedule advantage from design-build.

Questions to ask include:

- Must the work begin or end by a specific time?
- Is the available time unusually short?
- Are work windows a significant issue?
- Are certain seasons or dates critical?
- Are traffic detour and/or closure periods limited?

### **2.2.2 Project Complexity**

Projects that are complicated present more challenges and therefore more potential benefits from a design-build approach. A best-value solution is often a direct function of the compatibility between the contractor's capabilities and the features of the design. Projects that have the following issues may be best addressed through design-build contracting, where unique solutions, based on the specific characteristics, can be proposed.

- Does the project include a number of primary features (road, bridge, traffic control system)?
- Are the features tightly interrelated and/or closely located?
- Will construction staging be a major issue?
- Does the site present unique or unusual conditions?
- Are specialty skills needed for design or construction?
- Does the project include emerging technology (IT projects)
- Will extensive temporary facilities be required?

### **2.2.3 Traffic Management**

Construction staging that minimizes impacts to the traveling public is one of the most significant issues for any transportation project. In design-bid-build, the owner typically assesses this work and the method to be used is prescribed in the Contract Provisions. The contractor's capabilities may or may not match the

method dictated by the contract, resulting in an unnecessary reduction in the level of service and penalties, if the contractor can't deliver.

Alternatively, the contractor may submit a "value engineering" or "cost reduction" proposal, which would allow for a change in the contract requirements. This proposal requires preparation by the contractor and review and acceptance by the Department, subtracting from the total benefit of a customized approach. Using the design-build contract to set the performance standard, and allowing the contractor to combine his expertise with the designer, maximizes the potential benefits.

### **2.2.4 Project Size**

Project size has both positive and negative connotations for design-build contracting. Larger projects, measured in dollar value, usually offer the greatest overall potential benefits (and greatest risks). They may also limit the number of potential Proposers.

Design build may be the only project delivery method available on very large projects due to workforce constraints.

Smaller projects may present opportunities for specific benefits, such as specialty work. The use of design-build contracting on smaller projects with lower risks may still achieve the benefits of reduced schedule, lower contracting costs, and so on. Another benefit is that smaller firms can compete and gain experience in the method.

### **2.2.5 Workload Leveling**

At times, the projects in the program may exceed the capacity of DOT&PF staff to deliver using the traditional design-bid-build process. Design-build contracting may be useful to shift workload to Design-Builders. A DOT&PF project development core team will be needed to assess the project, assemble the RFP Package, and evaluate the submittals. **Be aware that scope definition and proposer selection requires a greater effort and impact project success more in design-build delivery than in design-bid-build delivery.** While it is true that DOT&PF's overall manpower efforts are less with design-build, the effort expended and expertise required during project development is significantly more intensive than the equivalent phase in design-bid-build. A bridging contract with a consultant to provide general engineering services, could be used to supplement

DOT&PF staff throughout the delivery of the contract. Except in extreme cases, the decision to utilize design-build should not rest solely upon Workload Leveling

### 2.3. Assess Project Risks

The DOT&PF design-build process is formulated upon a risk assessment and allocation principle described in the next section. Understanding the Department's position on risk allocation is necessary in determining responsibility for individual tasks.

Allocation of the risks inherent in highway projects will also define ownership and responsibility for each task of the project delivery process. On a standard design-bid-build project the Department acts as both the owner and engineer. This owner/engineer role requires that DOT&PF owns most of the risk for the success of the design. In design-build, the guiding principle should be one of assigning risk to the party (owner or Design-Builder) that can most economically handle the risk. One key question to be asked in risk allocation is, "*How much is the Department willing to pay a Design-Builder to assume risk that DOT&PF typically owns?*" This question may be asked for each individual task to tailor the design-build contracting approach to each specific project. Project risk is the defining issue that permeates all decisions related to developing the contract provisions. High-risk items that will usually remain the responsibility of DOT&PF and must be addressed prior to awarding a design-build contract include:

- Environmental studies
- Public endorsement
- Interagency agreements
- Utility agreements
- Right-of-way acquisition
- Funding

Funding for DOT&PF projects is typically provided in phases. The funding for each phase (design, right-of-way, and construction) is only available during the federal fiscal year when that phase will occur, as defined by the program. Design-build contracting combines the phases of the project into a single contract. This combining of phases requires that funding for the entire project be committed and available as the project progresses. Because of this, special funding considerations will be required when using design-build contracting. **Carefully assess program-funding impacts when the candidate projects are identified.** Lack of complete funding may be a fatal flaw for projects attempting to be

switched from design-bid-build delivery to design-build. This commitment to all phases of a contract may also adversely impact DOT&PF's overall program flexibility.

DOT&PF will also normally maintain responsibility in high-risk areas during execution of the contract. If unexpected conditions arise in areas such as changed conditions (differing site conditions), hazardous materials, cultural resource sites, endangered species, or other issues of an environmental nature, the Department will, unless specified otherwise in the contract, develop, direct, manage, and monitor the performance of any mitigation plans required. The Design-Builder may or may not be asked to perform the associated work under a change order. Deviations from this position on unknown and unexpected conditions should be based on an assessment of the cost to the Department and the benefit derived from allocating them to another party.

Other issues related to design-build contracting that should be reviewed and considered in the decision to use design-build contracting include:

- Construction administration
- Permit requirements
- Utility relocations
- Funding
- QC/QA responsibilities
- Labor disputes
- Weather conditions
- Inflation
- Hazardous materials
- Third party involvement
- Third party claims
- Schedule
- Incremental acceptance of work
- Performance guarantees/warranties
- Force majeure
- Design reviews/approvals
- Liability for design
- Site conditions/Differing site conditions
- Contract changes
- Liquidated damages
- Performance schedule
- Ability to compete
- Ownership of ideas
- Cost of proposing
- Contract terms
- Payment methodology
- Incentives/disincentives

- Bonding requirements
- Errors and Omissions Insurance requirements

## **2.4. FHWA Involvement**

Federal regulations set forth specific federal-aid program requirements based on conventional competitive bid practices; however, some degree of administrative flexibility does exist. In 1988, FHWA established a task force to evaluate innovative contracting practices. A Special Experimental Project No. 14 (SEP-14 – Innovative Contracting) was initiated to allow the use, and evaluate the results, of innovative contracting methods. Design-build contracting is one of the methods allowed under the SEP-14 program. Until the current Highway Bill was passed SEP 14 Approval was required for Design Build projects under \$50 million (\$5 million for IT projects).

**To encourage more projects to use Design Build contracting, SAFETEA-LU eliminates the \$50 million floor on the size of eligible contracts.**

DOT&PF, through FHWA stewardship, is responsible for projects. NEPA processes are required to be finalized and approved by FHWA prior to project advertisement. However, under certain circumstances, FHWA will authorize design and construction for the project, and obligate the funds, before advertisement as long as these federal activities are conditioned on getting final NEPA action before awarding the contract and acquiring any right-of-way. The amount of funding obligated will be based on DOT&PF's best estimate. DOT&PF has determined that federal funding obligations are not required to advertise the project; however, it will be required to prior to requesting Final Proposals.

## 3. Project Development

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- 3.1. Initial Screen for Use of Design-Build
- 3.2. Identify the Goal
- 3.3. Assemble the Project Team
- 3.4. Develop Project Scope
- 3.5. Project Risk Allocation Matrix
- 3.6. Plan the Project
- 3.7. Collect Base Data
- 3.8. Project Design Elements
- 3.9. Environmental
- 3.10. Schedule Analysis
- 3.11. Funding Analysis
- 3.12. Conduct Public Involvement Process
- 3.13. Materials (Product Warranty)
- 3.14. Agreements
- 3.15. The Final Decision to Use Design-Build

### 3.1. Initial Screen for Use of Design-Build

To be considered for design-build, a project must provide the opportunity for one of the following:

- Significant savings in project delivery time.
- Greater innovation and efficiencies between the designer and the builder.
- Highly specialized construction activities requiring significant input into the design.

When considering a project for design-build, make a careful analysis of the risks associated with the project. Base the final recommendation to utilize design-build on a balance of the anticipated benefits and allocated risks associated with the project. If a particular risk element will require a very high level of design or is so variable that the design-builder must provide a large monetary bid, design-build may not be suitable.

### 3.2. Identify the Goal

Preparing a project for design-build contracting is a unique experience in that the effort involves creating documents much different than those employed in a traditional design-bid-build project. It is important to have a clear understanding of the desired outcomes throughout the design-build project development stage. Clearly identify and track the desired outcomes (improve traffic flow, minimize traffic impacts during

construction, minimize impacts to wetlands, short construction timeline, etc.) throughout development of the project. If a fast-track project is the driving force, the level of development may be different than if a large amount of innovation is desired.

### 3.3. Assemble the Project Team

#### 3.3.1 Assign the Project Manager

The Project Manager's qualifications must include sufficient experience to have a complete understanding and command of the entire project delivery process. A thorough understanding of construction engineering and contract administration is required for a successful contract.

A small team should be assigned to assist the Project Manager with the technical aspects of the project. The Project Manager will initially focus on development of the complete RFP package; while members of the project team may focus on specific technical requirements. The ultimate size and makeup of the project team will depend on project requirements (conceptual design level, technical design elements required, permit acquisition, MOU acquisition, etc.).

**While individual members of the assigned project team may transfer or promote, the core project team should be fully committed to a design-build project from initial development through final construction.**

### 3.4. Develop Owner Requirements

A design-build project differs from a traditional project in that the project team must establish the final project expectations, goals, and desired quality at the outset. Early in the project, all team members, stakeholders, and leadership should agree on project goals, quality, and the desired outcome of the project.

### 3.5. Project Risk Allocation Matrix

On each design-build project, the team must determine how far to carry the preliminary design. Development of a risk allocation matrix is the key to making this determination.

Early in the project, the design team needs to identify potential risks associated with the project. Assign responsibility for each of these risks either to DOT&PF or to the design-builder. This is not a one-

time task. The project team should continually revisit the risk allocation matrix as more information becomes available about the project.

Utilize the risk allocation matrix throughout development and implementation of the project. This matrix will not only govern which party is responsible for a given risk, but it will also help the project team determine how far to advance each technical element within the preliminary design during development of the RFP.

For reference, an example risk allocation matrix is shown below. This allocation matrix will need to be tailored to each individual project. This risk allocation matrix is not intended to be all-inclusive. The project team will have to carefully review all elements that could impact the specific project and tailor the matrix to fit the project. The matrix should be open for review throughout the entire RFP development process.





RISK

Design-Bid-Build		
Owner	Shared	Contractor

Design-Build Process	
Owner	Design Builder

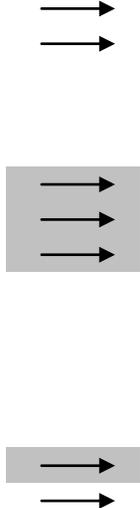
Change

**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
- Maintenance of Traffic
- Quantity/Cost of Callbacks
- Availability of Callbacks
- Damage to Utilities under Construction
- Falsework

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RISK

Design-Bid-Build		
Owner	Shared	Contractor

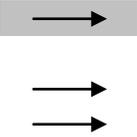
Change

Design-Build Process	
Owner	Design Builder

**Construction**

- Shop Drawings
- Equipment failure/breakdown
- Work Methods
- Early Construction / At Risk Construction
- Community Relations
- Performance of defined mitigation measures
- Warranty

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**Force Majeure / Acts of God**

- Strikes/Labor Disputes - on site labor
- 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

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**Differing Site Conditions/Changed Conditions**

- Changed Conditions
- Differing Site Conditions

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**Completion and Warranty**

- Establishment/definition of any risk pool
- Long term ownership / Final Responsibility
- Insurance

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### **3.5.1 Design Issues**

In the traditional design-bid-build format, DOT&PF bears the entire responsibility and risk for any design-related issues. All responsibility for design decisions and conformance to standards rests with the owner.

In design-build, several of these responsibilities shift to the design-builder. DOT&PF is still responsible for establishing the scope, project definition, design criteria, performance measurements, and existing conditions of the site (initial geotechnical investigation, subsurface conditions).

The design-builder usually has the responsibility for any project specific geotechnical or subsurface investigations beyond what DOT&PF provides. As the designer of record, plan accuracy, conformance with established standards, and constructibility rest with the design-builder.

As the design-builder is ultimately responsible for the design, wherever possible DOT&PF project personnel should resist the temptation to insert their preferences or solutions into the RFP.

### **3.5.2 Local Agency, Utility, Railroad Issues**

Since the design-builder is responsible for the design and construction, DOT&PF prefers that the design-builder communicate and coordinate directly with local agencies, utility companies, and railroads.

However, the design-builder is in a contractual relationship with DOT&PF on a DOT&PF-owned facility. The local agencies, utilities, and railroads will have a traditional relationship with DOT&PF or a MOU and DOT&PF will likely have more influence in obtaining the required cooperation. For a successful project, DOT&PF needs to have extensive preliminary and on-going communication with outside entities, as well as a strong ownership role throughout the contract.

### **3.5.3 Construction**

The contractor has always had responsibility for the construction. However, in a design-build environment, the owner (DOT&PF) no longer represents the designer (formerly DOT&PF, now the design-builder).

Many of the traditional materials testing and inspection responsibilities transfer to the design-builder. Items such as surveying and maintenance of

traffic shift entirely to the design-builder's responsibility.

DOT&PF project personnel are still responsible for procuring the services of law enforcement and ensuring that local agency and other agreements are in place prior to execution of the contract.

### **3.5.4 Force Majeure / Acts of God**

In past design-bid-build projects, DOT&PF has self insured 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 DOT&PF does not feel that self insuring is appropriate, obtaining catastrophic insurance through a third party may be DOT&PF's most economical option.

### **3.5.5 Differing Site Conditions/Changed Conditions**

DOT&PF owns the site of the project and performs the initial site investigation. Responsibility for differing or changed site conditions remains with DOT&PF unless this is explicitly changed in the contract.

### **3.5.6 Completion and Warranty**

Ultimately, the final responsibility and ownership of a project will transfer to DOT&PF. This final responsibility and ownership may occur at the completion of the project or at the completion of any project-specific warranty.

## **3.6. Plan the Project**

Defining an appropriately detailed project scope requires a preliminary risk assessment. The project team must weigh the project risks associated with the technical areas and determine the appropriate level of development to define and allocate them to the appropriate party (DOT&PF or the design-builder). The level of effort required to investigate and describe the risk constitutes the project team's scope of work.

Accurate determination of the project schedule requires an understanding of the effects of the data collection and conceptual development interdependency. **Research and confirm the**

**availability of DOT&PF specialty groups**, such as geotechnical exploration, environmental, and right of way acquisition, as these areas are important and may be critical to the execution of the project.

An initial project schedule and scope provide the foundation for ongoing discussions of specific project issues during the development stage. Investigation and conceptual development may uncover changes to the base assumptions that were made when the project was nominated as a candidate design-build project, as well as potential changes to the project risk allocation matrix. Team members should be continuously aware of who holds the ultimate responsibility for risk in a given element. As more information becomes available, there will be a strong temptation to continue design efforts beyond what is required to assign a risk element.

Some of the required project technical areas may not be easily expedited or reduced in scope (for example, environmental processes and right of way procurement) as they involve outside parties. Because actual time requirements can only be estimated, they can have significant impacts on the project development schedule. Isolating the specific issues that are indeterminate will help define the Department's risk exposure to schedule impacts from these elements.

When considering the time to prepare a project for advertisement using design-build contracting, start with a typical duration of four to six months. The technical and administrative functions of creating the RFP package should be manageable within this timeframe using the generic documents and the processes defined in this guidebook. However, environmental processes and acquisition of right of way must be considered separately.

### **3.7. Collect Base Data**

Preliminary investigations typically undertaken during DOT&PF's traditional project delivery process are generally still necessary for developing a design-build contract. Mapping and preliminary surveys, environmental studies, hydraulic analysis, and geotechnical investigations, among others, will address significant unknown issues of a project. Defining these unknowns, even at a conceptual level, will provide a basis for describing the Department's expectations of the project. Contract provisions will be written to reflect the findings of these studies and formally designate the allocation of project risks. For

example, the geotechnical data will be presented with no analysis provided.

It should be noted that DOT&PF takes full ownership of any preliminary data provided to design-builders. Design decisions will be made from information provided to the design-builders during the RFP process. In general, any information generated beyond the original site investigation will not be fully utilized by a design-builder and will likely be redone or reverified during the RFP process. Roadway templates and drainage plans are two areas that may change due to a design-builder's final configuration, if allowed under the RFP.

In the design-build process, the amount of data gathered will vary depending on the project's needs, but usually will require less effort than for a traditional design-bid-build process. Consider the following questions and objectives when defining the need for data and developing task work scopes (geotechnical investigation, preliminary geometric design, hydraulic design, topographic information, etc.):

- Is there a clear and complete definition of the desired outcome for the task?
- Does the task support project risk assessment and allocation?
- Does the task assist development of the conceptual level design by the design-build project team or is it likely it will be recalculated or redone by the design-builder?
- Will the task have the potential to funnel all proposals towards a single solution?
- Does the task provide all design-builders with an equal platform of information to prepare their proposals?

In an ideal scenario, the amount of base data provided by DOT&PF carries the project up to the point at which solutions begin to separate (bridge types, walls vs. fills, alignments, etc.). Base maps, project geologic boring investigations, and generalized hydraulic basin analyses can be completed without significantly impacting a specific solution.

While developing concepts, design-builders evaluate the information provided. Inadequate information requires either estimation by the design-builders or additional data gathering. The level of risk associated

with the level of data provided will be a factor in setting the proposal price. DOT&PF may gain a two-fold benefit from providing and requiring all design-builders to use the same base data. First, the proposed concepts will be based on the same assumptions and will be comparable at that level. Raw or derived data gathered by the design-builder, although technically or contractually correct, may lead to a proposal that is not directly comparable. Second, leaving such investigations to the design-builders may translate into higher prices, because risk dollars may be added to the price in lieu of performing a full investigation during proposal preparation.

A number of typical risk areas are described below with a preliminary assessment of the responsibility and allocation. Each project may have additional technical areas that are not described in this guidebook. These areas will require investigation; however, the recommendations contained herein are expected to provide universal guidance for addressing other areas.

### **3.7.1 Preliminary Survey and Mapping**

Preliminary mapping provides survey control for the project and a base map for initial project development by the project team and design-builders. Obtain a minimum level of mapping information to define a basis for communication of the project. The necessary level of site mapping should be adequate to provide support for a complete definition of the project, development of the necessary conceptual design, a basis for estimating the project cost, and a basis for design-builders to develop concepts. The recommended survey and mapping tasks include:

- Establishing control throughout the project.
- Stationing along the control lines to establish feature and design criteria locations.
- Existing cadastral information describing existing and future right of way.
- Construction easements associated with DOT&PF's conceptual design.
- Topographic information, such as contour lines and major site features to define the footprint of the project as expected by the Department or as intended by the design-builders. This level of mapping also supports other data gathering investigations and provides the base map for delineating feature locations.

The effort of gathering survey and mapping information is less than is typically needed in the design-bid-build process. How much less is dependent on the project type and site. Linear rehabilitation projects may require less than geographically isolated mobility projects such as interchanges. If the type, size, and/or location of project concepts are highly dependent on precise information, more detailed information is necessary. Supplement the available data in critical areas with specific information identified during conceptual design. Examples of supplemental information include:

- Existing alignment geometry
- As-built data corrections
- Wetland delineation locations

In defining the limits of the surveying effort, it should be noted that the exact limits of the project are not known during the project development phases. Whenever possible, strive to obtain data beyond the limits identified in the project development package.

### **3.7.2 Geotechnical Conditions**

Unknown geotechnical conditions can make it challenging to competitively price a design-build transportation project. DOT&PF may develop and provide geotechnical information to the design-bid-build contractor. This becomes the basis for determining differing site conditions (changed conditions).

It may be attractive initially to allocate this area of risk to the design-builder, because it transfers the liability for a significant changed condition; however, doing so may not be the best choice in all cases.

DOT&PF will ultimately own the responsibility for a differing site condition should the site prove to be materially different than what was anticipated in the proposal. By failing to provide a common baseline for all proposals, DOT&PF may award the contract to the lowest priced proposal (which failed to anticipate any subsurface challenges), only to lose any projected savings due to claims for differing site conditions.

The amount of time the design-builder has to formally develop the RFP may be short. DOT&PF should do the time consuming base data collection whenever possible. After the initial project scope, DOT&PF should perform a preliminary geotechnical investigation.

After the geotechnical investigation is completed, obtain field data in the approximate location of the project's major features. Perform preliminary geotechnical engineering analyses, as necessary, to address feasibility issues and to define project design criteria such as foundation type constraints. This information will be used to:

- Establish design parameters in the various supporting areas of typical highway projects (for example, bridge foundation type, seismic design criteria, pavement design, excavation limits, and embankment design).
- Set the basis for determination of changed conditions.
- Establish a preliminary project cost estimate.

The geotechnical data should provide enough information to permit the design-builder to perform a preliminary assessment of geologic features and to address key engineering issues such as foundation type. Providing inadequate data to design-builders may require them to gather additional data. The Department intends to minimize proposal development costs by gathering enough data to allow competitive price estimates by the design-builders.

To equalize risk tolerance for competing design-builders, it may be prudent to require all prospective design-builders to design from a baseline geotechnical evaluation provided by DOT&PF. In a design-build contract, the design responsibility and flexibility rests with the design-builder unless DOT&PF specifies more stringent or site-specific criteria.

If the Department performs preliminary geotechnical engineering evaluations or analyses, reference these as data in the design criteria, not as recommendations to the design-builder.

### **3.7.3 Hydraulic**

Perform hydrology (investigation/analysis) and/or hydraulic (design) investigations only if it is likely that proposal concepts will require the information. The focus should be on establishing the design criteria for the project. The criteria should define how hydrologic conditions (such as water surface levels, flow characteristics, scour potential, and allowable sediment deposition during construction) will be determined by the design-builder.

Define the hydrologic constraints in a manner that provides the Department adequate control over the results. If the criteria are ambiguous or can lead to significantly different hydraulic results, the initial hydrologic calculations may best be performed by the Department to set the basis for design for all design-builders. The results may be included in the RFP as minimum acceptable parameters.

Some project areas may require a preliminary hydrologic analysis to provide base data to establish design criteria or to fulfill regulatory requirements. For example:

- Back water analysis for EA/EIS on projects with water-crossing structures.
- Drainage data for site drainage design criteria.
- Existing drainage feature evaluation to determine existing conditions and necessary changes.
- Local agencies' requirements, such as ordinances, requirements, and design criteria. If there are differences between local agency and DOT&PF design requirements, the design criteria need to indicate that the more restrictive requirements apply.

In summary, do the minimum required to meet the regulatory requirements, define the scope of work design criteria, and reduce the efforts to prepare proposals.

### **3.7.4 Right-of-Way and Access Determination**

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 Department and contract execution by the design-builder. To determine if adequate right of way is available to build the project, it is necessary to accurately determine the physical boundaries of existing right of way along the route. Whenever possible, establish the right of way limits within which the design-builder must work on a project.

In some cases it may be advantageous for DOT&PF 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 DOT&PF wishes to

minimize the amount of real estate purchased. It is important to relay DOT&PF's desire to minimize right of way within the RFP scoring system. When making this decision, factor the potential cost of delays associated with right of way acquisition into DOT&PF's risk cost.

Under federal and State statutes, DOT&PF's ability to acquire property in a timely manner is limited. Because DOT&PF is 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 Department. A preliminary assessment of the right of way personnel required to meet a project's schedule is necessary in order to determine whether the project should even be considered for design-build.

### **3.7.5 Traffic**

Traffic study data is used to support a number of technical areas when developing the project scope and definition. Accurate traffic data is necessary for:

- Forecasting demand
- Noise studies
- Air quality studies
- Intersection channelization
- Lane configuration determination
- Pavement designs
- Design guidelines based on tabulated traffic data values
- Effectiveness of operational elements of the project (such as loop detection systems, video cameras, location and size of variable message signs, etc.)
- Maintenance of traffic during construction

DOT&PF will perform some of the tasks described as part of the environmental process or allocate them to the design-builder. In either case, a baseline of data is necessary to set project parameters as described by the conceptual design or in the design criteria.

In addition to the environmental and design processes, the construction phase of the project relies on traffic data to determine appropriate means of traffic staging and control. This is typically an important concept to describe in the proposals. Define the necessary

parameters to establish the appropriate and/or acceptable means of maintaining traffic in the design criteria of the Scope of Work or the Special Provisions.

### **3.7.6 Noise**

The NEPA process may require a noise study to describe project impacts and required mitigation measures. Acquiring environmental approvals is the Department's responsibility and determining the noise impacts of the project may be part of that process. Maintaining a balance between fulfilling regulatory requirements, allocating risk, and losing innovation benefits requires modification to the typical DOT&PF environmental process.

One means of accomplishing this balance involves using an assumed alignment, rather than a final alignment configuration, for the noise study and environmental applications. **Calculate the impact to receivers based on an assumed alignment and document the required mitigation based on the assumed parameters.** Prepare the Noise Technical Report, which documents the allowable impact to receivers, the analysis assumptions (including profiles and alignments), and the required mitigation measures to gain NEPA approval.

Development of the project concept should balance variations in the alignment, set by the roadway geometric design criteria, with effects on required mitigation measures. In the RFP, clearly define changes in the alignment that will require an adjustment to the prescribed mitigation measures. If significant variability is allowed in the design criteria, define the reapplication process and how the schedule and cost risk will be allocated.

Make the Department's noise analysis model available to design-builders in order to maintain consistency of design-builders' conceptual designs. In situations where the design-builders are allowed to deviate from DOT&PF's conceptual design, include the noise study as an attachment and provide scoring criteria during the RFP process to assist them in making design decisions.

### **3.7.7 Utility Relocations**

It is important to provide utility locations to the design-builder. Due to time constraints placed on the design-builder, it is likely that the design-builder will assume that all existing utilities are in good condition unless noted otherwise.

Utilities will already have an existing agreement with DOT&PF or a local agency. During the preliminary site investigation, determine the location and condition of all utilities. In preliminary design, identify any utilities that will be impacted and, whenever possible, relocate them prior to the design-builder beginning work.

If relocation must be done in conjunction with the design-build contract, give the design-builder responsibility for and control of the relocation itself, either directly or through the utility. Establishing a cost for potential coordination delays can impact the overall price of a contract.

If the preliminary agreement or MOU with a utility (public or private) requires modification as a result of the design-builder's final design, the risk and responsibility for this delay should rest with the design-builder.

In urban environments, consider a full subsurface utility investigation if the conditions of the existing facilities could potentially impact the project schedule.

### **3.7.8 Pavement Conditions**

It is important to provide the design-builder with pavement condition reports and the structural composition of the existing pavements if this information is available. Due to time constraints placed on the project, the design-builder will be inclined to assume that all existing pavements are in good condition unless noted otherwise.

Provide a full pavement report to the design-builder for all roadways within the project limits, including all shoulders or consider complete removal and replacement of the pavement.

### **3.7.9 Local Agencies**

DOT&PF is responsible to identify initial impacts to a community and to develop preliminary agreements regarding site access and mitigation requirements. If a design-builder's specific solution goes beyond the predicted impacts, the resulting communication and coordination rests with the design-builder.

When an improvement project has a direct impact on a local agency, establish all mitigation requirements and limitations between DOT&PF and the local agency prior to sending out the final RFP.

It is DOT&PF's responsibility to ensure that all local agency requirements and local standards are provided in the RFP.

### **3.7.10 Railroad**

Initial identification of any railroad impacts should be done during preliminary design. Since DOT&PF has a history with the railroads, DOT&PF should obtain all agreements or MOU's with them. Generally, railroads will be under no obligation to coordinate with the design-builder directly.

The design-builder is responsible for coordinating with the railroads during construction of the project.

### **3.7.11 Third Party / Adjacent Property Owners**

While DOT&PF is in a contractual relationship with the design-builder, third parties and adjacent property owners will expect direct communication with DOT&PF. If a third party benefit is requested (local developer, local agency), set up the agreement and establish the performance criteria prior to the RFP, if possible.

### **3.7.12 Community Relations**

Initially, community relations may appear to be a design-builder responsibility. However, the public will hold DOT&PF accountable for the success or failure of all portions of the project. The design-builder will be required to provide information, support, and personnel toward the community relations effort, and may take the lead in these communications, but DOT&PF must ultimately be accountable to the public for the success of a project.

## **3.8. Project Design Elements**

Project design elements are defined by the Scope of Work and project-specific technical components. The level of development of a design element depends on where the element falls within the project risk matrix. Challenge each decision to perform analysis and design prior to authorizing the project team to do it.

Design elements that need to be addressed include, but are not limited to:

- Determine the Design Matrix requirements and define them for the design-builder.
- Complete the Conceptual Design documents based on specific project needs.

- Set Level of Service (LOS) requirements and determine how they will be measured.
- List roadside elements to be brought up to current standards in accordance with the Design Matrices.
- Describe channelization requirements or perform analyses and provide results to the design-builder.
- Establish criteria for signalization.
- Establish criteria for weaving analysis.
- Determine design speed on a rehabilitation project, including corresponding required deviations.
- Set rehabilitation criteria. For example, on pavement rehabilitation provide clear, measurable performance criteria against which the final project will be measured. Whenever possible, avoid subjective criteria.

### 3.9. Environmental

Project permits present another project delivery hurdle. Even after receiving official approval of the environmental document, it is necessary to obtain a variety of permits for project impacts and construction activities. Some statutes, such as the Shoreline Management Act and the Clean Water Act, specifically define the party responsible for obtaining permits. Some refer to the “operator” as being responsible. For example, regional air quality regulations refer to the operator as the responsible party, and under the design-bid-build process, the contractor has been interpreted to be the operator. In design-build the contractor can also be characterized as the operator. However, some statutes refer to the “owner” as the responsible party. The owner is DOT&PF. In these cases, DOT&PF is responsible for a violation even if the design-builder or its employees actually caused a violation. The DOT&PF *Standard Specifications* require the contractor to indemnify DOT&PF for any fines imposed on DOT&PF for violations caused by the design-builder. These provisions require that the design-builder be responsible for compliance with all permits and environmental regulations.

When DOT&PF is required to be a permit applicant for elements of work controlled by the design-builder, require the design-builder to generate the required permit applications for DOT&PF’s review and processing. However, the overall responsibility for

these impacts and timeline should rest with the design-builder whenever possible, 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, DOT&PF should provide a guaranteed schedule to obtain a given permit.

In addition to data collection for specific design elements, a minimum level of development is required in support of the environmental process to provide a complete description of the final project, using conceptual designs if needed. Some of these elements are not available until the design is at or near completion and, therefore, will not be available prior to advertising the RFP. In place of submitting a completed design or study to obtain the environmental approvals, provide a description of the design criteria that define the contract requirements in the Scope Of Work of the RFP that the design-builder has to meet. For example, to meet NOAA Fisheries requirements for mitigation, describe the drainage criteria required for mitigation in the Biological Assessment in lieu of developing a full Storm Water Site Plan.

#### 3.9.1 Conduct NEPA Processes

The NEPA process requires definition of major project features. In the design-bid-build process, the Department conducts the studies, prepares the documents, and applies for the appropriate clearances. This ensures that the clearances are received and general mitigation requirements are known before the project proceeds. **The role of the Department does not change when using the design-build delivery method.** FHWA has defined the approval of the environmental document (EA/EIS) to be the formal approval for design-build.

#### 3.9.2 Hydraulic Project Approvals

#### 3.9.3 Corps of Engineers 404 permit

#### 3.9.4 Department of Ecology Water Quality 401 permit

#### 3.9.5 Shoreline Permits

### 3.10. Schedule Analysis

In order to manage the project development process, develop a preliminary schedule and update it continuously. An accurate schedule will help provide a clear understanding of how various components of the project are likely to interact with each other.

### **3.11. Funding Analysis**

As the project progresses, a full funding analysis is required. This funding analysis utilizes information developed in the schedule analysis, as well as preliminary design elements, to estimate probable funding expenditures. Program Management needs this information to ensure that adequate funding resources are available for the life of the project.

### **3.12. Conduct Public Involvement Process**

Design-build does not reduce the need for a comprehensive public involvement process. All public involvement and public notification currently required by the Department and existing statutes are still required under design-build. The required involvement, timing, and supportive design detail is dependent upon the project type and location rather than the process.

The project team should undertake an aggressive public outreach program to establish performance criteria for a project. The Department owns the risk of public acceptance and cannot reasonably pass this on to the design-builder.

#### **3.12.1 Public Information**

Maintain public communication for the duration of the project in order to maintain DOT&PF's role as a good neighbor. The public will recognize that all work on the project is controlled by DOT&PF and as such DOT&PF needs to provide accurate and timely public information.

The design-builder knows the scheduling of traffic staging impacts and day-to-day changes in the project and has direct control over them. The DOT&PF project team can tap into this expertise by requiring information, support, personnel, information web site, etc. However, the ultimate responsibility for public information rests with DOT&PF.

### **3.13. Materials (Product Warranty)**

The DOT&PF Materials Section will provide the quality requirements for project materials to the project team. Material quality can be defined through prescriptive specifications, performance-based design criteria, QC/QA requirements, use of the Qualified Products List (QPL), and/or product warranties. Use of warranties on constructed products, such as pavements, requires significantly more consideration.

### **3.14. Agreements**

Third party impacts to a project are unpredictable and thus pose a risk to whoever is responsible. Identify all third parties associated with project issues and contact them early to determine what effect they may have on the execution of the contract and the final project.

DOT&PF should execute project MOUs that outline the relationship of the DOT, third party and the Design Builder. The Design Builder shall work within the MOU guidelines to develop design and cost proposals and a work specific agreement.

Have agreements or MOU's with railroads in place prior to release of the RFP.

Utility impacts are a part of almost every project. Identify all utilities with potential impacts and list them in the contract provisions. Initiate discussions with utility companies that have significant impacts to determine specific utility constraints.

### **3.15. The Final Decision to Use Design-Build**

The final decision to use design-build contracting on a project occurs after the following areas have been investigated and documented:

- Perform a thorough analysis of the Risk Matrix to determine whether risk elements assigned to the design-builder can be properly developed prior to issuance of the RFP. This will be used to determine how far the preliminary design has to be carried (to address owner-held risk elements) before the RFP is released.
- Identify the desired outcomes for using design build (innovation, traffic control challenges, project time, etc.).
- Identify potential benefits to be gained from design-build contracting. List the most important benefits first and provide further detail.

This information will be presented to the Chief Contracts Officer who will make the final decision to proceed with a design-build contract for the selected project.

Base the final decision to utilize design-build on a balance of the anticipated benefits and the allocated risks. If a particular risk element requires either a very high level of design or is so variable that the design-builder must provide a large monetary bid, design-

build may not be suitable. An inadequately defined risk element is unacceptable.

After the final decision to proceed with a design-build project, continue with risk evaluation and fatal flaw analyses throughout project development.

### **3.16. Value Engineering**

Department policy requires that all projects with an estimated value equal to or greater than \$4 million be considered for a value engineering study. For those projects that meet the criteria, it is necessary to document the decision to use or not use value engineering in the project file. If a project is chosen for a value engineering study, consult the regional value engineering coordinator. The Department's policy and procedure for value engineering is found in DPOL 05.01.030. Value engineering analysis is required for all projects on the NHS with an estimated total cost of \$25 million or more per 23 USC 106(g).

FHWA's position on Value Engineering for Design Build projects appears in **CFR Sec. 627.5 General principles and procedures:**

In the case of a Federal-aid design-build project meeting the project criteria in 23 CFR 627.1(a), the State Transportation Departments shall fulfill the value engineering analysis requirement by performing a value engineering analysis prior to the release of the Request for Proposals document. The procedures for a value engineering study should follow those outlined in 23 CFR 627.5.



## 4. Developing a Design-Build Contract Document

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- 4.1. Introduction
- 4.2. Special Staff Needs
- 4.3. Prepare RFQ
- 4.4. Formulate RFP Package
- 4.5. Publish and Review Documents
- 4.6. Response to RFIs

### 4.1. Introduction

The Request for Qualifications (RFQ) and Request for Proposals (RFP) Packages are two separate documents created to conduct the solicitation process and then make the final selection of the Design-Builder.

The components of the RFQ and the RFP Package are based on the Department's standard bid proposal documents, with some significant differences. The RFQ [see Appendix C: RFQ](#) will focus exclusively on the design-builder's understanding of the project and qualifications. The RFP Package is comprised of the defined Contract Provision components ([see Appendix G: Revisions to the Standard Specifications Section 101, Definitions and Terms](#)) as well as the selection process requirements and criteria. The RFP Package describes the project, the requirements for submitting Final Proposals, the selection process, the technical requirements for designing and constructing the project, and the contract terms.

The Contract Provisions form the basis for delivery of the project by the Design-Builder. The RFP Package ([see Appendix E: RFP](#)) is used throughout the solicitation process. At the time of contract award, the relevant components of the RFP Package and the winning Final Proposals are combined to form the Contract Provisions. The Project Team efforts in developing a design-build project are specifically related to developing adequate performance criteria. Establish, through narrative descriptions, conceptual drawings, design criteria, and performance based specifications, exactly what it is the Department wants the project to accomplish. The ideal design-build project would define end result criteria which, when met, would meet all of the owner's desired criteria while refraining from providing prescriptive measures on how to obtain this end.

The RFQ and RFP Packages contain a number of inter-related documents that completely describe the project, the technical requirements for designing and

constructing the project, the methods for selecting the Design-Builder, and the means to administer the contract. The various components are combined into a document resembling DOT&PF's current bid proposal package.

### 4.2. Special Staff Needs

#### 4.2.1 Advisory and Review Staff

The Project Team and technical staff will be supplemented during the development of the RFP Package with additional advisory, review, and Evaluation Team staff. **Solicit the involvement of the additional staff to address specialized technical, administrative, and legal issues** related to assembling a cohesive and non-conflicting RFQ and RFP package. Use Regional, Headquarters, and Attorney General staff, among others, to provide the required expertise in legal issues, contracts, QC/QA, construction administration, and document production.

The Evaluation Team, described below, will also perform reviews of the developing RFP Package. The Evaluation Team is responsible to use the selection and evaluation criteria and score the Statement of Qualifications (SOQs) and Final Proposals. Their review and interpretation of the criteria are important to gain an understanding of how the criteria will be used in the selection process.

#### 4.2.2 Evaluation Team Description

This section describes a generic evaluation team that is intended to be comprehensive for any design-build project. Use the descriptions as a framework to tailor the appropriate components to each specific project. The team size and make-up are flexible and dependent on project size, type and complexity. A schematic diagram of the Evaluation Team organization can be found in [Appendix B, \(Evaluation Team Chart\)](#).

The Evaluation Team includes all individuals who will be involved in the evaluation of either the SOQ or the Final Proposal. Specifically tailor the structure and composition of the Evaluation Team to fit the evaluation criteria in each RFQ and RFP. Different team members will participate at different times and to different degrees, but the Proposal Evaluation Board will be involved in all decisions. All team appointments should be made well in advance of RFP

completion, so team members may contribute to and understand the selection criteria.

The Evaluation Team consists primarily of DOT&PF staff. However, participants from other stakeholders or agencies (contractors, consultants, FHWA, local and permitting agencies) may be appropriate and beneficial and should be considered on a project-specific basis.

The SOQ evaluation is accomplished primarily by the Proposal Evaluation Board (PEB), and additional individuals the PEB determines necessary to evaluate the SOQs.

Following is a description of the Evaluation Team constituents and a recommendation for their participation. Actual appointments should be based on the RFP criteria to determine necessary coverage for the areas to be evaluated.

#### **Evaluation Process Manager**

The Evaluation Process Manager is responsible for logistics and flow of the evaluation process for both the SOQ and the Final Proposal. This includes participating in training of all other evaluation team members, getting appropriate copies of information to all who need to see it, gathering information and assembling it for forwarding to the next phase, keeping all parties apprised of progress, changes, etc. The Evaluation Process Manager may be the Project Manager or another project team member. The Evaluation Process Manager is key to the success of the evaluation process, and should be designated early in order to be involved in discussions of process and criteria.

#### **Selection Official (SO)**

The SO, or his delegate, should have DOT&PF authority over both project development and construction where the proposed project is located. In most Regions, this is likely the Regional Director. As both design and construction are present in the submittals, this official must oversee and have authority over both areas.

The role of the SO is to oversee formulation of the team, appoint responsible and qualified personnel to manage the process, officiate over any evaluation team disputes, and make the final selection. The Selection Official's decisions are based on the recommendations of the Proposal Evaluation Board (PEB).

#### **Proposal Evaluation Board (PEB)**

The PEB is comprised of upper-level management in Design and Construction in the Region and the Project Manager. The responsibilities of the PEB include evaluating and scoring the SOQs for initial shortlisting.

As the last stage of Final Proposal evaluation, the PEB will review the recommendation of the Technical Evaluation Board (TEB). They will have the authority to concur with the recommendation or change it. The determination of the highest scored Design-Builder is then passed to the Selection Official with a written report on the selection process and results.

#### **Technical Evaluation Board (TEB)**

The TEB is nominated by the Project Manager, and appointed by the Regional Director or other appropriate individual. The first major TEB role is to assess (and change if deemed appropriate) the raw score recommendations of each of the Technical Experts. Reasons for any changes in recommended scores are to be discussed with Technical Experts, and documented in writing.

The second major role of the TEB is to evaluate the Technical Proposals in the following major factor areas:

- Management and Organizational Qualifications
- Project work Plan and Schedule
- Technical Solutions (overall)

The entire TEB should debate and agree by consensus on a score for each of the three major subfactor areas above.

The membership of the TEB should consist of the following positions or their equivalent:

- Design Group Chief, Engineering Manager, or Review Engineer, as appropriate
- Construction Group Chief, Regional Construction Engineer, or other as appropriate
- The Regional Maintenance Chief or representative from M&O
- Federal Highway Administration Transportation and Environmental Engineer

- Representatives from contractors, consulting firms, local governments or interest groups if deemed desirable and necessary

### Technical Expertise Advisors or Teams

The role of these advisors or teams will be to provide recommended raw scores for relevant technical areas, and to provide expert technical advice as requested by the Technical Evaluation Board. Each design-build project will have unique subfactors that will influence final technical scores (e.g. bridge construction); in addition, there are some subfactors that are common to most projects (traffic, staging). These advisors can provide input into the technical merits of each Final Proposal.

### Preparation and Training

Require each person assigned a role in the evaluation process to attend a training session. It is important for everyone involved to understand how a design-build contract works.

Many of the participants will not be familiar with a Design-Build scenario. It should be stressed to all that a design-build project is a binding contract. Headquarters has developed a design-build training curriculum that may be provided to all participants prior to beginning the selection process.

The training will educate participants on their roles and responsibilities as evaluators. Develop specific instructions for each phase of the evaluation, and provide them to Evaluation Team members. Present and discuss the selection criteria developed by the Project Team so that the interpretation of the criteria is clear and consistent among all evaluators. Hold separate training sessions for SOQ and Final Proposal evaluations. Training should be conducted no later than 1 week before evaluation. Evaluation criteria for the projects should be reviewed and agreed upon by the evaluators before the criteria is sent out with the RFQ and Draft RFP. During the training the primary risk elements should be discussed as well as how the project team has allocated and attempted to mitigate the risk. This information will be important to fully understand during the review of the Final Proposals.

### Commitment to timelines

One of the primary reasons for committing to a design-build project is an accelerated delivery of the final product. DOT&PF team members should be aware that time is of the essence and strive to expedite all DOT&PF activities which are on the critical path.

Design-Build Teams will be created during DOT&PF's preparation of the RFQ and RFP. One of the ways the Design-Build Teams can gauge how sophisticated the ownership team is, will be on how closely the deadlines are tracked and set. If DOT&PF requires Herculean effort on the design-builder's part to develop and submit RFQs and RFPs but takes excessive time to prepare and evaluate then the wrong message could be sent. Aggressive, but realistic timelines should be set for the entire selection process.

### 4.3. Prepare RFQ

The Request for Qualifications (RFQ) is used in the qualification step of the two-step selection process. The RFQ asks interested proposing teams (Proposers) to submit a well defined package outlining historical information related to capabilities, experience and past performance on specific issues pertinent to the design-build project, project team organization, key project team members, QC/QA approach, individual and team history and current safety record. A generic RFQ can be found in [Appendix C \(RFQ\)](#). The goal of the RFQ is to select the three to five top-ranked Proposers based on their experience in specific areas that are important for the project and their understanding of the project. These short-listed Proposers will be requested to compete in the second step of the selection process by preparing a Final Proposal. It should be noted that increasing the number of short listed firms above three might not be in the best interest of the public. The cost to a design-builder of preparing a Final Proposal is extremely high and increasing the number of short listed firms beyond the minimum might cause some teams to back out of the final selection process. Unless the submitted RFQ's are likely to produce significantly different final results the number of firms shortlisted should be minimized.

Evaluators will use the understanding section to determine if the Proposer knows enough about the project to address the significant concerns and issues. Formulating a response to the requirements of the understanding section will require research by the Proposer. Depending on the requirements, this could be a significant effort. Consider the cost of preparing the Proposer's Statement of Qualifications (SOQ) when drafting the requirements. **Evaluate the questions to ensure responses will be useful in selecting a short list of proposers, and not just interesting to the evaluators.** Weigh the cost of responding in the evaluation. An "approach" section

should not be included in the RFQ. Any solutions offered in the RFQ will not likely be fully investigated and will not be guaranteed due to the amount of design related work that would be required to adequately address this topic. The approach to the project is addressed in the Final Proposal and is supported by the specific required submittals.

To keep a level playing field a uniform RFQ should be rigidly defined by DOT&PF. The maximum number of pages, font size, and submittal layout should all be tightly defined. To prevent the potential teams from having to guess at DOT&PF priorities the scoring criteria should also be available to the public. Structure the RFQ to request information about a Proposer's experience that can be evaluated in an objective manner. Request information about key team members and for individuals filling specific roles. This allows the Proposers to demonstrate their teams' strengths and permits DOT&PF to determine which of the teams are qualified for the project. However, in defining the required experience of key members avoid requiring more experience than is absolutely necessary. Requiring more experience than is necessary will not necessarily give you a better product but could greatly reduce the number of individuals available for a project. This type of request breakdown also allows Proposers to indicate the personnel who will be assigned to the project, some of whom may be very experienced in the industry but new to a firm. The Proposer's key individuals named in the SOQ cannot be substituted without written consent by DOT&PF.

To help ensure that all necessary information is included in the SOQ it is necessary that DOT&PF include the evaluation criteria in the RFQ. This criteria should be specific enough to ensure that it is clear to all involved what the design-builder's required technical expertise/values are for a given project. A clear, well defined RFQ will help to ensure that the most qualified design/builders are selected to prepare the Final Proposals.

The selection criteria used to evaluate the SOQ must be related to the important aspects of the project, be clearly stated, and be measurable. It is best to request information that is a matter of record and available to the public. Usually this means that the experience is associated with projects that have already been completed by members of the Proposer's team. Proposal Team experience should be tied to the key individuals, rather than corporate history. Any

requirement for experience should include a performance element. Many of the Proposer's will list out of state work history. By providing a standardized reference form the Proposer's can be required to have owners of completed projects fill out the reference forms. This places the responsibility of delivering a timely response onto the Proposer and also helps to ensure timely, accurate reference information. *The RFQ should define the ideal type of experience needed to obtain the maximum score, with a step-wise lowering of points for lesser experience.* If a financial statement is desired by DOT&PF then it should clearly define what would be acceptable.

- The selection criteria contained in the generic RFQ focuses on specialized capabilities required by the project. The individual criteria are weighted according to their relative importance to the successful completion of the project. Some of the criteria used, among others, are listed below. The actual criteria selected for use on a particular project should be applicable to the project and the Proposer's ability to perform the work. With this in mind, it is also important to avoid criteria that are so restrictive that few, if any Proposers can meet the minimum requirements. Consider the following type of qualifiers when reviewing the RFQ requirements:
- Experience in the execution of fast-track projects
- Individual experience of team members with Design-Build contracting
- Corporate experience with Design-Build contracting
- History of the proposed team working together
- Specialized design capability for the key project elements
- Specialized construction capability for the key project elements
- Experience with complex construction staging, traffic control, site conditions
- Safety record
- Staff available (Project Manager, Design Manager, Construction Superintendent, etc.)
- Quality performance
- QA/QC organization

- Bonding record or proof of bonding ability
- Past performance on awarded contracts (completion, liquidated damages, quality, claims, fines, schedule)
- Financial capacity
- Experience with formal partnering activities
- Experience in similar types of work.
- History of performance (unsubstantiated claims, fines, suits, quality, accuracy, schedule)
- Understanding local environment
- Resource capacity and availability
- Scheduling and control systems to track and manage project
- Specialized expertise that reduces risk and assures quality of work

The scoring of the SOQ is done by the Proposal Evaluation Board (PEB). This team should contain individuals experienced in a broad array of areas of project delivery. A prepared scoring criteria, with the ideal design-build team should be provided to the PEB. As the PEB will be from various areas within the Department scoring the submittals together will provide the best opportunity for sharing of expertise. This team approach can also help reduce the required time for outside research.

To help ensure that all elements are consistently scored it may be appropriate to have assigned areas for scoring. If an individual on the PEB has no past experience with QA/QC then they may not be the appropriate one to score the section. By allocating the areas of responsibility, and working as a team in scoring, the PEB can ensure that all SOQs are scored consistently.

#### 4.4. Formulation of RFP Package

Formulation of the RFP Package is a significant effort that should not be overlooked in project scheduling, or underestimated. **This is the portion of the contract in which DOT&PF has the opportunity to properly define the desired outcome.** Team members need to ensure that the required information is incorporated. This Guidebook section describes special staff needs, necessary document reviews, and recommendations on developing the major components. Commentaries

for developing the individual sections of the Scope of Work, Revisions to the Standard Specifications, and Special Provisions from the generic documents are contained in the appendices.

The **RFP Package** components, in the order they are assembled, include:

- The **Proposal General Requirements** detail how the Proposers will respond to the RFP and formulate the Final Proposal. A generic version of this component is shown in **Appendix D** and will require modification for use in a specific project. The symbol “\$\$\$?\$\$\$” is used to delineate where project data must be entered.
- The **Technical Proposal Contents and Evaluation Criteria** describes the specific contents of the Final Proposal and how each of the requested details will be evaluated. A generic version of this component is shown in **Appendix E**. The criteria are presented as an example and are considered the type of information that will be required on all design-build projects. Some minor project specific modification is expected for special technical areas. The symbol “\$\$\$?\$\$\$” is used to delineate where project data must be entered.
- The **Scope of Work** contains the **Project Description** and other technical criteria for doing the design and construction related work. The technical criteria provide definition of required design criteria, references and methodologies, contract administration, QC/QA, construction maintenance, and product warranties. A Commentary and generic Scope of Work are contained in **Appendix F**.
- The **Revisions to the Standard Specifications (Revisions)** are similar to the Standard Specification but written specifically for design-build contracting. Combined with the Special Provisions they describe the necessary changes to the Standard Specifications for Division 1. The Revisions are expected to be relevant to all design-build projects. A generic version is contained in **Appendix G**. The symbol “\$\$\$?\$\$\$” is used to delineate where project data must be entered. Modifications to this section require the approval of either headquarters Specifications Engineer or the HQ Design/Build Engineer.

The **Special Provisions** are modifications to the Standard Specifications Division 1 that are project specific. Place any modifications to Divisions 2 through 9, if any, in this component. Any specific provision of the Standard Specification may be modified by either the Revisions or the Special Provisions, but not both. A version is contained in **Appendix H**. The symbol “\$\$\$\$” is used to delineate where project data must be entered.

- The **Risk/Responsibility Allocation Chart** is a summary document that graphically delineates the allocation of risk and responsibility between the Department and the Design-Builder for many project issues. The Risk/Responsibility Chart is intended to be a tool used to simplify the description of who is responsible for each portion of the work/risk. A generic version is contained in **Chapter 3**.
- **Project Specific Reference Materials** defined in the Scope of Work and included in the RFP Package to define project requirements or provide gathered data. Types of references materials may include: maps, traffic forecasts, technical reports, design details, and environmental documentation.
- **Typical Bid Proposal Documents** (Bid Documents, Bonding Requirements, Contract Form, Prevailing Wage Information, and Federal Aid Provisions) are also attached to demonstrate what the final contract provisions will entail.

The RFP Package is a document made up of several components created to conduct the solicitation process and then final selection of the Design-Builder

The remainder of this section provides descriptions and recommendations for the development of those components that require a significant effort. The discussions are also complemented by commentaries contained in the related appendix. The components listed above that do not have a corresponding section only require editing for minor project information that does not require explanation.

The RFP Package provides a significant amount of detail about the project and the Department’s expected outcomes. Its primary purpose is to outline the desired outcomes and specific requirements for the project as well as specific information requirements for the Design/Builder’s Final Proposal regarding their technical approach to executing the project and their proposed cost to do so. Request information

regarding specific design and construction actions, intended final products, construction staging, traffic control, and project management. In addition, consider requesting descriptions or design development of specific project elements to a specified level, to demonstrate the intent of the Design-Builder. Other items, such as safety plans, and public information plans, may be outlined in the proposal and submitted after contract award.

#### **4.4.1 Proposal General Requirements**

The Proposal General Requirements section of the RFP Package contains process and procedure information related specifically to the selection process. This section is complementary to **Standard Specifications Section 102**, Bid Procedures and Conditions, Revisions to the Standard Specifications, and Special Provisions. Instead of burying information specifically related to submitting a proposal deep inside the Contract Provisions, this supplemental information has been placed at the front of the document. Proposers must meet the requirements as stipulated in all four locations. Although this may seem confusing, it is consistent with the typical process of specifying proposal conditions in the design-bid-build process. A generic Proposal General Requirements is contained in **Appendix D (Proposal General Requirements)**

A brief project description, summary selection process, and detailed instructions of what must be submitted are included in this section.

DOT&PF may pay a stipend to all design/build teams submitting a responsive, non-successful Final Proposal. The cost of preparing a responsive Final Proposal can be prohibitive and an incentive is considered an appropriate way for the owner to pay for a portion of the development cost. The value of the stipend is typically in the range of 0.01 percent of the project’s construction cost for very large projects to 0.2 percent of the project’s construction for smaller projects. In no case is this amount large enough to compensate the competing teams for the cost of participating in the overall selection process and preparing a technical and cost proposal. In determining the actual stipend amount for a project consider the following.

The operating structures and overhead systems for most contractors and design firms have evolved in response to the requirements of the typical design-bid-build process. What these companies do, how they do

it, and how they account will be well established. The design-build selection process brings a new set of rules that guide the selection and contracting processes. Since design-build has been used on only a small percentage of transportation projects, the contractors and designers have not evolved new structures and systems unique to this delivery method. Instead, they use their existing systems in new ways that result in costs that are outside their normal experience.

In design-bid-build, design firms typically receive a fee of 6 to 10 percent of construction costs for design services. The cost of proposing, interviewing and contracting design projects typically average 3 to 7 percent of the value of the design contract.

The amount contractors spend on business development efforts varies with the complexity of the project and the emphasis they place on innovative ways of accomplishing the work. The cost of preparing a bid could range from 0.1 percent to 1.0 percent of construction cost.

However, a design-build selection process usually requires a more complex statement of qualifications document and a more complex proposal document. While the contractor is usually the prime, the design firm usually is better equipped to prepare the documents. This can easily add 20-50 percent to the cost of a typical process.

A design-build proposal usually requires that some minimum amount of engineering work be performed to demonstrate the approach to the project and to develop enough information to prepare a construction price. Typical owner development may average in the range of a 10-30 percent design, however, it is not unusual for the Proposers to advance the design at

least 5 percent to get sufficient information on which to base a good price. In this case, that cost would be 5 percent of \$1.2 million, or about \$60,000.

In addition, because it is a competitive selection process, the contractor may want to develop other aspects of a design to evaluate ways to deliver the project more efficiently using different means, methods or materials. The designer would provide designs and analyses to support the contractor's alternative ideas. This can easily result in the equivalence of a 5-10 percent design effort.

The additional costs fall into two categories:

1. Additional efforts required by the design-build selection process
2. Efforts related to Proposer innovation efforts attempting to produce a higher technical score and/or a lower proposal price

The second category is part of the business deal between the contractor entity and the designer entity and is often a basis for agreement regarding cost and profit sharing.

The first category is the focus of the stipend. These additional costs created for the design-build team are a direct result of the requirements associated with the selection process and documents. In this case, these costs would total \$80,000. This is about 0.5 percent of the construction cost of the project. Other projects, with different size and complexity, could require more or less effort. The historical ranges of stipends have a wide variance, but typically fall between 0.02 percent to 0.2 percent. The following table summarizes a sampling of stipend amounts used in other DOT's:

State	Project	Estimated Project Cost	Stipend	Percent
Arizona	I-17 Cordes Junction			0.20 percent
Florida	St. Georges Bridge	\$81,116,000	\$50,000	0.06 percent
Maine	Bath-Woolwich Bridge	\$74,000,000	\$60,000	0.08 percent
Utah	I-15	\$1,500,000,000	\$950,000	0.06 percent
Washington	I-5, 36th St	\$14,000,000	\$30,000	0.21 percent
	SR 500/Thurston Way	\$21,000,000	\$50,000	0.24 percent

DOT&PF's Design-Build process recognizes that offering a stipend is useful in attracting comprehensive proposals. When establishing a

project specific stipend, review the generic Proposal General Requirements and correct any project specific details as required. The generic document is

expected to be substantially complete and require little revision on future projects.

#### **4.4.2 Technical Proposal Contents and Evaluations Criteria**

The purpose of the RFP is to provide directions for Proposers to prepare a Final Proposal that describes their proposed approach to the technical aspects of the project and to present the associated price. A generic Technical Proposal Contents and Evaluations Criteria is contained in **Appendix E (Technical Proposal Contents and Evaluation Criteria)**. The generic document is expected to be substantially complete and should require little revision on future projects. Review the generic document and make any project specific modifications required. The evaluators must review the evaluation criteria of the RFP to determine if they can effectively score the proposals.

The evaluation process is intended to provide the Evaluation Team with a thorough understanding of the Proposer's approach to the project and to assess its value relative to the proposed price. The goal of this process is to determine which proposal provides the "best value" to DOT&PF. The technical component of the RFP should address specific project concerns the Department has about the project. The Technical Proposal will be evaluated and scored on how well it meets the Department's expectations for the project. Require the Proposers to prepare specific design concepts demonstrating their approach to the project. Depending on the requirements, Proposers may include narratives, sketches, drawings, charts, and graphs to support the description of their concepts. The level of detail required for any given component should be directly related to the importance (technical scoring) that DOT&PF is placing on the component. For example, if a bridge is required, but DOT&PF has little desire for anything beyond a standard approach, little detail should be required in the Final Proposal other than the type. If the same bridge had a high importance to DOT&PF due to outside agreements with a local agency, DOT&PF would be justified in asking for considerably more detail regarding the type of structure and the appearance. This interest should directly tie into the technical score.

The generic documents request specific management plans, schedules, concept drawings, approaches, and a draft QC/QA program. Since the proposal becomes

part of the contract documents, assurance of the requested document's validity is gained by requesting a submittal of critical information.

The Price Proposal represents the total project cost to the Department, as defined by the criteria specified in the RFP. The price includes design, construction, management, insurance, bonding, warranties, and maintenance agreements, all as specified in the Contract Provisions. Proposers may need to perform design and other project tasks to support the development of the price proposal. Depending on the project, this effort could be considerable.

The Department's goal in the defined selection process is to select a proposal that represents a "best value" to the Department. The highest scoring proposal may not be the lowest priced proposal. When preparing an RFP, the Department should have a clear vision of the desired outcome of the project. Allowing a design/builder to focus on the areas of greatest importance to DOT&PF will ultimately result in the best value project.

The best value approach to contract award selects the Final Proposal in which the combination of technical, quality, operating, and pricing factors most closely meet or exceeds the owner's requirements. This could result in a simple, straightforward solution with a relatively low cost, or a more complex solution with greater benefits but a higher cost, being selected. The lowest price proposal may not be the lowest cost solution to the owner when maintenance, operating, and replacement costs are considered. The highest price proposal, or intermediate proposals, may include technical innovations that the owner values very highly. *One of the most difficult parts of pricing and awarding a contract relates to establishing a method of evaluating the technical content and price of proposals in a way that accurately determines the "best value"*. A clear definition of quality, which could be based on more quantity, type of materials, higher strength, inconvenience to the public, component life, serviceability of the final product, etc. must be specified in advance.

It is not DOT&PF's desire to have design-builder's "guess" at how much value is being placed on an individual component. If a design-builder guesses incorrectly in preparing the Final Proposal, it is possible that the project selected would not be the

overall best value to the public but instead is the one that guessed the best.

Project staff should focus on the specific areas in which innovation or cost cutting is most desired when allocating the technical points. When specific information is required to score a Final Proposal DOT&PF is placing a heavy initial design burden on the design/build teams. This excessive effort and cost may not be appropriate at the level of design which the Final Proposal is at. It is acceptable to require certain technical components to simply meet the established contractual standards (pass/fail) rather than allocating points to each technical component. The end-product will still have to meet the requirements outlined within the RFP but the design-builders can avoid having to place inordinate number of hours advancing portions of the design to meet this effort.

Areas which will receive technical points will vary with each project. If a project's goal is to have minimum public impact due to construction traffic, then requiring clear, well defined work zone traffic control strategies/commitments is very appropriate. If a project is very rigidly defined due to outside commitments for geometrics, then requiring PS&E level details for geometrics would not be appropriate.

Theoretically, the means of achieving best value is to describe the acceptable or ideal qualification or quality of a product and the "value" of the ideal through an allocation of points. To allow variation in the proposed product the acceptable quality criteria must be stepped up and/or down a scale to acceptable extreme values. The approach presumes that the technical quality is directly proportional to the price. Scrutiny must be given to the breakdown of the technical scoring so that an equitable value is obtained from more or less quality. A disproportionate scoring system would skew the weight of the technical or the price components, resulting in false assessment of value. *Objective measurable means of determining quality are required that force the process to be repeatable.* Proposers as well as evaluators must be able to discern acceptable variations in price related to acceptable changes in quality. On projects with conceptual preliminary development and flexibility in the product performance criteria, completely objective evaluation criteria require significant efforts to derive. Performance based design criteria,

requiring a demonstration of success (capacity, smoothness, durability, etc.), is difficult to quantify in a proposal. It is very difficult to be specific in the evaluation criteria without having specific concepts in mind.

Using the definition of value as quality/price, the quality of each project component can be defined by the Contract Provisions while the price of each component is defined by the component-estimated cost. The Contract Provisions represent the minimum acceptable quality, the dividing line below which proposals are non-responsive. The evaluators provide the definition of best value with a defined range of points in determining if a specific product meets or exceeds the Contract Provision requirements. The criteria are not intended to be so prescriptive as to give explicit points for specific designs.

The breakdown of the points between the major and minor divisions of the Final Proposal will be based on a combination between the estimated cost to perform that portion of the work, the relative importance of that portion of the work, and the varying levels of performance regarding the element of work. For example, if all DOT&PF requires/wants at a given location is a widened bridge to accommodate an additional lane then the design will be very rigidly defined and DOT&PF would not desire any variation. In this instance, a relatively high cost element would have little variation in the Final Proposals and DOT&PF would potentially be better off making this performance element a "pass/fail" criterion. Another example may be the management structure for the project. This element has a relatively low cost to the project but DOT&PF would have a large interest in an experienced, well-organized management structure and would potentially have large differences in the Final Proposal. For this reason the management structure may have more technical points assigned to it to reflect the potential varying proposals and its relative importance to DOT&PF.

Assigning technical points to reflect what is important to DOT&PF and in what areas DOT&PF desires innovation/attention can be a very effective way of conveying the owner's values to the design/builders. However, care should be taken not to disproportionately overvalue an area of the proposal that could skew the results.

Grasping the concept of best value and developing a methodology to utilize it effectively is difficult. Be prepared to spend a significant effort with Project Team members defining the scoring distribution into each category, defining individual technical evaluation criteria, and establishing how the evaluators will select an appropriate “score” for each criterion. Produce the point breakdown for the overall distribution using the resources of a very small select group. The individual breakdown within each component, on a percentage basis, should be left to the technical Project Team member.

#### **4.4.3 Prepare Project Description**

The Project Description is a written summary of the Project Team’s definition of the project scope. It is placed at the beginning of the Scope of Work and in the RFQ as an overview of the project. Interested Proposers can read about the project details and determine if they are interested in proposing.

The Project Description is like an executive summary, and it functions as an index of the key requirements of the project. The description provides the who, what, when, where, and “how much” of the project. The actual “how” is determined by the Proposers in their proposals. Significant issues related to the project work will be mentioned here, but the actual requirements are described in the design criteria or specifications. The Project Description may be revised during the project development process to reflect changes in the project scope, arising from clarifications as the Department completes preliminary investigations.

**Write the Project Description early in the development of the project, after the project scope has been set but prior to preliminary work by the Project Team. It represents the mission statement for the Project Team.** The most important aspect of the Project Description is that it provides the vehicle to ensure that the Project Team understands the complete project and concurs with the expected products and intended outcomes. It provides a common basis for distribution of Project Team work tasks. It will continue to function as a focus point for the Project Team, evolving as the project evolves.

The Project Description should define the purpose of the project, its limits, unique conditions, design elements, physical components, schedule issues, and other items as necessary to fully describe the project.

Describe third party issues such as right-of-way acquisition, utility relocations, environmental mitigation, railroad facilities, and public information to provide the Proposers with a complete view of the Department’s expectations. Information contained in the Project Description is repeated in various places in the contract documents and other portions of the solicitation package. **Because of this, be sure to check the information regularly throughout the development of the solicitation documents to ensure continued accuracy and consistency.** Continuously updating the information contained in the Project Description during project development serves as a quality assurance mechanism for the Project Team. It also functions as a stand-alone administrative aid for communicating the progress of the project with the Project Team, Department administration, stakeholders and other interested parties.

The Project Description is a redundant source of information, providing a description of Department intent. It should not be used as the mechanism to communicate contract requirements to the Design-Builders. The requirements of the project are to be located in the Scope of Work, Revisions to the Standard Specifications, and Special Provisions. Even though the Project Description, in some form, may be attached to the RFQ and RFP Package, it is a weaker link than the Revisions to the Standard Specifications and would be more difficult to enforce as a contract requirement.

Another goal of the Project Description is to highlight important project issues that are critical to the success of the project because the intent of the project may not be totally apparent through the description of the technical requirements. By communicating the key issues, along with the Department’s expectations in narrative form, the Proposers can tailor their proposals to best meet the needs of the public and the Department.

**In generating the Project Description, highlight those project elements that have generated the most discussion among the Project Team.** These elements are most likely the key elements of the project and will also become the basis for establishing selection criteria for the RFQ and the RFP.

The Project Description typically contains the following subsections:

- General Overview and Funding Limit
- Project Purpose and Expectations
- Project Components and Limits
- Project Requirements and Constraints
- Expected Design Work
- Expected Construction Work
- Warranty or Maintenance Considerations

The General Overview subsection discusses the project location and pertinent existing site information. This section also describes the intent of the project, specifically the project's main features. Any work already completed by DOT&PF should be described in general terms in the text. The sections are self-explanatory and should be modified as needed to fully describe a particular project.

#### 4.4.4 Prepare Scope of Work

The primary goal in the development of the Scope of Work is to define, obtain, or develop all pertinent information required to describe performance-based criteria for the Design-Builder to use in designing and constructing the project features. Examples of items to consider include operational requirements, performance expectations, design standards, project limits, available budget, regulatory requirements, and schedule restrictions. Developing language that describes the requirements of a project feature is a different approach than creating design drawings and technical specifications.

The Scope of Work and Commentary are contained in [Appendix F](#). The documents are a good starting point for preparing a project specific document. However, developing a new technical area will require introducing the specific Project Team members to the concept of a Scope of Work and maintaining significant interaction. The level of effort to develop the Scope of Work is estimated to be equivalent to developing the Design File.

The Scope of Work provisions for design-build are significantly more detailed than a professional services contract provision for the same work. The design-build Scope of Work provisions lead directly to construction of the feature with no opportunity for Department refinement. **Emphasize the Department's role during design review and construction to the Project Team prior to their**

**review of the document.** Reviewing [Section 1000 and 1100](#) of the generic Scope of Work ([Appendix F](#)) is highly recommended. Significant changes in the design described in the Scope of Work, will likely lead to a contract change order.

The Scope of Work is tied by direct reference to existing DOT&PF manuals and other guidelines. A Scope of Work provision is supplemental to cited references, providing the specific criterion that is not present in them, or delineating specific choices that exist with the manuals. Project specific information typically contained in documents such as the Design File can be attached to the RFP Package or transferred directly into the relevant Scope of Work section. The scope of work language should convey the envisioned design sequences and the intended result. The goal is to ensure the design intent is covered without redundancy, conflict, or discrepancy. Using too many restrictions in specifying the design procedure may impact innovation or design flexibility. Project requirements from third-party partners also should be included.

Each project component to be designed and constructed by the Design-Builder must have a provision defining the requirements to do so. For a design-build contract, the project scope will involve all of the technical considerations required for any typical project. Development of a design-build Scope of Work varies from the design-bid-build process primarily in the timing of decisions and the attention given to details. Using resources such as the DOT&PF Standard Specifications, Special Provisions, and Bid Tabs from similar projects may help in identifying all of the scope items.

Prescriptively specified material or construction processes, where required, are outlined either by Scope of Work provisions or Special Provisions. However, in most cases, performance specifications will be more appropriate, as they tell the Design-Builder what is expected as an outcome, and not how to do the work. The performance specifications may address capacity, life span, toughness, ride quality, durability, appearance, conformance with standards, and other measurable features. Project requirements should be described completely and in a manner that will be easily interpreted and understood. The project requirements should also include how DOT&PF will measure whether they are met. *The Project Team should conduct adequate research and investigations to determine the project*

requirements and to document them in a clear and concise manner.

The Project Team decisions to be addressed in the Scope of Work development should be based on the risk matrix and primarily consist of:

1. What are the relevant items/products applicable to this project?
2. If the item/product is irrelevant, based on the Project Team's concept, are there factors or project concepts that could make it relevant? For example, certain permits are not applicable unless the Design-Builder's proposed delivery method requires work in the water.
3. If the item/product is allocated to the Design-Builder, what are the limits constraining the Design-Builder's decisions?

In addition to the engineered components of the project, there are also administrative and operational components of the design-build contract that are required of the Design-Builder to demonstrate project progress. Scope of Work Sections 1000, 1100, and 1200 (Appendix F) address administrative, QC/QA Program, and construction maintenance requirements of the project.

DOT&PF's involvement in the project as defined in Scope of Work Section 1000 and 1100 relate to design reviews and QC/QA. DOT&PF's primary role is to provide project oversight ensuring the proposed project is being designed and constructed according to the Contract Provisions. The Design-Builder creates a Quality Control Plan based on the Scope of Work provisions. DOT&PF will provide quality assurance and independent testing. Many actions by DOT&PF personnel during execution of the project do not change significantly with design-build contracting; however, their authority and responsibility may be quite different.

*Design-Builder personnel qualifications and minimum staff requirements are best placed in the RFQ.* Contract Provisions specify that the identified key personnel of the Proposers cannot be arbitrarily substituted. Requesting and evaluating the qualification requirements during the selection process draws the Department's attention to those types of issues at the time of Proposer selection. Inserting Design-Builder qualifications into the Scope of Work provisions will require field or design staff to discern whether qualified staff are

used. The Design-Builder and Department administrative staffs are concentrating on expedited performance of the project and certification of personnel may hinder that process.

Warranties will likely be required by DOT&PF for each Design-Build project. *The use of warranties provides a mechanism for reducing DOT&PF involvement in the design and construction of the project.* The warranty terms will be developed in concert with the ability of the industry to provide appropriate insurance or extend the bond at a reasonable cost. Warranty terms will be established for specific project components and based on the expected performance of that component. Elements subject to significant wear during the life of the project, such as pavements or bridge deck joints, are good candidates for consideration of a warranty. The warranty or maintenance contract should ensure that the product functions within the tolerances of the performance standard until the end of a stated warranty period. Product warranties presently requested for manufactured products under current design-bid-build contracting terms will also be requested under design-build contracting. Section 1300 (Appendix F) of the Scope of Work contains language for a pavement warranty. The Scope of Work provision in Section 400 (Appendix F) must be coordinated with the warranty provision in Section 1300 for compatibility.

#### **4.4.5 Prepare Revisions to the Standard Specification and Special Provisions**

A special version of the Standard Specifications has been created for Division 1 of the Standard Specifications to use with design-build contracting. To avoid confusion, they are given the title "Revisions to the Standard Specifications", (Revisions). A generic version is contained in Appendix G, (Revisions to the Standard Specifications for D-B) along with a Commentary. In addition, a generic version of Design-Build Special Provision is contained in Appendix H (Special Provisions) along with a Commentary. Prior to the RFP being finalized, the Revisions to the Standard Specifications for D-B must be reviewed and approved by the HQ Specifications Engineer.

The Revisions and Special Provisions are wholly complementary; not redundant or conflicting. No subsection has a corresponding subsection in the other component. The intent of having two

documents modifying the Standard Specifications is to emulate the current design-bid-build process. The Revisions are intended to contain universal changes that are relevant to all design-build projects while the Special Provisions are intended to be project specific.

The Revision/Special Provisions concept is used rather than a stand-alone contract due to dependency on the Standard Specifications of the DOT&PF guidelines, manuals, standards, technical specifications, and other contract forms. Revising the Standard Specifications allows all other references to remain valid. In an ongoing programmatic approach to design-build contracting, it is best to allow the design-build core documentation to evolve with the Department's design-bid-build core documentation. Project by project upgrading of the design-build Revisions and Special Provisions will be required, but that is expected to be far less laborious than re-writing a complete stand-alone contract for each design-build project. A provision-by-provision comparison of the Revisions and Special Provisions is required to identify the specific changes from the last design-build project. Update the generic documents after each successive design-build project to capture necessary modifications and improvements.

Enlist the expertise of a specification specialist, working with the technical team members to set the necessary requirements and perform the work involved in creating a project-specific Revisions and Special Provisions based on the generic documents. The generic documents have “\$\$\$?\$\$\$” embedded in places identified as needing specific input. The entire document will require word for word review to ensure the language is applicable for the project.

#### **4.4.6 Prepare Bid Tab**

For design-build projects, the bid schedule is comprised of a reasonable breakdown of the major work items on a lump sum basis. The breakdown could consist of a single item for the entire project. The Contract Provisions require that after award, the Design-Builder provide a Schedule of Values to break down the bid items into lists of scheduled work elements for project cost tracking, payments, and use in change order price adjustments. **Specify in Special Provision Section 1-09.9 (Appendix H) any specific breakdown requirements of the lump sum items in a Schedule of Values.** A sample list of elements has been included in the generic Special

Provisions. Consider the breakdown in the Special Provisions and ultimately provided by the Design-Builder carefully for unbalanced items. Check the Schedule of Values against the Cash Flow Schedule provided with the Proposers, and the project schedule for conformity. The Schedule of Values must be acceptable to the Department and is a negotiated effort with the Design-Builder.

In rehabilitation/preservation projects, where existing features are to be modified, the existing condition may not be known in enough detail to assign an accurate cost or price. Consider assigning a unit cost, against a pre-assigned estimated quantity for high-risk items, unknown to DOT&PF and the Design-Builder, to establish a basis for measuring and paying for the actual work. A description of the work, the basis for measurement and payment must be included in the Special Provisions.

#### **4.5. Publish and Review Documents**

The assembly and printing production of the RFP Package is a similar operation to the Department procedure to publish specifications. The package is organized as described in **Guidebook Section 5.2**. The RFP Package may have attachments that are in numerous electronic formats that will require hard copy transfer to the Contracts Section.

An understanding of the design-build process and project intent is required to provide meaningful review comments in a timely manner. The Project Team will communicate with Department experts in a number of areas in developing the RFP Package. The distribution list for the RFP Package should include the experts used to develop the package, Project Team, Design-Build Program Management, Evaluation Team, and other Regional Management.

#### **4.6. Response to RFIs**

A Proposer responding to criteria in the RFQ and RFP of a design-build project requires an understanding of the project to be successful. Project understanding can be derived from the data provided by the Department in the RFP, and if permitted, through interviewing DOT&PF individuals and groups who are involved in the project development. Theoretically, the score awarded to a Proposer is proportional to the information gained and reflected in the SOQ and Final Proposal. Proposers tend to start researching project understanding very early in

the life of the project. The Department typically should designate the Project Manager as the sole contact person for information requests by the Proposers and others interested in project information.

Prior to advertisement of the project, the project information that is released to interested parties should be consistent to all that inquire. A policy must be established early on how to respond to Requests For Information (RFIs) and what information will be made available. Website communication with stakeholders during project development and advertisement is an effective tool to provide available information and answers to frequently asked questions (FAQ's).

The process for responding to RFIs should become formal during the selection process. Define the formal process adopted in the RFQ and RFP Proposal General Requirements (see **RFQ Section 1.4, Appendix C**) and RFP Proposal General Requirements **Section 3.2 (Appendix D)**. The website could also be used during the selection process to post Proposer questions and Department responses as well as addendum.

The development of the design/builder's SOQ and Final Proposal are competitive in nature. Confidentiality during this process should be maintained whenever an RFI is directly tied to a design/builder's specific approach. When a contract interpretation is asked for or a potential error/conflict is noted, the information should be shared with all competitors.

## 5. Design-Builder Selection

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- 5.1. Introduction
- 5.2. Letter of Interest
- 5.3. Request for Qualifications
- 5.4. Evaluate Technical Proposals
- 5.5. Pre-Submittal Meetings
- 5.6. Oral Presentations
- 5.7. Open Price Proposal
- 5.8. Calculate Highest Score
- 5.9. Other Best Value Scoring
- 5.10. Award Contract
- 5.11. QA/QC Plan Review

### 5.1. Introduction

This section of the guidebook deals with the selection process as it progresses from the initial Letter of Interest until ultimately a Final Proposal is selected as the Best Value and the project is awarded.

#### Confidentiality and Security

It is important to understand that the evaluation and selection process is a competitive process. As such, DOT&PF has the authority and obligation to keep certain information confidential during the competitive process. This information will be made public at the end of the process.

Confidentiality of the proposal documents shall be governed by AS 36.30.230.

As both the RFQ and RFP selection processes are competitive in nature this confidentiality will apply to both selection processes. The Project Manager will be the point of contact for all outside correspondence in the same manner that they are in the design-bid-build advertisement phase. As some of the individuals involved with the evaluation process may not be familiar with contract administration this method of communication shall be made clear to everyone involved with the evaluation.

The Project Manager is reminded that the development of the Final Submittal does involve extensive design effort and will likely generate a larger number of Information/Clarification requests than a standard design-bid-build project. The internal procedures within the project office should be modified to reflect this increased staff requirement prior to advertisement.

### 5.2. Letter of Interest

When initially setting up a project the project team should consider requesting letters of interest from the industry. These letters are not binding but it can provide the team with an idea of what level of interest there is in the project.

The Letters of Interest will also let the industry know that DOT&PF has committed to the process and is continuing to work towards a Request for Qualification.

### 5.3. Request for Qualifications

#### 5.3.1 Project Advertisement

Publish an advertisement announcing the availability of the Request for Qualifications in much the same manner as typical bidding and professional service advertisement practices. The description used in the advertisement will be a combination of that used for professional service solicitation and contractor bid solicitation. Send RFQ packages to those requesting them and to DOT&PF's typical plan review centers.

*It is strongly suggested that a draft copy of the Request for Proposal be included with the RFQ package. Although not binding at this point, the RFP provides significantly more detail about the project and about the continuing selection process. It also provides contract language, bond and insurance requirements and other information of interest to Proposers. Making the draft RFP available provides Proposers an opportunity to review the documents and submit comments and/or concerns before it is finalized. This can greatly improve the acceptability of the Contract Provisions to all parties and result in a better project.*

#### 5.3.2 Pre-SOQ Submittal Meeting

The value of having a pre-submittal meeting should be evaluated for each project. The purpose of the meeting is to discuss the intent of the Design-Build contract and provide details of the project. The selection process, contract terms, and expected outcomes should be discussed, as well as project specific questions, both administrative and technical. Since the solicitation will contain the RFQ and draft RFP, questions could arise that will require modification to the RFP package. These changes would be

incorporated into the final publication of the RFP rather than a number of addenda.

The pre-submittal meeting should be held no sooner than 2 weeks after advertisement of the project and no later than 2 weeks prior to the SOQ submittal date.

### **5.3.3 Evaluate SOQ and Shortlist**

The evaluation process requires tight control by the Selection Official (SO). The following process and recommended times should be used as a framework to design and manage the actual selection process. The times for this process (contained in parenthesis) are goals only. Actual commitments made to Proposers should be longer than these recommendations to accommodate the possibility of complicated analysis, a large number of SOQs received, or other factors that could affect the ability of the Evaluation Team to meet the commitment.

Upon receipt of the SOQs, the SO will make an initial determination as to whether the SOQ is responsive, using pass/fail and other criteria set up as part of the RFQ (complete on Day 1). **Use a checklist of items for determination of responsiveness.** The Proposal Evaluation Board will assess how well the evaluation criteria were met and score accordingly. In making this evaluation, they may call upon selected members of the Technical Evaluation Board as needed for input. The team should independently review each of the proposals during the first two days of their work (complete on Day 3). Following this independent review the team should discuss and agree by consensus on a final score for each SOQ (complete on Day 5). This will help to ensure that the broad expertise provided by the scoring team is fully utilized in scoring. It is also acceptable for a single member of the review board to do research for the entire group (consultant and contractor performance reviews). At any time during the process, the Proposal Evaluation Board may make a determination that a SOQ is non-responsive.

To ensure that scoring is consistent a specific outline of a point matrix should be constructed prior to the submittal of the SOQ packages. An ideal answer to each scoring section shall be provided to evaluators for each scoring section. This ideal answer shall be kept confidential until after the scoring is complete. As the Proposal Evaluation Board will be made up of individuals with varying backgrounds it is recommended that the group score the proposals together.

The Proposal Evaluation Board will then make a recommendation to the Selection Official of the top three to five Proposers to be asked to prepare a Final Proposal. The choice of three, four, or five Proposers is left to the PEB.

The development of a Final Proposal is prohibitively expensive for a design-builder. Even when stipends are provided by DOT&PF they do not fully cover the cost of submitting a proposal. When making the decision to expand the short-listed field beyond three DOT&PF is increasing the risk for all parties involved. Unless there is an opportunity for significantly different Final Proposals the PEB should limit the number of short-listed firms to three.

In cases where the PEB feels that more than three firms are required then concurrence from the Chief Contracts Officer is required.

The Selection Official may concur with the recommendation, or may ask the PEB to reevaluate if the SO feels the evaluation was flawed for any reason.

In cases where the number of qualified submittals is less than three, approval to proceed with an RFP advertisement will require concurrence from the Chief Contracts Officer.

All Proposers submitting SOQs will be notified of the results of the shortlist selection process not later than 30 calendar days from the date set for receipt of SOQs. (DOT&PF will strive to notify within 10 business days.)

The short-listed Proposers will be provided with a final RFP and asked to prepare Final Proposals for the Department's evaluation.

Evaluation team members will prepare the following written reports for the different phases of the evaluation:

- **SOQ Evaluation.** A narrative describing the process of evaluation, and reasons for scores on each criteria. These narratives also are used by the TEB in evaluation of the Final Proposals but may be augmented by additional information presented in the Final Proposals. These narratives become part of the permanent project selection record.
- **Technical Expert's Recommendations.** A 1-2 page narrative evaluation and reason for the raw score determination. These narratives are used by the Technical Evaluation Board in their review, and

also become part of the permanent project selection record.

- Technical Evaluation Board Report. A narrative documenting the process of their review and evaluation, and any changes to Technical Expert's scoring recommendations. This narrative is used by the Proposal Evaluation Board, and also becomes part of the permanent project selection record.
- Proposal Evaluation Board Report. A narrative documenting any changes to the Technical Evaluation Board scores or other considerations deemed necessary. This narrative becomes part of the permanent project selection record.

#### 5.4. Evaluate Technical Proposals

The evaluation of the Technical Proposal is the most important and significant exercise the Department will undertake in the design-build contracting process. The evaluation represents a design review. Selection of a proposal represents acceptance of the proposed design, equivalent to the "Design Approval" of the design-bid-build process. In addition, the Department is evaluating the proposed construction process. In the design-bid-build process, the review of the final plans is a rigorous exercise; evaluating the Technical Proposal is the equivalent step in the design-build process. The Technical Proposal will be reviewed for compliance with the contract requirements including the relevant codes and manuals.

The scoring begins with each Technical Expert reading relevant areas of the Technical Proposal individually to gain an understanding of the subject matter, then recording a recommended raw score for each area they are responsible for on the form provided. In addition to this raw score, each Technical Expert is required to prepare a 1-2 page written summary of their analysis. In the cases where two or more Technical Experts form a team, only one written summary is required. Simultaneous with this phase, all other Evaluation Team members will read all Technical Proposals individually, to gain a basic understanding of each proposal. This stage of evaluation should be completed in 2 days (day 3). The Technical Experts who determine the technical approach for a specific product does not meet the requirements of the Contract Provisions will recommend that the proposal is non-responsive and send their recommendation to the TEB for review.

Technical Experts then meet individually with the Technical Evaluation Board, for discussion of each technical area (Days 4 & 5). Oral presentations by Proposers, if held, will take place on the afternoon of Day 5, or morning of Day 6, or both. The TEB will by this time make an initial, individual, evaluation of the Management/Organizational Qualifications, and Project Work Plan/Schedule of each Technical Proposal. Through discussions the TEB and Technical Expert will arrive at a mutually agreeable raw score for each technical area. Pre-established weighting criteria and best professional judgment are used as needed in some areas. The TEB develops final scores for each technical area. The TEB has some latitude in either accepting the raw score offered by the Technical Expert, or adding other information, to arrive at the final determination. The weighted raw scores are combined using a pre-determined formula to arrive at a composite Technical Solutions score. This is the first major factor score.

#### **Develop a system or scale for use by the Technical Experts and TEB in determining the scoring.**

Establish a basis for the scoring such as the minimum acceptable score for meeting the requirements of the contract. *All evaluators must have the same system in mind to minimize scoring discrepancies.* It is recommended that evaluators use a non-numbered scale to judge each criterion with judgment positions identified. The positions could relate to aspects as simple as unacceptable (non-responsive), acceptable (meets criteria), exceptional (exceeds criteria). The TEB would use these scaled judgments to actually assign point values. The Technical Expert's concentration would be isolated to relative judgments rather than individual points.

The second role of the TEB is to agree upon a score for the other two major factor areas, namely:

- Management and Organizational
- Project Schedule

Scoring is accomplished by analysis of the entire proposal individually by each TEB member, (Days 2 & 3) presentation of individual opinions, then debate and agreement by consensus (Days 6 & 7). One member of the group should be designated as a recorder to develop the draft summary of their work.

The TEB completes the main body of their work by completing the written summary of their decisions. The TEB begins reading the proposals on Day 2, and

completes their work on Day 7. The entire work of the TEB should take no more than 6 days (Day 7). The TEB then meets with the Proposal Evaluation Board (PEB) (Day 8), to present their scoring and related information.

The PEB may either concur with the scoring, or challenge the TEB recommendation. If challenged, the PEB and TEB must meet to reconcile their differences, and arrive at a mutually agreed upon score. If they for some reason cannot agree, the PEB will make the final determination (Day 8). The PEB begins reading the proposals on Day 2, and completes their work on Day 8. The PEB meets as a group on Day 8 and part of Day 9, for presentation to the Selection Official (SO).

The recommendation is then passed upward to the SO (Day 9). The SO may concur, or disagree with, the PEB's recommendation. If the SO disagrees, the PEB and the SO meet to resolve any differences.

### 5.5. Pre-Submittal Meetings

During the Evaluation process DOT&PF may provide a forum for meetings between Proposers and DOT&PF. These meetings may be kept confidential when discussing solution-specific issues. Allowing the Proposers a forum in which to initially discuss potential solutions can help to ensure that the Proposal comes as close to possible to matching DOT&PF's desires.

If errors or inconsistencies in the proposal are noted then this information should be made available to all Proposers.

### 5.6. Oral Presentations

Section 2.2 of the Proposal General Requirements contains a provision that allows Proposers an opportunity to present fortifying presentations of their proposals. Approximately one week after Final Proposals are submitted, each Proposer may be allowed to make a one-hour oral presentation to all members of the DOT&PF Evaluation Team. The presentations afford the Proposer the opportunity to highlight the significant aspects of their Technical Proposals and their understanding of the RFP requirements. Oral presentations provide the evaluators an overall perspective of the project and offer a chance for the Evaluation Team to ask clarifying questions. *The oral presentations shall not be used to fill-in missing or incomplete information that was required in the written proposal.*

### 5.7. Open Price Proposal

Upon receipt of the Final Proposals, the Price Proposals will be put in secured storage until after the Technical Proposals are scored. The SO will make an initial determination as to whether the Final Proposal is responsive without opening the Price Proposal. However, at any time during this process, any member of the Evaluation Team may make a determination that based upon their reading, a Final Proposal is non-responsive. This determination would be subject to review and agreement by the PEB before disqualifying the Final Proposal. This initial determination of responsiveness should take 1 day (day 1).

The Price Proposal is opened at a predetermined time. The scores of the Technical Proposal are tabulated and prepared prior to the public opening. The values of the Price Proposals are read and entered into the scoring matrix as described in Guidebook Section 5.8.

### 5.8. Calculate Highest Score

The equation suggested by this Guidebook is a simple division of the technical score by the proposed price. In the example below, the total possible for the technical score is 1000 points. The technical score is then adjusted by a factor to create an order of magnitude similar to the price. For example, with a \$10 million project and a 1000-point system, multiply the technical score by 1,000,000 to get to a useful whole number final score.

Total Score = (Technical Score x 1,000,000)/Bid price (\$)

An example of calculation scenarios follows:

#### Scoring

Team	Technical Proposal Score	Proposal Price
A	930	10,937,200
B	890	9,000,000
C	940	9,600,000
D	820	8,700,000

## Calculations

A	$\frac{930 \times 10^6}{10,937,200}$	=	85
B	$\frac{890 \times 10^6}{9,000,000}$	=	99
C	$\frac{940 \times 10^6}{9,600,000}$	=	98
D	$\frac{820 \times 10^6}{8,700,000}$	=	94

Proposer B would be chosen in this example, even though C has the highest technical score and D has the lowest bid.

DOT&PF would select the Final Proposal from Proposers B and evaluate the Price Proposal for responsiveness in the same manner as a Bid received in the design-bid-build process. DOT&PF proceeds from this point to contract award and execution.

### 5.9. Other Best Value Scoring

Many other Best Value Scoring methods exist. Two others are presented here.

1. Technically Acceptable/Low Bid
2. Normalized Ranking

The **Technically Acceptable/Low Bid** method is appropriate when many different technical solutions are possible and the Department does not care which one is used. The Technical Proposal is evaluated on a pass/fail basis. Each evaluation factor in the RFP would be judged Acceptable, Marginally Acceptable or Unacceptable.

For example, if the RFP contained 5 evaluation factors:

For a proposal to be judged as Technically Acceptable a ranking of "Acceptable" must be obtained in at least three of the evaluation categories, and "Marginally Acceptable" in no more than two categories.

Proposals would be judged as Technically Unacceptable if they have a ranking of "Unacceptable" in any category or more than two categories ranked as "Marginally Acceptable".

Technically Acceptable bidders are ranked by price with the lowest bid being ranked Number 1.

The **Normalized Ranking** method is appropriate when the Department wants to clearly indicate the

relative importance between the technical proposal and the cost.

The raw score is developed as describe above in Section 5.4. These technical points are then normalized to a percentage of the highest technical score obtained.

$$\text{Normalized Technical Score (NTPS)} = \frac{\text{Proposal tech score}}{\text{highest tech score}}$$

The costs are converted to a cost score by normalizing the costs as a percentage of the lowest cost proposer.

$$\text{Cost Score (CS)} = \frac{\text{Lowest proposal cost}}{\text{Proposal cost}}$$

The Overall Score is calculated by applying a percentage multiplier to the NTPS and the CS.

For example, if the Technical proposal is worth 25% and the Cost is 75%, the formula would be:

$$\text{Overall Score} = (0.25 \times \text{NTPS}) + (0.75 \times \text{CS})$$

Many other scoring methodologies are possible. Consult with the Regional Contract staff and the Design Build Engineer before releasing an RFP with a unique scoring method.

### 5.10. Award Contract

The Department is required to negotiate with the highest scored Proposers to execute a contract. If unable to execute a contract, negotiations with that Proposer would terminate and begin with the next highest scored Proposer. This process would continue until the project is awarded or the selection process is terminated. In the event of identical best value scores, the Proposer with the lowest proposal price would be awarded the contract. The Design-Builder awarded the contract shall provide a performance and payment bond for the amount specified in the RFP and required by the contract.

### 5.11. QC/QA Plan Review

The QC/QA Program is a critical component of the design and construction of the project. It partly represents assurance to the Department that the Design-Builder is executing in accordance with the contract. DOT&PF will provide the quality assurance and independent testing, but the established QC/QA Program is the backbone for which the Department will gauge compliance.

The Contract Provisions require that the QC/QA Program submitted with the proposal be brought into conformance prior to execution of the contract (see Appendix F, Scope of Work). The Department must negotiate the provisions of the highest scoring Proposer and agree on the final QC/QA Program.

## **6. Design-Build Contract Administration**

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- 6.1. Introduction
- 6.2. Project Team Composition
- 6.3. Roles of the Project Team Members
- 6.4. Contract Administration
- 6.5. Project Pre-Contract Meeting and Site Visit
- 6.6. Design and Construction Document Preparation
- 6.7. Preconstruction Conference/Meeting
- 6.8. Re-Establish Survey Control/Construction Surveying
- 6.9. Materials Testing
- 6.10. Construction Inspection
- 6.11. Contract Changes
- 6.12. Construction Documentation
- 6.13. Partial Payment Application

### **6.1. Introduction**

After selection of a Design-Builder and execution of the contract, the Department takes on the role of contract administration and quality assurance. DOT&PF's focus for contract administration will be on the Design-Builder's project manager. All aspects of the project for design and construction, as defined in the specifications, will pass through this person throughout the life of the project. The Design-Builder's project manager will be responsible for management activities, including progress reports, scheduling, communication, project direction, change management, and oversight of the quality control program.

It is important to note that a design-build project is a binding contract as soon as the project is formally awarded to the Design-Builder. DOT&PF's Project Manager will administer the design-build contract. Continued involvement of support groups will be necessary for a successful project.

DOT&PF's responsibilities for contract administration involve monitoring contract compliance and schedules, processing progress payments, performing quality assurance activities, assisting in permitting and right-of-way acquisitions, negotiating contract amendments, and resolving disputes. Technical submittals by the Design-Builder require review by DOT&PF staff for conformance to the technical criteria and contract terms. In some cases, the design and construction will be fast tracked, requiring timely processing by the Department to avoid impacts to the project schedule. Progress payment requests prepared by the Design-Builder will be reviewed by DOT&PF.

The focus of the Department's quality assurance program is on product compliance with contract documents, verification of the Design-Builder's quality control measures, and meeting Federal quality requirements. Quality assurance activities focus on monitoring contract execution with respect to a negotiated Quality Control Plan.

### **6.2. Project Team Composition**

The Project Team required during contract administration is similar to the team typically assembled for a design-bid-build project. Design-build does not eliminate tasks required during the construction of a project; it allocates the functions into a single entity. Typically, all the functions DOT&PF performs when a design is provided by a consultant and then contracted for construction are performed during the execution of a design-build contract. However, the functions are performed in a condensed time period and require prompt attention by the team to not affect the project schedule.

Depending on the size of the project, the primary team members may include:

- Project Manager

- Project Engineer
- Designer(s)
- Inspector(s)
- Material Tester
- QA Specialist
- Administration staff (coordinate design review, QA, and contract administration/documentation)

### 6.3. Roles of the Project Team Members

The roles of the team members are all affected by the Revisions to the Standard Specifications. Every project will have unique provisions and requirements that will require adaptation by the team members. **Highlight unique design-build contract terms for the team early in the execution of the contract.** Significant issues related to specific contract provisions should be raised and addressed between the Project Team members and the Design-Builder at the partnering session.

As the execution of a design-build contract is typically fast-paced through the design phase, introduce the Project Team to the Contract Provisions through a formal training program. The program should cover the Department's role, the changes to the Standard Specifications that affect each of the team members, and what procedures will be used to accommodate the changes. **Review typical forms used by Department to process submittals and modify them based on the role of the Department and the Design-Builder.** In some cases the Design-Builder may be processing some of the typical forms with the Department's review.

### 6.4. Contract Administration

The design-build **Revisions to the Standard Specifications Section 1-05.1, (Appendix G)** and 1-05.2 define the authority of the Engineer and the inspector. The provisions state that the Project Manager has the authority to enforce the provisions of the design-build contract. The contract documents (specifically the Scope of Work) guide the development of the final design. The Design-Builder, not DOT&PF, creates the final plans that are a component of the contract. The Project Manager and the Project Team are limited to checking the plans and specifications for conformance with the design criteria and the constructed work against the final plans and specifications submitted by Design-Builder. Changes to the design drawings and specifications can only be required if they do not conform to the terms of the contract documents (see **Appendix F Scope of Work Section 1065.30**).

During the execution of the contract, the Design-Builder must submit many of the same documents required under a design-bid-build professional services and construction contract. The submittals of the design phase may be new to the DOT&PF construction management staff. The **Scope of Work Section 1130.05.3 (Appendix F)** contains a generic list of submittals that should be checked as part of the Department training program and meetings with the Design-Builder.

### 6.5. Project Pre-Contract Meeting and Site Visit

**Scope of Work Section 1027 (Appendix F)** describes a site visit between the Department and Design-Builder. The meeting is intended to familiarize participants with the project, review contract terms, discuss the project schedule, and establish communication links for beginning the project.

## **6.6. Design and Construction Document Preparation**

### **6.6.1 Design Documents Preparation**

The Design-Builder will initiate their design effort by completing the necessary investigations and studies required by their proposed design and the Contract Provisions. The list contained in Scope of Work Section 1130.05.3 is a guideline to what those submittals might be for a project.

The critical path elements of the project will most likely be centered on the right-of-way and permit processes of the project. As described in Section 4.3 of the guidebook, the Department will acquire the necessary right-of-way for a project based on the Department's conceptual design. Changes to right-of-way requirements for any reason (see Scope of Work Section 475 in Appendix F) should be addressed immediately to ensure minimal impacts to the project.

Acquiring certain permits is another task that is officially the responsibility of the Department. However, preparation of complete permit application packages, based on the impacts of the actual design, will be the responsibility of the Design-Builder. Required adjustments in the permit applications or the mitigation requirements will remain with the Design-Builder. In certain cases, the Design-Builder could be made responsible for obtaining certain permits as DOT&PF's agent. Provisions for the anticipated time for permit acquisition are written into the Scope of Work Section 420.02 Permits (Appendix F). Allowances for acquisition time beyond the allotted period, due to circumstances beyond the control of the Department or the Design-Builder, will be added to the contract.

The Design-Builder also will determine the need for utility relocations that are dependent on the design and construction activities; thus, the risks of such are under the control of the Design-Builder. The Department investigations during project development identified significant utility conflicts (see Guidebook Section 4.4) and addressed the utilities' special concerns. If agreements were prudent, they were obtained. The Design-Builder is responsible for coordination of the necessary relocations. The Department role with the utilities will be defined in the Scope of Work Section 430 (Appendix F) and may or may not include processing payment for the work.

### **6.6.2 Prepare Construction Documents**

The Design-Builder will begin preparation of the Construction Documents when the necessary data are collected. The Department will have the opportunity to review the reports prepared by the Design-Builder but will not interfere with the design process. Department comments given to the Design-Builder from any reviewer will be in line with the Scope of Work description of the Department role. Construction Documents may be prepared in a manner that will allow phased construction of the project, with the 100 percent plan set being broken into appropriate sections. The review process described in Scope of Work Section 1065 (Appendix F) is written to accommodate this type of process.

### **6.6.3 Plan Review and Oversight**

The Department's typical design-bid-build process involves a "Design Approval" decision point that is not relevant to the design-build process. By awarding the design-build contract, the Department is approving and accepting the design; thus, approval of design is inherent in the selection process. *If the proposed design meets the requirements of the contract documents, no significant changes can be made without a corresponding contract change order.* The details necessary for DOT&PF approval of design must be requested in the RFP and supplied in the Final Proposal. The acceptance of the proposal authorizes production of final plans.

With design-build contracting, the design risk is placed with the Design-Builder; and the Department's review will be to determine if the proposed design is per the intent of the Contract Provisions (Scope of Work Section 1065). Language in the Contract Provisions protects the proposed concepts from significant changes during final design. Proposals that meet the contract requirements as described in the Contract Provisions but do not meet what the Department intended would require a change to the contract. There is no pre-defined review period for the Department, as the Design-Builder and the Department will decide on the appropriate timing of reviews during execution of the contract (Scope of Work Section 1130.02 Appendix F).

In a design-build contract, the Department and the Design-Builder both warrant something to each other. The Department needs to warrant that the project's criteria and contract documents meet the standards and requirements for the project but not warrant the applicability of the design. The Design-Builder essentially warrants that the design and the constructed products will meet the intended outcome of the Department. For these reasons, only comments related to non-conforming design elements not meeting the contract requirements will be incorporated. All other comments are for the Design-Builder's consideration only. The decision to incorporate Department comments of a "preferential" nature resides with the Design-Builder. **Develop a protocol to delineate the required and preferred types of review comments.**

DOT&PF's constructability and maintenance reviews occur simultaneously in the current design-bid-build process. In design-build contracting, constructability becomes the responsibility of the Design-Builder, as the designer and builder are combined on the same team. The Department carries no liability for whether a design is constructible. Whether a design meets the Department's needs for long-term maintenance is still relevant and must be considered in the preparation of the contract design criteria. Changes to the design during construction for identified maintenance concerns that are not detailed in the design criteria will be a contract change.

### **6.7. Preconstruction Conference/Meeting**

Prior to the start of construction, the Design-Builder will conduct a preconstruction conference. The traditional preconstruction conference activities associated with design-bid-build construction will occur with design-build contracting however, some parts of construction could take place while design is still under way. With a phased design of the project, phased construction could occur very near the start of the contract time. The preconstruction conference is required to discuss contract administration and work coordination with outside parties, such as local agencies, utilities and permitting agencies. Under design-build, the Design-Builder will be responsible for these activities and thus will be responsible for holding the preconstruction conference.

### **6.8. Re-establish Survey Control/Construction Surveying**

Project survey control is provided by the Department and is established during the development of the project (see **Guidebook Section 3.5**). The Design-Builder will re-establish survey control based on data provided by the Department. The Design-Builder will maintain responsibility for the control and required staking for construction. The Department will conduct necessary quality assurance checks on the control and staking if determined to be required.

### **6.9. Materials Testing**

The transition from design-bid-build prescriptive specifications and plans to design-build performance specifications requires a change in methods of measurement of quality. The Department has set the requirements the Design-Builder must adhere to in developing a QC/QA Program, which defines the quality controls procedures for the products associated with the project. Some quality assurance monitoring and control functions are under the Department's control to comply with FHWA policies. Department tasks will include verification testing, independent assurance sampling, and fabrication inspection (off-site). The Design-Builder's responsibilities include materials testing; review working drawings, and full time construction inspection.

The working drawing review, which is a check on the fabrication drawings as compared to the design drawings, will be conducted by the designer of the facility (the Design-Builder). The designer must remain responsible for the fabrication and proper installation of the detailed components.

DOT&PF's Materials Section will function just as under a design-bid-build contract. All required QA samples and tests will be collected and tested according to current guidelines. In addition, if DOT&PF designed a portion of the project, the QC testing will fall into their range of responsibilities. Fabrication inspections will require DOT&PF involvement in ensuring the required certifications of the fabricators. QC inspection of the fabrication will be part of the QA/QC plan and the responsibility of the Design-Builder's inspector.

## **6.10. Construction Inspection**

DOT&PF's inspection involvement will be less extensive than under design-bid-build, depending on the construction schedule and the type of project. The primary role is to monitor the progression of the construction against the Construction Documents submitted by the Design-Builder. *The inspector's authority has not changed, although his work will be coordinated with the Design-Builder inspector.* On projects where DOT&PF performed final design on portions of the project, the DOT&PF inspector's role will be similar to that under design-bid-build projects. With mixed assignments on-site, the DOT&PF and Design-Builder inspectors will need to maintain close coordination to ensure none of the required QC measures are missed.

Copies of the working drawings will be forwarded to the Department for use in independent assurance inspection, mandatory inspection (Hold Points to be determined for each project), and construction inspection oversight (Witness Points, to be determined for each project), see **Appendix F, Scope of Work Section 1150.01 Witness and Hold Points.**

## **6.11. Contract Changes**

Contract changes on a design-build project should generally be limited to areas where the requirements included in the RFP cannot be easily met. This will generally happen when a preliminary design is advanced and conflicts within the proposed solution occur. When such a situation occurs during the contract a change order will be in order. The procedures for authorizing, administering and executing change orders are outlined within DOT&PF's Construction Manual.

## **6.12. Construction Documentation**

Much of the construction documentation currently being collected under design-bid-build is still necessary under a design-build contract, such as the materials certifications. The contract has provisions (see **Appendix F, Scope of Work Section 1200**) requiring the submittal of documentation in support of progress payment requests.

## **6.13. Partial Payment Application**

The Design-Builder will prepare the application for partial payment on a monthly basis, which will be reviewed by the Department for progress estimates verification (see Appendix H, Special Provisions **Section 1-09.9**). The partial payment application estimate will be based on the schedule of values negotiated with the Department prior to submission of the first partial payment.





## 7. Contract Closure

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### 7.1. General

*A design-build project ends when all conditions of the contract have been fulfilled.* This includes design activities and record drawings, construction activities, QC/QA work, project documentation, and any warranty periods.

The steps of officially completing the project follow the design-bid-build process. DOT&PF will conduct a final inspection and provide the design-builder with a list of corrective or incomplete work items. The design-builder is responsible for collecting all the required documentation and submitting it to DOT&PF on a weekly basis. During the preparation of the semi-final documents, the design-builder may be required to submit or re-submit missing, incomplete, or inaccurate documents.

*A design-build project that is described and specified using performance parameters is “accepted” by DOT&PF based on the design-builder’s final plans and technical specifications.* Acceptance of the project’s concepts occurred during preliminary design, as presented in the design-builder’s proposal and modified at the beginning of the design work. During execution of the contract, acceptance of the project’s components occurred through the QA/QC program. If the QA/QC plan was followed, the execution should lead to an acceptable final product, aside from typical minor corrective work.

Warranty requirements will extend beyond the completion of construction and will be monitored for compliance on the specific objectives of the warranty. Final acceptance of the project provides confirmation that the completed product meets the contract terms.

Components of the project may carry warranty provisions requiring performance for a prescribed time prior to final acceptance. The warranty provisions describe the required condition of the component for the duration of the warranty period; measurements for progress payments or final payments are based on those provisions. Final acceptance occurs when the warranty period ends and the component’s condition is confirmed to meet the requirements of the provisions or is restored to those requirements.

An alternative to a warranty period is a maintenance program that keeps the project at a prescribed

minimum condition throughout the maintenance period. Maintenance agreements work well for a distinct project where limits are well-defined and other maintenance will not be performed by DOT&PF.

A pavement rehabilitation project within a continuous highway section, where the design-builder maintains the new section, but the Department maintains the rest of the highway, could create an ambiguous definition of responsibility. A major new bridge is a highly distinctive project and may be well suited to a maintenance agreement. Acceptance of the project becomes similar to the warranty condition where the project (or component’s) condition is confirmed to meet the requirements of the provisions or is restored to those requirements.

The tasks associated with the contract closure lie almost entirely with the Department. The Department will establish substantial and/or physical completion of the work as described in the revisions to the Standard Specifications. Determination of physical completion signifies the end of liquidated damages.

