



U.S. Department
of Transportation
**Federal Aviation
Administration**

Advisory Circular

Subject: INTRODUCTION TO
DEVELOPING DESIGN/BUILD
CONTRACTS FOR AIRFIELD
CONSTRUCTION PROJECTS

Date: 10/31/09

AC No. XX-XX

Initiated By:
ANM-XXX

1. PURPOSE. This Advisory Circular (AC) provides guidance on the preparation of design/build (D/B) alternate procurement contracts for airport pavement construction projects.

Background. Design/build is a method of project delivery in which the design and construction phases of a project are combined into one contract and awarded on either a low bid or best-value basis. D/B projects allow for greater collaboration between the designer and contractor in the delivery of transportation projects.

Advantages of the D/B methodology include:

- Single point accountability for owner
- Opportunities for increased efficiency in procurement and construction
- Reduction in construction time
- Access to private sector experience
- Opportunities for innovation and cost savings
- Transfer of delivery risk to the private sector
- Fewer construction claims

The disadvantages of the D/B methodology include:

- Best value and qualification-based selection is not conventional for most construction contracts
- Owner does not have a direct relationship with the designer
- Not all projects are suitable for D/B
- Lack of understanding of risk transfer between the owner and D/B contractor could lead to higher project costs
- Due to reduced owner quality assurance (QA), owner may request a longer warranty

- Compressed schedule may require quick owner turnaround of submittals

D/B projects move from conception to commission much faster than the traditional design/bid/build (D/B/B) process. Procurement is achieved through a single process by integrating design and construction into one overall project team.

Rulemaking. There are a number of Federal and State regulations and policies pertaining to the implementation of alternate procurement methods. Federal Statute 49 USC 47104 authorized a D/B pilot program for the Federal Aviation Administration (FAA) that expired on September 30, 2003. Statute 49 USC 47142 authorized the FAA to use D/B selection procedures under specific guidelines effective September 30, 2003. This statute allows the Administrator of the FAA to authorize the airport sponsor to award a D/B contract using a selection process permitted under applicable State or local law; the statute describes the specific conditions and criteria.

FAA Order 5100.38.C provides guidance and sets forth policies and procedures to be used in the administration of the Airport Improvement Program (AIP). Specific guidance is provided for procurement and contract requirements for Federal grant programs which refers extensively to Title 49 CFR, Part 18.36 requirements. As noted in this document, Federal law provides that the granting agency (the FAA) has a minimal role in the procurement used by airport sponsors. For example, if the sponsor is a State, they are authorized under Part 18.36 to use the same procurement policies and laws that are used for procurements not funded in whole or in part by Federal sources. FAA Order 5100.38.C stipulates that all procurement transactions will be conducted in a manner providing full and open competition. This includes unreasonable requirements on firms, non-competitive price impact, organizational conflicts of interest, unnecessary experience and bonding requirements, unnecessary product or brand name specifications, and preference to in-State or local bidders.

This AC presents guidelines for owners contemplating the use of D/B procurement for airfield construction. The guidelines present a six-step process to carry a project through from conception to completion. Appendix A of this AC presents a supplemental evaluation of the suitability of FAA AC 150 5370-10C, *Standards for the Construction of Airports*, for use with D/B projects. The standards, as written, allow for sufficient flexibility to permit modifications to suit local materials, methods, and requirements. Owners contemplating D/B should ensure that the appropriate modifications are identified as part of the request for proposal (RFP) design criteria to ensure that appropriate methods and materials are identified.

2. APPLICATION. The material contained in this AC is applicable for all airports/airfields. The AC establishes guidelines for the use of D/B for procurement by airport/airfield operators.

This AC does not constitute a regulation.

3. COMMENTS OR SUGGESTIONS. Send comments or suggestions for improving this AC to:

Needs FAA Input

Federal Aviation Administration
ATTN: Needs FAA Input
800 Independence Avenue, S.W.
Washington, DC 20591

4. COPIES OF THIS AC. The FAA makes ACs available to the public through the Internet. These ACs may be found through the FAA home page (www.faa.gov). A printed copy of this AC and other ACs can be ordered from the U.S. Department of Transportation, Subsequent Distribution Office, Ardmore East Business Center, 3341 Q 75th Avenue, Landover, MD 20785.

Needs FAA Input
Signature

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1 GENERAL INFORMATION

1.1 Introduction

The most prevalent procurement practice for selecting design firms and contractors for airfield and highway projects has been the sequential design/bid/build (D/B/B) process. The D/B/B method requires that owners design the project, either in-house or by contract, and then advertise the project to potential construction contractors. Once the design is approved, the owner enters into another contract with the lowest bidder for the construction of the project. Under the traditional D/B/B method, the design must be completed before the project is advertised.

Design/build (D/B) is a method of project delivery in which the design and construction phases of a project are combined into one contract and awarded on either a low bid or best-value basis. Procurement is achieved through a single process by integration of design and construction into one overall project team. The methodology requires only one procurement phase, the guaranteed maximum price of the project is known, and fast tracking is accomplished by performing design and construction activities in parallel. D/B projects also allow for greater private sector participation in the delivery of transportation projects.

1.2 FAA and Design/Build

Federal Aviation Administration (FAA) Order 5100.38.C provides guidance and sets forth policies and procedures to be used in the administration of the Airport Improvement Program (AIP). Specific guidance is provided for procurement and contract requirements for Federal grant programs which refers extensively to Title 49 CFR, Part 18.36 requirements. As noted in this document, Federal law provides that the granting agency (the FAA) has a minimal role in the procurement used by airport sponsors. For example, if the sponsor is a State, they are authorized under Part 18.36 to use the same procurement policies and laws that are used for procurements not funded in whole or in part by Federal sources. FAA Order 5100.38.C stipulates that all procurement transactions will be conducted in a manner providing full and open competition. This includes unreasonable requirements on firms, non-competitive price impact, organizational conflicts of interest, unnecessary experience and bonding requirements, unnecessary product or brand name specifications, and preference to in-State or local bidders. An extract of interested from FAA Order 5100.38.C Section 9.04 is as follows:

“Other methods of contracting may be appropriate when used for an AIP project. One such method is considered a two-step procurement in which a general scope of the project is provided to prospective bidders. A technical proposal is submitted and the sponsor determines which bidders provide a technical proposal that meets the requirements of the general scope. An invitation for bids that encompasses the general scope and incorporates a bidder’s technical proposal by reference is issued to each bidder whose technical proposal is deemed acceptable. The bidder then bids on the general scope as well as its technical approach and the responsible and responsive bidder submitting the lowest bid is awarded the contract. Other methods that may have some use under AIP are various forms of Design-Build. Except in those circumstances under which a project has

been approved under a Design-Build pilot program, sponsors should be cautioned that the design-build contracting must still meet the requirements of both Paragraph 904(b)(2) above for professional services as well as the price competition for construction. In addition, sponsors should be cautioned that except under limited circumstances (See Chapter 3, Section 2) costs incurred prior to a grant are not necessarily reimbursable so the contract phasing should reflect the need to perform construction services after a grant is issued.”

Program Guidance Letter 01-2 provides further guidance for the procurement of D/B services, including qualification-based selection and competitive proposal selection.

FAA Advisory Circular (AC) 150/5100-14D, *Architectural, Engineering and Planning Consulting Services for Airport Grant Projects*, provides similar guidance.

FAA AC 150/5370-10C, 9/29/2007, *Standards for Specifying Construction of Airports*, provides standards for the construction of airports. This AC does not constitute a regulation and in general is not mandatory. However, use of these guidelines is mandatory for airport construction funded under the AIP or the Passenger Facility Charge (PFC) program. They will require modification to be used for a D/B procurement.

The General Provisions section of the AC presents the standard D/B/B approach to airport construction; D/B is not addressed in the AC as currently written. As a minimum, the authorizations set forth in 41 USC 47142 for use of D/B procedures in airport construction should be set forth in the AC, reiterating the criteria described in 49 USC 47142.

2 DESIGN-BUILD GUIDELINES

This AC is intended as a guideline for airport owners/operators considering D/B procurement for airfield pavement rehabilitation and construction. Figure 2.1 is a project flow chart that outlines the various steps in developing a D/B procurement, and each step is defined with action items and supporting reference documents. The steps are described in the subsequent sections.

2.1 Determine Suitability of the Project for D/B Procurement

Large airport projects may be up to 3 years in the planning and funding stages, particularly due to the preparation of environmental documentation. Owners should not move forward with design until the Environmental Impact Statement (EIS) and Record of Decision (ROD) are complete.

To determine the suitability of a project for D/B, the key factors specific to the project should be considered. Typically, these factors are divided into primary, secondary, and other considerations which may impact the decision to use D/B for a particular project.

A. Primary Considerations (Fatal Flaws)

- Time constraints for project delivery
- Status of environmental approval
- Availability of funding
- Well defined scope

B. Secondary Considerations (Advantages of Design/Build)

- Overall project complexity
- Complexity of performance requirements
- Project size
- Availability of qualified teams
- Owner experience and resources
- Cost of the project
- Degree of team collaboration
- Number of contracts
- Allocation of risks
- Interest in innovation

C. Other Considerations (Risk Transfer)

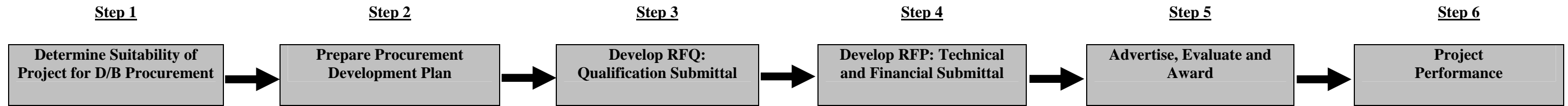
- Airside security
- Operational constraints
- Utility relocations
- Quality assurance/quality control (QA/QC) responsibilities

- Weather conditions
- Performance guarantees/warranties
- Design reviews/approvals
- Impact of unknown site conditions
- Ability to pay stipend
- Ownership of intellectual property

The primary considerations are those that would have an overriding influence on the decision to move forward with the project. The secondary considerations have a lesser influence and usually are taken into account when there are no overriding considerations or one type of contacting mechanism is not clearly superior for the particular project. Other considerations may have some influence on the procurement type decision but would not preclude the use of D/B. The primary considerations are weighted the highest to reflect their importance in moving forward with the project and the D/B procurement method.

This is not an exhaustive list, but rather reflects a sampling of needs and expectations. Other constraints and project-specific considerations should be added or deleted as necessary. The individual weighting of the considerations should be modified to reflect local agency needs and expectations. To assist in evaluating the suitability of projects for the D/B procurement method, a project suitability matrix (template) was developed. The matrix includes the considerations outlined above with appropriate weighting factors for each group. Within each group, the individual consideration items also are given weighting factors. Each factor is assessed using specific criteria of the owner's needs and expectations for the project. Once the factor is rated, the total scores are summed on a scale of 0 to 100. If the score totals less than 50, the project is not considered a good candidate for D/B procurement. Between 50 and 65, the project can be considered for D/B. Scores over 65 indicate that the project is well suited for D/B. An example of a suitability matrix is shown in Table 2.1.

In the example shown in Table 2.1, the primary considerations have been given a category weighting of 50 points, the secondary considerations are weighted at 35, and other considerations are weighted at 15. When considering the primary factors, there was a preference to accelerate the project delivery. To accelerate project delivery, this example considered that the record of decision and environmental approvals were in place, the funding was committed, and the scope of the project was generally defined. These items were selected as primary considerations because this project could not proceed in a timely manner without them. The secondary considerations are items that can define the benefits of D/B procurement, such as a single contract, owner experience with D/B, overall project complexity, and the like. The other considerations are largely risk-related items that the owner would consider as risk transfer elements.



ACTION ITEMS										
1. Define/establish project requirements and scope 2. Evaluate fatal flaws 3. Complete suitability matrix		1. Complete strategic planning 2. Develop project description 3. Assess risk 4. Choose selection method 5. Owner's team 6. Create knowledgeable selection panel 7. Develop schedule and planning budget		1. Establish Prequalification requirements 2. Disclose selection criteria and weighting scheme 3. Determine requirements for financial capacity 4. Shortlist qualified firms		1. Balance responsibility/risk in contract language 2. Disclose project budget 3. Consider a stipend and guidelines for use of intellectual property. 4. Establish design guidelines 5. Confirm subcontracting and disadvantaged business requirements 6. Define operational requirements 7. Prepare performance based criteria/specifications 8. Provide background information 9. Limit design direction 10. Confirm financial guarantees 11. Consider management plans including quality management 12. Define bonding and insurance 13. Establish and disclose warranty and performance measures		1. Arrange bidder meetings and answer questions 2. Evaluate proposal submissions 3. Separate evaluation of price and qualitative issues 4. Hold bidder presentations 5. Use of documents or design concepts from unsuccessful proposers 6. Award contract		1. Hold chartering sessions 2. Review documents and approval procedures 3. Undertake auditing/monitoring 4. Final acceptance 5. Dispute resolution
GUIDANCE										
IPRF Report 01-G-002-06-1		IPRF Report 01-G-002-06-1 FAA Order 5100.38.C UFC 3-26-11FA FAR Part 36 49 USC 47142		IPRF Report 01-G-002-06-1 FAA Order 5100.38.C FAA AC 150/5370-10 UFC 3-26-11FA FAR Part 36		IPRF Report 01-G-002-06-1 FAA Order 5100.38.C FAA AC 150/5370-10 UFC 3-26-11FA UFC 3-260-02 FAA AC 150/5320-6D FAR Part 36 UFC 1-300-07A		IPRF Report 01-G-002-06-1 FAA Order 5100.38.C UFC 3-26-11FA FAR Part 36		IPRF Report 01-G-002-06-1 FAA AC 150/5370-12 FAA AC 150/5370-10 UFC 3-250 Series UFGS Master Series

Figure 2.1. The six-step D/B methodology.

Table 2.1. D/B screening matrix.

A. Primary Considerations

Part A Weighting: 50

Consideration <i>(Deal Breakers)</i>	Rating	Weighting	Weighted Value	Weighting Guidelines		
				Low	Medium	High
Time constraints for project delivery	Medium	25.0	15.0	Sufficient time for standard procurement	Need to accelerate project delivery	Insufficient time for standard delivery
Status of environmental approvals	High	25.0	25.0	Not started	Underway	Complete
Availability of funding	High	25.0	25.0	Unknown	Multiple funding periods/sources	Funding in place and available
Well defined scope	Medium	25.0	15.0	Concept only	Scope needs refinement	Clearly defined scope
Total		100.0	80.0			
		Weighted Total:	40.0			

B. Secondary Considerations

Part B Weighting: 35

Consideration <i>(Advantages of Design/Build)</i>	Rating	Weighting	Weighted Value	Weighting Guidelines		
				Low	Medium	High
Overall project complexity	High	10.0	10.0	Simple project	Moderate complexity	Significant complexity
Complexity of performance requirements	High	10.0	10.0	Performance requirements unknown	Performance requirements established	Performance requirements known
Project size	High	10.0	10.0	< \$ 1 million	\$1 to \$ 5 million	> \$5 million
Availability of qualified teams	Medium	10.0	6.0	< 3 possible bidders	3 to 5 possible bidders	> 5 bidders
Owner experience and resources	Medium	10.0	6.0	First design/build project	Some experience	Significant experience
Cost of project	Medium	10.0	6.0	No fixed budget	Some budget flexibility	Fixed budget
Degree of team collaboration	High	10.0	10.0	Unknown teaming arrangements	May know some team members	Owner familiar with the teams
Number of contracts	High	10.0	10.0	Many separate small contracts	Several contracts but manageable	One overall contract
Allocation of risks	Medium	10.0	6.0	Owner retains majority of risk	Risks shared between owner and D/B team	Transfer majority of risk to D/B team
Interest in innovation	High	10.0	10.0	Low	Medium	High
Total		100.0	84.0			
		Weighted Total:	29.4			

C. Other Considerations

Part C Weighting: 15

Consideration <i>(Risk Transfer)</i>	Rating	Weighting	Weighted Value	Weighting Guidelines		
				Low	Medium	High
Airside security	Medium	10.0	6.0	Airfield operations area work	Some airfield operations area work	Non airfield operations area work
Operational constraints	Low	10.0	2.0	Significant operational constraints	Some operational constraints	No operational constraints
Utility relocations	Low	10.0	2.0	Significant utility relocations	Some utility relocations	Minimal utility relocations
QC/QA responsibilities	Medium	10.0	6.0	Owner's responsibility	Shared responsibility	Design/build entity responsibility
Weather conditions	Low	10.0	2.0	Owner takes all weather related risk	Some weather risk transfer	Weather risk transferred to D/B team
Performance guarantees/warranties	Medium	10.0	6.0	Short term coverage	Medium term coverage	Long term warranties
Design reviews/approvals	Low	10.0	2.0	Significant design review required	Moderate owner review required	Short turn around/minimal review
Impact of unknown site conditions	Low	10.0	2.0	Owner's risk (geotech by owner)	Risk shared	D/B team risk (geotech by D/B)
Ability to pay stipend	Medium	10.0	6.0	Cannot pay stipend	Unknown	Can pay stipend
Ownership of intellectual property	Low	10.0	2.0	Significant intellectual property	Some intellectual property	No intellectual property
Total		100.0	36.0			
		Weighted Total:	5.4			

Sub Totals

A. Primary Considerations	50	40.0
B. Secondary Considerations	35	29.4
C. Other Considerations	15	5.4
Grand Total	100	74.8
Decision		Yes

Decision Range		
From	To	D/B Applicability
0	50	No
50	65	Can Consider
65	100	Yes

2.2 Prepare Procurement Development Plan

The procurement development plan includes a variety of information that ensures the owner has prepared a blueprint for the project and establishes core guidelines for the delivery of the project.

2.2.1 Strategic Planning

Current and future airside requirements are assessed to determine the general facility development for the owner/user. Inputs for the strategic planning may include the airport master plan, airport pavement management system, maintenance reports, pilot and tenant feedback, operations reports, and traffic forecast. For specific projects, the relevant environmental documents should be completed and approved.

2.2.2 Project Description

The owner establishes the project requirements in terms of project limits, design and performance criteria, quality standards, applicable codes, regulatory standards, and other such factors. The project description outlines the owner's expectations of the key physical aspects. The project description also identifies the available funding, expected design work, construction work, prospective schedule, technical criteria, project constraints (environmental, third party involvement, etc.), and warranty considerations, and summarizes the selection process and scoring. The project description also should identify important project issues that are not readily apparent through the technical requirements.

2.2.3 Risk Management

The D/B concept shares risk between the owner and the D/B team. The areas of risk should be well defined so that the D/B team understands their responsibility for risk. The airport owner normally maintains responsibility for high-risk areas throughout the duration of the contract. If differing site conditions pose increased risk due to such issues as unforeseen ground conditions, hazardous materials, underground utilities, archeological sites, endangered species, or other environmental concerns, the airport owner should accept responsibility unless specified otherwise in the contract. The D/B team may or may not be asked to perform the associated work under a change order.

An effective way to identify and allocate the risks associated with a project is through the use of a risk allocation matrix, such as the one shown in Table 2.2. (Table 2.2 is for illustration purposes only; each project should have its own detailed risk assessment.)

Table 2.2. Example airport project risk allocation matrix¹.

RISK ²	Design/Build	
	Owner	D/B Team
Design Issues		
Definition of Scope	X	
Project Definition	X	
Establishing Performance Requirement	X	
Preliminary Survey/Base Map	X	
Geotechnical Investigation - Initial Borings based on Initial Design	X	
Geotechnical Investigation - Initial Borings based on Proposal		X
Establish/Define Initial Subsurface Conditions	X	
Initial Geotechnical Analysis Report based on Preliminary Design	X	
Proposal-specific Geotechnical Analysis/Report		X
Plan Conformance with Regulations/Guidelines/RFP		X
Plan Accuracy		X
Design Criteria	X	
Conformance to Design Criteria		X
Design Review Process		X
Design QC		X
Design QA		X
Owner Review Time	X	
Changes in Scope	X	
Constructability of Design		X
Contaminated Materials	X	
Local Agency and Utility Issues		
Identification of Initial Local Agency Impacts	X	
Obtaining Initial Local Agency Permits	X	
Establishing Local Agency Requirements	X	
Establishing Final/Actual Local Agency Impacts		X
Modifications to Existing Local Agency Permits		X
Identification of Initial Utility Impacts	X	
Establish Initial Utility Locations/Conditions	X	
Defining Required Utility Relocations	X	
Relocation of Utilities Prior to Contract	X	
Relocation of Utilities Under Agreement During Contract		X
Modified Agreement With Private Utility		X
Damage to Utilities Under Construction		X

Table 2.2. Example airport project risk allocation matrix¹.

RISK ²	Design/Build	
	Owner	D/B Team
Verification of Utility Locations/Conditions		X
Coordination with Utility Relocation Efforts during Contract		X
Unforeseen Delays - Utility/Third Party	X	
Utility/Third Party Delays resulting from Proposal Modification		X
Other Work/Coordination		X
Third Party Agreements (Fed, Local, Private, etc.)	X	
Coordinating with Third Parties under Agreement		X
Coordination/Collection for Third Party Betterments		X
Coordination with Other Projects		X
Coordination with Adjacent Property Owners		X
Construction		
DBE Compliance		X
Safety/Safety QA		X
Construction Quality/Workmanship		X
Schedule		X
Materials Quality		X
Materials Documentation		X
Material Availability		X
Initial Performance Requirements of QA Plan	X	
Final Construction/Materials QA/QC Plan		X
Construction/Materials QA		X
Construction QC		X
Construction QA Procedural Compliance Auditing	X	
Construction Independent Engineer (IE) Testing/Inspection	X	
Construction Layout		X
Erosion Control		X
Spill Prevention		X
Accidents within Work Zone/Liability		X
Third Party Damage		X
Operations and Maintenance During Construction		X
Maintenance under Construction		X
Airside Operations		X
Damage to Utilities under Construction		X
Falsework		X
Construction		

Table 2.2. Example airport project risk allocation matrix¹.

RISK ²	Design/Build	
	Owner	D/B Team
Shop Drawings		X
Equipment Failure/Breakdown		X
Work Methods		X
Early Construction/At Risk Construction		X
Community Relations	X	
Performance of Defined Mitigation Measures		X
Warranty		X
Force Majeure/Acts of God		
Strikes/Labor Disputes – On-site Labor		X
Tornado/Earthquake/Hurricanes	X	
Epidemic, Terrorism, Rebellion, War, Riot, Sabotage	X	
Archaeological Discovery	X	
Suspension of any Environmental Approval	X	
Changes in Law	X	
Lawsuit against Project	X	
Storm/Flooding	X	
Fire or Other Physical Damage	X	
Differing Site Conditions/Changed Conditions		
Changed Conditions	X	
Differing Site Conditions	X	
Completion and Warranty		
Establishment/Definition of any Risk Pool	X	
Long term Ownership/Final Responsibility	X	
Insurance		X

1. For illustration purposes only; each project should have its own detailed risk assessment. Shaded items are typically high risk/high cost and should be defined as well as possible.

2.2.4 Selection Method

The three common approaches to selecting a D/B entity are:

- Low bid – selection based on the lowest construction bid
- Best value – combination of a weighted technical approach and low bid
- Qualifications-based selection – the construction bid is not a factor in the final selection

The two-step best value bid has become the preferred approach, where the first step consists of an evaluation of bidder qualifications and the second step involves the evaluation of the technical

and financial submissions of a shortlisted group of bidders. Some agencies may not be able to use best value or qualifications-based selection because of legislatively mandated low bids only.

A number of different methods can be used to evaluate best value and qualifications-based bids:

- Pass/fail
- Modified pass/fail
- Qualitative rating
- Direct points scoring

The pass/fail method uses a list of evaluation criteria that the proposers either meet or do not. If they do not meet the criteria, the bid may be disqualified. The modified pass/fail method allows some “gray area” where a reviewer may pass a bid if the majority of the criteria are met and the others are close to being met. The qualitative rating uses a system such as good, fair, poor to rank the submissions. The direct points scoring method assigns points to each rating criterion, with a minimum number of points considered acceptable to move forward in the bidding process. Each method has advantages and disadvantages, and the agency needs to determine which method best suits its needs for a given D/B project.

D/B presents a unique opportunity to optimize price and other issues. The most effective selection results from a competitive process that balances first cost with life cycle costs, design aesthetics, maintenance/operational costs, and other project-specific qualitative and efficiency factors. Information published by the Design-Build Institute of America indicated that D/B selection is based more on the technical submission than on price, typically weighted 60/40 toward the technical submission. Current trends indicate this continues to be the case.

2.2.5 Owner’s Team

Depending on the selection method, the owner will need to identify both internal resources and any external supplemental resources used for its project management team.

2.2.5.1 Owner’s Role

In the development stage, the owner oversees the development of the design criteria, the contract documents, and the procurement process. During the design and construction phase, the owner is responsible for controlling the process through design review, notices to proceed, monitoring contract compliance and schedules, processing progress payments, performing QA overview, negotiating contract amendments, and resolving disputes. Technical submittals will require review by the owner for conformance to the technical criteria and contract terms. The owner needs to verify progress payment submissions by the D/B team. With respect to QA, the owner needs to monitor compliance with the contract documents and verify the contractor’s compliance with the project quality control plan.

The owner’s team must be developed to ensure rapid review and processing to avoid schedule impacts to the D/B team.

2.2.5.2 Owner's D/B Consultant

An outside firm with adequate pavements and airside electrical D/B experience and expertise may be engaged to assist in-house experience with defining, procuring, or administrating D/B projects. This role typically is called a design/build consultant or a program manager. The owner's D/B consultant should be excluded from availability for any work with the D/B teams.

2.2.5.3 Supplemental Technical Experts

Some owners have sufficient expertise within their organizations to prepare the necessary documents and administer a D/B contract, but those without sufficient internal resources may need to use external consultants to provide specific subject matter expertise. These external consultants may be responsible for developing the request for proposals (RFP) technical documents, performance specifications, monitoring contract compliance, processing progress payments, performing QA activities, and assisting with the negotiation of contract amendments and disputes. Typically, technical submittals would be reviewed by the external consultants for conformance to the technical criteria and contract terms.

2.2.6 Schedule and Planning Budget

Many owners choose the D/B procurement methodology because it can help to expedite the overall project delivery schedule. To realize this benefit, the owner needs to establish major procurement and construction milestone dates. In addition, the owner needs to have an understanding of the overall cost of the project for budget allocation.

2.3 Development of the Request for Qualifications (RFQ)

The professional, financial, and experience requirements for D/B teams and the general project parameters are articulated in an RFQ prepared by the owner, in-house, or by the owner's representative or program manager. The RFQ should include an information session where the owner presents the general requirements of the project and their expectations. Guidance is provided in FAA AC 150/5300-9A for pre-design, pre-bid, and pre-construction conferences for airport grant projects.

2.3.1 Prequalification Requirements

The project is advertised and qualification statements are received in response to the RFQ. The qualifications of the D/B team are critical to success. The selection criteria need to be well defined, and an evaluation method or rating system needs to be established for items such as experience, management, and so on. Large projects require bonding, and this may limit the number of firms that can qualify.

The RFQ is used in the two-stage process for D/B procurement to shortlist qualified D/B entities for receipt of RFPs and the opportunity to prepare a detailed proposal for the project. The key

considerations of the RFQ are to establish the team's ability to complete the design and construction, the experience and past performance of the team and of key individuals, and the financial capacity of the team to undertake the project.

Below are some of the considerations that could be included when reviewing RFQ submissions:

- Team's understanding of the project
- Individual and corporate team members and experience with design/build
- Previous experience of team members working together
- Relevant design capabilities
- Specialized construction capabilities
- Experience with complex construction staging, airport operations, site conditions
- Safety record
- Key project team member availability and time commitment (project director, design manager, construction manager, quality manager, etc.)
- Quality control organization and performance
- Bonding record or proof of bonding ability
- Past contract performance (completion, liquidated damages, quality, claims, fines, schedule)
- Financial capability
- Understanding the local and political environment of the work location
- Project management and schedule control
- Risk management

Overly extensive proposal requirements are financially burdensome to the proposers, serve to discourage the participation of quality firms, and add unnecessarily to the owner's proposal review process. The quantity of proposal deliverables should be limited to the information necessary to judge competing proposals and to protect the owner's interest in the subsequent contract.

Care must be taken when establishing acceptable qualifications and experience. Raising the bar too high may preclude qualified individuals and firms that normally would be well qualified to undertake the assignment.

The RFQ submissions should be evaluated by a qualified evaluation committee. To ensure consistency in the evaluation process, some agencies have held training sessions for the committee members in advance of the review process.

The Federal Acquisition Regulation (FAR) suggests that the maximum number of firms shortlisted should be limited to five. However, in consideration of the effort required to respond to the RFP, consideration should be given to shortlisting no more than three.

2.3.2 Disclose Selection Criteria and Weighting

The basis for evaluating the proposal should be identified clearly in the RFQ/RFP documents. Specific evaluation criteria, or a fully defined point award system, will allow proposers to provide submissions that maximize benefits and optimize solutions to the owner's needs.

2.3.3 Requirements for Financial Capability

The RFQ should require submitters to provide some form of financial capability information. This may include a list of similar projects completed, bonding capacity backlog, equipment and staffing, and other information. This will help to ensure that the firms are capable of undertaking the project.

2.3.4 Shortlist Qualified Firms

The first stage of a two-step procurement process should limit the final competitors to a field of three best qualified D/B firms. Shortlisting more teams undermines the credibility of the process and discourages high-quality proposals. For FAA projects awarded under the AIP Handbook, the method must meet with the requirements of both Paragraph 904(b)(2) from Order 5100.38c for professional services and the price competition requirements for construction.

The number of prospective bidders can impact the suitability of a project for D/B. If the owner anticipates fewer than three bids, alternative procurement should be considered if this would increase the number of bidders. If only the desired shortlist number or fewer submit bids, do not shortlist.

2.4 Development of the Request for Proposals

The RFP establishes the requirements, standards, and expectations for the project, and it should outline the owner's organization structure and how it integrates with the D/B team.

2.4.1 Balance Responsibility/Risk in Contract Language

D/B inherently imposes additional risk and responsibility upon the D/B entity. Contract language should not needlessly exacerbate this situation by attempting to pass the owner's legal risks and responsibilities on to the proposers. Examples of such unbalanced risk transfer include making the D/B entity responsible for certain types of zoning or environmental permits, concealed conditions, differing site conditions, third party delays over which it has no control, obtaining property/rights-of-way, and other similar clauses. On the other hand, D/B may quite properly assign responsibility to the contractor for compliance with performance criteria, compliance with codes, design approvals and certain permits (except those under control of the owner), and adequacy of designs to meet expressed purposes.

The information that the owner provides in the RFP also will impact the allocation of risk. The owner should be aware that risk allocation may impact the cost of the project, as well as affecting

the D/B entities' cost of developing technical submissions. For example, if the owner provides only limited or no geotechnical information, it may be necessary for the proposers to undertake their own geotechnical investigations in order to complete technical submissions. This not only impacts the costs to the proposers but also likely will impact operations at the facility.

2.4.2 Disclose the Project Budget

The D/B process can be useful for achieving budgetary goals. If there is a budget amount above which an award absolutely will not be made, this should be stated. Proposers have the right to know that funding is available for the project before investing the considerable resources that a D/B proposal requires.

2.4.3 Create Knowledgeable Selection Panel

The panel responsible for evaluating proposals should include individuals knowledgeable in the D/B process and the technical issues related to the project. The panel should consist of sufficient members with representative expertise reflecting the requirements of the RFP to ensure that a full and detailed technical evaluation of the selection criteria can be completed.

2.4.4 Consider Applicability of a Stipend

On large or complex projects, or where the quantity of documents required for submission of a proposal is relatively great, the owner should consider paying a stipend to unsuccessful proposers. While many firms may compete in the absence of such payments, excessive submittal requirements and preliminary design effort may discourage quality teams from participating. A stipend also is an indication that the owner is serious about awarding and receiving a quality project. A stipend in the order of 0.01 to 0.2 percent is considered typical. The value of the stipend should be commensurate with the work required to prepare the bid. Typically, smaller projects use a higher stipend percentage.

2.4.5 D/B Team Organization

One of the chief benefits of D/B is that the owner will deal with a single entity for both the design and the construction of the project. There is often a misconception that this means that the owner has relinquished control of the project. This is not the case, as owners still are responsible for developing the project, contract administration, and quality assurance.

The D/B entity should be required to submit a management plan as part of the technical submission. The management plan should include details on the organization of the team, internal and external lines of communication, and levels of responsibility.

The internal structure of a D/B team generally takes one of two forms: designer-led or contractor-led. Project-specific joint ventures between a design firm and contractor have been used on some large projects. The distinction is in which entity assumes the greatest risk and liability. Many would argue that the risks typically associated in construction of a facility are

higher than the design of a project, and therefore are best dealt with by a contractor-led team. A typical D/B organizational chart is provided in Figure 2.2.

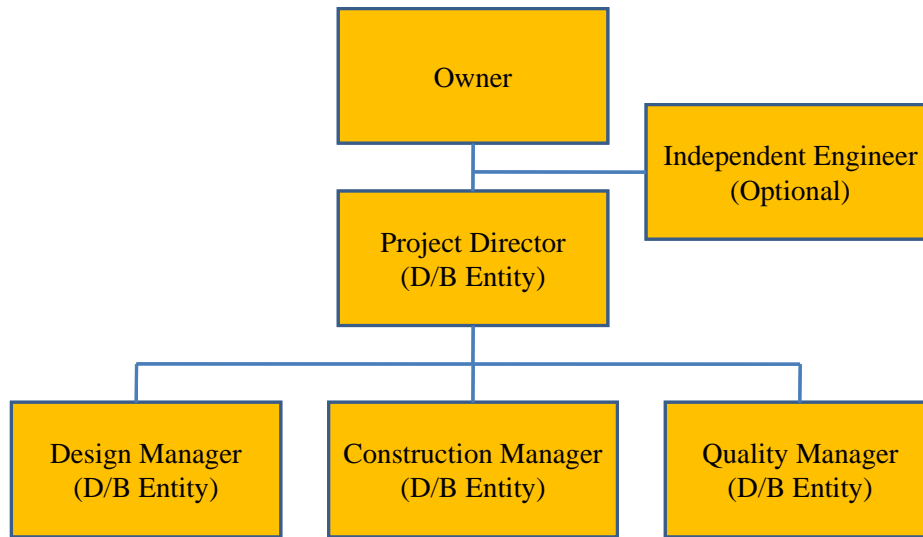


Figure 2.2. Typical organization and project roles for D/B projects.

The D/B entity assumes the combined risk of both the design and the construction of the project. Within the D/B team, roles and responsibilities must be clearly defined. Typically, professional liability insurances do not offer coverage for construction-related claims. This also would include indemnification and dispute resolution.

Many owners have found that IEs, retained by mutual agreement between the owner and the contractor, can fill the gap as the owner's agent. The IE can act as reviewer, provide overview, certify work completion and payment, mediate dispute resolution, etc. The IE's mandate should be defined clearly in the D/B contract. It is also very important to choose an IE who understands the D/B process and is willing to work with the D/B team to ensure that the technical requirements are met, and not to dictate design. Often, the cost of the IE is shared between the D/B entity and the owner, and it can be included in the D/B contract.

2.4.6 General Design Guidelines and Mandatory Design Requirements

The project documents should outline general design guidelines and mandatory design requirements. General design guidelines would include the FAA design manuals as well as local and State design criteria. Mandatory design requirements would include aircraft design group requirements, aircraft traffic mix and frequency, design life, FAA lighting and navigational aids requirements, and the like.

2.4.7 Subcontracting Requirements

The perception in the contracting community is that a small business cannot compete with larger companies on D/B projects. However, experience has shown that many large firms tend to

subcontract to local companies. Further, in the acquisition process, many RFPs award points to technical proposals that have a balanced approach to subcontracting. Agencies that encourage, or have mandated, participation of disadvantaged business enterprises (DBE) should include these requirements in the RFQ/RFP process. Depending on agency preference, points may be awarded to proposers that commit to the minimum requirements.

2.4.8 Operational Requirements

The RFP documents must outline operational requirements for the project. This includes access to the site, available working times, security requirements, restrictions on proximity to live surfaces, height restrictions, noise, etc.

2.4.9 Use of Performance-Based Criteria/Specifications

The technical requirements listed in the RFP should, as far as possible, be defined in performance terms. They should be sufficiently comprehensive to ensure that the intended result is achieved, but not restrictive in a way that would inhibit creative solutions and best value.

The owner should identify the specifications and standards that are to be followed for the project and the limitations for changes to the specifications that would be accepted. The standard project specifications should be of sufficient detail to ensure that the owner's requirements for construction quality are met. The specifications should not be modified without the express approval of the owner.

2.4.10 Owner Provided Information

The owner needs to provide adequate information to the bidders to permit the completion of a preliminary design and costing. This information may include:

- Topographical survey
- Geotechnical investigation (including laboratory testing)
- As-built plans (existing electrical, underground utilities)
- Performance documentation
- Design criteria
- Airside layout
- Design requirements (life, aircraft mix, drainage, electrical, lighting, nav aids)
- Operational requirements
- Master plan
- Staging areas
- Access and security

There are two philosophies regarding the level of information that should be provided to the D/B team. One is to provide preliminary design-level information to define minimum requirements such as geometry, pavement type, and the like. The advantage of this approach is that the owner

can dictate part or all of the design. The disadvantage is that the owner takes on more risk and limits innovation.

Alternatively, the owner can provide only base data from which the bidders must develop their own design to meet the project requirements. Typical base data would include a topographical survey, raw geotechnical information, as-built plans, and historical performance information. The advantage of this approach is that the owner minimizes risk through transferring the design liability to the D/B, but the disadvantage is that the owner has less control over the design.

There is a minimum amount of information that must be provided irrespective of the option chosen. This would include performance specifications, environmental approvals, geotechnical information, and topographical survey. To minimize the amount of disruption to airside operations, it often is impractical to allow each D/B team to undertake its own geotechnical investigation and topographical survey. Therefore, the owner may elect, schedule permitting, to solicit scope from the teams and consolidate this information into one overall information gathering plan. The resultant data from this investigation are then shared with all bidders. This is one option to transfer the risk from the owner to the prospective D/B teams.

Typically, information is provided to the preliminary (30 percent) design level. This information should state the purpose, function and characteristics of the project. This typically would include a project site plan, facility layout, geotechnical information, topographical information, performance specifications, pavement sections and critical details, airport master plans, and utility plans.

An example of RFP content for drawings is provided in Unified Facilities Criterial Model Design-Build (D-B) Request for Proposals (RFP) for Airfield Construction (UFC 3-260-11FA), Chapter 2. Table 2-1 from that document is provided herein as Table 2.3.

Guidelines for geotechnical investigations, including test types and frequencies for airside pavements, are provided in FAA AC 150/5320-6D.

If insufficient information is provided in the bid phase, the inherent risk of the D/B team increases significantly, and this risk is reflected in the bid price.

2.4.11 Limit Design Direction in RFP

Certain specific areas of design that are critically important to the owner—and that should not be compromised under any circumstances—should be stipulated in detail without reducing opportunities for full creativity elsewhere throughout the project. In general, limiting direction in design/construction will lessen the potential for D/B teams to achieve innovative solutions.

Table 2.3. Suggested RFP content for drawings.

Drawing Description	Information Provided		
	Minimal	Partial	Full
Cover Sheet		X	X
Location Plan/Project Site Plan	X	X	X
Contractor Access, Storage, and Haul Routes	X	X	X
Horizontal and Vertical Control		X	X
Existing Topography (if available)		X	X
Existing Utilities		X	X
Demolition Plans		X	X
Runway Geometry w/Key Elevations		X	X
Taxiway Geometry w/Key Elevations		X	X
Apron Geometry w/Key Elevations		X	X
Typical Pavement Sections	X	X	X
Phasing Plans		X	X
Conceptual Drainage Plans			X
Conceptual Grading Plans			X
Conceptual Jointing Plan			X
Joint/Sealant Detail			X
Grounding Point Locations			X
Mooring Point Locations			X
Pavement Marking Plans			X
Visual Navigation Aids Location			X
Electronic Navigation Aids Location			X
Apron Lighting Plan			X
Electric Vault Location			X

2.4.12 Use Lump Sum Contracts When Selection is Competitive

The contract for D/B services obtained competitively generally should be made on the basis of a lump sum fixed price. The use of guaranteed maximum or cost plus contracts when price was a factor in the initial award is inappropriate and fails to recognize the special risk position imposed on the competitors.

2.4.13 Requirements for Financial Guarantee

A requirement for proposers to submit bid bonds or other forms of financial guarantee assures the owner that the selected D/B team is financially capable of performing the work and reduces the possibility that unrealistic designs are submitted without financial risk for later withdrawing.

2.4.14 Project Management Plans

As part of the RFP submission, the D/B team typically is required to submit an outline of its project management plans. Once selected as the preferred bidder, detailed project management plans that govern all aspects of the delivery of the project must be delivered. The plans typically include:

- Mandatory Project Management Plans
 - Overall Management Plan
 - Design Management Plan
 - Construction Management Plan
 - Quality Management Plan
- Optional Project Management Plans
 - Environmental Management Plan
 - Safety Management Plan
 - Airfield Traffic Management Plan

Typically, these plans would follow the basic framework of the International Standards Organization (ISO) guidelines. In essence, the plans establish the procedures to be followed, how they will be followed, and documentation that they have been followed. These are living documents that may be updated regularly during the course of the project.

An example table of contents of a typical quality management plan is presented in Table 2.4.

2.4.15 Bonding and Insurance

Basic comprehensive liability coverage is typical in the construction industry and would include auto, employers, workers compensation, builder's risk, and excess liability. These policies typically exclude liability arising from design errors and omissions.

As D/B teams often are contractor-led, many take the form of limited liability companies, joint ventures, or similar entities that customarily carry general liability coverage that would be considered typical for contractors. As a result of policy endorsements and exclusions, there can be gaps in coverage, or insufficient coverage, for professional liability.

D/B agreements should consider project-specific liability insurance with limits commensurate with the size of the project. These policies have terms that continue through construction to upwards of 10 years after construction. These types of policies would insure both the design professionals (and subconsultants) and the constructor (and subcontractors).

Table 2.4. Example table of contents for quality management plans for a D/B project.**PART 1 QUALITY MANAGEMENT SYSTEM**

- 1.1 Quality Management System
- 1.2 D/B Team Responsibilities
- 1.3 Quality Management System Requirements
- 1.4 Certification
- 1.5 Documentation Deliverables
- 1.6 Timing of Implementation
- 1.7 Compliance with Quality Management System
- 1.8 Continuous Improvement in Quality Management System

PART 2 QUALITY DIRECTOR

- 2.1 Appointment and General Responsibilities
- 2.2 Specific Responsibilities

PART 3 TESTING

- 3.1 Testing Requirements
- 3.2 Accreditation Standards
- 3.3 Remedial Work

PART 4 QUALITY AUDITS AND MONITORING

- 4.1 Quality Audit Plans
- 4.2 Owner's Quality Audits
- 4.3 Owner's Monitoring
- 4.4 Deficient Quality Audits
- 4.5 Third Party Audits

PART 5 QUALITY DOCUMENTATION

- 5.1 Principles
- 5.2 Quality Plan Reference Documents
- 5.3 Quality Documentation Requirements
- 5.4 Submission of Quality Documentation
- 5.5 D/B Team Obligation to Update
- 5.6 Changes to Quality Documentation
- 5.7 Amendment of Quality Documentation
- 5.8 Quality Records
- 5.9 Quality Management System Reports
- 5.10 Additional Information

PART 6 NONCONFORMITIES

- 6.1 Nonconformity Reporting Process
- 6.2 Nonconformity Report Tracking System
- 6.3 Unresolved Nonconformity
- 6.4 Nonconformity Records

Contract surety bonds provide financial security and construction assurance on construction projects by assuring the project owner that the contractor will perform the work and pay certain subcontractors, laborers, and material suppliers. Traditionally, surety bonds excluded coverage for errors and omissions.

The bonding and insurance coverage should be commensurate with the project size and in accordance with specific agency requirements.

2.4.16 Warranty and Performance Measures

The D/B team is responsible for QC and process control. The owner relies on the team's quality management plan to identify and correct non-conformities in the project. As the owner is not directly involved in the quality management of the project, many defects may not be readily identifiable.

Warranties should require repair or replacement of defective work, or work that does not conform to the contract requirements during the warranty period. The warranty should reference the specific performance measures for the item in question over the term of the warranty. Often, warranties will have extensions for remedial work completed during the warranty period.

Warranty terms typically range from 1 to 5 years. One year may be too short, considering that the owner is limited to an oversight role during the construction process. On the other hand, beyond 5 years can raise surety issues and is thought to be excessive. Two to 3 years is reasonable for the initial progression of pavement distress due to design, materials, and construction deficiencies. The length of the warranty should be tied to the amount of QA inspection and testing conducted by the owner; extensive testing by the owner should provide a high degree of confidence in the quality of the construction work and therefore require a shorter warranty period. It also should be recognized that unlike highways, access to the areas to be repaired may be more difficult for airports/airfields.

2.5 Evaluate and Award

Evaluation and award will include answering bidder questions and possibly individual bidder meetings. Once the proposals are submitted, the owner would evaluate the bidder submissions based on the established selection criteria and weighting factors and award the contract.

2.5.1 Answers to Questions and Individual Bidder Meetings

Some agencies allow meetings with individual bidders during the bid phase to assist in clarifying specific points of the design and procurement process.

2.5.2 Proposal Submission and Evaluation

Once received, proposals are evaluated on the basis of quality of design, price, and other predetermined factors (best value).

2.5.3 Conduct Separate Evaluation of Price and Qualitative Issues

Qualitative issues are best evaluated before prices are revealed. This prevents the tendency of allowing knowledge of price to short-circuit a thorough review of qualitative issues. Owners should request that qualitative and cost sections of a proposal be submitted in separate sealed envelopes, with the price envelope opened only after the qualitative evaluation has been concluded.

2.5.4 Shortlisted Bidder Presentations

Typically, shortlisted bidders are asked to present their technical bids at a meeting in front of the evaluation panel. This gives the panel an opportunity to gain a better understanding of the bidder's proposal and evaluate their team qualifications and the technical concepts of the bid.

2.5.5 Promptly Award the Contract

Once a selection has been made, the project should be awarded in a prompt and straightforward manner without on-going adjustments to the proposer's submission. Review meetings with the owner for the purpose of design modification should be conducted following selection and prior to award, not while proposers are in a competitive posture. This principle also applies to price, which should not be subject to negotiation or modification between formal submission and selection.

2.5.6 Use of Documents/Design Concepts from Unsuccessful Proposers

The winning design proposal submitted in a D/B competition is the design that ultimately should be constructed. Use of design concepts from unsuccessful proposers without compensation (stipend) is considered inappropriate and unethical.

2.5.7 Contract Award

Prior to the award of the contract, the contents of both the technical and financial proposal must be reviewed to ensure that the proposer is meeting the expectations of the owner. The selected proposer enters into a contract with the owner that incorporates both the owner's requirements and the D/B entity's proposal.

2.5.8 Execute Contract

The contract should incorporate both the owner's requirements and the D/B entity's proposal.

2.6 Project Performance

The final step in the D/B procurement is the administration of the contract. This would include monitoring of compliance with management plans including documents and submittals. This may also include the owner's right to complete independent QA inspection and testing.

2.6.1 Documents/Approvals/Construction

Upon completion of the design documents for all elements (or for specific phases) of the project, construction commences. The contract may call for fast track methods, allowing for construction to commence after logical phases of design and permitting are completed, but prior to completion of the entire body of construction documents.

2.6.2 Auditing/Monitoring

Although the contractor is fully responsible for the quality of all work, D/B agreements should provide for the owner's right of access at any time to all records produced in the performance of the work, including inspection records and test results, and to conduct sampling, to ensure the contractor is adhering to all requirements of the agreement. Weekly progress meetings should be held with the D/B team to monitor performance. Meetings should be well documented, including follow-up of action items.

D/B agreements also should include provisions confirming the owner's right to audit the contractor's work to ensure that the owner's requirements are being achieved. Such review may consist of random or milestone inspections or audits, continuous inspection, sampling and testing for audit purposes, or any combination thereof.

2.6.3 Final Acceptance

Prior to final acceptance of the work, all systems being inspected shall be completed and approved for acceptance by the quality management plan. A final inspection should be completed by the quality manager and owner. The inspection will verify that the facility is complete and ready to be accepted. A "punch list" should be developed as a result of this inspection, and the quality manager will ensure that all items on this list are addressed prior to final acceptance.

2.6.4 Dispute Resolution

The D/B contract should outline a method for dispute resolution. One way to minimize dispute is through partnering, which fosters cooperation between the owner and the contractor to resolve their disputes. Many owners and contractors have established dispute resolution boards to diffuse issues before they become formal disputes. Typically, the board consists of three respected, experienced individuals: one appointed by the owner, one appointed by the contractor, and a third appointed jointly. Arbitration is another frequently used method for dispute resolution.

APPENDIX A: SUITABILITY OF FAA CONSTRUCTION SPECIFICATIONS FOR USE WITH DESIGN/BUILD

Projects funded under the AIP must be designed and constructed in accordance with approved policies, standards, and specifications. FAA AC 150 5370-10C provides standards for the construction of airports. The AC includes general provisions, as well as construction and material specifications for earthwork, subbase and base courses, stabilized base courses, flexible pavement, rigid pavement, miscellaneous, fencing, drainage, turf, and lighting installation.

AC 150 5370-10 is applicable for use with D/B projects. The standards, as written, allow for sufficient flexibility to permit modifications to suit local materials, methods, and requirements. Owners contemplating D/B should ensure that the appropriate modifications are identified as part of the RFP design criteria to ensure that appropriate methods and materials are identified. The following notes are provided to assist in preparing appropriate contract specifications and modifications.

Note: *Italicized text in the subsequent sections has been provided as commentary for designers in preparing special provisions to adapt AC 150 5370-10 for D/B use.*

Part 1 – General Provisions

SECTION 10 DEFINITION OF TERMS

10-18 ENGINEER. The individual, partnership, firm, or corporation duly authorized by the Owner to be responsible for engineering inspection of the contract work and acting directly or through an authorized representative.

Consideration should be given to separate definitions for the DESIGNER and the OWNER and/or INDEPENDENT ENGINEER to suit the D/B contract.

10-24 INSPECTOR. An authorized representative of the Engineer assigned to make all necessary inspections and/or tests of the work performed or being performed, or of the materials furnished or being furnished by the Contractor.

Should be clarified to define the inspector as a representative of the Owner and/or Independent Engineer.

SECTION 20 SCOPE OF WORK

This section is generally suitable as a component of a D/B contract.

SECTION 30 AWARD AND EXECUTION OF THE CONTRACT

This section is generally suitable as a component of a D/B contract.

30-01 CONSIDERATION OF PROPOSALS. After the proposals are publicly opened and read, they will be compared on the basis of the summation of the products obtained by multiplying the estimated quantities shown in the proposal by the unit bid prices. If a bidder's proposal contains a discrepancy between unit bid prices written in words and unit bid prices written in numbers, the unit price written in words shall govern.

Must be modified to reflect the best value selection rather than a summation of unit bid prices and quantities.

SECTION 40 SCOPE OF WORK

This should be reviewed and revised carefully, as there is a lot of discussion about scope change and authority for change.

40-02 ALTERATION OF WORK AND QUANTITIES

This section needs to be reworded to reflect the D/B contract. Changes to the project scope would have to be defined clearly to allow for the development of cost and schedule extensions/reductions by the D/B team. Text similar to Section 40-04, Extra Work, may be appropriate.

40-06 REMOVAL OF EXISTING STRUCTURES

Wording of this section should be modified to reflect the project risk allocation matrix.

40-07 RIGHTS IN AND USE OF MATERIALS FOUND IN THE WORK

Wording of this section should be modified to reflect the project risk allocation matrix.

SECTION 50 CONTROL OF WORK

50-01 AUTHORITY OF THE ENGINEER. The Engineer shall decide any and all questions which may arise regarding the quality and acceptability of materials furnished, work performed, and the manner of performance and rate of progress of the work.

This section requires fundamental changes to suit the specific D/B project requirements and roles of the Owner and the D/B entity. The Independent Engineer, if retained, should be monitoring and reporting compliance with the contract, but not directing the work, as the section appears to be written. The authority and responsibilities of the Engineer are reiterated throughout AC 150 5370-10C. Acceptance of work should be based on the Quality Management Plan (QMP) and should likely require certification from the

Designer with confirmation from the Independent Engineer (if retained). Within the construction specifications, the specification of materials and material quality should be based on the design criteria and the Designer (as opposed to the Owner's agent, as referred to in the definitions).

SECTION 60 CONTROL OF MATERIALS

This section should be modified to reflect the requirements of the QMP.

SECTION 70 LEGAL REGULATIONS AND RESPONSIBILITY TO THE PUBLIC

This section is generally suitable as a component of a D/B contract.

SECTION 80 PROSECUTION AND PROGRESS

This section is generally suitable as a component of a D/B contract.

SECTION 90 MEASUREMENT AND PAYMENT

The measurement component of this section is considered suitable for D/B as confirmation of material quantities incorporated into the work. The payment component will need some modification to suit the D/B contract.

SECTION 100 CONTRACTOR QUALITY CONTROL PROGRAM.

This section is suitable as a component of the D/B QMP.

100-10 SURVEILLANCE BY THE ENGINEER.

As with Section 50, change to Independent Engineer or Owner would be appropriate.

The subsequent sections of AC 150 5370-10 deal with the actual construction and material specifications. In general, the specifications will require modifications to suit local materials, methods, and requirements. Modifications also should be considered with respect to the authority of the Engineer. Throughout the specifications, there are references to "as approved by the Engineer" (see comments with respect to Section 50 of the general provisions). All specification sections will need modification to the basis of payment to suit the D/B contract. Nevertheless, the specifications are suitable for use with D/B.