

DESIGN-BUILD PROJECT DELIVERY

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Design Build as a Project Delivery System

I. INTRODUCTION

A. Design Build

There are three types of project delivery systems that are commonly used in North America. They are:

1. Design-Bid-Build (most frequently used in U.S)
2. Design-Build
3. Construction Management

The purpose of this course is to familiarize the practitioner with Design-Build concepts, since this delivery method has experienced rapid growth in North America in the past decade. It is the predominant form of project delivery outside the United States.

Under the design-build delivery method, the owner contracts with one entity to provide a final design and to construct the project in accordance with that design. In some cases, the owner may provide a conceptual or preliminary design in order to guide the design-builder in preparing a design-build proposal.

Design-build provides the owner with a single point of contact for project responsibilities and thereby eliminates the need for resolving conflicts between design professionals and constructors. This results in enhanced project benefits as will be discussed, in detail, hereinafter.

A number of professional and technical organizations have cited reasons why the design-build project delivery method is preferred. These include:

1. Demands for better quality in the constructed project.
2. Financial considerations since project budget, schedule and constructibility are emphasized throughout the process.
3. To an extent, adversarial relationships are eliminated.
4. Responsibilities and risks are divided according to the entity (ies) most able to handle them.
5. Influence of global markets and foreign competition.
6. A changed perception by business and government on project delivery systems.

B. Benefits

Design-build advocates, as well as technical and professional organizations cite many benefits to the design-build project delivery method. They include the following:

1. **Single Point of Responsibility.** Since both design and construction is performed by a single entity, there is a single point of responsibility and accountability for quality, budget, and schedule adherence and performance of the completed project. Conflicts between design professionals and constructors are eliminated. The owner can

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focus on broader project issues, such as financing, leasing, etc. and does not have to be involved with coordination between design professionals and constructors.

2. **Quality.** Since the design-builder is singularly responsible for the completed project and cannot shift responsibility for defects to another party, there is ample motivation to build in quality throughout the design and construction process. The design-build process eliminates the adversarial situations that sometimes develop under the design-bid-build process and thereby affect project quality.

3. **Time Savings.** The total time to complete the project is substantially reduced under the design-build method. This is due to several factors, including overlapping of the design and construction periods, elimination of the bidding periods, expediting of shop drawings and other contract submittals, and the ability to make timely procurements. Some will argue that time will be saved because construction can commence before the construction documents are complete, but the requirement for obtaining project permits before construction commences usually negates this argument. Most jurisdictions require completed construction documents before they will issue permits.

4. **Cost Savings.** Since designers, constructors, vendors, suppliers, and materialmen work as a team they are able to evaluate alternative designs, materials and methods efficiently and accurately. This continuing project scrutiny often results in substantial cost savings, both initial project costs and operating costs over the life of the project.

5. **Early Knowledge of Firm Costs.** In the design-build system firm or “guaranteed” construction costs are known much earlier in the process compared to other delivery systems. This can be of substantial benefit to the owner in assessing project feasibility, obtaining project financing and developing marketing strategies.

From the benefits described hereinabove, it is evident that the design-builder assumes a greater risk that will result in greater value to the owner than that available under traditional project delivery systems. Accordingly, a design-builder’s fees should reflect the greater risk assumed and value created. The potential benefits and the degree to which they are realized is related to the owner’s ability and willingness to adapt to the design-build approach.

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II. TYPES OF PROJECTS

A. Public Sector

The design-build project delivery system is utilized on all types of civil infrastructure projects including transportation facilities (roads, bridges, airports) environment projects (water and wastewater treatment, solid waste facilities) water resource facilities (flood control, stormwater management, drainage) and public building and structures.

Design-build was the predominant method of procurement in North America and most of the world until about 1850. In the latter part of the 1800's and early 1900's the licensure of design professionals came into being and the process of constructing civil infrastructure evolved to the traditional design-bid-build system. It was thought that the public would be better protected by an independent licensed design professional that would represent the public sector entity in the design of publicly funded projects. While the design-bid-build process has received a high level of public acceptance, it does have some disadvantages. Since the project design is developed sequentially and since most projects are of a relatively complex nature involving several design professionals, coordination of the design may become difficult and the assignment of responsibility is complex. The design-bid-build process is slow, has considerable front-end costs and provides no guarantee on project costs. In addition, the process does not provide an opportunity for constructors to contribute their experience in the areas of project costs, constructability, alternative designs and other construction related activities that may be beneficial in the successful completion of the project.

In the 1960's, public officials, largely due to the concerns expressed above, looked at alternative procurement methods that would result in public projects having the same advantages that the private sector enjoyed. This resulted in fundamental changes in the way in which public owners implemented civil infrastructure projects. Since the 1960's, there has been a dramatic shift away from the design-bid-build process to a process of single-point procurement of both design and construction.

The major thrust of this transition was the desire on the part of the public sector owners to obtain procurement based on performance criteria and to achieve up-front cost guarantees.

Procurement procedures for design-build were legislated by federal, state and local government jurisdictions and today, it is a well-accepted procurement method by most jurisdictions. Florida is one of the lead states using design-build. The Florida Department of Transportation has extensive experience with design-build contracts for highway and bridge projects. Following a pilot program consisting of thirteen (13) projects, the FDOT concluded that almost all of the benefits alleged by the design-build industry were achieved, including less total time for project completion and the elimination of most claims. In addition to the state, many local government jurisdictions in Florida have used design-build on water and wastewater facilities.

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B. Private Sector

In the private sector, the design-build delivery system is used on projects involving commercial office buildings, manufacturing plants, process industry facilities, hospitals and medical facilities and related types of commercial/institutional projects. The owners of these projects can be either a single ownership or a corporation. The same design-build advantages, which accrue to public sector projects, are also prevalent on private sector projects. However, there are some added advantages, as will be discussed hereinafter.

The design-build system is ideally suited to the private sector where the efficient use of capital funds is mandated. To be able to achieve maximum return on capital investment owners need to be able to respond to changes of technology and consumer demands. The design-builder team is ideally suited to evaluate alternatives to achieve building flexibility, which anticipates future changes in use and marketability of the facility.

Design-builders will generally find more knowledgeable and sophisticated owners in the private sector. In most cases the owners “have been there before” and have experience with repeat projects. Many times the owners have substantial in-house staffs, standard contracts, and standards for design and execution of projects. Thus, the design-builder needs to be aware of owner requirements that may not be consistent with “standard” industry practices. Alliances between owners and design-builders for a series of projects can be instrumental in achieving successful projects, since the design-builder becomes familiar with the owners’ standards and practices and the owner gains confidence in the design-builder with each successive project.

The design-build project delivery system allows owners in the private sector to execute projects with the least distraction from business and use of minimal internal resources. This is achieved with the use of performance criteria in lieu of equipment and material specifications. It also offers the lowest cost and fastest schedule because the design-build contractor is most proficient in managing the risk associated with the construction phase.

In their research paper [Comparison of U.S. Project Delivery Systems](#) sponsored by the Construction Industry Institute, Konchar and Sanvido of Penn State University used data from 351 building projects with the findings that design-build was superior to traditional design-bid-build because:

- Unit costs were at least 6.1% less
- Construction was at least 12% faster
- Overall project delivery was at least 33.5% faster
- Cost growth was at least 5.2% less
- Schedule growth was at least 11.4% less
- Quality was equal or better.

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As *Engineering News Record* (ENR) pointed out in the June 6, 1994 issue, “A variety of market forces have conspired to reintroduce owners to design-build and they are now asking for it on a wider range of projects than ever before. What owners apparently want is certainty and they want it sooner in the construction process. They want single point of contact and responsibility. They want guarantees for price and schedule. The most powerful forces in U.S. industry today invariably seem to favor design-build.”

The Design-Build Institute of America cites the following advantages why design-build is rapidly becoming the capital project delivery system of choice by owners:

- \pm 20% cost savings with competitive or negotiated selection of contractor
- Schedules that are \pm 20% shorter over other delivery systems
- Minimum budget variations due to better cost control
- Most accurate earlier knowledge of total cost
- Value engineering and constructability review during front end loading
- Best fit with total quality management programs
- No construction market risk
- Single contract administration
- Single source for responsibility
- Optimum outsourcing to most cost effective contractors and vendor equipment
- Simple cash flow
- No engineer/constructor conflicts
- Scope control that assures the “wants” don’t exceed the “needs”
- More congruent with partnering
- Significantly less litigation and/or claims.

Owners benefit with design-build because:

- More improvement projects clear the high return on investment (ROI) hurdle rates
- More projects can be done with the same budget
- Superior results mean greater credibility and more capital
- Greater flexibility in capital cash flow management
- Faster startups in a competitive marketplace
- Less internal project management costs since contractors are self-policing
- Little or no litigation costs

Contractors benefit with design-build because:

- Higher productivity delivers superior value
- CAD investments provide positive returns
- Administrative costs are minimized
- Organization is streamlined

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- Accounting is simplified
- Minimum disruptive scope changes because of better front-end loading.

III. SELECTION OF DESIGN-BUILDER

A. Selection Procedures

Typical types of design-build selection procedures include the following:

1. Fixed Price/Weighted Criteria – The design-builder submits a qualitative proposal and a firm price. The owner establishes a point rating for both qualitative factors and price. The owner may hear oral presentations from each proposer. He then assigns points on a scoring matrix for each proposer's response to each of the evaluation factors contained in the qualitative proposal. Price is then considered with maximum price points assigned to the lowest dollar bid. All other proposer's prices are scaled inversely proportional to the low bid. High total points (qualitative proposal plus price) then determine the award.

2. Adjusted Low Bid – This is a variation of the weighted criteria. The qualitative proposal (including oral presentations, if applicable) is scored on a scale of 0 to 100 percent. The proposer's price is then divided by the qualitative score to yield an "adjusted" bid. The lowest adjusted bid is recommended for contract award.

3. Equivalent Design-Low Bid – The evaluation procedure parallels the two previous processes up to the receipt of the qualitative proposals. The technical proposals are critiqued and each proposer is given an opportunity to respond with specified design changes and corresponding price amendments in order to make all proposals technically equivalent. Revised designs and price proposals are evaluated by the owner and the award is made based predominantly on price, since the proposal critique should have created equivalent designs.

4. Fixed Price/Best Design – The contract price is established by the owner in the RFP. Qualitative or technical proposals are received and the owner uses its evaluation criteria to score the proposals. The award goes to the firm having the highest scoring proposal for the stipulated price.

5. Meets Criteria/Low Bid – This method of evaluation most closely resembles the traditional bid process. The RFP provides highly specific requirements which constitutes a detailed preliminary design. Proposals are solicited from qualified firms, evaluated, determined to meet the base criteria and the award is made to the low bidder. The selected firm completes the construction documents based on the owner's criteria and performs the construction.

6. Emergency Award – Most public agencies have the legal authority to negotiate with the best-qualified design-build firm available at the time, when public safety or welfare is threatened.

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7. Negotiation – This procedure is not permitted with public sector projects (except in an emergency). However, it is used extensively in the private sector where owners have a great deal of flexibility in conducting their business. In the negotiation process, owners can make decisions on a more subjective basis rather than following established selection procedures prevalent in the public sector.

B. Request for Proposal (RFP)

The Request for Design-Build Proposals is the primary contractual document between the owner and the proposers. It describes all of the relevant project and contractual requirements before engaging in the competitive process.

Elements of a typical design-build RFP include the following information:

- Identification of Owner, Consultants, Selection Committee and Design-Build Teams
- Instructions to Proposers
 - Eligibility and Submittal Stipend (fees paid to unsuccessful proposers)
 - Communications Channels
 - Pre-proposal Conference(s)
 - Selection Schedule
 - Proposal Form
 - Alternates
 - Supplements to Proposal Form
 - Presentations
 - Disqualifications
- Selection Criteria
- Basis of award
- Information Provided by Owner
 - Surveys
 - Geotechnical Information
 - Environmental Impact Statement
 - Design Standards and Criteria
- General Conditions of Contract
- Agreement and Bond Forms
- Program Facility Requirements

The program facility requirements are the owner's detailed and specific expression of project needs. As primary contract documents, they describe the end product to be produced and delivered by the design-builder. Since these documents are detailed and somewhat technical in nature, the owner often will use a consultant or design professional for this activity. The program of facility requirements will contain component parts, which will be specific to the project. For example, if the project involves civil infrastructure, the program will describe capacity requirements, design speeds, environmental considerations, etc. If the project involves a building or structure, net area requirements, usage, intra-office relationships, specific arrangements, etc. will be described in detail. The program

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- of facility requirements needs to be presented in sufficient detail so as to avoid future change orders made without the benefit of competitive pricing.
- Performance Specifications – Indicate how the completed facility/system is expected to perform. They describe the expected characteristics of the completed project and utilize industry standards, whenever practical, to denote the levels of quality and performance desired. The selection of specific systems or materials is left to the discretion of the proposer.

C. Request for Qualifications (RFQ)

The request for design-build qualifications is issued by the owner and is a formal request for qualifications from the design-builder for consideration for selection for the project. In the RFQ, the owner lists specific information needed for consideration and describes the selection criteria that will be used to select the design-builder. The proposers submit a “qualifications package” that includes: experience, expertise, past performance, resources, and design, construction, and management skills. After the owner evaluates the “qualifications package”, on many projects, a “short listing” of proposers is made. The finalists then compete on the basis of their approach to the project, design innovation and excellence, value added to the project, and responsiveness to the owner’s objectives, including cost. On most projects, the finalists will have the opportunity to present the above information to the owner by means of a personal presentation. Often, these presentations involve graphics such as slides, videotapes, power point presentations, and display boards.

Elements of a typical design-build RFQ include the following:

- Identification of owners
- Description of project and scope
 - ♣ Facility type, size, capacity, etc.
 - ♣ Estimated cost
 - ♣ Project schedule
- Selection Process
 - ♣ Type of design-build competition
 - ♣ Key dates
 - ♣ Pre-submittal conference
 - ♣ Number of finalists
 - ♣ Stipends, if any
 - ♣ RFP Requirements
 - ♣ Proposal selection criteria
 - ♣ Basis of Award
- Identification of Selection Committee
- Minimum Requirements of Design Build Team
- Submittal Requirements
- Pre-Qualification Selection Criteria
- Submittal Deadline and Address

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An owner may publish both the RFQ and the RFP together as a single comprehensive document.

D. Advertisement

Practically all public bodies are statutorily required to publish notice of pending projects in a newspaper of general circulation in the area in which the project is intended to be constructed. On projects of significant scope and magnitude additional notices are placed in other areas from which the owner expects to create an interest in the project. These legal notices usually contain only basic information concerning the project from which the design-builder can then determine if an RFP/RFQ should be requested.

E. Pre-Qualification of Design-Builder

Many owners wish to pre-qualify proposers to determine what size projects the design-builder has the capability to execute. The pre-qualifications process establishes minimum requirements which the owner deems necessary for a certain size and type of project. On projects of a lesser or greater magnitude, the owner may either decrease or increase these minimum requirements, as applicable.

Typical pre-qualification selection criteria include the following:

- Builder's financial and bonding capacity
- D/B team's experience
- Record of design and technical excellence
- Staff experience
- Design-build experience
- D/B's organization and management plan
- D/B's record of on-budget performance
- D/B's record of schedule compliance

IV. TEAMING AGREEMENT

A. Introduction

A teaming agreement is similar to a memorandum of understanding in that it sets forth the terms and conditions under which each member party in a design-build team will operate. It defines the role of each team member and their relationship between the parties. The teaming agreement is a legal document since it will form the basis for subsequent contracts between the parties should the team be successful in being selected for the design-build project. Accordingly, each of the parties entering into a teaming agreement should obtain their legal counsel's opinion with respect to the document. While teaming agreements generally involve designers and constructors, other key consultants may become involved depending on the type of design-build project that is proposed.

Design-build team members are usually selected on the basis of the experience, expertise, value and reputation that each member will bring to the team. Of equal importance is the ability of the respective team members to be compatible, to communicate and to work together toward the common goal of completing the design-build project successfully. Each member of the team should have similarly minded philosophies with regard to ethics, business practices and values.

Many design-build teams have worked together on numerous projects and have the advantage of knowing how each other operate and what to expect from each team member. Many owners are more comfortable working with a Design Build team that has already worked together on previous projects since they know that the team understands the process. Furthermore, owners do not want to go through a costly and time consuming procurement process and then have to enter into an extended orientation activity with the Design Build firm. They want a Design Build team that is prepared to commence work once selection is made and contracts are signed.

B. Organizational Structure

The design-build team, once formed, need to determine the type of organizational structure that is best suited for their situation and most likely to achieve the owner's requirements. There are two basic options: one is to form an individual entity, such as a joint venture or limited liability company or, one of the team members will have the prime contract with the owner and subcontract the work to the other team members.

Certain factors need to be considered before selecting the organizational structure. Probably the most important is that it must be compatible with jurisdictional statutes and licensing laws. For example, in Florida, either general contractors, professional engineers, or architects may be the lead consultant, but each profession must have licensed individuals representing their discipline. Other factors to be considered in selecting the organizational structure include:

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- Owners preference
- Type of design-build project
- Liability issues
- Ability to achieve owner's objectives

A brief discussion of the options for structuring a design build team follows:

- ◆ Joint Venture - An association of two or more entities for the purpose of performing a design-build project. The entities maintain their separate identities and join forces, usually, for a specific project. From both a legal and a tax standpoint a joint venture is viewed as a general partnership. Accordingly, each joint venture partner is jointly and severally liable for both the actions and debts and obligations of the other party. A particular benefit of a joint venture is that it affords the owner access to both the designer and constructor(s).
- ◆ Limited Liability Company - An entity possessing attributes of both a general partnership and a corporation. An L.L.C. is permitted in most states. As the name suggests, the entities in an L.L.C. limit their liability to the assets of the L.L.C. and are not individually liable for its debts and liabilities. For tax purposes, the L.L.C. is treated as a partnership. A disadvantage of the L.L.C. is that, because its liabilities are limited, owners are reluctant to enter into a contract with them without some form of security guaranteeing the L.L.C.'s obligations.
- ◆ Prime-Subcontractor Relationship - The most common organizational structure for performing design-build projects. Under this structure, one party, usually the constructor because of their financial resources, executes the design-build contract with the owner and subcontracts the design portion and other project elements. This type of relationship enables the owner to receive the benefits of single point responsibility and accountability. Any one of the following entities may be the prime contractor and subcontract the appropriate portion of the work:
 - Constructor - Led Team
 - Designer - Led Team
 - Developer - Led Team

Once the team members have been selected and the organization structure determined, the parties have to assign the roles and responsibilities of each party in the preparation of the team's proposal. They also need to address the allocation of proposal preparation costs, the protection and ownership of confidential and/or proprietary information and the exclusivity of the teaming arrangement. They also need to discuss post-award issues should they be selected for the project.

V. PREPARATION OF DESIGN-BUILD PROPOSAL

Since the preparation of a response to an Request for Qualifications/Request for Proposal (RFQ/RFP) involves the expenditure of considerable resources, the design-builder first has to decide whether or not to pursue a proposed project. This can usually be done by carefully analyzing the RFQ, although sometimes some investigative effort is required. The following questions and concerns must be satisfactorily addressed before a decision to proceed is made:

- Is the project type, size and scope consistent with the proposed team's capabilities, experience and resources?
- Is the area in which the project is to be located within the geographical boundaries of the team's general area(s) of operation?
- What is the relationship and/or previous track record with the owner or owner's agents?
- What are the submittal requirements both qualitative and quantitative?
- Is the criteria for evaluating and short-listing clear and unbiased?
- What is the probability of being "shortlisted" and selected?

If, on the basis of the previous analysis, it is decided to pursue the project, the first step is to assemble the team composition and begin filling key roles. The selection of a team leader/director is critical since that person should have a high profile in the design-build community and be prominent in the design-build area of practice. A teaming agreement should be developed and that has previously been discussed in Chapter IV. Finally, the team, once selected, should be motivated and strategies for winning the assignment should be brainstormed.

After the teams has been selected, a team meeting should be conducted to discuss all aspects of the project, including submittal issues and the creation of an action plan for responding to the RFQ.

The main objective in preparing the qualifications submittal should be, not only to make the shortlist, but also to establish you early on with the client, as the team most likely to win. This involves a superior RFQ submittal. The submittal strategy should include the following:

- A concise outline for the submittal based on the requirements and format stated in the RFQ.
- The identification of potential weaknesses in the team structure.
- The use of graphics to demonstrate capability to perform the work. GSA Standard Forms 254 (General Qualifications) and 255 (Specific Experience) should be updated as required.

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- A clear and concise “approach to the project”.
- A statement regarding your ability to accomplish the work
- Maximize the use of graphics to indicate the ability to produce documents of a superior nature.
- Ensure that the entire submittal is of the highest quality, in both form and substance.

Once the team has been “shortlisted” they will receive a “Request for Proposals” (RFP). Under the direction of the team leader, the RFP should be analyzed and the team should establish a detailed plan for developing the RFP elements required, including identification of all key events with dates of completion. In analyzing the RFP, the team should focus on the elements of the project that are the most crucial and the project issues that are the most complex.

By emphasizing the critical project elements and developing solutions to the complex issues, sometimes with innovative methods, the team will create a strategy for winning the assignment. Sometimes alternative, creative solutions to the owner’s requirements should be considered to enhance the chance of winning.

Responding to a major design-build RFP requires a comprehensive team effort and focus. A major element in preparing the response involves a meeting of key team members for the purpose of solving the problems defined in the RFP. The project meeting should be away from the office, to avoid distractions and interruptions, and preferably, near the location of the proposed project. The project meeting may last from one day up to several days depending on the magnitude of the proposed project. The format of the meeting is generally informal, focused, and well organized. Interactive participation by all team members is encouraged and an atmosphere conducive to brainstorming is created. Sometimes a facilitator is used to achieve these objectives. By the conclusion of the meeting design influences should be identified, an initial construction cost estimate made and options and alternatives should be considered. The meeting should be results oriented so that, at its conclusion, all project issues have been addressed and resolved.

The proposal should be prepared in response to the criteria set forth by the owner in the RFP. It should be written for a direct expression of points which correspond to the RFP criteria. Some RFP’s state the format and order in which the proposal shall be organized. Where no order is stipulated the design-build firm should use their standard outline in structuring the proposal. As soon as the outline is complete, the Project Director begins with a first draft of the text for each section and subsection, assigning tasks to team members as appropriate. Subsequent iterations of editing and style eventually result in a final completed document.

Design documentation developed in preparing a proposal response includes both pricing documents and presentation drawings.

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- ◆ Pricing documents – These are designed for internal estimating and outside subcontractor and vendor use. The drawings should clearly reflect the intent of the design through extensive use of sketches, notes quantity summaries, photos and technical cut sheets. CADD-generated drawings provide excellent base sheets for all disciplines. They can also be used for the presentation drawings. Pricing documents are used strictly for the purpose of developing cost estimates and are not intended to be submitted with the RFP.
- ◆ Cost estimates – Quantity takeoffs and cost estimates are prepared using the pricing documents. “Conceptual” estimating is sometimes used, absent complete construction documents, and involves knowing from experience that which will be required to produce a finished project. A conceptual design-build estimate involves using experience and good judgment, taking intelligent risks, and realizing that while the accuracy of individual line items may vary their aggregate total must not. A principal distinguishing factor of design-build is having the skill and expertise to manage design development and construction documents, after securing the award, so that final design satisfies the criteria while remaining within the cost budget.
- ◆ Presentation Drawings – The presentation drawings that are required are usually stipulated in the RFP. The drawings become a part of the design-build contract and must be sufficiently developed to protect the owner and the design-builder. They must also clearly define the scope and quality levels that the team is offering in the proposal.
- ◆ Outline Specifications – Should include a “design concepts” narrative as a preface wherein the rationale and basis of the proposed design is briefly described. This document can be in outline or general narrative format and supplements the proposed drawings with more detailed technical descriptions, both qualitative and quantitative, defining the elements of the proposal.

In addition to the proposal drawings and outline specifications, the following additional elements are required for a totally responsive proposal:

Cost estimates

- * Project schedule
 - Design, Permitting and Construction Activities
 - Critical Path
- * Pricing and Fees
- * Project Delivery Organization
 - Design build team
 - Outside Consultants
 - MBE/WBE Plan
- * Contract Terms
- * Quality assurance and Safety
 - TQM Plan
- * Formatting, Design and Submittal of Proposal

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The oral presentation provides the best opportunity to present the team's strengths. Prior to the presentation the presentation room should be visited and the physical layout obtained to design the graphics presentation accordingly. At the conclusion of the presentation, a "presentation summary" should be distributed to the selection committee which summarizes the team's strength, approach to the project and ability. The team leader should be in charge of the presentation and initially field all questions unless directed specifically to another team member. It is important that the "right" team members be present, especially those who will be involved in key elements of the project.

As can be seen, from the discussion herein, the preparation of a major design-build proposal requires a significant effort and, once a decision to proceed is made, the design-build team should make maximum effort to secure the assignment.

VI. DESIGN-BUILD INSURANCE AND BONDING

A. Introduction

In the design-bid-build system liability for design errors and omissions falls to the Engineer and/or Architect and liability for construction defects falls upon the contractor, who has no privity of contract relationship with the A/E. Under this delivery system, liability exposures are established along fairly discernable lines and insurance and bonding products provide coverage accordingly.

In the design-build delivery system these activities are merged into a single point of responsibility. This presents a problem which may result in a gap in coverage. Initially, the insurance and bonding industries felt that the design-build delivery system would create a greater exposure to loss, which would result in higher risk, and they were reluctant to issue policies for design-builders. In recent years, with the advent of more design-build projects, the underwriters have become more amenable to providing products that can be used by their clients in the design-build sector. While this shift in philosophy is largely a function of market demand, it is also based on the claims record on design-build projects.

Insurance and bonding have always been important to the construction industry so as to provide adequate protection to owners on their capital investment. The insurance and bonding markets are constantly developing new and/or changed products to meet industry demands and underwriting concerns. Many of these products relate to the needs and/or concerns of both owners and design-constructors involved in design-build projects.

B. Risk Management

Some of the risks that arise on a construction project include:

- Economic loss caused by poor performance
- Personal injury and property damage to third parties or employees
- Force majeure events such as war, usual weather, governmental actions or labor strikes
- Unforeseen site conditions
- Design deficiencies

Some risks are purely business risks that are inherent with any business activity. Business risks are usually managed by assigning the risk to the entity most able to manage the risk. The ability of the entity to accept the risk will be dependent on the level of risk tolerance and profit potential which the entity is willing to assume. In the design-build industry careful contract administration and planning can prevent many risks from occurring.

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Most business entities are unwilling to take the direct responsibility for certain risks because of the financial impact that a potential loss would have on their business. Those risks are managed by transferring them to a third party such as an insurance or bonding company. The types and amounts of insurance and/or bonding required should be based on the specific needs and risk tolerance of the entity seeking protection.

C. Insurance Coverage – General

Features common to all insurance policies include the following:

- **Policy Limits**
All policies have limits for the insurable event both per claim and an aggregate limit over the life of the policy.
- **Exclusions and Endorsements**
The risks covered by an insurance policy are set forth in the insuring agreement. Exclusions to a policy simply identify the risks that are not covered. The most common way of broadening the scope of coverage is by means of endorsements, which remove exclusions.
- **Coverage Initiation**
Coverage under insurance will be initiated either on a claims-made basis or an occurrence basis. The former covers claims made during the policy term for acts that occurred within the policy term. Occurrence based policies cover the loss at any time during the policy period, that an act giving rise to the loss occurs.
- **Waiver of Subrogation**
Clauses within the policy that enable the insurer to recover from the responsible party the losses that it pays to be insured.

D. Typical Insurance and Bonding Products

1. Commercial General Liability (CGL)

This policy protects the insured from claims by third parties for bodily injury or property damage, losses due to personal and advertising injury and medical payments. CGL is a “basic” policy that all business entities should possess as a component of their risk management program. The exclusions in a CGL policy are usually extensive and cover such things as workers compensation, professional liability, joint ventures, etc. CGL policies are generally written on an occurrence basis and do not cover economic losses.

2. Builder’s Risk Insurance

This policy protects the insured’s property interests in the work during construction including physical damage to the structure and all materials to be

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incorporated into the structure. This type of insurance is used on a high percentage of design-build projects. Policies are either written to cover all risks to the property except those specifically excluded or named perils which cover only the risks identified in the policies. Certain common exclusions include loss of use or occupancy, penalties for delays, loss due to faulty workmanship or design, loss caused by war, civil rebellion, insurrection, and similarly related losses.

3. Professional Liability Insurance.

This policy protects the insured against liability arising from negligence, errors and omissions in rendering professional services. These policies are written on a claims-made basis which requires that they be renewed annually in order to maintain coverage for prior acts. Coverage is based on a reasonable standard of care that may be expected in the industry. Certain exclusions are contained in these policies including the provision that on projects where the insured performs both design and construction services coverage is not provided. Accordingly, in order to accommodate a design-build project delivery system it is necessary to modify the policy exclusions to fit the role of the A/E. In recent years, due to the increasing use of the design-build delivery system, many insurance providers have addressed this risk and developed products to cover this activity. It is essential that a design-build entity thoroughly address the professional liability issues involved in any project before responding to an RFP.

4. Performance Bonds

This bond provides a guarantee to the owner that the design-builder entity will perform its contractual obligations. The surety also guarantees that should the design-builder entity fail to perform in accordance with the contract, it will take over and perform on the principal's behalf.

5. Payment Bond

This bond provides a guarantee to the obligee (owner) that the design-builder entity will fulfill its payment obligations to subcontractors and suppliers.

6. Bid Bond

This bond qualifies those design-builders submitting bids or proposals on a project. It guarantees that, if the bid or proposal is accepted, the design-builder entity will enter into a contract with the owner to perform the work specified.

E. Other Insurance Products

Some other insurance products commonly used in the construction industry include the following:

- Worker's Compensation

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Provides replacement wage benefits and medical coverage for employees killed or injured on the job. This insurance is statutorily required in almost all states.

- **Automobile Coverage**
Provides coverage on vehicles owned by the design-builder entity.
- **Pollution Liability**
Most professional liability policies exclude pollution based claims. This coverage insures the costs associated with cleaning up unknown, pre-existing environmental damage.

F. Conclusion

It is not the intent of this section to provide a complete synopsis of the types and coverages of insurance and bonding products available in the marketplace. This section provides a brief overview of those products. It is incumbent on the design-builder entity to obtain advice from knowledgeable insurance and surety brokers and/or professional consultants regarding the types of insurance and amounts of coverages required for a specific project so as to minimize risk and exposure to the greatest possible extent.

VIII. DESIGN-BUILD AGREEMENTS

A. Introduction

There are four (4) primary entities that have developed guidelines and commentary on how to address critical contract issues between owners and design-builders. They are:

- American Institute of Architects (AIA)
- Associated General Contractors of America (AGC)
- Engineers Joint Contract Documents Committee (EJCDC)
- Design-Build Institute of America (DBIA)

Each of these entities has also published model forms of agreement between the various parties which are involved in a design-build project and for various fee options. Each design-build project may have certain objectives and it is essential that the parties to the contract tailor the contract documents to meet the specific needs of the project and the design-build team.

B. Risk Allocation

The issue of risk in the construction industry and how to allocate the risk among members of the project team has been a long-standing topic of discussion within the industry. In the past both public and private sector owners felt that all risk should be shifted to the contractor as the price of doing business and realizing profits. In the latter part of the 1970's studies were conducted, mainly under the auspices of ASCE, that concluded that, by shifting all risks to contractors, owners were paying significantly more for the constructed project through increased bid prices, change order disputes and litigation costs. The studies further showed that:

- Risks belong with the party who is best able to manage the risk.
- Many risks and liabilities can be shared.
- Every risk has an associated cost that must be assimilated in the process.

As a result of these studies many owners changed their contracting practices to a more realistic allocation of risk. The result has been reduced claims, fewer adversarial relationships and reduced construction costs.

On a specific project potential risks should be identified and then assigned to the party most capable of managing the risk. Risks can be assumed, transferred to third parties, insured against or retained by the Owner. Once the identified risks have been allocated, the contract price can be fixed accordingly.

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C. Standard Form Design-Build Contracts

Standard form contracts have been used extensively to provide an economical and convenient way for parties to contract without having to incur legal costs on each new project. As the terms of standard form contracts are used and accepted, they become a model for how industry expects parties to relate to each other contractually. With the acceptance of the design-build project delivery system several organizations now sponsor families of design-build contract documents. Some of these are:

- **AIA**
AIA has a package of three (3) documents, each of which contains two parts. Part 1 deals with preliminary design, scheduling and budgeting and Part 2 covers final design and construction.
- **EJCDC**
EJCDC is consortium of the National Society of Professional Engineers (NSPE), The American Council of Engineering Consultants (ACEC) and the American Society of Civil Engineers (ASCE). They have a design-build family totaling nine (9) documents which are similar to their standard forms for design-bid-build. The documents note that the owner should perform a “Study and Report” phase which, some feel, weakens the benefits of design-build.
- **AGC**
AGC has published a package of six (6) design-build contract documents. A strength of their approach is an optional preliminary agreement to assist the owner in defining its program and determining budgets for price and time.
- **DBIA**
DBIA has a family of ten (10) standard contract forms by and between various parties involved in a design-build scenario. They reflect a balanced approach to risk that considers the legitimate interests to all parties to the process.

D. Establishing the Contractual Relationship

The methods available to an owner for selecting a design-builder have previously been discussed. The four most common methods are:

- Direct Selection
- Competitive Negotiation
- Cost/Design Competition (Best Value)
- Cost Competition

Once the design-builder has been selected there are several ways a contractual relationship can be established. Normally, the less formal the selection process is the simpler the contractual process becomes. On the other hand, if the owner plans to use a

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competitive selection process, the contracting arrangements between the design-builder and owner will be formal and complete as to price, time and scope commitments.

The main element to be considered by both the owner and the design-builder, once contract negotiations commence, is flexibility in addressing project requirements. The owner needs to be assured that certain design options will guarantee a price guarantee from the design-builder before the design is completed. If the owner is confronted with a price that exceeds his budget, he needs to have the flexibility to reduce the scope of the project, increase the budget or cancel the project. The design-build contract negotiated should provide this option to the owner and yet compensate the design-builder for the efforts expended in this early design development phase.

E. Contracting Issues

There are many issues that need to be addressed in the contract for a design-build project. Some of these are briefly discussed as follows:

1. Method of Payment.

Both lump sum and cost-plus/guaranteed maximum price contracting approaches are appropriate to the design-build project delivery system. When the owner procures the design-build services through competitive means lump sum pricing is the prevailing method. Owners who procure design-build services through negotiation are more likely to use the cost-plus/GMP approach. Under this method certain “costs” such as reimbursable costs, costs due to fault or negligence, etc. need to be defined and agreed upon by the parties to the contract. The most important element to establishing either a lump sum price or a cost-plus/GMP amount is that pricing only occurs after the parties have reached a clear understanding of the owner’s program.

2. Scope of Work.

The scope of work should be thoroughly described in the contract documents. Under the design-build scenario this can usually be accomplished if the parties will agree upon a conformed set of project requirements that integrate the owner’s program and the design-builder’s proposal into a single scope document.

3. Design Development.

Since the development of the design for the project is progressive, it is important for the parties to understand how they will coordinate and communicate during the development of the design. The contract should also describe the frequency of design submittals and procedures to be followed in the design review process.

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4. Permits.

The responsibility for preparing and submitting permit applications should be clearly spelled out in the contract documents.

5. Schedule and Time Extensions.

The contract should describe the conditions which would justify a time extension to the contract. These might include, acts of others beyond the design-builder's control, changes in the work, labor disputes, adverse weather conditions and similar causes which the parties agree may justify delay.

6. Liquidated Damages/Incentives.

The contract should state the amount (in dollars) of liquidated damages/incentives, if any. Liquidated damages should not be established to penalize the design-builder but to legitimately compensate the owner for financial losses incurred when a project is unjustifiably late. Recently, many owners have taken the position that if a project economics justify liquidated damages it is appropriate to reward the design-builder/contractor for early completion by means of an incentive bonus. In the past few years, in Florida, the FDOT has had incentive bonuses for early completion in contracts for many major transportation projects.

7. Changes in the Work.

The contract should stipulate the owner's right to make reasonable changes to the scope of work with the corresponding obligation to ensure that the design-builder is entitled to reasonable time and price adjustments.

8. Differing Site Conditions.

Concealed and/or unknown conditions clauses provide a process whereby a contractor can be granted monetary and schedule relief for conditions falling under the clause.

9. Warranty/Standard of Care.

Many of the warranties imposed under design-build contracts are similar to those that are contained in design-bid-build construction contracts. The one significant warranty question that is different is how to address the issue of design defects. Under a design-bid-build project the design professional works directly for an owner and warrants the design to meet prevailing industry standards of care. Likewise, a contractor on a design-bid-build project does not face liability if the project fails to function as the owner anticipated since the contractor is only obligated to construct the work in accordance with the design furnished by the owner. In the design-build scenario, the designer and contractor are a single entity. Thus, the design standard of care issue needs to be

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addressed in the contract documents. While there are differing opinions on contract language among the entities (AIA, EJCDC, AGC and DBIA) the prevailing thought seems to be that if the design-build contract establishes specific performance requirements that can be objectively measured the design-builder should be obligated to meet those requirements, regardless of what the ordinary standard of care in the industry is relative to such issue. Accordingly, the design services should be performed so as to achieve such standards.

10. Indemnification.

Indemnification or “hold harmless” provisions are standard methods for distributing the risk of loss on a contract. Three major areas of indemnity issues on a design-build project are general indemnity, patent indemnity and hazardous waste indemnity. These indemnity provisions are discussed in all of the standard contract forms developed by the four primary entities and it is incumbent on the owner and design-builder to use the contract language that is most appropriate for the project which is contemplated.

11. Changes of Law.

The contract should provide for possible changes in statutes during the contract period which might have an effect on the project.

12. Bonds and Insurance.

These elements have been discussed in Chapter VI. The contract should simply state the types, amounts and coverage limits of insurance and/or bonds required by the owner for the project.

13. Termination.

This contract provision enables the owner to terminate a contract for convenience for any reason in exchange for payment to the terminated design-builder of its costs for performance, to date, plus a reasonable fee on the work performed. Each of the four primary entities that have developed standard design-build contract documents recognizes the owner’s right to terminate for convenience, but each approaches the process in a somewhat different manner. One important element is a termination situation involves the “ownership of documents.” Also whether or not the project is abandoned may determine the magnitude of termination fees paid by the owner to the design-builder.

14. Liability Limits.

Liability limiting clauses which limit the overall liability of the design-builder are used in certain sectors of the design-build market. Usually, on public sector projects, these clauses are not allowed. The applicability of a limitations of liability clause should

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be decided by the owner and design-builder based on the issues associated with the project, prevailing practice in the industry section and the contracting terms between the parties.

15. Dispute Resolution.

The contract should stipulate the means by which the owner and design-builder should attempt to resolve disputes and/or settle claims which may arise during the project. Dispute resolution techniques include negotiation, mediation, arbitration and litigation. The costs for dispute resolution are generally low for negotiation and range to the highest for litigation. In Florida, the Florida Department of Transportation (FDOT) has endorsed the use of dispute review boards to resolve disputes and/or claims. In this process, one panel member is selected by the owner (FDOT), one panel member is selected by the contractor and these two panel members select a third member. In the past few years, on FDOT projects, over 99% of the disputes/claims have been resolved in this manner.

VIII. PROJECT EXECUTION

Execution of the design-build project begins when the Design Build team receives notification that they have been selected. The notice of award should be shared with the entire team to reinforce the team building that occurred during the proposal phase. It is important to emphasize that winning the award is proof that the team functioned well together and that this attitude be carried forward into the execution stage of the project. Good team dynamics will result in the superior organizational skills that will be required for the project. The first step in proceeding with the project should be the scheduling of an initial partnering session with the owner/client to provide an opportunity for everyone to understand the inter-relationship of their respective roles within the project team.

1. Review Project Elements

A detailed review of all project elements should be made with the owner to verify and/or clarify any element that may have been unclear in the proposal. This will ensure that all project requirements and design expectations have been addressed. Major value engineering options should be discussed with the client and closure obtained on any issues that may not have been clearly understood through the RFP/proposal process.

2. Project Schedule

As a result of the review process all project elements should have been identified and addressed. It is then necessary to develop a detailed project schedule which must include all design requirements, permitting issues, any long-lead items identified and construction activities. Input into the project schedule should come from the project team members for the schedule components for which they have primary responsibility. The project director should coordinate the creation of the overall project schedule.

3. Contract Negotiations

Contract forms and issues have been discussed in Section VII. Once all project elements have been reviewed and discussed with the owner, contract negotiations for the project can proceed. Prior to entering formal contract negotiations with the owner/client, the project team participants should reach internal agreement on all issues relating to liability and responsibility. When the internal agreements are complete, the design-builder can begin to develop a comprehensive contract with the owner. All documents, such as proposal documents, work program, schedule, cost, etc should be integrated into and made a part of the contract. In some instances, full construction documents are incorporated into the contract, when completed.

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4. Design Development

Using the proposal documents as a base, the design development can commence. During the design development phase, the design-builder should institute a quality assurance-quality control (QA-QC) program whereby, by means of constant and frequent checking of construction documents, conflicts can be avoided and errors/omissions can be eliminated. The design should be developed to that point of completion which enables construction documents to proceed on a solid basis. For projects in the public sector design development is generally considered to be from 25 to 30 percent of total completion. The design development should address all elements of the project such as scope, pricing, schedule, constructability, permitting, and code or agency compliance.

5. Construction Documents

The final construction documents are prepared based on the design development documents. The ultimate set of construction documents for a design-build project is essentially the same as for a design-bid-build project. The project team should develop construction documentation to ensure compliance with owner criteria, code compliance, environmental permitting compliance, critical schedule adherence and avoidance of costly changes in the work. Both design and construction professionals should be involved in determining content and format for the final construction documents. On certain building construction projects “bid packages” may be appropriate for:

- Long lead purchases
- Fast-track subcontracts
- Fast-track bid packages

After procurement using the early packages is complete, the complete general set of construction documents is issued, providing a complete set of documents including the advance packages.

6. Permits, Testing and Quality Assurance

a. Permits.

Permitting in general, and environmental permitting, specifically, is often critical elements of the schedule for the entire project. The design professionals should make an early identification of all permits required. A comprehensive permit management matrix should be used to track all permit applications. Frequent communication with the permitting agencies to determine the status of permit applications will usually serve to expedite the process.

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b. Testing.

Prior to the commencement of construction the design-builder should develop a geotechnical and materials testing program to thoroughly document the construction process. The program should include type and frequency of tests, test procedures and standards of quality.

c. Quality Assurance.

Practically all A/E firms have established guidelines for developing and implementing an effective quality assurance program. These guidelines and or checklists should be used throughout the design and construction phases to ensure a quality constructed project.

7. Field Construction.

During the construction phase the construction leadership should implement proven field construction procedures. Monthly progress reports should be prepared to substantiate progress payments and provide information to the owner/client and the owner's lending institution, if applicable. The progress should cover a summary of work performed during the reporting period, the schedule showing actual progress versus anticipated progress, a financial summary and progress photographs.

8. Project Completion.

As project completion approaches, there are numerous activities which must be completed by the design-builder. These include.

a. Preparation of a punch list. A punch list is to identify the work remaining and/or deficiencies to be corrected. The owner/client should participate in the preparation of the punch list.

b. Documents. Project record drawings, field and change order records, technical submittals, shop drawings, testing and inspection reports, and operating manual should be assembled in an organized manner and given to the owner/client.

c. Performance verification. Any performance testing required for the completed facility should be measured and documented with the client's representative present.

d. Warranty. The design-builder should create a Maintenance Manual that outlines owner's responsibilities in order to validate the warranty(ies). The Manual will aid operating personnel in the development of a preventative maintenance program. It will also clarify manufacturer and vendor warranty provisions.

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9. Post Construction Review

Soon after substantial completion of the project the project team should conduct a post construction review with the client to assess the performance of the team and the degree to which client satisfaction was achieved.

IX. DESIGN-BUILD VARIATIONS

Under the design-build delivery system there are a number of methods for providing additional project services. These include financing, leasing and operating the completed facility. This chapter will briefly discuss these methods.

A. Financing

A typical financing arrangement is one where an owner will give a private operator a long-term lease to use and operate a facility. The operator finds external funding for the owner and the owner dedicates a portion of the lease payments to amortizing the debt. This is usually referred to as lease-develop-operate. Under this scenario the operator, not the owner, will engage the design – build team.

Another variation is called a “wraparound” where the ownership of or fiduciary responsibility for a project is assigned to a private party. That party designs, builds and may operate and maintain the facility until eventually transferring it back to the owner.

B. Turnkey

In turnkey project delivery the design-builder is also responsible for the operation and/or maintenance of the completed project. Three forms of turnkey project delivery are described below:

1. Design-Build-Operate-Transfer

Under this scenario the design-builder operates the completed facility for a limited period of time, usually one year or to the end of the first warranty period.

2. Design-Build-Operate-Maintain

In this project delivery the period of contractor operation and maintenance is usually from 10 to 15 years. This is sometimes called a “super-turnkey” project.

3. Design-Build-Own-Operate-Transfer

This method of project delivery is a broader type of turnkey. It is typically used for public infrastructure projects of a revenue generating nature where tax-exempt revenue bonds are used for project financing. The design-build entity is responsible for and acts as the owner of the facility for a specified period of time, using operating revenues to meet the bond amortization schedule. The length of time is usually long and depends on

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the bond payoff schedule. This type of delivery can also be carried out using private financing secured through a developer.

C. Turnkey Variations

There are several variations on turnkey delivery using financing as a key component. Developer-financed projects usually fall into the following categories:

- Finance, design, build, transfer
- Finance, design, build, operate, transfer
- Finance, design, build, own, operate, transfer

In each case, the transfer of the project occurs only after the developer's interests and financial obligations have been satisfied.

Developer financing is attractive because it enables the owner to have facilities or services that would otherwise not be available through owner financing. Sometimes, for large projects, complex financing packages are assembled that rely on funds from numerous sources.

DESIGN-BUILD PROJECT DELIVERY

Course Examination

After you have completed answering all of the questions, go back and check your work. Make certain that you have marked only one answer for each question. There is only one correct answer to each question. Make certain that you have answered each question. Any question that is left blank will be counted as incorrect.

A score of 70% is required to complete the course. Failing to achieve a 70% score all your answers will be erased. You will have three opportunities to achieve a passing grade. Failing to score a passing grade on the third attempt will block you from further attempts and your course fee returned to you.

Once you have successfully completed exam you will be able to print out your completion certificate. We suggest you file it electronically or print it out should you be audited by your licensure board for compliance with continuing education requirements. At that time you will also be able to compare your answers to the school answers on questions you may have missed.

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1. Which of the following is not a method of project delivery?
 - a. Design-bid-build
 - b. Design-build
 - c. Partnering
 - d. Construction Management

2. Under design-build the design professional is engaged by:
 - a. Owner
 - b. Developer
 - c. Constructor
 - d. Design-builder

3. The design-build project delivery system is preferred when
 - a. Project financing needs to be secured
 - b. The owner is willing to assume greater risk
 - c. Quality in the constructed project is demanded
 - d. Project budget is not a consideration

4. Which of the following best enables the Owner to assess project feasibility on a design-build project?
 - a. Overall knowledge of cost savings
 - b. Early knowledge of firm costs
 - c. Having a single point of responsibility
 - d. The reduction in time to complete the project.

5. _____ most closely resembles the traditional bid process?
 - a. Meets criteria/low bid
 - b. Adjusted low bid
 - c. Equivalent design/low bid
 - d. Fixed price/weighted criteria

6. The primary reasons for the transition from design-bid-build to design build in the 1960's was
 - a. to obtain procurement based on performance criteria
 - b. to achieve up front cost guarantees
 - c. to obtain constructor input during the design phase

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- d. both a and b above
7. According to *Engineering News Records*, design-build has become the delivery system of choice because:
- a. it simplifies project financing
 - b. it provides a single point of contact and responsibility.
 - c. it allows for turnkey project delivery
 - d. the design is performed by an independent licensed design professional
8. One of the benefits to owners with design-build is
- a. their administrative costs are minimized
 - b. their accounting is simplified
 - c. they have greater flexibility in capital cash flow management
 - d. all of the above
9. The program of facility requirements
- a. generally describe the owner's needs
 - b. are used by the design-builder to arrive at an estimated price
 - c. indicate how the completed facility/system is expected to perform
 - d. are primary contract documents
10. If the owner elects to pay a stipend to unsuccessful design-build proposers it will be noted in
- a. the RFP
 - b. the RFQ
 - c. Advertisement
 - d. both a and b above
11. If a design-builder is pre-qualified by an owner he
- a. meets minimum requirements for a given size and type of project
 - b. does not have to submit an RFQ, only an RFP
 - c. is qualified for any project which the owner contemplates
 - d. qualifies for "bonus points" in a design-build competition
12. A teaming agreement
- a. describes the organizational structure that the design-build team will select
 - b. involves only designers and constructors
 - c. should be executed by the parties once the design-build team has been selected for the project

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- d. is a legal document
13. The most common organizational structure for performing design-build projects is
- a. Limited liability company
 - b. Prime-subcontractor relationship
 - c. General partnership
 - d. Joint venture
14. Once the design-build team members have been selected they should
- a. determine whether or not they should pursue the project
 - b. establish a detailed plan for developing the RFP elements required
 - c. conduct a team meeting to discuss all aspects of the project
 - d. determine selection criteria
15. In preparing the response to an RFP one of the major elements entails
- a. an analysis of the RFP
 - b. a meeting of key team members for the purpose of solving the problems defined in the RFP
 - c. the preparation of the presentation drawings
 - d. developing the format for response to the RFP
16. A design concepts narrative should be included in the
- a. outline specifications
 - b. presentation drawings
 - c. cost estimates
 - d. all of the above
17. Under the design-build delivery system insurance and/or bonding is used
- a. to meet the requirements stipulated for the project by the owner
 - b. to transfer risks to a third party
 - c. to cover all risks which may be incurred by the design-builder
 - d. protect against economic loss caused by poor performance
18. Risks can be
- a. assumed
 - b. transferred to third parties
 - c. insured against
 - d. all of the above
19. The Design Build Institute of America's family of standard contract forms

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- a. provide for an optional preliminary agreement to assist the owner in defining its program.
 - b. contain two parts, one for preliminary design and one for final design and construction
 - c. reflect a balanced approach to risk
 - d. note that the owner should perform a “Study and Report” phase
20. After a design-build team receives notice that they have been selected the first major activity should be
- a. proceed with contract negotiations
 - b. review all project elements with the owner
 - c. commence design development
 - d. develop a detailed project schedul