

The Architect-Engineer's Role in Design-Build Contracts

While an engineering firm might open itself to increased risk, the design-build contracting method can provide significant advantages to the engineering firm and owner in carefully selected situations.

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INCREASING numbers of public/private construction project owners have found that their needs are best served by retaining one organization to perform both the design and construction services needed on their facility. Use of the design-build contracting method can avoid entangling the owner in the conflicts that often arise between the architect-engineer and construction contractor. A design-build project is also particularly suited to a fast-track construction project — enabling early phases of construction, such as excavation and foundation work, to start before the later phases of the project are finally designed.

In the not-so-distant past, the engineering community opposed the use of design-build. The objection most often raised was that having a single entity furnish both design and construction functions would deprive an owner of the checks and balances needed to integrate design with a cost-conscious construction program. An unstated objection, however, was the fear of many engineers that owners would view the actual construction as entailing more financial risks than design, thereby leaving the construction contractor in a better position to sell its expertise as a design-builder than the engineer.

Recognizing that design-build would remain an attractive contracting method to certain owners, many engineering firms have entered the design-build arena. Some have developed in-house construction capabilities to allow them to compete as design-builders. Others have developed strong relationships with construction contractors and have become design subcontractors to design-builders. With so many engineering firms becoming significant players in the design-build arena, it is critical for architect-engineers to understand the design-build approach fully and to recognize its differences — particularly in risk allocation — with the relationships that traditionally exist among the participants

on a construction project.

Traditional vs. Design-Build Contracting

A construction project — whether executed via traditional means, design-build or construction management — requires the involvement of a number of individual performers on a unique site to construct a unique project. The fundamentals for such projects are identical, with the only differences being which party is responsible to the owner for performing certain duties.

Under the traditional contracting method, the owner serves as the intermediary between the designer and contractor working on the project. An architect or engineer under contract directly with the owner designs the project. Upon completion of the design, the owner hires a general contractor to construct the work according to the plans and specifications prepared by the designer and furnished to the contractor by the owner. In most cases, the contractor hires trade subcontractors and suppliers to perform portions of the construction work. During the construction phase, the design professional assists the owner in monitoring the construction.

Under the construction management approach, the owner retains an entity to assist in both the design and construction of a project. With respect to design, the construction manager typically works with the design professional to suggest value engineering alternatives to lower the project cost. With respect to construction, the construction manager often coordinates the activities of trade contractors and ensures that the work is being performed in accordance with the contract documents.

In contrast to the traditional or construction management methods, design-build contracting calls for one entity to undertake the responsibility to the owner for both the design and the construction of the project. The design-builder — rather than the owner — retains the engineers and architects needed to design the project *and* hires all contractors and suppliers needed to construct the project. The design-build approach does not reduce the number of tasks or entities needed to

complete a project, but simply rearranges the contractual relationships so that the owner is removed from being the key figure in resolving conflicts between design and construction.

However, owners in design-build contracts do assume varying degrees of responsibility. Some owners give the design-builder virtually complete design and construction discretion. These owners find that it is more efficient and economical to take advantage of the design-builder's efficiencies and expertise, thus avoiding facing responsibility for interfering with the design-builder's work. On the other hand, an owner may require complete approval of the design before beginning construction. These owners often choose to monitor the construction project actively with their own representatives, just as they must on a traditional project. Such active involvement by the owner makes the design-build project similar to a traditionally constructed project, replete with many of the risks that the owner seeks to avoid when turning to design-build.

Design-Build Suitability

Because the design-build approach offers greater flexibility in project management, it is difficult to categorize which projects that are completely appropriate or inappropriate to the design-build process. Moreover, as with any form of construction contracting, design-build provides unique risks and benefits to the participants. Any design professional contemplating involvement on a design-build project must analyze the risks independently and determine whether this technique of contracting best serves its interests on a particular project.

The abilities of all of the project participants must be carefully examined. If only a limited number of design firms have the capability to design the type of project required, and those firms lack design-build capabilities or the inclination to acquire such capabilities through joint venture or subcontract arrangement, a design-build project should be avoided. On the other hand, where a type of project has been repeatedly and successfully constructed on a design-build basis by a qualified and available firm, there

are strong incentives to retain that firm under a design-build contract.

The type of project to be constructed is also a factor in analyzing whether design-build is appropriate. If the project is of a repetitive nature or otherwise does not require detailed owner input into design and construction, it may be appropriate to contract through a design-build arrangement. Examples include fast-food restaurants or tract-housing projects.¹ Design-build may also be appropriate for complex projects where the prospective design-build contractor has either built such a facility before or has the in-house expertise needed to meet the state of the art. Petrochemical facilities, hydroelectric facilities and cogeneration plants are classic examples of this type of project that may be suited to design-build. However, design-build may not be appropriate for complex projects where a completed design is required before the cost and scheduling components of the construction contract can be fixed.

The financial resources available should also be considered. Lenders and bonding companies in some instances may want completed plans and specifications before committing to financing or providing bonds for an entire project. In such cases, design-build is inappropriate unless the design is specified to be completed before any construction starts and the owner retains a no-cost or low-cost option not to proceed with construction if the plans and specifications do not meet approval.

If these qualifications are met, several advantages accrue to an owner that chooses to use a design-build contract. Perhaps the most compelling advantage is that a design-build approach enables the owner to hold one party accountable for the design and completion of the entire project. This single-party accountability aids in avoiding the obfuscation of responsibility that can arise under the traditional approach.² A single-point contract can relieve the owner of the responsibility to coordinate both designer and contractor — one primary cause of construction disputes and cost overruns.

Design-build also enables the owner to devote less management and coordination time to the project than would normally be

expended under the traditional approach. While an owner must still have a designated representative available to review the project construction and act upon the owner's interests, this representative's time will not be overwhelmingly consumed with handling the communications and conflicts that can arise between the design professional and the contractor.

Design-build can result in a lower overall project cost and a faster completion time. A design-builder that is given the authority to perform all of the work necessary to develop a project is often willing to charge the owner a lower total fee than the combined fees generated by different entities under a traditional approach. Furthermore, since a design-build approach is ideal for fast-track construction, a better coordinated design and construction team can more readily identify and solve problems.

Several risks that an owner assumes when using design-build may offset these benefits. For example, although the owner derives the benefit of having a single entity be responsible for the complete development and construction of a project, the owner must rely solely on that entity for any recovery of compensation. Many owners find it advantageous to have a number of parties — including the architect, engineer and trade contractors — potentially liable for damages. Multiple parties tend to create a larger potential pool of funds for the recovery of damages, especially if the insurance carriers and bonding companies of the parties are included.

Another risk to the owner in design-build is that the design-builder may have little incentive to develop design alternatives for a particular project. A design-builder's search for alternatives may be based largely on reducing its costs rather than benefiting the owner. The owner may not obtain the best design available for its project. This risk may be mitigated by the amount of the design-builder's experience on similar projects. The greater the design-builder's experience, the greater the chance that the owner will receive a well-designed, cost-effective project.

The design-build method eliminates the checks and balances that are present when

design and construction are contracted for separately. Under the traditional approach, design professionals closely examine a contractor's performance to determine whether it meets specifications and justifies payment. Contractors, on the other hand, may suggest value-engineering proposals if the design turns out to be too costly to construct. While the owner may pay more to separate design and construction responsibilities, many owners believe that these controls are worth the price.

There are also unique benefits and risks to those firms that have chosen to act as design-builders. Most find the greatest benefit to be the coordination of the entire design and construction process. Having the designer and contractor on the same team permits the team to focus on successful project completion, and not on communicating with, and protecting their rights against, each other and the owner. This team approach should result in greater efficiencies to the design-builder.

Unfortunately, having the designer and contractor on the same team may also present a big risk to the design-builder. An owner contracts for a design-build project, seeking a finished project. The design-builder must, under most circumstances, do what it takes to furnish the finished project to the owner. The fact that the design-builder must present a completely constructed project to the owner creates a much broader based liability for the designer than under a traditionally built project, where the designer does not warrant that the design will work as requested. To the extent that the design has negligent errors, the design-builder is likely to be held responsible for absorbing the costs incurred by the owner. The design-builder may be liable to trade contractors for *any* errors in the specifications under an implied warranty theory. The design-builder must also bear responsibility when the construction becomes more expensive because specified equipment was unsuitable for the project or there were construction errors.

The Role of the Client

Under the traditional method of contracting, a design professional owes the owner — the client — a clear duty to exercise professional

judgment and training so that the owner will be furnished with a project that best meets the owner's needs at the most reasonable price. The design-builder undertakes this same responsibility by agreeing to design the project for the owner. However, the successful and impartial performance of this duty may be threatened by the design-builder's inclination to make the construction as inexpensive and easy as possible, regardless of its effect on the owner's needs. When a design professional is managing the design-builder's organization, it is hoped that the designer's instincts and training will result in properly fulfilling these responsibilities. When the design-builder is headed by someone who is not trained to put the client's interest first, it can be more difficult to obtain the best design if the design-builder is focused on creating a design that minimizes construction costs in order to generate maximum project profit.

The design-build approach may impact the design professional more when the designer is an employee of, or a subcontractor to, the design-builder. In this situation, the design-builder is in a position to direct the design professional to make a design decision that, in the designer's professional judgment, does not best serve the owner's interest. In such a case, there is a strong argument that the design professional must act in the owner's best interest even if the immediate client or employer (who is the design-builder) insists on a different design. In other words, a licensed design professional employed by a design-builder still owes an independent duty to the owner as a design professional.³ This duty to the owner cannot be ignored by the rationalization that the designer is contracted by the design-builder and not the owner.

Experience with design-build indicates that the instances of such situations arising are rare, perhaps because the design-builder must, to a large extent, rely on the judgment of its design professionals regarding proper project design. Nevertheless, all the parties entering into the design-build project must recognize this potential conflict and recognize the independent duty of design professionals to the owner, regardless of who may be signing their checks.

Drafting the Design-Build Contract

On traditional projects, most design professionals contract with owners through standard form contracts published by trade associations serving members of the construction industry such as the American Institute of Architects (AIA), Associated General Contractors of America (AGC) and the Engineers' Joint Contract Document Committee (EJCDC). Because design-build contracts are project-specific and the contours of design-build are not well established, it is difficult to develop a workable standard form contract. The two standard forms that are available — AGC Document No. 410, *Standard Form of Design-Build Agreement and General Conditions Between Owner and Contractor (1982 Edition)* and AIA Document A191, *Standard Form of Agreements Between Owner and Design/Builder (1985 Edition)* — contain general provisions that are not readily adaptable to a particular project.

Because of the uncertain state of the law and the potential increased liability of the design-builder, the agreement between the owner and design-builder — whether it be specifically drafted or be a standard form — must accurately reflect the levels of risk each party agrees to assume. The contract should address the foreseeable contingencies that may arise during the performance of the contract as well as the performance requirements expected of the completed project. In particular, it is important to address how changes, differing site conditions and limitations of liability are to be treated.

Changes. Changes occur on every major construction project for a variety of reasons, including:

- errors and omissions in preparing the plans and specifications;
- modifications of the owner's needs;
- technology changes to equipment and systems required for the project; and,
- molding the design to accommodate field conditions.

Consequently, virtually all construction contracts between an owner and contractor con-

tain a changes clause to enable such changes to be made. A typical clause reads as follows:

The owner, without invalidating the contract, may order changes in the Work within the general scope of the contract consisting of additions, deletions or other revisions, the contract sum and the contract time being adjusted accordingly. All such changes in the work shall be authorized by change order and shall be performed under the applicable conditions of the contract documents.⁴

When changes to the plans and specifications arise, a contractor is paid the costs associated with such changes as well as being granted extensions of time to the project completion date, regardless of whether the change is caused by the designer's failure to perform.

An owner's exposure to changes is lessened to a great extent under a design-build contract because the contractor is also the designer. Thus, changes caused by design modifications are made at the expense of the design-builder. Nevertheless, a changes clause is an integral component of a design-build contract. While an owner still needs to set forth to the design-builder certain performance requirements for the project, the design-builder does need some measure of discretion in how to achieve such performance requirements. Even though performance requirements are broad in scope, they may change, giving rise to a claim by the design-builder for extra costs.

To minimize the chance for changes, the parties must identify in great detail the performance parameters of the project before agreeing to a guaranteed maximum price. The design-builder should know the type and function of the structure, the approximate area of the project, and details regarding the types, sizes and approximate location of equipment materials and finishes. Furthermore, on heavy industrial projects such as petrochemical plants or hydroelectric facilities, there should be clear and objective criteria defining the facility's expected performance output.

To protect both the owner and design-builder, the changes clause should be specifically tied into a benchmark after which compensable changes will be recognized. For

example, if the parties contemplate that schematic drawings are to be converted into full-scale construction drawings, it is reasonable that changes made after the full-scale construction drawings have been approved by the owner will result in compensation to the design-builder unless the changes were due to an error or omission by the design-builder.

Unanticipated Site Conditions. Under traditional contracting arrangements, the owner agrees to bear the risk of unanticipated site conditions. These clauses, commonly referred to as *differing site conditions or clauses*, generally state that:

*Should concealed conditions encountered in the performance of the work below the surface of the ground or should concealed or unknown conditions in an existing structure be at variance with the conditions indicated by the contract documents, or should unknown physical conditions below the surface of the ground, or should concealed or unknown conditions in an existing structure of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent work of the character provided for in this contract, be encountered, the contract sum shall be equitably adjusted by change order upon claim by either party made within twenty days after the first observance of the conditions.*⁵

This type of clause encourages contractors to submit bids that do not include dollars for unexpected contingencies, thus providing the owner with the benefit of the lowest possible bid price.⁶ It also provides a contractor with the assurance that if unexpected conditions are encountered, the contractor will be paid the actual costs incurred in overcoming such conditions. Theoretically, the owner should pay no more than if the actual conditions were known at the time of bidding.⁷

When design and construction functions are merged into one entity, the question arises as to whether or not differing site conditions should be recognized. Some owners argue that it is the designer's obligation to conduct an appropriate pre-bid site investigation and geotechnical analysis. Therefore, if the designer's analysis failed to reveal the actual

conditions encountered on the site, its analysis was not complete enough. Owners also argue that with a differing site conditions clause, it is possible for a design-builder to conduct virtually no pre-bid geotechnical analysis and simply rely on the clause for compensation for any site condition.

A proper balance to protect the interests of both owner and design-builder may be again to establish a benchmark. Under this concept, the design-builder and owner agree on a prudent and reasonable site investigation program at the time of contracting. The design-builder would be allowed to rely on the information generated from this program. To the extent that site conditions differ materially from those indicated as the result of the design-builder's investigation, a differing site condition could then be claimed.

This system would provide assurances:

- to the owner that a reasonable site and geotechnical study has been conducted that would conceivably permit the design-builder to fulfill its design duties economically; and,
- to the design-builder that any conditions deviating from this reasonable investigation would be paid for by the owner.

To the extent that the owner chooses to lessen the risk of a differing site condition claim through an unusually detailed pre-design site investigation, it would pay for such services prior to contracting with the design-builder. If the design-builder possesses sufficient information about the design of the project and the likely range of subsurface conditions to be encountered, its overall price should be lowered.

Scheduling. Most construction contracts impose strict requirements on the contractor to prepare a schedule depicting how performance will be completed within the contractual time period.⁸ Any scheduling requirements the parties insert into the design-build contract can have a significant impact on the parties' ability to overcome delays and prevent delay claims. Since the inclusion of scheduling requirements contributes greatly to the successful completion of any project, it should

not be overlooked in a design-build project contract.⁹

Contracts often require a contractor to schedule a project with a particular technique — such as the critical path method of scheduling — and impose milestone dates for the completion of certain activities. The purpose of these scheduling requirements is to:

- assist the owner in monitoring contractor performance;
- measure performance in relation to time and costs;
- facilitate coordination and execution of the required work; and,
- provide a tool to determine the most efficient way to accommodate changes in the work.

In a design-build project, the integration of discrete project activities is crucial to obtain an integrated project schedule. A single schedule should be developed that covers the design, procurement and construction activities necessary for project completion. The schedule must provide sufficient detail to allow project management to monitor the project closely, identify problems before they have adverse effects on the project's timely completion and to evaluate alternatives to address those problems.

The integration of design, procurement and construction activities into a single schedule is often difficult to implement. Designers are generally not used to designing a project according to a strict schedule. Nevertheless, the designers of a design-build project must be made aware of what portions of the design are most crucial to the timely completion of the project and order their priorities accordingly. Likewise, the schedule must identify long-lead items that must be ordered early in the project in order to avoid project delays.

Liability Limitations. Limitations of liability clauses attempt to put a ceiling on the amount of damages for which a contracted party may be responsible. Many design professionals routinely use such clauses as a means of reducing their potential exposure for professional negligence. Because a design-builder

has substantial potential liability for design and construction deficiencies, the design-builder often insists on limiting liability via such clauses. These clauses may limit damages by:

- excluding liability for consequential damages and limiting the exposure of the design-builder to the cost of redesign or repair of the defective work;
- excluding all implied warranties;
- requiring the owner to obtain builder's risk insurance; and/or
- establishing a fixed limit of damages for which the design-builder may be responsible (often the amount of the fee generated on the project).

There is no public policy prohibiting the inclusion of limitations of liability clauses in a construction contract. However, there are several pitfalls in using such a clause that parties to a design-build contract should recognize. For example, courts will be stricter in the interpretation of the language of a limitations of liability clause against the drafter of the clause. Therefore, if there is a gap in the clause — such as shielding the design-builder only from negligence claims and not contract claims — the design-builder will not be protected from contract liability.¹⁰ Furthermore, many state legislatures have drafted legislation prohibiting a party from exempting itself from liability under hold-harmless provisions when the injuries or damages arise solely from the negligence of the party that is seeking to limit its liability.¹¹

Liability of the Design-Builder to the Owner

Since design-build integrates design and construction responsibilities under one entity, it poses significant liability consequences for the design professionals that may participate on the project. Under the traditional approach, a general contractor is liable to the owner for its failure to comply with the contract requirements. The general contractor's liability is strict, since any deviation from contract requirements will result in liability to the owner. The doctrine of *substantial performance*,

which stipulates that the owner is not freed from its obligations to pay for any work if the work is substantially complete even though that work does not strictly conform to contract requirements, provides some relief from this liability. Nevertheless, the contractor remains liable for the monetary damages an owner suffers because the project is not built according to the specifications. These damages may be either:

- the cost of completing the project in strict accordance with the specifications; or
- the difference between the value of the project if it were completed in accordance with the specifications and as it was actually completed.¹²

A traditional construction contractor, however, is not generally responsible for the project meeting the owner's needs. The contractor is only required to build in accordance with the specifications. If the project fails to meet the owner's performance requirements, it is of no consequence to the contractor. The owner's recourse in such an event is against the designer.

In order to recover any costs from the designer, the owner must prove that the failures were due to the designer's negligence.¹³ When professional services are rendered, the professional is not required to perform perfectly. The professional is only required to perform with the degree of professional care and skill customarily employed by other designers located in the same general area.¹⁴ In short, the design professional does not guarantee that its design will work. This standard for liability differs significantly from the standard applied to the contractor, since reasonably expected errors may be excused. In the case of the architect-engineer, this standard can be contractually altered if there are express warranties made as to the design's ultimate performance. Most design-build contracts contain such express warranties of performance. The owner has hired the design-builder to achieve an end product specified by the owner in the contract. The potential exposure to liability under such a standard may be great, since the design-builder will

generally be held responsible that the project serves its intended purpose.¹⁵

The design-builder's liability to the owner may be:

- a professional negligence standard;
- a strict contractual liability; or
- a hybrid of the two standards.

The design-builder's method of compensation can be a significant factor in assessing liability. In determining whether a designer can be held to a strict liability standard or a negligence standard, some courts have noted that since designers are paid on an hourly rate, it is obvious that services — not a product — are being requested. This interpretation would result in the application of the negligence standard.¹⁶ The design-builder's exposure in some instances may also be one of strict liability. Strict liability means that the seller of a defective product is liable for damages even if there is no showing of negligence.¹⁷

Liability to Third Parties

The design-builder's potential liability to third parties — such as the ultimate users of the project, their visitors and lessees — is greater than that of a contractor or designer individually. Because the design-builder is liable for both design and construction defects, a third-party that is owed a duty of care can recover damages if the third party's injury was caused by either a design problem or a construction problem. Recovery from a design-builder is far easier to achieve than if the contractor and designer are sued in their individual capacities (as would be in the traditional approach), since each can point to the other as the culpable party. Moreover, the design-builder's defense can be complicated by the fact that a plaintiff may argue for the application of the strict liability standard. In a number of mass home-building cases, third-party plaintiffs have successfully argued for strict liability.¹⁸

The design-builder is differentiated from the mass home-builder, since the design-builder is not building a mass of projects over which the risk of defects can be spread. Instead, it may be building only one or a few

projects at a time and is, therefore, unable to apportion the risk properly. On the other hand, if a third party is not at fault for its injuries, the court may find it appropriate to shift the loss to the design-builder by imposing strict liability, since the design-builder would be deemed better able to absorb the risk of liability.

Another complication in such suits is the fact that certain defects may arise from design errors while others may arise from construction errors. In the case of third parties, a negligence standard would be applied (if strict product liability is not applicable), since there is no contract upon which to sue. The proof for a design defect would be to demonstrate that the design professional breached its standard of care as a professional. The proof for a construction defect would be to demonstrate that the construction contractor failed to perform in accordance with the contract. When, as often is the case, the defect is of a mixed design and construction nature, the jury may be incapable of determining and applying the correct standard of liability. This situation can result in an award by the jury that apportions the damages among the parties, regardless of whether the plaintiff has met its burden of proving negligence.

Liability to Subcontractors

The design-builder's potential liability to subcontractors or trade contractors is most often greater than either the contractor or designer alone under the traditional method. As the construction coordinator on the project, the design-builder is liable for any coordination errors. Pragmatically, since owner involvement is minimized and the design-builder is directly liable for designer delays, exposure to liability may be greatly increased.

Moreover, one defense designers have traditionally used to shield themselves against subcontractor claims for damages caused by design errors — lack of *privity*, or the fact that the subcontractor was not a direct party to the designer's contract with the owner — is no longer available to the design-builder. Trade contractors and subcontractors, like third parties, are not burdened with having to distinguish between design and construction

errors, since the design-builder is liable for both. As in the case of the general contractor in the traditional method, the design-builder must vouch for the correctness of the specifications for services or products in its relations with subcontractors. The design-builder also cannot pass consequent liability on to the owner.

Another risk for the design-builder is that faced by the owner under the traditional method: that the design-builder is held strictly liable for defects in the specifications. The design-builder cannot pass any costs arising out of claims resulting from defective specifications to the designer unless the designer was negligent. If the designer is part of the design-builder's organization, there is nowhere to shift the liability, even if the mistake was one of negligence.

Recent Caselaw

Because design-build is a relatively new area of construction contracting, few reported decisions are available to analyze the court's perspective of a design-builder's liability. Two cases that have recently been decided confirm the premises discussed above that the design-builder cannot rely on the traditional defenses of the design professional.

In *Koppers Co., Inc., v. Inland Steel Co.*, an Indiana court found the design-builder responsible for absorbing the cost of field changes required by engineering errors.¹⁹ The project involved the construction of a blast furnace and several coke ovens on behalf of the owner, Inland Steel. The design-builder, Koppers, was to complete the project on a cost plus fixed-fee basis.

Because of the size of the project, and the intricacy of the design, Koppers and Inland Steel entered into four separate contracts that integrated the design and construction requirements for the project. These contracts provided, among other things, that Koppers warranted that the work would be free of defects in design or engineering and that any errors would be corrected with no change in the contract price, "but Koppers shall have no other liability under the contract for such errors."¹⁹

Although the case involved many issues

regarding the liability of Koppers for cost overruns during its performance of the contract, one particular question that arose was whether Koppers was required to absorb the construction costs related to field changes necessitated by defective engineering drawings. Koppers argued that the limitation of liability set forth in the contract required that it simply be responsible for correcting the drawings at no cost and that the owner would not receive free construction services for the corrective work. The court disagreed with Koppers, finding that the correction of errors would include necessary construction field changes in addition to the correction of the drawings. In essence, the court upheld the principle that an owner need not face responsibility for either design or construction errors on a design-build project.

Arkansas Rice Growers Cooperative Association v. Alchemy Industries, Inc., is another recent design-build case.²⁰ In this case, the owner, the Arkansas Rice awarded a contract to Alchemy Industries requiring Alchemy Industries to serve as a design-builder for a project that would generate steam by burning rice hulls. The design work for the project was subcontracted to an engineering firm known as Norman Pitt, Inc.

The design-build contract required Alchemy Industries to guarantee that the completed plant would be capable of certain performance requirements, including "reducing a minimum seven and one-half tons of rice hulls per hour to an ash in producing a minimum of 48 million BTUs per hour steam at 200 pounds pressure."²⁰ The plant was designed and constructed, but it was not able to meet the performance criteria required in the contract.

Arkansas Rice sued Alchemy Industries and Pitt as a result of this failure. Its suit against Alchemy Industries was based on a breach of the design-builder's warranty under the contract, while its suit against Pitt was based on the theory that the owner was a third-party beneficiary of the Alchemy-Pitt subcontract. The 8th Circuit Court of Appeals upheld a lower court's award against the two defendants jointly on the theory that each party guaranteed that the performance re-

quirements of the project could be met. The court specifically stated:

The construction contract obligated Alchemy and Pitt to provide 'the necessary engineering plant layout and equipment design in [addition to] the on-site engineering supervision and start-up engineering services' for the construction of a hull-burning plant capable of achieving the performance criteria. Alchemy and Pitt thus warranted that a plant constructed according to Pitt's design was capable of achieving the performance criteria. The evidence is undisputed that the plant was never capable of achieving the performance criteria on a sustained basis. . . We therefore affirm the District Court's finding that Alchemy and Pitt liable to [Arkansas Rice] for breaching the warranty in the construction contract.

As evidenced in both the Koppers and Arkansas Rice cases, a court looks pragmatically at the fundamentals of a design-build contract. In these situations, good faith and diligence on the part of a design-build contractor does not absolve it from liability on either a contractual or negligence theory, particularly when the ultimate test is whether the owner receives the product for which it had contracted.

The Architect-Engineer's Role in Design-Build

An architect-engineer can participate in the design-build process in a number of ways, each of which has certain benefits and shortfalls. The most common organizational forms of a design-build structure have the architect-engineer serve as the design-builder, subcontractor to the contractor, subcontractor to the construction manager, or serve with a contractor in a joint venture.

Architect-Engineer as the Design-Builder. Many architectural-engineering firms are interested in contracting with owners to serve as the design-builder on a project. There are many advantages in serving in this capacity. First, the architect-engineer has complete control over the project, being able to coordinate and

delegate responsibilities to all contractors working on the project. Moreover, this control allows the architect-engineer to share directly in the financial rewards on the project and negotiate directly with the owner for all aspects of the project.

There are a variety of risks assumed by an architect-engineer that chooses to serve as a prime contractor on a design-build project. Unless the architectural-engineering firm possesses true construction management capability, it will depart from its traditional role and enter into the construction business. It will have to deal with union and open shops, strikes, equipment and material suppliers, construction subcontractors and other factors normally handled by a contractor. Furthermore, the design professional must recognize that its standard of care to the owner will no longer be simply one of meeting professional design standards. As represented by the Koppers case, the owner expects the project to be furnished at a fixed price once the project scope is adequately defined. Therefore, the design professional must take whatever steps are necessary to design and construct that project within the contracted price.

For an architectural-engineering firm to be successful on a design-build project, it must reject the notion that "design comes first at whatever cost," and recognize that design and construction interests must be sensibly balanced to meet the owner's desires. In order to promote such a balance, the firm should subcontract with a reputable contractor with which it has experienced a productive working relationship on other projects.

Architect-Engineer as Subcontractor to Contractor. An experienced contractor using a designer as a subcontractor is generally in a strong position to serve as a design-builder on a given project, since construction expertise is a key selling point to an owner. This approach provides architectural-engineering firms with excellent opportunities to capture a piece of the design-build market without incurring as much risk as they would if they were the design-builder.

The greatest disadvantage that contractors have on a design-build project is their assumption of design responsibilities. Many

contractors are not familiar with the difficulty in developing a high-quality design that meets budget restrictions. In order to complement the contractor's skills on a design-build team, the architect-engineer must be sympathetic to the difficulties in integrating design with construction at a cost-effective price. Good construction experience would also be desirable. The optimal situation is for the architectural-engineering firm to establish a close working relationship with a contractor that has either had experience in design-build projects or that has worked closely with the architectural-engineering firm on other projects.

Architect-Engineer as Subcontractor to Construction Manager. Construction management organizations can be uniquely qualified to provide design-build services. The primary advantage to such an organizational structure is that the construction manager basically fulfills the same role on the design-build project as it would on a traditional project, namely project coordination. Consequently, the construction manager would subcontract to both a design firm and a contractor and coordinate their activities to provide the owner with the product it seeks.

One of the primary advantages to a design professional that subcontracts to a construction manager as the design-builder is that the construction manager is not, theoretically, biased towards construction costs in the same manner as a contractor might be. The contractor would be required to abide by the design policy of the construction manager as shaped by its design professional subcontractor. This design would be balanced by the construction manager by maintaining control over the designer and ensuring a cost-effective product. In short, this approach provides a check and balance system that may not be present without a construction manager.

The major disadvantage to subcontracting with a construction manager, however, is that the construction manager concept involves a potential problem with defining lines of responsibility. It is in the interest of all of the parties to ensure that the construction manager is fully responsible to the owner for design and construction. A construction

manager that acts as an agent for the owner and delegates responsibility to design and contracting firms that have their own contractual relationships with the owner is not a true design-builder and can place the designers and contractors working on the project in greater jeopardy of liability.

Joint Ventures. In order to mitigate the risks associated with design-build contracting, architect-engineers and contractors often form joint ventures to serve as design-builders on a particular project. By pursuing a design-build project as partners, instead of as prime contractor and subcontractor, both the design professional and the contractor have a mutual interest in cooperating with one another in order to share the rewards and reduce the risks of the project development.

Contractors and design professionals interested in forming joint ventures must carefully structure the agreement to detail how the joint venture will operate. Some questions that must be addressed in the agreement include:

- which of the entities will be the managing partner;
- how liability for design or construction problems will be apportioned;
- how profits and capital contributions will be distributed; and,
- how disputes over design and performance obligations will be resolved.

Design-Build Firms

There are many organizations that have been specifically organized to compete solely for design-build projects. On the whole, these organizations are largely capitalized and geared to handle large industrial projects such as petrochemical facilities and alternative energy projects. The exceptions are some small firms that may specialize in designing and building parking structures, fire protection systems and small office buildings.

A single corporate entity that possesses the in-house ability to both design and build a project offers inherent advantages over all other organizational structures for the design-builder. The most widely-recognized advantage is that there is a unity of purpose in

performing what it takes to complete the project. The design and construction departments of the firm should be highly coordinated and communicate with each other well in order to eliminate the gaps that occur when dealing with subcontractors or joint venture partners. The primary disadvantage, however, is the expense in forming and maintaining the integrated design and construction functions within a single corporate entity.

An alternative to the fully-integrated design-build firm is the holding company that owns separate architectural-engineering and construction entities. The benefit of a holding company approach is that each company can gain additional experience by working with outside engineers or constructors on projects for which the other entity may have neither the expertise nor interest in competing. The primary disadvantage is that because each entity is concerned with individual profit and potential liability, the separate entities may not pull together for the good of the whole. Consequently, the key to a successful relationship between the different entities of a holding company is to ensure that proper lines of communication remain open on the project and that each entity is fully committed to taking the necessary steps to make the project a success.

Special Concerns

There are a variety of special problems that are associated with an architect-engineer performing work on a design-build project. Two of the most critical items are:

- what effect licensing requirements will have on how the design-builder performs its work; and,
- the impact of insurance requirements on the project.

Licensing Requirements. Any professional organization interested in providing design-build services must carefully review the licensing requirements within the jurisdiction in which the work is to be performed. Most states make it unlawful for any person, partnership or other entity to engage in the practice of architecture or engineering unless

such person has been duly licensed.²¹ Therefore, a contractor that agrees to furnish design-build services must have available a registered design professional to supply the needed design services. Moreover, most states require that organizations be properly licensed as contractors before providing construction services to an owner on a given project. This requirement precludes the design professional from simply hiring a general superintendent to manage the work of trade subcontractors performing on the project. In this case, the designer must obtain a construction license for itself.²¹

Insurance. Another subsidiary issue to be addressed by the design-builder is whether it is properly insured against injuries to persons or property when it performs the services required under its contract with the owner. The "errors and omissions" insurance typically obtained by architects or engineers excludes coverage for construction mistakes. Furthermore, the typical comprehensive general liability coverage obtained by general contractors excludes coverage for errors or omissions in design.²¹ Obviously, when the functions of design and construction are merged into the same entity, neither policy is sufficient in itself.

Given the potential liability that the design-builder may encounter, it is critical to procure insurance policies that cover both design errors as well as traditional construction errors. To facilitate obtaining such an insurance policy, it may be advisable for the owner to procure a builder's risk policy and a difference-in-conditions policy to cover any potential gap in the policies of the design-builder.

Conclusion

If a design professional is to take advantage of the opportunities in design-build contracting, it must carefully examine all of the risks and subtleties associated with this unique form of project development. Over the next few years, as more owners become familiar with the benefits of the design-build process, it is likely that the construction and design risks will be harmonized with the owner's objective of obtaining a project quickly and at the least

cost. Moreover, courts can be expected to better define the types of risks that are properly to be shifted to the design-builder.

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