

1. Construction Contracting

1.1 The Construction Industry

Construction projects are complex undertakings. The owner of the structure, either from his own resources or by some form of external financing, provides the capital necessary to finance the entire operation. The structure must be designed in accordance with applicable codes and standards, culminating in drawings and specifications that describe the work in sufficient detail for its accomplishment in the field. The building of a structure of even modest proportions involves many skills, materials and equipments.

Construction Categories

The field of construction is as diversified as the uses and forms of the many types of structures that it produces. However, construction can be divided in to four categories, although there is some overlap among these divisions and contain projects do not fit into any one of them.

The four main divisions are housing, nonresidential building, engineering, and industrial construction.

a) Housing Construction

This includes the construction of single-family homes, high-rise apartments, low-rise, garden type apartments and the rehabilitation of existing house units.

b) Nonresidential Building Construction

This category includes buildings that are erected for institutional, educational, commercial, social, religious and recreational purposes. The combination of housing and nonresidential building construction is commonly referred as building construction.

c) Engineering Construction

This category covers structures that are planned and designed by engineers. Engineering construction can be divided into three groups – highway, heavy and utility construction.

d) Industrial Construction

It includes the erection of projects that are associated with the manufacturing or production of a commercial product or service. Petroleum refineries, steel mills,

chemical plants, electric – power generating stations and similar installations are all examples of industrial construction.

1.2 Drawings and Specifications

The design of construction projects is performed by architects and/or engineers, the division of responsibility between the two depending on the nature of the construction involved. As a general rule, building construction is primarily of an architect nature, with structural, electrical, mechanical and sanitary engineers providing supportive services as may be required. High way, heavy, utility and industrial projects are predominantly engineering projects, with architectural services obtained if needed. Within this text, “architect – engineer” (A/E) is used to designate the organization, person, concern, or team responsible for project design, whether it be architect, consulting engineer, or a combination of both.

Services Provided by Architect – Engineer

When the owner has his own in – house design capability or when a design – construct contract is contemplated, the owner is not faced with the necessity of choosing an architect – engineer to design his project. Otherwise, he must go through some selection process. The usual procedure is for the owner to notify various design firms, selected on the basis of personal acquaintance, reputation or recommendation, about his forthcoming project. Each interested architect – engineer firm then presents the owner with information concerning its past projects, names of ex – clients, qualifications of its staff, manpower available for assignment to the project, and perhaps some specific ideas about the owner's upcoming job. After interviews and discussions, the owner selects the company that he deems the most desirable and negotiates a contract with it. A private owner may not choose to follow this procedure, preferring to negotiate immediately a design contract with a selected concern.

The scope of service required of the architect – engineer is subject to considerable variation, depending on the needs and wishes of the owner. Basic to such services is the preparation by the architect – engineer of several documents required for bidding or negotiation, and for construction purposes. *These documents typically include the instructions to bidders, proposal form, general conditions, supplementary conditions, drawings, technical specifications, and agreement.*

Subsequent to the award of a construction contract, the scope of services of the architect – engineer depends considerably on the construction management capabilities of the owner. Responsibility of the architect – engineer to the owner may cease when the contract documents are prepared and delivered. On the other hand, the owner may desire him to provide full construction phase services

including project inspection, approval of payments to contractor, change orders, and assistance in the selection and obtaining of interior furnishings. Although the architect – engineer is not a party to the construction contract between the owner and contractor, it delineates those functions that he is to perform on behalf of the owner during the construction phase. Ordinarily, the status of the architect – engineer during construction is defined in the general conditions.

Ownership of Design

Ownership of the drawings and specifications and their possible reuse can be a matter of considerable importance to the architect – engineer. So long as the documents remain with the architect – engineer, he has a common – law copyright on his design that is regarded as intellectual property. The protection afforded by a common – law copyright is against unauthorized copying and unauthorized use without his consent. However, when the work is delivered to the owner – client and the fee is paid, ownership of the drawings and specifications now lies with him. This is, however, in the absence of any contractual provision to the contrary. Normally, the contract between the owner and the architect – engineer makes explicit provision regarding ownership.

1.3 Estimating and Bidding

Construction estimating is the compilation and analysis of the many items that influence and contribute to the cost of the project. Estimating, which is done before the physical realization of the work, requires detailed study of the drawings and specifications. It also involves a careful analysis of the results of the study in order to arrive at the most accurate estimate of the probable cost consistent with the bidding time and the accuracy and completeness of the information submitted.

Although negotiated contracts frequently lack the competitive element, the accurate estimating of construction costs constitutes important aspect of such contracts. The contractor is expected to provide the owner with reliable advance cost information, and his ability to do so determines in large measure his continuing ability to attract owner – client. In design – construct and construction management contracts, the contractor is called on to provide expert cost assistance and advice as the design develops. The estimation of costs is a necessary part of any construction operation.

There are different estimating procedures: lump – sum, unit – price and approximate estimates.

Advertisement for Bids

In all jurisdictions, laws regulate and control the award of public construction projects. These legal requirements start with first step in the construction process; that is, notice must be given to interested and qualified members of the construction industry in advance of the bidding of any project financed by public funds. In addition, all bidders must be treated alike and be afforded an opportunity to bid under the same terms and conditions.

The contracting agency may be required to give notice by placing advertisements for bids in newspapers, magazines, trade publications, or other public media. An advertisement of this type is commonly referred to as a "Notice to Bidders".

The advertisement describes the nature, extent and location of the work, and the authority under which it originates, together with the time, manner, and place in which bids are to be received. The place where bidding documents are available and the deposit required are designated, and information is listed concerning the type of contract, bond requirements, dates when the work is to be started and completed, terms of payment, and the owner's right to reject all bids.

However, private owners may proceed in any manner they choose to select a contractor.

Submission of Proposal

It is the responsibility of the contractor to deliver his bid to the proper place prior to the closing time designated. The completed proposal form together with the necessary information is sealed in an envelope that is addressed as directed to bidders. Bids may be submitted at any time previous to the deadline scheduled for their acceptance.

Award of Contract

After competitive bid proposals have been submitted, the owner and his architect – engineer, after a careful study and evaluation of bids received, must identify the contractor to whom the project will be awarded. Private owners, after a closed bidding, may negotiate with the two or three lowest bidding contractors before this decision is made. Open biddings, involving both private and public owners, customarily award the job to the "lowest responsible bidder". This is mandatory on public financed projects.

It is interesting to note that the American preoccupation with the low bidder normally being the successful bidder is not shared by many other parts of the

world. There are some very good arguments why the lowest price is not necessarily the best price for the owner. By its very nature, competitive bidding places the contractor and the owner in adversary positions; the award to the lowest bidder can exacerbate the relationship.

- I. In one European country the award is made to the bidder whose bid is nearest to the average of all bids received.
- II. In another European country, the successful bidder is the one nearest to the average after the two highest and the two lowest bids have been rejected.
- III. The bid that is more than but nearest to the average of all bids received, but is still below the owner's estimate, wins in an Asian nation.

On selection of a contractor, the owner advises him in writing that his proposal has been accepted. This acceptance is conveyed to the contractor together with information concerning arrangements for the signing of the contract. It is usually in letterform and sets forth the conditions pertaining to the award.

1.4 Construction Contracts

The usual mode of accomplishing construction work is where the owner and contractor, as separate parties, enter into a contract with one another. The contract describes in detail the configuration of the project and how the work is to be carried out. The owner is required to pay the contract in accordance with the provisions of the contract. In return, the contractor is obligated to construct the project in full accordance with the contract documents.

The means by which the contractor is identified, the form of contract between owner and contractor, and the scope of duties assumed by the contractor are highly variable with each individual case. The contractor may be selected on the basis of competitive bidding of one sort or another, the owner may negotiate a contract with a selected contractor, or perhaps a combination of the two may be used. The entire project may be included within a single general contractor, or separate prime contracts for specific portions of the job may be used. The contract may include project design as well as construction, or the contractor's responsibility may be primarily managerial.

1.4.1 Types of Construction Contracts

Although there are many different types of construction contracts, they may be grouped into two large divisions – competitive bid contracts and negotiated contracts.

The competitive - bid contracts are prepared on a fixed - price basis and consist of two types: the unit – price contract and the lump – sum contract.

The negotiated contracts can be on any mutually agreeable basis: lump sum, unit price or cost plus fee.

The Lump – Sum Contract

For small works and repairs, it is not usual or necessary to prepare bills of quantities. Drawings with a specification are sent to the tendering builders and they are requested to send in a lump sum price for carrying out the building scheme. The main difficulty in this type of contract is the valuation of any variations that may arise.

The Unit – Price Contract

This type of contract is based on estimated quantities of certain well – defined items of work and costs per unit amount of each of these work items. The estimated quantities are compiled by the architect – engineer, and the unit costs are those bid by the contractor for carrying out the stipulated work in accordance with the contract document.

Unit – price contracts offer the advantages of open completion on projects involving quantities of work that cannot be accurately forecast at the time of bidding.

Cost – Plus Contract

Contracts of the cost – plus variety are usually used when the work is to be conducted in accordance with terms negotiated between the owner and the contractor. Contracts are negotiated between the two parties for a number of reasons. The owner may want a particular contractor to do the work. The nature of the construction may be such that it is impossible or impracticable to prepare complete drawings and specifications before operations are begun. Unusual speed of construction may be a pressing requirement. Perhaps many major changes in the work are apt to become necessary during the construction program. Extensive changes can be very troublesome under a competitive type of contract.

1.4.2 Contract Clauses

Construction contracts contain many nontechnical provisions that pertain to the conduct of the work. These contract clauses constitute the general conditions, supplementary conditions and provisions of the agreement. (Refer Appendices C, D, G and H from Clough Richard H. – Construction Contracting – that are reproduced documents for illustrative purposes)

The general conditions, sometimes called general provisions, will typically include the following items:

- Definitions
- Contract documents
- Right and responsibilities of owner
- Duties and authorities of architect – engineer
- Right and responsibilities of contractor
- Separate contracts
- Time
- Payment and completion
- Changes in the work
- Insurance and bonds
- Disputes
- Termination of the contract

These clauses are devised predominantly for the protection of the owner and must be carefully examined and studied by the contractor so that he thoroughly understands the obligations he is to assume.

The contract clauses of many construction contracts are not standard and are prepared by the architect – engineer. These sometimes impose burdensome, one - sided obligations on the contractor, who may single out such documents for more than the usual hurried scanning. Obviously, the time for a careful reading of such contract articles is before rather than after the contract is signed. After execution of the contract, all its provisions bind the contractor, whether he has read them or not.

1.4.3 Rights and Responsibilities

The Owner

The owner, as a contracting party, has several rights especially reserved for him. Depending on the type of contract and its specific wording, he may be authorized to award other contracts in connection with the work, to require contract bonds from the contractor, to approve the surety proposed, to retain a

specified portion of the contractor's periodic payments, to make changes in the neglect work, to carry out bonds from the contractor 's periodic payments, to make changes in the work, to withhold payments to the contractor for adequate reason, and to terminate the contract for cause. The right of the owner to inspect the work as it proceeds, to direct the contractor to expedite the work, to use completed portions of the project before contract termination, and to make payment deductions for uncompleted or faulty work are common construction contract provisions.

By the same token the contract between owner and contractor imposes certain responsibilities on the owner. For example, construction contracts make the owner responsible for furnishing property surveys that describe and locate the project site, securing and paying for necessary easements, providing certain insurance, and making periodic payments to the contractor. The owner is required to make extra payment and grant extensions of time in the event of certain eventualities provided for in the contract. When there are two or more prime contractors on a project, the owner has a duty to coordinate them and synchronize their field operations.

It is important to note that the owner cannot intrude on the direction and control of the work. By the terms of the usual construction contract, the contractor is known at law as an "independent contractor." Even though the owner enjoys certain rights with respect to the conduct of the work he cannot issue direct instructions as to method or procedure, unreasonably interfere with construction operations, or otherwise unduly assume the functions of directing and controlling the work. By so doing, the owner can relieve the contractor from many of the latter's rightful legal and contractual responsibilities. If the owner oversteps his rights, he may not only assume responsibility for the accomplished work but also become liable for negligent acts committed by the contractor in the course of construction operations.

The Architect-Engineer

Other than cases in which both design and construction are performed by the same contracting party or in which the owner has his own in-house design capability, the architect-engineer is not a party to the construction contract, and no contractual relationship exists between him and the contractor. He is a third party who derives his authority and responsibility under the contract from the owner. When the owner utilizes private design professionals are utilized by the owner, the construction contract substitutes the architect-engineer for the owner in many important respects. However, the jurisdiction of the architect-engineer to make determinations and render decisions is limited to and circumscribed by the terms of the construction contracts. The architect-engineer represents the owner in the administration of the contract and acts for him during the day-to-

day construction operations. The architect-engineer advises and consults with the owner, and communications between owner and contractor are made through the architect-engineer.

Construction contracts of this type impose many duties and bestow considerable authority on the architect-engineer. All construction operations are conducted under his surveillance, and he generally oversees the progress of the work. It is his direct responsibility to see that the workmanship and the materials fulfill the requirements of the drawings and specifications. To ensure this fulfillment, he or his designated representative exercises the right of job inspection and approval of materials. In addition, he may exercise the privilege of approving the contractor's general program of field procedure and even the construction equipment that the contractor proposes to use. Should the work be lagging behind schedule, the architect-engineer may reasonably instruct the contractor to speed up his activities.

The foregoing paragraph does not mean that the architect-engineer will assume responsibility for the contractor's methods merely because he retains the privilege of approval. The rights of the architect-engineer are essentially concerned with verifying that the contractor is proceeding in accordance with the contract documents. It should be pointed out, however, that the architect-engineer cannot unreasonably interfere with the conduct of the work or dictate the contractor's procedures. Here again, if the direction and control of the construction are taken out of the hands of the contractor, he is effectively relieved of many of his legal and contractual obligations.

The contract documents authorize the architect-engineer to interpret the requirements of the contract. The usual stipulation is that "the decision of the architect-engineer shall be final and binding on both parties." Actually, the jurisdiction of the architect-engineer is restricted to the settlement of questions of fact, such as what quantity and quality of materials are required or whether the work performed meets contract requirement. The answers to questions of fact require the professional knowledge and skill of the architect-engineer, and it is proper that he should make such decisions. In the absence of fraud, bad faith, or gross mistake, the decision of the architect-engineer may, in fact, be considered as final, provided that the subject matter falls within the proper scope of his authority. Most public contracts, however, provide for appeals to higher authority from decisions made by the architect-engineer or the contracting officer.

With respect to disputed questions of law, however, the architect-engineer has no jurisdiction. He cannot deny the right of a citizen to due process of law, and the contractor has the right to submit a dispute concerning a legal aspect of the contract to arbitration or to the courts. Whether a particular matter is one of fact

or one of legal construction can depend on the language of the contract. Matters pertaining to time of completion, liquidated damages, and claims for extra work usually involve points of law.

The Contractor

As one might expect from a document prepared especially for the owner, the contractor has few rights and many obligations under the contract. His major responsibility, of course, is to construct the project in conformance with the contract documents. Despite all the troubles, delays, adversities, accidents, and mischances that may occur, the contractor is expected to “deliver the goods” and finish the work in the prescribed manner. Although some casualties are considered as justification for allowing him more construction time, only severe contingencies such as impossibility of performance can serve to relieve him from his obligations under the contract.

The contractor is expected to give his personal attention to the conduct of the work, and either he or his representative must be on the jobsite at all times during working hours. The contractor is required to conform to laws and ordinances concerning job safety, licensing, employment of labor, sanitation, insurance, zoning, building codes, and other aspects of the work. Many contracts now include tough rules designed to decrease air and noise pollution on construction projects. These rules imposing regulations and restrictions concerning trash disposal, pile driving, riveting, demolition, fences, and housekeeping.

The contractor is responsible for and warrants all materials and workmanship, whether put into place by his own forces or those of the subcontractors. Contracts typically provide that the contractor shall be responsible for the work until its final acceptance, although engineering projects commonly include “act of God” exclusion. Even though the contractor has no direct responsibility for the adequacy of the plans and specifications, he can incur a contingent liability for proceeding with faulty work whose defects should be manifest to one in his position. Should an instance occur in which the contractor is directed to do something he feels is not proper and is not in accordance with good construction practice, he should protect himself by writing a letter of protest to the owner and the architect-engineer, stating his position before proceeding with the matter in dispute.

Insurance coverage is an important contractual responsibility of the contractor, both as to type of insurance and policy limits. The contractor is required to provide insurance not only for his own direct and contingent liability, but frequently also for the owner's protection. He is expected to exercise every

reasonable safeguard for the protection of persons and property in, and adjacent to the construction site.

The most important contractor rights concern progress payments, recourse should the owner fail to make payments, termination of the contract for cause, right to extra payment and extensions of time as provided, and appeals from decisions of the owner or architect-engineer. Subject to contractual requirements and limitations therein, the contractor is free to subcontract portions of his contract, purchase his materials where he chooses, and process the work in any way and in any order that he pleases.