

1 BIDS AND PROPOSALS

1.1 Notice to bidders

The document announcing to prospective bidders that design documents are available for consideration and that the owner is ready to receive bids is called the **notice to bidders**. The owner wants to be sure that the lowest bid price is achieved and to ensure this, the job is advertised to those contractors who are capable of completing the work at a reasonable price.

1.2 Bid package

The documents that are available to the contractor and on which he must make a decision to bid or not to bid are those in the **bid package**. In addition to the plans and technical specifications, the bid package prepared by the owner consists of a **proposal form**, **general conditions** that cover procedures common to all construction contracts, and special conditions which pertain to procedures to be used that are unique to this particular project.

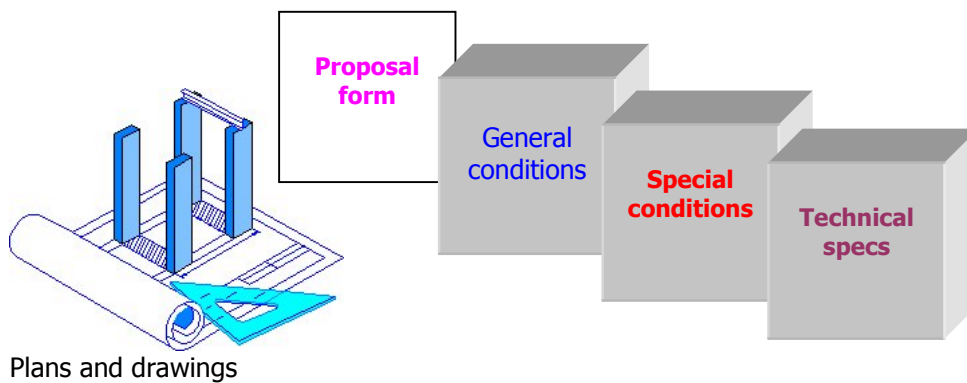


Figure 1.1. Bid package documents

1.3 General conditions

Certain stipulations regarding how a contract is to be administered and the relationships between the parties involved are often the same for all contracts. An organization that enters into a large number of contracts each year normally evolves a standard set of stipulations that establishes these procedures and applies them to all construction contracts. This set of provisions is normally referred to as the **general conditions**. The topics typically addressed in general conditions are:

1. Definitions
2. Preliminary matters
3. Contract documents
4. Bonds and insurances
5. Contractor's responsibilities
6. Owner's responsibilities
7. Engineer's responsibilities
8. Changes in the work
9. Change of contract price
10. Change of contract times
11. Test and inspections
12. Payments to contractor and completion
13. Suspension of work and termination
14. Dispute resolution

1.4 Supplementary conditions

Those aspects of the contractual relationship that are peculiar or unique to a given project are stated in the **supplementary conditions**. Items such as duration of the project, additional instructions regarding commencement of work, owner-procured materials, mandatory wage rates, format required for project progress reporting and amount of liquidated damages are typical of the provisions included in the supplementary conditions. Items contained in supplementary conditions are two types:

1. Modifications to the basic articles of the **general conditions** in the form of additions, deletions or substitutions
2. Additional articles of a contractual-legal nature that may be desirable or necessary for a particular project

1.5 Technical specifications

The contract documents must convey the requirements of the project to potential bidders and establish a legally precise picture of the technical aspects of the work to be performed. This is accomplished:

1. Visually, through the use of drawings
2. Verbally, through the use of technical specifications (specs)

The provisions in technical specs pertain in large part to the establishment of quality levels. Standards of workmanship and material standards are defined in the specifications.

1.6 Addenda

The bid package documents represent a description of the project to be constructed. Any changes in detail, additions, corrections, and contract conditions that arise *before* bids are opened that are intended to become part of the bid package and the basis for bidding are incorporated into the bid package through **addenda**. An **addendum** thus becomes part of the contract documents.

1.7 Decision to bid

After investigating the plans and specifications the contractor must make a major decision – whether or not to bid the job. Bidding the job requires a commitment of man-hours by the contractor to develop the estimate.

Estimating is the process of looking into the future and trying to predict the project cost and various resource requirements. The quantity of materials must be developed from the drawings by an expert in quantity takeoff. Once quantities are established estimators who have access to pricing information use these quantities and their knowledge of construction methods and productivities to establish estimates of the *direct costs* of performing each construction task. They then add to the totaled project direct cost those *indirect costs* that can not be assigned directly to a particular estimating item. Finally the bid price is established by adding the management and overhead costs, allowances for contingencies, and a suitable profit margin.

1.8 Subcontractor and vendor quotations/contracts

As already noted, estimating department personnel establishes cost directly for those items to be constructed by the prime contractor with in-house forces. For specialty areas such as electrical work, interior finish, and roofing the prime contractor solicits quotations from subcontractors with whom he has successfully worked in the past. Material price quotations are also developed from vendors. These quotations are normally taken via phone and included in the bid. The contractor integrates these quotations into the total bid price. Following award of the contract, the prime contractor's procurement group immediately establishes subcontracts with the appropriate specialty firms.

1.9 Bid shopping

It is sometimes the custom in the construction industry where there are no protective laws, to shield a subcontractor from the unfair practice of **bid shopping**, for the prime contractor, after being notified of selection, to shop around to other potential subcontractors and offer to substitute them in the general contractor's bid if they will underbid the subcontractors originally used in determining the bid price.

1.10 Bid bond

If a person of limited means attempts to borrow money at the bank and if the bank is concerned about the ability of the borrower to pay back the borrowed money, it may require that a separate individual cosign the note or instrument of the loan. This is referred to as **bond**. A similar relationship exist in construction contracts. The concept of a bond allows one party to protect itself against default in a relationship with a second party. A third party referred to as *surety* provides protection such that,

if a default between two parties occurs that results in damage (e.g., loss of money or other value) the surety protects the other party.

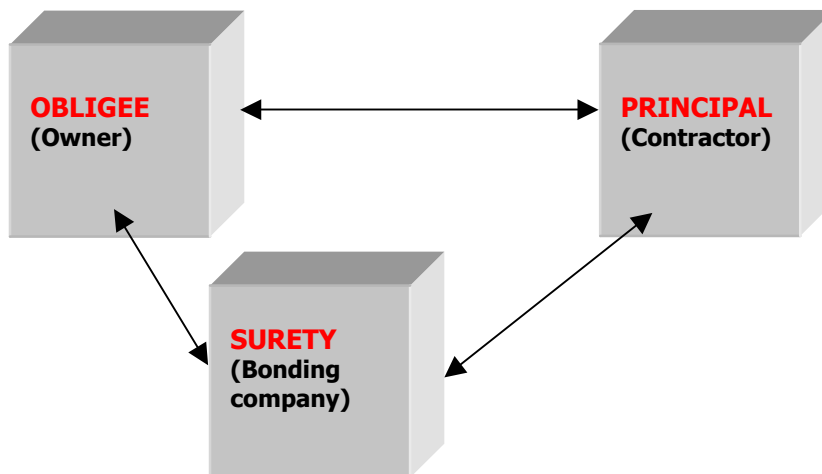


Figure 1.2 Bonding relationship

If the selected bidder can not begin the project as directed since, for example, he realizes that he has underbid the project and that pursuing the work will result in a financial loss and he withdraws his proposal, the owner would incur a damage. If the bidder is unable to pay the damage the surety steps in and cover the damage.

1.11 Performance and payment bonds

If the contractor is awarded the contract, performance and payment bonds are issued. A **performance bond** is issued to a contractor to guarantee the owner that the contract work will be completed and that it will comply with project specifications. In other words, a performance bond protects the owner against default on the part of the contractor in performing the project as required. If the contractor fails to perform the work as required, the surety must provide for completion of the project in compliance with the plans and specifications at the price originally quoted by the defaulting contractor.

A **payment bond** is issued to guarantee the owner protection against any liens or charges against the project that are unpaid as a result of the contractor's default. That is, if the contractor fails to pay outstanding liens and charges against project occurring as a result of the construction work, the surety will pay these debts. If the contractor does not pay subcontractors or suppliers, the surety must protect the owner from the claims.

Performance and payment bonds are issued for a service charge. The common rate, in USA for example, is 1% on the first \$200.000 of contract cost. At higher contract costs, the rate is reduced incrementally.

1.12 Public and private sector bidding

Bidding practices of the public and private sectors of the industry differ tremendously. The term **public** in this context means that the construction work is financed by public funds.

Public and private work have different bid rules. Public construction contracts are advertised and let in accordance with the bidding statutes and other legislatively mandated rules of the particular governmental entity that is paying for the construction work. The enabling legislation usually provides definitive rules for advertising and awarding the the construction contracts.

Unlike public owners, private owners can establish whatever rules that they want. They also can change the rules at will. Although the public owner has the ability to set particular rules and/or to change them by issuing an addendum to the bidding documents, this power is severely regulated. A bid document addendum is a modification to the biding documents formally issued by the owner to all holders of bidding documents before bids are received.

In the private sector, anything can happen whereas, in the public sector, the result will usually be that the job will be awarded to the lowest **responsive** and **responsible bidder**.

1.13 Public bidding statutes

The requirement of the state bidding statutes and resulting regulations make the outcome of the bidding process in the public sector very predictable compared to the private sector. The purposes of public bidding statutes are to protect public funds by open competitive bidding and to ensure that public sector construction contracting remains honest. Those who violates the rules find themselves subject to both civil and criminal liability.

Basic principals behind most bidding statutes can be stated as follows:

1. There must be sufficient advertising time between the first advertisement of the bid and bid opening so that prospective bidders know about the project and have sufficient opportunity to prepare their bids.
2. The bidding documents must be sufficiently clear and detailed to assure free and oen competition. The purpose of this requirement is to assure that each bid received represents a price tendered by each individual bidder to construct the identical project.
3. There must be a public bid opening and a public reading of all bids received at the date, time, and place stated in the bid advertisement. This requirement ensures that every person present at the bid opening has the opportunity to hear the bid prices tendered by the various bidders.
4. The contract must be awarded to the lowest responsive and responsible bidder whose bid is in the best interest of the government. The requirement also applies to contracts that are negotiated, in that the government is required to award the contract to the bidder whose proposal is determined (price and other factors considered) to be in the best interest of the government.
5. All bids may be rejected when rejection is determined to be in the best interest of the government.

1.14 Material Improprieties

A public owner must determine whether there is any **material impropriety** which would preclude award of a public contract. A material impropriety can be anything that is not proper in either the bidding documents or the bidding process. Examples include such acts as bribery, bid rigging, or offering private clarification of bid document requirements to selected bidders, or anything else that would impugn the integrity of the bidding process.

1.15 Factual determination of the low bid

A public owner must make a **factual determination of the low bid**. This is more complicated than simply noting and recording which bid submitted has the lowest price written in the space for the total bid price. The public owner must also make sure that the bids received include no arithmetic mistakes or discrepancies, pr, if such mistakes or discrepancies are found, that the apparent low bid remains low when they are corrected.

1.16 Responsive and responsible bidders

The public owner must make a seperate determination that the low bidder is both a *responsive bidder* and a *responsible bidder*.

- A **responsive bidder** is one who has filled out and signed the bid forms in accordance with the bidding instructions and who has submitted an unqualified bid in full conformance with the requirements of the bid documents. There may be no additions or alterations of any kind.
- A **responsible bidder** is one who possesses sufficient financial resources to undertake the project and, in addition, he has the necessary experience and a track record indicating the ability to execute successfully the work of the contract.

1.17 Rejection of bids

A public owner normally must reject bids received after the time specified in the bid documents for submitting bids. In practice late bids are usually rejected but not always. Public owners may reject all bids upon a determination that rejection is in the public interest. However this right is not absolute, there are limitations, rejection can not be arbitrary.

1.18 Bid irregularities/informalities

Errors and ambiguities in the bids received that makes it impossible to determine that each bid is for exactly the same work are known as **bid irregularities** or **informalities**. If a public owner awards a contract on the basis of a bid containing an irregularity or informality, the other bidders may sue to prevent the award of the contract. The both terms mean the same thing and have to do with bidder responsiveness. A major irregularity or informality means one that has an important effect on the terms of the bid, whereas a minor irregularity or informality is one of less significance. A bid containing a major irregularity is required to be rejected, whereas a minor one may be waived by the owner.

2 PRECONSTRUCTION OPERATIONS

2.1 The preconstruction conference

The preconstruction conference allows the key personnel of both sides to be introduced, and the responsibilities and authorities of each can be defined at that time. It also allows the parties to get a clear understanding of the procedures involved in contractor submittals, sampling and testing, construction surveys, inspections by outside agencies, payment requests, procedures for claims and disputes, unforeseen job conditions, change order requests, and similar items.

During the course of preconstruction meeting, mention can be made of the contractor's responsibility to provide insurance documents as specified and all required bonds as well as to obtain (and pay for) all permits from building departments, street departments, police departments (for traffic control) environmental protection agencies, or other agencies having jurisdiction. The contractor should be reminded at this meeting that all such documentation is required to be submitted before work can begin.

Another item that should be brought up at this meeting is the schedule of job site and management meetings, the location and frequency of such meetings, and who should be in attendance.

Before closing the conference, the subject of the construction schedule should be raised. It may be necessary to remind the contractor that the initial project schedule submitted at the beginning of the project will require periodic adjustment, and that all such adjustments must meet with the approval of the design firm and the owner.

2.2 Preconstruction conference agenda

Checklist of Subjects to be Considered for Agenda:

Construction coordination (preconstruction) conference

- Participants
- Time required for conference
- Topics for discussion
- Minutes of the meeting
- Acknowledgement or correction of minutes

Identification of key personnel of all parties

- Names and 24-hour phone numbers of contractor, engineer and owner
- Define authority or responsibility of key personnel
- Designate sole contact for administration of contract

Authority and responsibilities

- Methods of construction
- Rejection of work by inspector
- Work performed in absence of inspector (unacceptable)
- Work performed in absence of contractor's superintendent (unacceptable)
- Stopping the work (right reserved to owner alone)
- Safety at the site
- Issuance of field orders from engineer/owner
- Authority of the inspector

Conformance with plans and specifications

- Call attention the areas of special concern
- Answer contractor inquiries
- Clarification of specification provisions

Contract administration

- Notice to proceed
- Time of the contract
- Liquidated damages
- Insurance requirements and bonds
- Record drawings (procedure, responsibility for)
- Mobilization (identify scope)
- Contractor submittal procedure
- Surveys and staking
- Bid allocation of lump-sum bids

- Environmental requirements (cleanup, sanitary, dust, blasting, chemicals)
- Change orders and extra work procedures
- Unforeseen underground condition procedures (public agency responsibility)
- Coordination with utilities
- Closeout procedures
- Progress payment and retainage procedures

Materials and equipment

- Substitution of "or equal" items
- Long-lead (prepurchase) items
- Assignment of procurement contracts to contractor
- Owner-furnished materials or equipment
- Storage and protection
- Concealed shipping damages
- Payment for materials not yet used in the work

Contractor's schedule

- Owner/engineer rights to approve
- Submittal requirements
- Owner/engineer can set milestone date

Change orders and extra work

- Who has authority to issue
- Effect on time and cost
- Field or versus change order
- Cumulative change order

Subcontractors and suppliers

- Contractual relationship
- Submittal requirements
- Owner/engineer: no direct contact alone
- Fair subcontracting act requirements

Coordination with other agencies and contractors

- Interface requirements
- Testing and validation of systems
- Highway departments and railroads
- Code enforcement agencies
- Other regulatory agencies of government

Handling of disputes, protests, and claims

- Must exhaust all contractual means
- Resolution by the engineer

Labor requirements

- Documentation and audit requirements
- Federal, state and local requirements

Rights-of-way and easements

- Permanent easements for project
- Temporary easements for construction
- Dumping sites and storage areas
- Access to the site by heavy equipment

Owner protection

- Warranties and guarantees
- Bond protection during guarantee
- Security
- Extended maintenance of landscaping

Punch list procedures

- Contractor certification of completion
- Punch list inspections
- Final acceptance inspection (run-up, testing, final walk-through)
- Withheld funds for remaining punch list items

A careful record should be kept of all matters discussed at the preconstruction conference, and a copy of the record should be provided to all who attended the conference.

2.3 Starting a project

The beginning of a construction project normally starts with the award of the construction contract. This may be accomplished in the minutes of a city council or county board of supervisors action, by letter, or by issuance of a preprinted **Notice of Award** form. The giving of a Notice of Award is similar in its legal effect to the issuance of a letter of intent, as it obligates the owner to sign the construction contract if the contractor does what is required of it within the time specified. The Notice of Award does not authorize the start of construction, because no work is supposed to start until after the owner/contractor agreement has been signed by both parties. The contract time will begin running on the thirtieth day after the owner has signed and delivered a fully executed agreement, but it may start sooner if a formal Notice to Proceed is issued. Under the AIA General Conditions, if no Notice to Proceed is issued, the contract time will begin as of the date of signing of the agreement. Under FIDIC Conditions of Contract, the work must begin "as soon as is reasonably possible after receipt of a notice (to proceed). Many public agencies allow a 10-day period after the issuance of a formal Notice to Proceed for the contractor to begin work at the site.

The issuance of a Notice to Proceed formalizes the date that the project is to begin and sets the stage for computation of the total project construction time. This will greatly facilitate the establishment of an accurate count of construction time for the computation of **Liquidated Damages** (recovered damages).

A construction contract can but should not designate a specific commencement date because of the uncertainty of when the work can begin. Before the contractor can begin it must be given **Access to the Site**. This can require that easements be obtained, public approvals be given, and funds be obtained. As a result, the commitment to begin work is usually expressed in terms of a number of days after access to the site. The owner also uses this approach to avoid responsibility for delay in its ability to grant access to the site.

3 PLANNING FOR CONSTRUCTION

Construction planning and scheduling should be considered as an application of common sense, a logical analysis of a construction project together with all of its parts, and a through knowledge of construction methods, materials and practices. The planning process should include answers to the following *preliminary* questions:

1. **Long-lead purchases.** Are there any items that will require purchase orders to be placed long in advance of the time that the item is needed on the job because of material shortages, fabrication time, or similar delay factors?
2. **Utility interruptions.** Is there any part of the project that will involve an outage of utility services such as water, power, gas or other essential services? If so, has the utility owner been contacted to determine the maximum length of the outage, the time of day that outages will be permitted, the calendar dates during which outages will be permitted, or similar restrictive controls?
3. **Temporary utilities.** Will temporary utility lines be required to be built to bypass the construction area, and will temporary roads be required to provide detour routes for street traffic?
4. **Temporary construction utility service.** Who provides temporary construction utility service and from where must it be obtained?
5. **Labor.** Have representatives of labor been contacted in the area of construction to establish the jurisdictional responsibilities of the various trades to be used in the work, as well as to determine the union work rules in the affected area?
6. **Work and storage areas.** Have provisions been made for contractor's work and storage areas?
7. **Traffic requirements.** Have local traffic regulations been investigated? Will construction equipment be allowed to operate on public streets, will street closures in the construction area be permitted, and will special traffic control and flaggers be required to direct traffic around construction?
8. **Temporary access.** Will temporary access, including temporary bridges, be required to provide continued access to residences and places of business during the construction period?
9. **Other contractors.** Will other contractors be working on the same area, thus requiring schedule coordination with them to complete the work of this contract?
10. **Interdependency of tasks.** Are some of the tasks in this project dependent upon the completion schedule of another contractor or utility owner before they can be started?
11. **Environmental controls.** Will special environmental controls be required; If so which ones?
12. **Special regulations.** Are there special regulations, such as FAA requirements for work at airports, that may affect the construction scheduling or construction time?
13. **Special construction equipment.** Will special equipment be required for construction? If so, is it off-road equipment that will require special haul routes? What are the load limits and bridge clearances for roads in the area?
14. **Time for construction.** Is the time allowed to complete the project adequate for the location and the seasons, or will it require increased crew sizes or premium time?

4 CONSTRUCTION OPERATIONS

4.1 Authority and responsibility of all parties

Depending upon the type of contract the owner may be authorized to award other contracts in connection with the same work, to require contract bonds from the contractor, to approve the surety proposed, to retain a specific portion of the contractor's monthly progress payments, to make changes in the work, to carry out portions of the work with the owner's own forces in case of contractor default or neglect, to withhold payments from the contractor for adequate cause, and to terminate the contract for cause. The right of the owner to inspect the work as it progresses, to direct the contractor to expedite the work, to use completed portions of the work before contract completion, and to make payment deductions for incomplete or faulty work are also common contractual provisions.

4.2 Opening a project

Opening a project requires many details to be completed before the contractor even moves a single piece of equipment onto the project site. Immediately after award of the contract, the contractor is expected to make arrangements for the required policies of insurance, obtain permits, order long-lead purchase items, check the site to determine the availability of storage and work staging areas, make arrangements for off-site disposal of surplus or waste materials, and take care of numerous other tasks.

In addition, the owner and the design firm will usually want to schedule a preconstruction meeting. At this time they will be able to meet with the contractor and the other key personnel, identify areas of responsibility, establish job philosophy, set up requirements for on- or off-site job meetings and set the frequency of such meetings, determine who should be in attendance, point out particular problem areas anticipated in construction and discuss any special methods of treatment of such problems, and if necessary, discuss special sequence of operations or scheduling limitations.

It is desirable for the owner, either directly or through the design firm or construction manager, to issue a written **Notice to Proceed** to the contractor, which will designate the actual beginning of the contract. This is important when attempting to establish the amount of **Liquidated Damages** where the contractor has exceeded the contract time. The **Notice of Award** can not serve as a valid Notice to Proceed, as no contract will have been executed between the owner and the contractor at that time. The notice to proceed sets a precise date that the job began and eliminates any later argument over the time of the contract.

4.3 Administrative activities

The following list serves as a summary of the principal administrative activities of the Resident Project Representative:

1. Coordinate and provide general direction of work and progress
2. Review contractor's schedule regularly
3. Assist in resolution of construction problems
4. Evaluate constructor claims for the design firm
5. Maintain log of change orders
6. Maintain log of contractor submittals
7. Develop and administer a quality control program
8. Physically inspect all construction every day
9. Observe all contractor tests
10. Maintain daily diary and construction records
11. Maintain record drawing data
12. Review contractor progress payment request
13. Review contractor's change order request for design firm
14. Assure that construction area is safe
15. Participate in field management meetings
16. Provide negotiation assistance on contractor claims
17. Review and recommend contractor value engineering proposals
18. Supervise inspection forces and field office staff
19. Report field conditions that prevent original construction
20. On unit-price projects obtain accurate field measurements

21. On all jobs, verify contractor's monthly work quantities
22. Assist scheduling and ordering required field services.

4.4 Suspension or termination of the work

Work may be suspended in whole or in part, and the nature of a suspension is to cease all or part of the work without actual contract termination.

The owner may order the contractor in writing to suspend, delay, or interrupt all or part of the work. However, if the work is delayed or suspended for a longer period than specified, the contractor may claim an adjustment in price for delay damages as well as additional time.

Motives for suspension of the work vary. The owner may have budgetary limits and decide to stop work in certain areas or work may be suspended due to bankruptcy of the contractor.

Some contract documents contains provisions allowing the owner to discontinue all or any part of the work being done by a contractor. Such termination may be for reasons such as abandoning the work, bankruptcy or insolvency, unnecessary delay of the work.

5 MEASUREMENT AND PAYMENT

5.1 Construction progress payments

Among the most important items to the contractor are those provisions of the contract governing the making of monthly progress payments to the contractor throughout the job. The contractor will be expected to submit a request for payment stating amounts of work completed and the estimated value of such work to the Resident Project Representative approximately 10 days before the payment due date. The Resident Project Representative is responsible of verifying the actual quantities of the various items of work completed and determine the probable value of such work.

Although a unit-price contract requires extreme care in the verification of the contractor's payment claim, a lump-sum job can usually be handled more informally as the overage claims will be compensated for ultimately by the fixed-price nature of the contract.

5.2 Approval of payment request

The following is a list of possible tasks that might be delegated to the Resident Project Representative during the validation phase of the contractor's payment request:

1. Quantity takeoff of work actually completed as of date of request
2. Inventory of equipment and materials delivered but not yet used in the work
3. Field measurements of quantities of work completed or claimed
4. Construction cost estimate of all completed work, using unit prices in bid or in cost breakdown submitted at the beginning of of job
5. Audit of invoices and costs (cost-plus jobs only)
6. Review of claims for extra work and completed change orders
7. Check of retention amount
8. Recommendation to the project manager, submitted together with the contractor's payment request

5.3 Evaluation of contractor's payment request

At a prearranged date each month, the contractor is expected to submit a request for payment for all of the work performed during the preceding month. Prior to forwarding these payment requests to the owner through the design firm or construction management firm for payment, the Resident Project Representative must check to assure that all items for which the contractor claimed payment have actually been completed.

Often, certain fabricated items of equipment or certain products are delivered to the site a considerable amount of time before they are actually needed or installed in the work. In some contracts no payment will be made for any such material (material delivered but not used yet) until it is actually used in the work. A second approach to this problem is to allow a partial payment for materials or equipment as soon as they have been delivered to the site.

5.4 Retainage

The majority of construction projects, particularly public works, involve some retention of a portion of earned funds of the contractor. Typically, this has been 10 percent, although 5 percent is not uncommon. In some cases, the retained funds are held throughout the life of the job; in other cases, the amount may be reduced or actually eliminated at some point after the midpoint of the project.

The purpose of the retention of funds is to provide an amount of money that can be available to the owner for the satisfaction of lien claims because of the failure of the prime contractor to pay its subcontractors or suppliers, and as a means of holding the profit that contractor makes on a given project. In case of default by the contractor, these funds may be utilized by the surety to complete the work.

5.5 Measurement for payment

Often, the contract documents may specify that payment will be made based on the quantities indicated on the drawings. Technical specifications indicate which unit i.e., mt, m2, m3, ton, etc. will be used in measuring the production items and how each production item must be measured, e.g.,

the surface area of a roof tiling production item can be measured by considering the slope of the roof (actual measure) or the surface can be measured from the dimensions on roof plan, etc.

5.6 Final payment to the contractor

After the Certificate of Completion or Substantial Completion has been filed the contractor will apply for final payment. Final payment as referred to in many General Conditions of the Contract is the last progress payment made to the contractor, less retainage, and should not be made until after execution of the **Notice of Completion** (Substantial Completion). This notice constitutes formal "acceptance" of the Work by the owner.

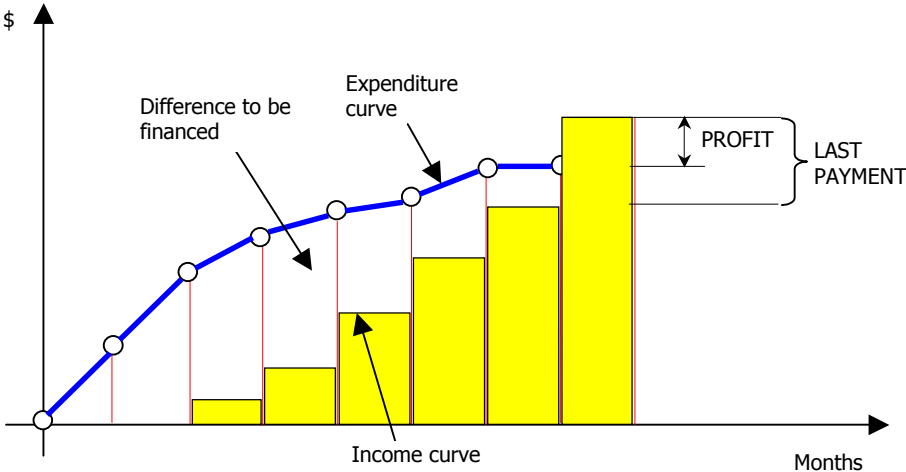


Figure.2.1. Project expense/income curves and last payment

6 CHANGES AND EXTRA WORK

6.1 Contract Modifications

Since the contract documents are included by reference in the formal agreement, the lines on the drawings, the words in the technical specifications, and all other aspects of the contract documentation are legally binding. Any alteration of these documents constitutes an alteration of the contract.

It is standard practice in construction contracts to allow the owner the right to make changes in the work after the contract has been signed and during the construction period. Depending upon the contract and its specific terms, such changes might involve additions to or deletions from the work, changes in the methods of construction or manner of work performance, changes in owner-furnished materials or facilities, or even changes in the contract time or order of work. Changes may also be executed to correct errors in the plans or specifications, or they may be the direct result of contractor suggestions that are approved by the owner.

A change order is a written agreement to modify, add to, or otherwise alter the work from that set forth in the contract documents at the time of opening bids, provided that such alteration can be considered to be within the scope of the original project; otherwise, a contract modification may be required. It is the only legal means available to change the contract provisions after the award of the contract. Functionally, a change order accomplishes after execution of the Agreement what the specifications addenda do prior to bid opening.

6.2 Types of change orders

- **Oral change orders:** Despite the fact that the documents require all change orders to be in writing, the actions of both the owner and the contractor can waive that requirement.
- **Written change orders:** Normally, a change order is a written formal document that alters some condition of the contract documents.

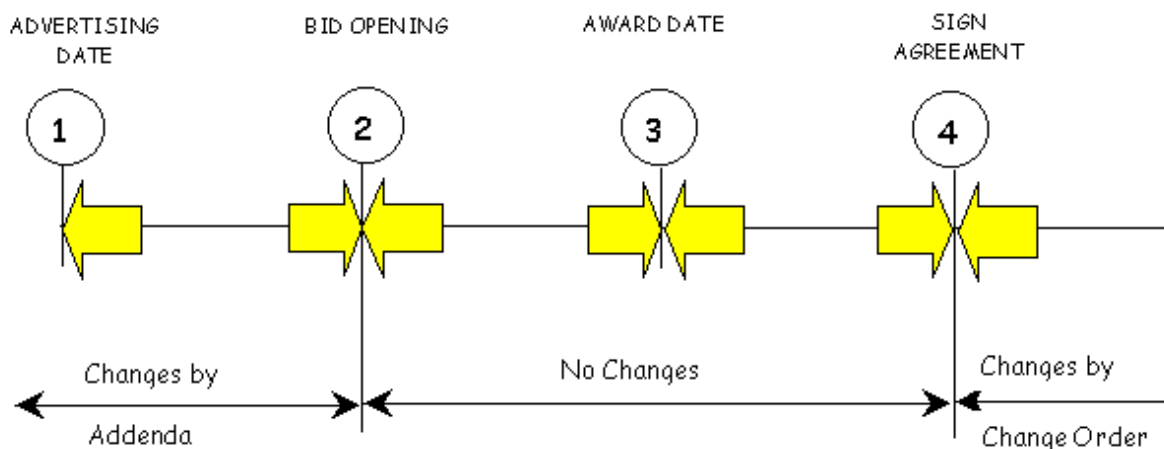


Figure 2.2. Time of changes by addenda versus by change order

6.3 Changes in the work

Two basic types of changes can be stated:

- **Directed changes:** The owner directs the contractor to perform work that differs from that specified in the contract or is an addition to the work specified. This type of changes may reduce the scope of work.
- **Constructive changes:** In contrast to the mutually recognized need for a change, certain acts or failure to act by the owner that increases the contractor's cost and/or time of performance is considered a reason for a change order.

6.4 Elements of a change order

A change order specifies the agreed-upon change to the contract and should include the following information:

- Identification of change order
- Description of change
- Reason for change
- Change in contract price
- Change in unit prices (if applicable)
- Change to contract time
- Approvals by owner and contractor

6.5 Change order process

Change order are usually initiated by construction personnel at the project site. However, changes are also requested from various other sources, such as the contractor, the design firm, outside public agencies, or private individuals. Any change in the work that involves a change in the original contract price must be approved in writing by the owner before a change order can be excuted.

A change order must be clear, concise, and explicit. It must tell the contractor what is to be done, where or within what limits, when the work is to be performed, if the order of the work is affected, how the contractor will be paid, and what consideration will be given to contract time (extensions, etc.).

7 CLAIMS AND DISPUTES

In the world of business, **disputes** are inevitable. One person may understand rights and obligations differently from another no matter how carefully a contract is written. This could lead to delayed shipments, complaints about the quality of the work, claims of non-performance of the terms of the contract and similar misunderstandings. In any construction contract, it is almost inevitable that the written documents will not adequately address every single matter. There may be gaps, conflicts, or subtle ambiguities. This causes protests, claims and disputes.

7.1 Protests

The term **Protest** as used here refers to disputes arising out of the issuance of a contract change order by the architect or engineer against the objections of the contractor.

7.2 Potential claims

The term **Potential Claim** applies to any differences arising out of the performance of the work that might reasonably lead to the later filing of a formal claim by the contractor if the difference can not be resolved in the field.

7.3 Claims and disputes

The term **claim** applies to differences that are developed during the life of the contract under protests and potential claims, and that are not yet resolved at the time the contractor returns the proposed final estimate of the amount of additional money or time asked for. In other words, a protest or potential claim does not become a claim until the contractor repeats its objections by notifying the architect, engineer or owner at the time the proposed final estimate.

7.4 Alternative methods for dispute resolution

A simplified summary of the principal methods available to the contractor for resolution of construction disputes is given below:

- **Negotiation:** Compared with the others, the only economically sound solution is to negotiate. Negotiation involves compromise, so it should be entered into with that in mind. Put up a good fight, do some hard bargaining, but be prepared to compromise.
- **Mediation:** Mediation is a process in which a trained third-party neutral attempts to assist the parties to a dispute in reaching an agreement that resolves the dispute. In other words, mediation is a particular form of settlement negotiation in which a trained third-party neutral intervenes by agreement of the parties in order to guide and facilitate the parties' negotiations toward an agreement that resolve the disputes.
- **Arbitration:** Arbitration is the voluntary submission of a dispute to one or more impartial persons for final and binding determination. It is private, informal, and is designed for quick, practical, inexpensive settlement. But at the same time, arbitration is an orderly proceeding, governed by the rules of procedure and standards of conduct that are prescribed by law.
- **Litigation:** Litigation means to apply to the court to resolve the dispute.

8 PROJECT CLOSEOUT

8.1 Acceptance of work

Acceptance of the work and final payment to the contractor must proceed in accordance with the terms of the construction contract documents. Although the methods may vary somewhat from job to job basically they all begin with a request from the contractor to make a final inspection of the work. Generally there may be at least two inspections required to close out the project. The first will establish those areas still requiring correction or other remedial work, and the final inspection will be a checkoff to assure that all work is substantially complete and that all corrections have been made. The checkoff list or **Punch List** as it is normally called, is a detailed list made near the end of the project, showing all items still requiring completion or correction before the work can be accepted and a **Certificate of Completion** issued. Before acceptance, all workmanship must meet specified standards, all work must be installed and complete, and all equipment must be tested and operational.

In some cases it is possible to accept a project as being "substantially complete" if only minor items remain to be finished. This simply means that the project is close enough to being completed that it can be put to use it was intended, and that all remaining incomplete work is comprised of relatively minor items that the contractor agrees to correct while the building is occupied.

8.2 Gurantee period

Generally, the work covered in a construction contract includes a stated guarantee period, which is frequently one or two years. In some cases, the overall project may be guaranteed for only one year, although certain portions of the work may be covered by supplementary guarantees for longer periods. Although some contracts call for 100 percent of the performance bond to be continued in force during the entire guarantee period, many contracts allow for a reduced portion of performance bond to cover any defects noted during the guarantee period. After all, if the project is 100 percent complete, there is little reason to believe that it will all fail. Thus, many such bonds are reduced to 10 percent or some other reduced percentage of the performance bond during the guarantee period.

8.3 Contract time

When computing contract time, particular attention should be paid to the contract wording – is it "calendar days" or "working days"? The easiest time to compute is calendar days, as this method includes all days, including Saturdays, Sundays and holidays. Normally, construction time is computed from the date on the written Notice to Proceed given to the contractor at the beginning of the job.

8.4 Liquidated damages for delay

On many projects, where time is the essence of the construction, the owner and the contractor agree under the contract terms that if the contractor fails to complete the project by the stipulated date, it is financially liable to the owner for a preagreed sum of each day beyond the specified completion date that it takes the contractor to finish the work. This amount of money represents the financial losses to the owner for such delays, and because it is difficult to determine the real values of the owner's losses, the preagreed sum is used in lieu of a determination of the actual actual damages suffered. This assessment is referred to as **Liquidated Damages**, and it is common practice throughout the construction industry to require that the contractor pay the owner this fixed sum of money for each calendar day that it exceeds the specified date of completion.

8.5 Cleanup

The constructor is obligated to clean up the construction site thoroughly at the end of the job before the work can be accepted. The final clean up is of significantly greater proportions than previous clean up work during the progress of the work, as all of the various items of demobilization rightfully are included under the clean up category. This includes removal of temporary utilities, haul roads, temporary fences, field offices, detours, stockpiles, surplus materials, scrap, replacement of landscaping where it had been temporarily removed, street cleaning.

8.6 The punch list

Theoretically, if every trade performed its work in strict compliance with the contract requirements and the best of craftsmanship, what is known as a **punch list** might never have come to exist.

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