LECTURE NINE: CONTRACTS

INTRODUCTION:

Contract is a written agreement made between two parties which is enforceable by law. It is an undertaking by a person or a firm to do any work under certain terms and conditions. The work may be Construction, maintenance, repair work, supply of materials and supply of labours. The contractor is a person or a firm who undertakes contract.

FORMS OF CONTRACTS:

The following are the forms of contracts are used in the engineering and construction industry

- Lump Sum or Fixed Fee Contract
- Unit Price or Item Rate Contract
- Cost Plus Contract

A. Lump-sum contract or Fixed Fee Contract

In this type of contract, the contractor offers to do the whole work as shown in drawings and described by specifications, for a total stipulated sum of money. There are no individual rates quoted, thus it becomes difficult to make adjustments in the contract value if any changes are to be made in the work later on. The schedule of different items of work is not provided and the contractor has to complete the work as per drawings and specifications for the agreed lump sum amount.

This is a single fixed price contract. In this contract, contractor agrees to perform specified job for fixed sum. The owner provides the contractor exact specification of the work. In this contract both the parties try to fix the conditions of the work as precisely as possible.

This contract is also named "Fixed Fee Contract". A Fixed Fee or Lump Sum Contract is suitable if the scope and schedule of the project are sufficiently defined to allow the consulting engineer to estimate project costs. Fully developed plans and specifications required.

Upon the completion of work, a fixed lumpsum amount is paid to the contractor. Detailed measurements of different items are required but the whole work is compared and checked with drawings and specifications before releasing the payment. In large projects, part payments are made to the contractor at different stages of work on money agreed terms. In case the contractor stops the work in between he is not entitled for any further payment.

A lumpsum contract is more suitable for works for which contractors have prior construction experience. This experience enables the contractors to submit a more realistic bid. This type of contract is not suitable for difficult foundations, excavations of uncertain character, and projects susceptible to unpredictable hazards and variations.

Merits

1) The owner can decide whether to start or shelve the project knowing the total lumpsum price quoted by different contractors.
2) The contractor can earn more profit by in-depth planning and effective management site.
3) Know cost at outset.
4) Minimum owner supervision related to quality and schedule.
5) Contractor should assign best personnel due to maximum financial motivation to achieve early completion and superior performance.
6) Contractor selection is relatively easy.
7) Owner is aware of the cost of the project before the project construction starts
8) It avoids a lot of details and accounting by both owner and contractor.
9) Contractor gets free hand to execute the work.
10) If this contract is used with design-construct method of delivery, contractor gets opportunity to use value engineering

DemerIts

1) Before the contract is awarded, the project has to be studied thoroughly and the complete contract documents has to be prepared in advance. So early start of project is not possible

2) In this type of contract, unforeseen details of work are not specified in the contract document. Many additional items may have to be undertaken as the work progresses, giving opportunity to the contractor for claiming higher rates of the extra items not included in the contract agreement.
3) Changes are difficult and costly.
4) Contractor free to choose lowest cost means, methods, and materials consistent with the specifications. Only minimum specifications will be provided.
5) Hard to build relationship. Each project is unique.
6) Bidding expensive and lengthy.
7) Contractor may include high contingency within each Schedule of Value item..
8) It is very difficult to accommodate any charge in design and specification.
9) This contract is as good as the accuracy of the contract document. If errors exist in the contract document, the contract need to be renegotiated and hence more risk is involved from the owner ride.
10) In the case of unforeseen hazard during the construction, contractor may be put in adverse situation.

This type of construct is suited for small job, precisely specified job, low risk with construction job. This is generally suited for the job where it is easy to make the measurement. Lump-sum contract should be avoided for underground work. Lump-sum contract with design construct method of delivery is often called turn key contract.

Payment by the owner can be carried out in lump-sum contract as total amount at time or percentage of total cost after finishing certain amount of work. For example suppose a water tank was awarded as lump-sum contract. It can be said that 15% of amount will be paid after construction of foundation 50 % of total amount will be paid after construction of staging and 80% of the total amount will be after the construction of the tank. Rest will be paid only when the tank becomes operational.

B. Unit Price or Item Rate Contract

Also called as schedule contract. For this contract, contractors are required to quote rates for individual items of work. In general this contract is only suitable for construction and supplier projects where the different types of items, but not their numbers, can be accurately identified in the contract documents.

In a unit price contract, the work to be performed is broken into various parts and a fixed price is established for each unit of work. Sums for the extended unit prices are not included in the initial contract sum. As the work is completed, actual quantities are measured, and the contractor is paid according to the contractor's quoted unit prices.

The item rate contract is most commonly used for all types of engineering works financed by public or government bodies. This type of contract is suitable for works which can be split into various items and quantities under each item can be estimated with accuracy. In a unit price contract, like a lump sum contract, the contractor is paid the agreed upon price, regardless of the actual cost to do the work.

Merits

1) In this type of contract, there is no need for detailed drawings at the time of allotting contract as in the case of lumpsum contract. The detailed drawings can be prepared after the contract is awarded.
2) Changes in drawings and quantities of individual items can be made as per requirement within agreed limits. Hence flexible.
3) The payment to the contractor is made on the actual work done by his at the agreed rates.

Demerits

1) The total cost of work can only be known upon completion. As such, the owner may incur financial difficulty if the final cost increases substantially.
2) Additional staff is required to take detailed measurements of work done for releasing payments to the contractor.
3) The scope for additional saving with the use of interior quality materials may prompt the contractor to use such materials in the work.

In this type of contract, the price is paid per unit of the work carried out.

C. Cost Plus Contract

In the cost-plus-fee method, the contractor is reimbursed for the actual cost of labor and materials. In addition to that the contractor is paid a fee for overhead and profit (the fee may be a percentage of the total costs or a fixed amount). With this method, the contract sum is not fully determined until the work is completed. This form of contract is useful where the quality as well as the quantity of the work is not known previously and also in the times of unsettled market conditions, where no contractor is coming forward to carry out the work on any other contract forms. Under this arrangement complete records of all time and materials spent by the contractor on the work must be maintained.

In this contract, the payment is made based on the work carried out plus the fee which includes overhead, profit etc. Sometimes a cap is put on the type of contract by provided maximum and minimum cost limit such as guaranteed maximum cost contract. If project cost exceed this limit, contractor is responsible for that. Sometimes incentive clause is also included if the contractor bring the project before certain specified limit.

The advantage of this type of contract is that considerable overlap is provide between design and construction. Hence the project can be executed in the fast-tract basis. This contract is suitable for the work where it is difficult to define the task to be done before the awarding the contract.

Various types of cost plus contracts are discussed below.

- Cost Plus Fixed Percentage Contract
- Cost Plus Fixed Fee Contract
- Cost Plus Fixed Fee with Profit Sharing
- Cost Plus Fixed Fee with Bonus Clause
- Cost Plus Variable Percentage

Cost Plus Fixed Percentage Contract: The contractor is paid for the actual cost of the work, plus the contractor's fees is paid based on an agreed fixed percentage of the total cost of the project. The fee is usually 10 to 15% of the total cost of the materials and labour.

Cost Plus Fixed Fee Contract: The contractor is paid for the actual cost of the work, plus the contractor's fees is paid based on an agreed fixed sum independent of the final project cost. The customer agrees to reimburse the contractor's actual cost of the project and in addition to that a definite amount is paid for the contractor's service which is independent of the amount of the actual costs.

Cost Plus Fixed Fee with Bonus Clause: The contractor is paid for the actual cost of the work, plus the contractor's fees is paid based based on a fixed sum of money. In addition to that a bonus is given if the project is finished below budget, ahead of schedule etc. This type also sometimes provides the penalty for the late completion of works.

Cost Plus Fixed Fee with Profit Sharing: The contractor is paid for the actual cost of the work, plus the contractor's fees is paid based on an agreed fixed sum independent of the final project cost. In addition to that a share in the amount saved, during the construction, will be given to the contractor. Usually 25 to 50% of the savings will be given to the contractor. This type of contract is adopted to induce the contractor to bring down the cost of work lower than its estimated amount.

Cost Plus Variable Percentage: The contractor is paid for the actual cost of the work, plus the contractor's fees is paid on an variable percentage based on the actual cost of the project. The percentage of the fees is inversely variable according to the increase or decrease in the actual cost when compared to the estimated cost.

Merits

1. No conflict of interest between the owner and the contractor.
2. Disputes arising due to the extra work can be totally eliminated.
3. It reduces the time for the completion of the works.
4. Early starting of project is possible

Demerits

1. The total cost of work can only be known upon completion.
2. The work of inferior quality will be demolished and replaced at owner's cost. This results in unnecessary increase in the final cost of the project.
3. Illegal for public bodies, under normal circumstances.
4. Owner is likely to pay more for the contractors mistakes as it is sometimes difficult to check the contractor's account.

TYPES OF CONTRACTS:

There are different types of contracts which can be employed in any of the delivery methods. Owner can pay the money to the contractor, in lump-sum, based on measured work with unit price, based on percentage plus quantity involved. In the following, we shall briefly discuss the different type of contract.

The following are the various types of contracts:

1. Percentage Rate Contract
2. Labour Contract
3. Materials Supply Contract
4. Piece-Work Agreement

5. Target Contract
6. Turn-key Contract or Package Contract
7. Negotiated Contract
8. Rate Contract
9. Basic Price Contract
10. Continuing Contract
11. Running Contract
12. Fixed Rate Contract

Percentage rate contract: In this form of contract, the department draws up the schedule of items according to the description of items sanctioned in the estimate with quantities, rates, units and amounts shown therein. The contractors are required to quote their rates which may be at par with the departmental rates, or percentage above or below them. This quotes by the contractors are apply to the overall quantities.

Merits

1. Comparitive positions amongst each contractors are immediately known.
2. There is no imbalanced tender.
3. There is no likelihood of rates being tampered with.
4. There is no chance of over writings and erasing.

Demerits

1. There is uncertainty about the quality, smooth progress and timely completion of works.
2. There is a greater chance for the contractors to form a ring to get the order at higher rate.

Material Supply Contract: The contractor offers their rates for supply of the required quantity of materials inclusive of all the local taxes, carriage and delivery charges within fixed time. This type of contract is used for the purchase of materials bricks, stone chips, furniture, pipes etc. All the materials received are examined and counted or measured.

Merits:

1. No worries for the loss of materials, breakage, demurrage charges during transit.
2. Payment will be made promptly. Thus the contractor will supply materials even at less cost.

Demerits

1. A constant watch has to be maintained for the quality of materials which is received
2. Contractors may form a ring to get the order at higher rate.

Piece work contract: In this type of contract only rate is agreed upon without reference to the total quantity of work to be done within a given period. This is applicable for the petty works valued up to Rs. 10,000 including the cost of the material. It is terminable from either side at any time and cannot be called as contract on true sense. The Work may be done under simple work order. There is no security money deposit nor penalty case.

Merits

1. Suitable for urgent small works without inviting tenders and hence time is saved.
2. If the contractor does not follow the conditions and specifications, another contractor may be engaged.

Demerits

1. Good Contractors find less interested in small projects
2. Work has to entrusted to the petty contractors who have little experience and knowledge to carry out the work according to the departmental procedures.