

Construction Contract Types

1. **Lump Sum** Typically used with Design-Bid-Build method of project procurement.
 - a. A lump sum contract, sometimes called stipulated sum, is the most basic form of agreement between a supplier of services and a customer. The supplier agrees to provide specified services for a specific price. The receiver agrees to pay the price upon completion of the work or according to a negotiated payment schedule. In developing a lump sum bid, the builder will estimate the costs of labor and materials and add to it a standard amount for overhead and the desired amount of profit.
 - b. Most builders will estimate profit and overhead to total about 12-16 percent of the project cost. This amount may be increased based on the builder's assessment of risk. If the actual costs of labor and materials are higher than the builder's estimate, the profit will be reduced. If the actual costs are lower, the builder gets more profit. Either way, the cost to the owner is the same. In practice, however, costs that exceed the estimates may lead to disputes over the scope of work or attempts to substitute less expensive materials for those specified.
 - c. The Stipulated Sum contract may contain a section that stipulates certain unit price items. Unit Price is often used for those items that have indefinite quantities, such as pier depth. A fixed price is established for each unit of work.
 - d. Contractor free to use any means and methods to complete work.
 - e. Contractor responsible for proper work performance.
 - f. Work must be very well defined at bid time.
 - g. Fully developed plans and specifications required.
 - h. Owner's financial risk low and fixed at outset.
 - i. Contractor has greater ability for profit.
 - j. Requirements:
 - 1) Good project definition.
 - 2) Stable project conditions.
 - 3) Effective competition essential when bidding.
 - 4) Much longer time to bid and award this type of project,
 - 5) Minimum scope changes due to higher mark-ups than occurred at bidding.
 - k. Advantages:
 - 1) Low financial risk to Owner.
 - 2) High financial risk to Contractor.
 - 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.
 - l. Disadvantages:
 - 1) Changes difficult and costly.

- 2) Early project start not possible due to need to complete design prior to bidding.
- 3) Contractor free to choose lowest cost means, methods, and materials consistent with the specifications. Only minimum specifications will be provided.
- 4) Hard to build relationship. Each project is unique.
- 5) Bidding expensive and lengthy.
- 6) Contractor may include high contingency within each Schedule of Value item.

2. Unit Price

- a. In a unit price contract, the work to be performed is broken into various parts, usually by construction trade, and a fixed price is established for each unit of work. For example, painting is typically done on a square foot basis. Unit price contracts are seldom used for an entire major construction project, but they are frequently used for agreements with sub-contractors. They are used for maintenance and repair work. 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.
- b. Requires:
 - 1) Adequate breakdown and definition of work units
 - 2) Good quantity surveying and reporting system
 - 3) Sufficient design definition to estimate quantities of units
 - 4) Experience in developing bills of quantities
 - 5) Payment terms properly tied to measured work completion
 - 6) Owner-furnished drawings and materials must arrive on time
 - 7) Quantity sensitive analysis of unit prices to evaluate total bid price for potential quantity variations
- c. Time and Cost Risk are Shared:
 - 1) Owner at risk for total quantities
 - 2) Contractor at risk for fixed unit price
- d. Large quantity changes (>15-25%) can lead to increase or decrease in unit prices.
- e. Advantages:
 - 1) Complete design definition not required
 - 2) "Typical" drawings can be used for bidding
 - 3) Suitable for competitive bidding
 - 4) Easy for contractor selection
 - 5) Early project start possible
 - 6) Flexibility:
 - Scope and quantities easily adjustable
- f. Disadvantages:
 - 1) Final cost not known at outset since bills of quantities at bid time are only estimates
 - 2) Additional site staff needed to measure, control, and report on units completed

3) Unit price contracts tend to draw unbalanced bidding

3. Construction Management

- a. In this delivery method a Construction Manager (CM) is selected to construct the project based on fully completed drawings and specifications prepared by an architect hired by OSU. The CM provides advice during design. The CM is selected based on competitive proposals from three to five firms.
- b. The CM approach differs from the other methods in the following ways:
 - 1) The project manager approves the CM's construction management staff and their required time on the project.
 - 2) The CM provides pre-construction services, including construction cost estimating and constructability review, throughout programming and design.
 - 3) The project manager approves the subcontractor bidders list and the selected subcontractors.
 - 4) All of the costs of the CM and subcontractors are "open book" to the project manager and subject to the project manager's approval. There is no profit mark-up by the CM on the subcontracts.
- c. The CM approach best fits a project where design requirements are complex, the owner wants to supplement the expertise of its project management staff, and the owner wants full control of the design and construction process. This approach is considered the most cost effective since the CM is involved early to help assure the design is constructible and affordable, and the owner can control the level of services that are purchased.
- d. The CM method is significantly faster than the GC method when a "fast-track" approach is used. In this approach, the CM starts construction on each of the project components as soon as that particular portion of the design is completed and bids are received for that work. In new construction, the earthwork and foundations can begin months before the rest of the building design is fully completed.
- e. Types of CM construction tracts commonly used:
 - 1) **Cost-Plus-Fee:** In a cost-plus-fee contract the owner pays the CM the actual cost of the construction (based on competitive bids for each trade subcontract) plus certain reimbursable expenses without any profit mark-up, and is charged a fixed fee by the CM for the services provided.
 - 2) **Guaranteed Maximum Price (GMP):** In this contract, the CM agrees beforehand that the cost of the work will not exceed a specified figure, known as the GMP. The GMP is based on competitive bids for each trade subcontract, but the CM charges an additional fee for taking on the risk of the guarantee. The CM is also allocated some contingency to pay for construction changes that are within the design intent of the project. Changes beyond the design intent require approval by all stakeholders.

4. Design-Build

Although this method is allowed by Title 61, it not often used due to the Owner's inability to control quality, difficult to confirm adherence by the Contractor to specific materials, and it is difficult to make changes with this method.

- a. Design-Build is very old method that fell out of use until recent years. In this process the owner selects one contractor to both design and build the project. In Oklahoma this

typically means that the owner selects a builder who then hires the design team as required. Design-Build is primarily intended to save time. Like Construction Management with pre-construction services, the designers and builders work together from the beginning, the design effort can be substantially reduced. It is not necessary to prepare drawings in great detail if the builder already understands what needs to be done.

- b. Like Construction Management, time may be saved by using a fast track schedule where the builder begins working on each phase of the construction as soon as the design for that phase is complete. Ideally the designers complete the next phase just as the builder is ready to start that phase. Design-Build works very well when using standard designs that have been built repeatedly. It is absolutely critical that the owner and builder have the same clear picture of the final project before construction begins. There are those who advocate Design-Build as a cutting edge method and as a method which will result in significant cost savings. Neither is correct. Design-build had been around for centuries.
- c. There may be some slight savings in design costs, but those have no impact on the costs of labor and materials for the actual construction, which is where the greatest part of the total cost is to be found. Since the owner and the builder commit to a cost before design is started, there is an amount of uncertainty which will have an associated cost that will probably be included in the builder's bid. In general, OSU feels strongly that Design-Build is not a good method for most projects for the following reasons:
 - 1) Fast track schedules eliminate the possibility of integrated design. They also often mean that very little time is spent with the occupants to ascertain their needs in a new facility.
 - 2) When the designers work for the builder, rather than the owner, the checks and balances that exist in other methods are lost. The architect and the Contractor's engineer (clerk of the works) are usually relied upon to keep track of construction to ensure that the builder follows the plan and codes. The architect cannot objectively fill this important role if he works for the builder.
 - 3) People in a hurry make mistakes. Fast track schedules can lead to serious problems which are difficult and expensive to resolve.
 - 4) Saving time is the main advantage of design-build, but that should not be as critical an issue for a project as cost and construction quality.
 - 5) Changes are difficult to implement once construction starts in a Design-Build project because everything moves too fast and the budget is often inflexible. When a costly unforeseen situation arises, the only alternative is often a reduction in the scope of work. This will lead to a final product that is something less than what was envisioned at the beginning of construction.
 - 6) Unforeseen circumstances are the bane of any construction project, but they are particularly difficult to handle in Design-Build. For this reason Design-Build is ill suited for renovation projects.

Design-Builders like the freedom that this method gives them. They do not have to clear every decision with the design team. If the owner also has limited involvement, the builder can get about his business and get the job done without interruptions. This can be an advantage when everything works well. When problems arise, as they almost always do in construction, unilateral decision making by the builder can lead to everyone's dissatisfaction with the outcome.