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PROJECT DELIVERY – CONSTRUCTION MANAGEMENT

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1. It is determined a definite need exists that must be filled. A construction manager can be hired at this time to provide professional input from this point forward, but usually is not.
2. A determination is made of what the budget for the project will be. This budget can be determined a number of ways, ranging from an actual estimate using current market data applied to a complete scope of work, to a guess based on average square foot costs. Usually it is limited to monies that can be made available.
3. After the budget has been determined, a site is usually picked, often without an assessment from design or construction professionals as to suitability.
4. A selection process is then used to determine which design firm will spearhead the process of designing the facility. Either right before this or right after this, a decision is usually made to also hire a construction manager.
5. If a construction manager is hired, the usual understanding is that for a negotiated percentage of costs, definitely less than a contractor is believed to mark these costs up, the CM will act in all respects as a general contractor, except:
 - The books will be open. All bids received from material suppliers or subcontractors will be given to the Owner and will be actual costs with no markups.
 - The Owner will actually be the entity to directly contract for and purchase work or materials, based on input from the CM acting as their agent.
6. An assessment of current and future needs should be made by the Designer to insure the site is used in such a way the existing project does not hinder future growth.
7. The Designer then creates a program based on current and future needs, wishes, budget, code requirements, site constraints, utilities, etc., and presents it to the Owner and the CM for confirmation of the parameters to be met with the design.
8. Upon approval of the parameters, a preliminary design is established to the satisfaction of all parties using construction methods and materials the Designer and the CM feel are most suited to the project requirements. These preliminary drawings are usually sufficient to determine the larger scope of the project and include site plans, floor plans, exterior building elevations, and sometimes building sections.
9. At this point, a preliminary budget estimate is often made by the CM, using a square foot cost estimate combined with a best guess of market conditions. Project components have been examined and tweaked by the project manager. The systems, construction methods, materials, sizes, etc. of the building components have been evaluated and modified for the most economical means to accomplish their intended use. This service by the CM is called value engineering
10. Upon approval of the preliminaries, design of building systems begins, structural design begins to be finalized, building details begin to be worked out, and the overall design is tweaked to accommodate system requirements. Schedules are developed for finishes, doors, window selections, etc. This phase is called the design development phase and at the end of this phase, all of the decisions required from the Owner have been obtained and incorporated into the drawings. Outline specifications of the material and equipment

- choices involved are usually created by the end of this phase. At this point, the preliminary estimate can be refined by the CM, using better square foot estimates obtained from national cost data providers.
11. Upon approval of the design development drawings, work proceeds on the completion of construction documents. These include drawings detailing the quantity of materials and specifications detailing the quality of materials to be included.
 12. Upon approval of the construction documents, the project is put out for bid by the CM. There is normally a time period to allow bidders to respond to the public or private invitation, obtain a very large number of sets of documents, and briefly review them. Then a pre-bid meeting is held with all willing participants to clarify questions that may have initially come up in review of the drawings. The drawings may need to be revised at this time to resolve any ambiguities. Any changes to the construction documents are forwarded to all bidders. A date is set at which all bids are due. A public opening may or may not be utilized. Subcontractors determine the cost of the Work to be performed by their labor forces, obtain costs of materials, total these, add on a percentage of the actual costs to cover their project management fee, and add overhead costs to cover equipment, trailers, guarantees, etc., to arrive at a bid price.
 13. During the last portion of the time frame for bidding, bidders normally call with many questions unanswered by the documents or with suggestions for possible cost savings. If there is enough time, clarifications called addendums to the construction documents are issued to all bidders detailing changes to what is being bid, so all bidders maintain the same advantage. Normally, suggestions for savings are not volunteered unless the contract is awarded to a company and they can negotiate savings after the fact, tailored to the subcontractor's advantage.
 14. When bids come in, sometimes they are opened publicly and the numbers become the knowledge of all other bidders. After the bidders are dismissed, the bids are tabulated by the Owner, CM, and Designer in a comparison chart to determine if the bids are truly comparable.
 15. After bids are tabulated, the apparent low bidders, most likely to be subcontractors who made the worst mistakes bidding, are called and asked to come sign contracts for their portions of the Work. If changes are needed and negotiated after that point with the apparent low bidders, they will not come as cheaply as the first time through the process.
 16. If the total cost is not within the budget, which is sometimes the case, the project must be redesigned to lower the cost or portions of the project must be removed from the scope and left undone. Then the whole project must go through the bid procedure, but this time, everyone has everyone else's price. Some subcontractors won't even bid the second time. Bids that were low will usually be higher.
 17. Once bid prices and a scope of work are determined, the CM establishes contracts between the Owner, material suppliers, and Subcontractors, and the Work commences.
 18. During the Work, the Designer usually acts as an observer of the Work on behalf of the CM to help assure Work is being done in accordance with the contract documents, bid documents, specifications, and acceptable construction practices. All subcontractors, material purchases, and deliveries are coordinated by the CM. Changes to the scope of the Work of price or time are documented by the CM for the Owner. Pay requests are also usually verified by the CM before being released for payment to the Owner.
 19. When the CM feels the project has been substantially completed, the Designer normally reviews the Work with the Owner and CM and creates a punch list of items still felt to be deficient, needing correction before the Owner takes possession of the Work.
 20. After the Work has been completed, the Designer normally reviews the Work, with the Owner and CM, to make sure all punch list items have been completed before authorizing final payment.

ADVANTAGES OF CONSTRUCTION MANAGEMENT

1. There is sometimes a savings in time as the design process is done by or in conjunction with the CM. Materials can be ordered and portions of the Work bid and scheduled as the drawings are being completed.
2. Projects are engineered early in the process for value, and professional contractors and subcontractors included by the CM give input early in the design phase to assist in obtaining the best design possible.
3. The CM acts independently as an expert agent for the Owner through the whole process, dealing with the Designer and Subcontractors. They represent the interests of the Owner only.
4. The Owner perceives they have hired a qualified general contractor to act in their interests for a negotiated fee instead of an undisclosed mark-up.
5. It is perceived this process will result in the best possible price when the lack of profit mark-ups is combined with the competitive bid process.
6. A CM usually has fewer overhead costs that must be paid for in a project.

DISADVANTAGES OF CONSTRUCTION MANAGEMENT

1. The CM is always perceived as being partial to the Owner. They are being paid to be so.
2. Whose fault is it, i.e., who pays for redesign, if the project comes in over budget due to the Owners' wants being unaffordable or the CM guessing wrong about current market conditions? Only those actually doing the Work can determine what they will charge.
3. A tremendous amount of time and potentially money for redesign fees can be lost in the bid, redesign, and re-bid processes if the budget does not match the cost. This time spent results in needs that remain unmet, additional cost as inflation continues to push up costs of labor and materials. In the meantime, additional cost for other facilities and their rental, maintenance, and utilities reduces available funds.
4. The CM has no liability as an agent of the Owner. They guarantee nothing. If a problem arises after occupancy, it will be the responsibility of the Owner to determine fault between subcontractors, designers, or suppliers and enforce repairs or replacement.
5. The budget and design are often reconciled in the field through the use of change orders, a process usually distasteful and financially detrimental to Owners.
6. When something goes wrong and a problem can not be solved, there are four sets of fingers pointing in all directions as to the source of the problem.
7. When the project delivered is not the project hoped for because of budget compromises, no one is truly happy with the end result. It does not meet all of the expectations generated before the initial bid opening.
8. Suppliers and subcontractors have no incentive for competitive pricing because the Owner, with whom they will contract, is not a likely source of future work.
9. If part of the work falls through the cracks because it was not included in any subcontractor's specific and contracted scope of work, the Owner pays any extra because there was no guaranteed total price.