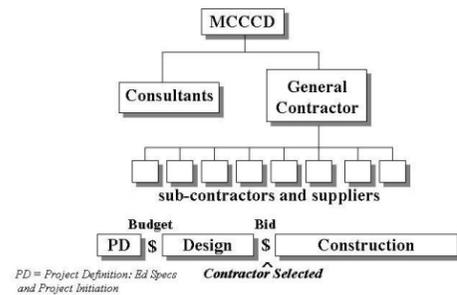


### COMPETITIVE BID (TRADITIONAL DESIGN/BID/BUILD)

Often referred to as Design/Bid/Build, this method is the one with which most Owners are familiar. It is a linear process where one task follows completion of another with no overlap possible. Plans and specifications are completed by the architect and then bids are issued. Contractors bid the project exactly as it is designed with the lowest responsible, responsive bidder awarded the work. The design consultant team is selected separately and reports directly to the owner.

#### STRUCTURE and SCHEDULE



#### Advantages

- Familiar delivery method
- Simpler process to manage
- Fully defined project scope for both design and construction
- Both design team and contractor accountable to Owner
- Lowest price proposed and accepted; pricing, including contractor fee and overhead, developed competitively: "best price"
- Creates most the bidding opportunities for general contractors and subcontractors

#### Disadvantages

- Linear process means longer schedule duration than other methods
- Price not established until bids are received; may require redesign and rebid if bids exceed budget
- Quality of contractors and subcontractors not assured
- Cost estimates change during design process
- Fosters adversarial relationships between all parties increases probability of disputes
- No design phase input from contractor on project planning, budget or estimates
- Not optimal for projects that are sequential, schedule or change sensitive
- Change orders and claims may increase final project cost

#### Best Suited For

Less complicated projects that are budget sensitive, but are not schedule sensitive nor subject to significant change once construction begins. The owner completely controls the design and consultant team.

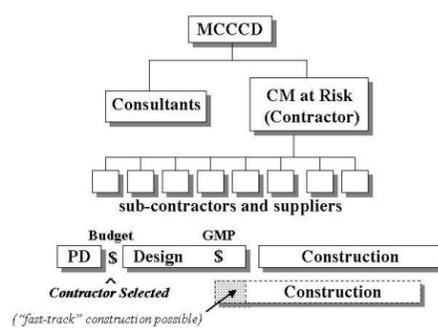
*Basic information for this comparison is derived from a guideline developed by the American Institute of Architects.*

*This version, prepared by Maricopa Community Colleges, is posted at: [http://www.maricopa.edu/facilitiesplanning/docs/delivery\\_methods.pdf](http://www.maricopa.edu/facilitiesplanning/docs/delivery_methods.pdf)*

### CONSTRUCTION MANAGER AT RISK (CMAR)

CM at Risk allows the Owner to interview and select a fee-based firm, based upon qualifications and experience, before the design and bidding documents are fully completed. The construction manager and design team work together to develop and estimate the design. A guaranteed maximum price (GMP) is provided by the CM, who then receives proposals from and awards subcontracts to subcontractors. The final construction price is the sum of the CM's fee, overhead, and contingencies and the subcontractors' proposals. Any unused contingency at the end of the project reverts to the Owner. The design consultant team is selected separately and reports directly to the owner.

#### STRUCTURE and SCHEDULE



#### Advantages

- Selection of contractor based upon qualifications, experience and team
- Contractor provides design phase assistance in budget and planning
- Continuous budget control possible
- Screening of subcontractors allows Owner and contractor quality screening
- Faster schedule than traditional bid; fast track construction possible
- Ability to obtain GMP earlier in process; earlier than traditional bid, later than D/B
- Theoretically, more teamwork between design firm and contractor
- Provides more ability to handle change in design and scope
- Theoretically, reduced changes and claims once in construction

#### Disadvantages

- Difficult for Owner to evaluate the GMP or determine whether the best price has been achieved for the work
- Costs more than traditional bid due to reduced competition in pricing of contractor overhead, fee and sub-contract costs
- Costs often increase due to "details" not in the GMP
- CM may expand budget to create future savings

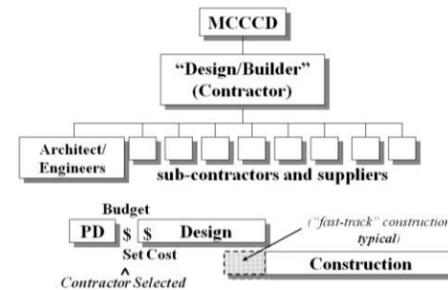
#### Best Suited For

Large new or renovation projects that are schedule sensitive, difficult to define or subject to potential changes; for projects with difficult or unusual site constraints; also for projects requiring a high level of construction management due to multiple phases, technical complexity or multi-disciplinary coordination.

### DESIGN/BUILD (D/B)

The contractor and architect are one entity hired by the Owner to deliver a complete project. A guaranteed total price is provided by the D/B early in the project, based upon design criteria prepared by the school. The pricing also can wait until a moderately developed design is developed. The contractor/architect then develops drawings that fulfill the criteria and complete the design, while staying below the furnished price. The contractor then receives proposals from and awards subcontracts to subcontractors.

#### STRUCTURE and SCHEDULE



#### Advantages

- Single point of responsibility for design and construction
- Selection of contractor based upon qualifications, experience and team
- Contractor provides design phase assistance in budget and planning
- Faster project delivery than traditional bid, slightly faster than CMAR; fast track construction possible
- Guaranteed price possible early in process
- Price tends to match quality (also a disadvantage!)
- No change orders written for this consultant errors and omissions- covered through an contractor allowance. Owner still responsible for other types of changes.

#### Disadvantages

- No check and balance between contractor and architect; Owner left to fend for himself versus the contractor, creating potential for reduced quality and increased potential for conflict between Owner and D/B team
- Difficult for Owner to determine whether the best price has been achieved for the work
- Initial costs likely higher than traditional bid due to increased contractor risk, reduced competition in pricing of contractor overhead, fee and sub-contract costs
- Changes difficult and expensive to make once construction begins, due to phased construction and cost driven, inflexible budget
- Considered "sophisticated": Owner must have a clear idea of scope and concept before selection
- Owner has no input on selection of proposed design team
- Over-emphasis on price may compromise quality
- Increased speed and fewer reviews increase potential for mistakes, missed items, etc.
- Staff and users required to make quick decisions and have reduced time for reviews and input

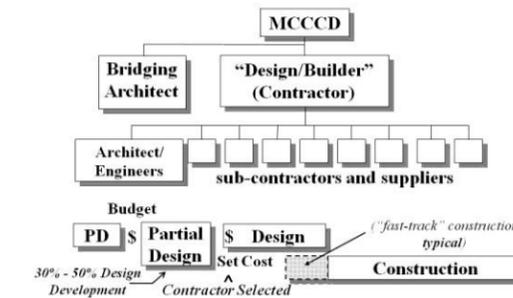
#### Best Suited For

New construction projects that are highly time sensitive, projects with smaller user groups or reduced need for user reviews and mid-course design changes.

### DESIGN/BUILD with BRIDGING (BRIDGING)

Bridging combines the first portion of the traditional design process with the design/build delivery process. The Owner selects an architect that develops the project to 30% - 50% design documents stage. The Owner then selects a design/build team to complete the design and then construct the project while staying below the furnished price. The contractor then receives proposals from and awards subcontracts to subcontractors.

#### STRUCTURE and SCHEDULE



*Bridging shares many of the advantages and disadvantages with traditional D-B, along with the following:*

#### Advantages

- Owner more thoroughly defines the scope and gains better understanding of design before awarding D/B contract, while still passing the risk for design deficiencies to the D/B
- Bridging architect continues as owner's representative during the balance of design and construction; owner no longer left to fend for itself
- Design documents can be used to select the D/B
- Greater development of design documents at time of D/B selection and pricing may result in overall cost savings
- Improves the final product through less guesswork about owner expectations or criteria
- Owner and bridging architect can increase degree of design and construction quality control

#### Disadvantages

- Potential conflicts between owner's bridging architect and D/B architect
- Owner retains more design liability risk
- Early design work and system selection creates additional later liability for D/B, leading to greater potential for disputes and claims
- Somewhat slower than traditional D/B
- Reduced ability to procure long lead items very early in design
- Even *more* complicated delivery method than D/B
- May limit D/B design or construction creativity and innovation because basic decisions and solutions are determined before the D/B is selected
- Some original design intent may be lost or misinterpreted at transition between bridging consultant and D/B designer

#### Best Suited For

Larger, new or renovation projects that schedule sensitive, difficult to define or where the initial design must be developed and tightly controlled by the Owner and users. Not suitable for small projects or those subject to changes.

### JOB ORDER CONTRACTING (JOC)

Job Order Contracting uses a pre-qualified, pre-selected contractor to perform small new construction, remodeling or maintenance work. The "on-call" procurement agreement is a renewable multiple year, indefinite delivery, indefinite quantity (IDIQ) contract for construction using fixed price delivery purchase orders based upon pre-established unit prices or competitively obtained subcontractor proposals, applied adjustment factors and previously established mark up rates for overhead and profit. Individual work order amounts generally are capped by statute or institutional preference. Total annual cumulative amounts also may be capped

#### STRUCTURE and SCHEDULE



#### Advantages

- Fast and timely delivery of projects; not necessary to bid and write separate contracts for each job
- Low overhead cost of construction procurement and delivery
- Reduced number of change orders and claims
- Standard pricing structure, mark-ups and profit established ahead of time
- Long-term relationship with contractor creates efficient communication and familiarity with owner needs and expectations
- Work can be done from complete drawings to napkin sketches to simple written descriptions
- JOC contracts can be established for general construction or specific sub-trades/types of work
- Owner can access other institutions' procurements and contracts for JOC

#### Disadvantages

- Caps on the value of individual work orders
- Can be very difficult to evaluate and manage pricing if based upon unit cost basis. **Ronald Reagan's rule applies: "trust but verify"\***
- Initial JOC selection and qualifications process can be long, daunting and difficult
- Owner and contractor must have skills to manage, evaluate and negotiate the work

#### Best Suited For

Schedule sensitive, small, repetitive or simpler work tasks that will arise, but where the specific timing, type, and quantity of work are unknown in advance. Projects will have a limited number of trades involved, minimal design requirements and are not especially price sensitive.

*\*Shown in an 11/07 presentation by Mary K. Crites, AIA*