Project Delivery Methods Part I
Construction Manager at Risk (CMAR)
Lessons Learned

Presented By: Rusty Bost, City of Gastonia
Keith Garbrick, LaBella Associates
Five Methods of Project Delivery

I. Design – Bid – Build
II. Construction Manager At Risk (CMAR)
III. Progressive Design/Build
IV. Design/Build
V. Public/Private Partnership (P3)
Design – Bid - Build

• Plans/Specs prepared, competitively bid and awarded to lowest bidder
• Two party contract Owner and Contractor
  • Contractor performs the work
• Any issues that come up during construction are paid for by responsible party (Change Order)
• Owner has a great deal of control and responsibility
Construction Manager At Risk (CMAR)

- Construction Manager is chosen by qualifications
- CMAR becomes part of the design team and provides Value Engineering input and estimates based on progress drawings (30%, 60% and 90%)
- CMAR provides owners with a Guaranteed Maximum Price (GMP)
- CMAR cannot self perform work*
Design/Build Bridging

• Hybrid of CMAR and Design/Build
• Owners uses Qualifications Based Section for initial Architect/Engineer – delivers 30% plans
• Owner then hires Design Build firm (or team) to complete project – exactly like Design/Build
• Original Design Professional transitions to “Owners Representative”
• Owner maintains some control through their Representative firm
Design Build

• Owner defines scope of project and sets specific goals
• Owner monitors the work
• Owner hires a Design/Build team – Qualifications based selection
• Owner has less direct control of the project
Public Private Partnership (P3)

- Owner defines a scope or need
- Contractor completes project and operates facility, can collect revenues, possible lease arrangement
- Very little control of the project
Construction Manager At Risk

- Gastonia Case Studies
- Downtown Conference Center
  - $10 million, with parking deck
- Water Treatment Plant Renovations
  - New 4 m.g. clearwell
  - Membrane treatment of surface water
  - 56 million dollar upgrade
  - Very limited site (in downtown)
Governing Statues

• NC General Statute §143-128, October 1, 2014
  • Construction Manager At Risk
• NC General Statute §143-135.8, October 1, 2014
  • Prequalification
How to Get Started

• Make this decision early – get benefit of the pre-construction services

• §143-128: Municipality has to have “concluded that Construction Management at risk service is in the best interest of the project” and have to have compared to other delivery methods
<table>
<thead>
<tr>
<th>Description</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Construction Manager at Risk</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Two Contracts:  
City hires Engineers  
City hires Constr. Mgr (CM)  
CM hires Subcontractors | Allows pre-qualification of bidders/subs (owner selects the entire team)  
Team approach / less adversarial  
Early inclusion of designer/builder  
More control (ideal for owners who expect much input into the project)  
Cost transparency  
Continuity of team thru project  
Better for complex projects with “unknowns”  
More Opportunity for operations staff input | More risk/liability (as compared to D-B)  
CM/“Expert” cannot self-perform (except under special circumstances)  
Not as fast as D-B |
| **Progressive Design Build** | | |
| One Contract:  
City hires DB Firm (Mini Brooks Act – Must have three responses)  
DB firm selects design professional  
DB firm lists all contractors or strategy on how they will be selected | Most similar to CM@R  
Faster delivery method than CM@R & DBB  
Less risk than CMAR  
Single point of responsibility  
Ideal for owners who care more about end results than input | Less Control (City has access to design team but is not a part of it)  
Not allowed until new legislation is passed (anticipated 10/01/2013)  
More adversarial than CMAR |
| **Design Build Bridging** | | |
| Two Contracts:  
City hires design criteria design professional (Completes design to 30% and then becomes Owners Rep)  
City hires DB firm (City ranks top three firms based on qualifications and then uses sealed envelope with fees to make final decision) | Owner input for the first 30% of design to establish direction  
Ideal for extremes (i.e. no in-house capabilities or significant in-house capacity) | Not allowed until new legislation is passed (anticipated 10/01/2013)  
Disconnected of initial designer and design “finisher” (typically in-house staff take project to 30%)  
Has elements of DBB |
| **Design Bid Build** | | |
| Two Contracts:  
City hires design firm  
City bids/hires contractor | City has substantial experience with this method  
Based on competitive bids | No pre-con services  
Most adversarial  
No contractor input  
Change orders and vulnerability to “low bailing”  
Multiple points of contact  
Emphasis on wrong things |
Advantages and Disadvantages of Delivery System

Evaluation of Construction Methods

Construction method can bring many benefits to the owner of specific projects. The project team invited three experts in construction methods to educate the members on current advantages and disadvantages of each system. The three experts were Roger Builders/Crowder Construction, Hickory Construction/Western Summit and Wharton-Smith. During our meeting with the experts, the team investigated three different construction methods to determine which system would provide the maximum benefits for the water treatment plant project. The common points each expert discussed as advantages and disadvantages are shown below:

• Conventional Design, Bid, Build
  • Advantages
    • One bid package
    • Low cost at time of bid based on contractors interpretation of plans/spec
  • Disadvantages
    • Change orders
    • Multiple points of contact during construction between owner/designer/contractor
    • Schedule determine by owner and designer
    • Three party conflict resolution (owner/designer/contractor)
    • Owner is mediator between designer and contractor
Advantages and Disadvantages of Delivery System - Continued

• Construction Manager at Risk (CMAR)
  • Advantages
    • Detail cost transparency
    • Key personnel continuity for entire project
    • Constructability collaboration between Owner, Designer and Construction Manager
    • Best value for project procurement of equipment
    • Eliminate change orders
    • Aligns cost with scope prior to GMP
    • Mitigates risk
  • Disadvantages
    • Owner/contractor/designer require dedicated key personnel time during project for collaboration
Advantages and Disadvantages of Delivery System - Continued

• Design Build
  • Advantages
    • One point of contact between Owner and Contractor/Designer
    • Designer has access to construction cost during the design phase
    • Fast delivery compared to the traditional design-bid-build method
    • Owner has access to the project team
    • Quality control is enhanced with the designer and contractor communicating during design phase
  • Disadvantages
    • Owner/contractor/designer require adequate key personnel time during project for collaboration
    • Once Guarantee Maximum Price (GMP) is established the contractor benefits from additional negotiations with sub-contractors
    • Design Build is not approved as a method for general construction in North Carolina. Individual projects have been approved by the NC General Assembly. Proposed legislation has been introduced for general construction with no deadline for approval or implementation

Conclusion

The review team recommends Construction Manager at Risk as the method of construction for this project. Each of the construction methods has their benefits for specific projects, but this project under CM@R will allow the team direct involvement and maximizes cost benefits. With this process it ensures quality due to effective and efficient collaboration between owner, designer and construction manager.
Selecting A Construction Manager At Risk

Qualifications Based Selection – Standard RFQ process for Professional Services

• RFQ Suggestions:
  • Litigation History
  • GMP vs Actual cost history (possible payback)
  • Bonding Capacity and grade of Bonding Agency
  • Page limits are a must

• Short List Interview Suggestions:
  • Time Limit
  • Bring the Superintendent
  • Limit number of representatives from applicant
# Scoring Matrix

## Request for Qualifications Evaluation Matrix

**For Construction Manager At Risk**

**Water Treatment Plant Renovation and Upgrade Project City of Gastonia - Two Rivers Utilities**

<table>
<thead>
<tr>
<th>Description Evaluation Criteria</th>
<th>Hickory Construction/ Western Summit</th>
<th>USC-Harper</th>
<th>Brasfield &amp; Gorrie</th>
<th>MB Kahn</th>
<th>Rodgers-Crowder</th>
<th>PC-LaChase</th>
<th>Garney-Finnes</th>
<th>MWH</th>
<th>HDR</th>
<th>Wharton-Smith</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Raw Score</td>
<td>Weighted</td>
<td>Raw Score</td>
<td>Weighted</td>
<td>Raw Score</td>
<td>Weighted</td>
<td>Raw Score</td>
<td>Weighted</td>
<td>Raw Score</td>
<td>Weighted</td>
</tr>
<tr>
<td>1. Firm's experience in providing similar services for similar projects</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Weighted Score (100%)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2. Ability to meet established schedules and budgets</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Weighted Score (100%)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3. Qualifications and abilities of key individuals</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Weighted Score (100%)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4. Qualifications Package appearance and presentation</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Weighted Score (10%)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5. Building Information Modeling (BIM) Services</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Weighted Score (50%)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6. Legal/Litigation history for the last ten (10) years</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Weighted Score (10%)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>7. Utilization plan for local and minority sub-contractors</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Weighted Score (100%)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8. Safety record including Experience Modification Rating (EMR)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Weighted Score (25%)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9. Principal office location and nearest regional office</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Weighted Score (50%)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10. Project Approach and Distinguishing Factors</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Weighted Score (100%)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Note: Rate 1 to 10 with 10 being the highest
Construction Manager At Risk Contract

• Conference Center – Single contract for all services, amended to full GMP/GV

• Water Treatment Plant – separate contracts for Preconstruction Services and Construction
Construction Manager At Risk Fees

- Preconstruction Services
  - 0.25% per pricing exercise or 1% of the cost of work

- General Conditions
  - Includes costs associated with the project team - 
    (Senior Project Manager, Superintendent, etc.)
  - Includes items required to administer the project - 
    (job trailer, storage trailer, etc.)
  - Typically 8% of the cost of work
Construction Manager At Risk Fees – Continued

• Construction Fee
  • Typically in the range of 2.5% to 3%
  • Includes profit and home office overhead (including the Project Executive, Accounting, etc.)

• Contingencies
  • Preconstruction: Team Decision
  • Construction Contingency: 3%

• Bonds and Insurance
  • Typically 2% of the cost of work (P&P Bond/GL Insurance/BUILDERS Risk)
Pre-Construction Services

- Value Engineering
- CMAR Provides estimates at 30%, 60% and 90%
- Constructability review/input
- Materials/equipment reviews, field trips to other facilities
- Possible early bid package for long lead items
Construction

• CMAR cannot self perform
• All work is still competitively bid to “1st Tier Subcontractors”
• The CMAR has to prequalify all 1st Tier Subs
  • Minimum score method, with points awarded for experience, bonding capacity, references, staffing, etc.
Construction - Continued

- Changes in work – Two separate contingencies
  - Contractors contingency – carried by CMAR in the GMP
  - Owners contingency – can be carried separately
- A CMAR is still a contractor
- At close out, CMAR carries the warranty. The subs may have to come back to repair/finish items; however, it is the CMAR’s responsibility.
Close Out

• Conference Center: Very traditional, substantial completion, soft opening, Temporary CO for operators to occupy while punch list was being completed.

• Water Treatment Plant: will be under operation during project, will be more of a phased approach with substantial completion being phased for some parts.
In Closing....