Howard County Experience with Alternative Delivery Projects

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25 MGD BNR Plant upgraded to 29 MGD ENR Plant. Mandated by NPDES Permit.

Design work on the Project began in 2007.

Facilities operating by December 2011, three months ahead of schedule. Approximate $100M project, by CM@ Risk.
LPWRP Septage Receiving and Treatment Facilities Project

Septage receiving and treatment facilities at the LPWRP.

Constructed in 2012/2013 as a CM@Risk. $5M project using the savings derived from the ENR Project.
Fort Meade Reclaimed Water Project

- 5 MGD reclaimed water project for the US Army base at Fort Meade, Maryland.
- Project is currently underway.
- Startup in April 2015.
- $40 M project by a modified CM@ Risk method.
The ENR facilities:

Denitrification Filters and their related equipment including methanol facilities and UV Disinfection which was all new construction.

Other work included modifications to existing process reactors and secondary clarifiers, flow distribution improvements for the reactors, new blowers, and additional dewatering capabilities.
Design – Bid – Build

- Owner and Designer Control the Complete Design
- Hard Bid
- Adversarial Relationship
Design-Build

- Owner provides Performance Specification
- Design Build entity performs design and construction under a single contract
- Limited Owner Involvement
Construction Manager At-Risk

- Owner retains Designer and a CM to manage construction.

- The CM collaborates on the design and guarantees schedule, quality, and project cost (GMP).

- Partnering approach
Why CM At Risk?

- Experience with CMAR at the LPWRP on a much smaller scale.
- Uncertainty of existing as-built conditions.
- Allowed design of retrofit facilities to proceed in parallel with new construction activities.
Why CM At Risk?

- “Partnering Approach”.
- “Open Book” negotiation of all subcontract bid package work.
- Advanced “big ticket” procurement
Why CM At Risk?

- Operation and Maintenance staff input into the design.
- Maintenance of Plant Operations (MOPO).
Why CM At Risk?

- Became familiar with facilities.
- Establish working relationship with design and O&M team early.
- Refine schedule and develop resource plan
- Constructability Reviews
Selection of Design Consultant

- Quality Based Selection (QBS) process.

- Paved the way for a similar procurement methodology for the Construction Manager.
Selection of Construction Manager

- Expressions of Interest (EOI’s).
- Selection for technical proposals and interviews from the EOI’s.
- Representatives from Designer and County’s Purchasing Department were present but non-voting.
Selection of Construction Manager

- Ratings based on Project Team, Project Approach, MOPO, Safety, Staffing and Costs.
- Financial strength of the firm(s)
- Amount of self performance.
Selection of Construction Manager

- Two part contract; preconstruction and construction services.
- CM under contract at 30% design, and a GMP @ 60%-80% design.
- Engineers Joint Contract Documents Committee (EJCDC) Design Build Contract Forms modified for CMAR
CMAR Preconstruction Services

- Preconstruction services portion centered on partnering workshops, constructability reviews, value engineering, and construction estimates @30%, 60%, and final GMP.

- Lump sum or T&M.
Guaranteed Maximum Price (GMP)

- GMP Negotiations are the single most critical step in the CM@ Risk Process.

- More complete design means less risk, but less room for creativity and cost savings by the CM.

- Know When to Stop Design and Begin Construction
Guaranteed Maximum Price (GMP)

- **GMP Breakdown:**

  - CM Staffing Costs, Indirect costs (Bonds and Insurances), Misc Management costs (construction trailers, utilities, etc.)
Guaranteed Maximum Price (GMP)

- Construction Bid Packages
- Budgetary cost development with “plug ins”, actual bids occur after the GMP
- Place to limit self performance ; 50% or less
- “Backstopping”
- 35 bid packages on ENR
Guaranteed Maximum Price (GMP)

- Contactor’s construction contingency
- Conditions that could not be “reasonably anticipated”
- Also to be used for Construction schedule enhancements, if necessary. For this project, it was ~4% of project cost.
Guaranteed Maximum Price (GMP)

- **CM fee.** Total Fixed fee as percentage of the work. ENR project, ~3.2% of GMP.

- 15% of that was placed at risk based on performance.

- 10% held by the County disputes that could not be settled by the Project Team.
Guaranteed Maximum Price (GMP)

- Allowances.

- 100% Owner’s money to perform discretionary work. For this project, approximately 10%.

- High uncertainty or risk items.
Guaranteed Maximum Price (GMP)

- **Splitting of Savings:**
  - 1) 60/40% Owner/CM split of all recognized savings in Staffing costs, bid package savings, and construction contingencies.
  - 2) Allowances savings are 100% to the Owner.
Guaranteed Maximum Price (GMP)

- Manage the GMP through construction
- Tracking and transferring costs.
- “Internal Change Orders”
Project to Date

- Completed 3 months ahead of schedule.
- Meets all NPDES parameters.
- Project came in within the GMP, savings recognized by excellent value engineering suggestions and implementations between CM and Designer, aggressive savings in bid package costs by CM, savings in CM staffing costs due to early completions.
- Added Septage Receiving facilities to the project as a result of the savings.
Lessons for future CM Projects

- Owners Must Be Active Participants
- Retain Designer for construction services.
- Engage Procurement, Permitting and Legal Staffs Early and Often
Lessons for future CM Projects

- Choose CMAR based on the experience of their team. Insist on key members of the team remaining for the entire project.

- CMAR only extends one level down, subcontractors will have DBB mentality.
Lessons for future CM Projects

- Clearly define the uses for Construction Contingencies and Allowances.
Lessons for future CM Projects

- Balance limiting of CM self performance with ability to “backstop” work of subcontractors, especially for critical path items.
- Less than 50%.
- Limiting self performance assures competitive pricing.
Lessons for future CM Projects

- Utilize “Internal Change Order” within the GMP to move money between bid packages, construction contingencies, and Owner controlled Allowances.
- In GMP Development, place as much of the “large uncertainty or risk” items into the Owner controlled Allowance.
Lessons for future CM Projects

Have a structure for Operations Staff input during the design/value engineering phase to minimize changes and enhancements during construction.
Howard County CMAR Experience

Questions?