

Prepared for:  
Texas Association of Clean Water Agencies  
San Antonio, Texas

# CMAR Preconstruction Service Expectations

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# – Presentation Topics

- 1 – Texas experience with CMAR
- 2 – Preconstruction service expectations
- 3 – The “Big 7” preconstruction service tasks
- 4 – Summary and recommendation

01

# Texas experience with CMAR

# — In 2011, Texas promulgated statutes for the CMAR project delivery method

- Early project results were mixed
  - » Some CMAR projects morphed into DB projects
  - » Selection criteria resulted in “price based” CMAR awards
- Today’s projects
  - » Good but sometimes inconsistent results



02

# Preconstruction service expectations

# — Every CMAR project will have both typical and unique expectations for the preconstruction phase

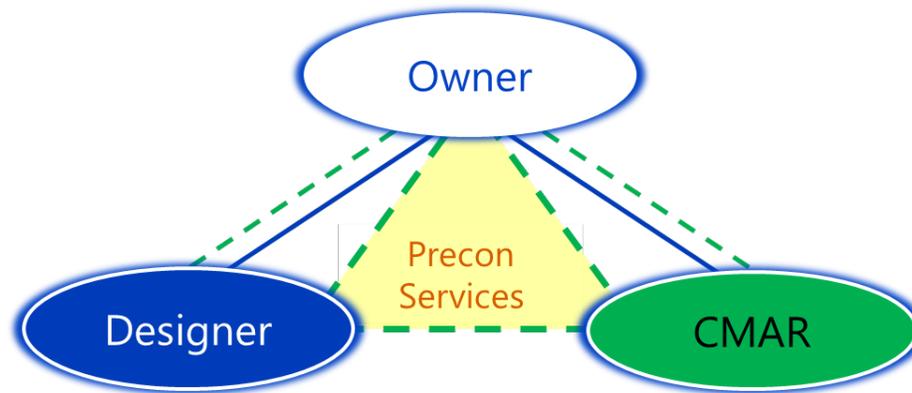
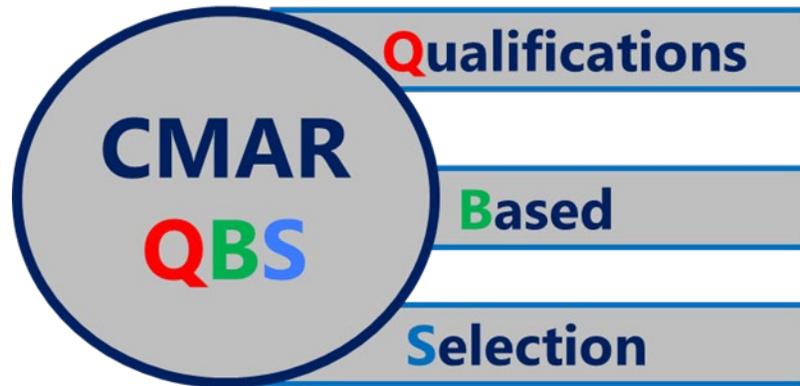
- Typical

- » Team member collaboration
- » Balanced risk profile
- » Cost certainty
- » Shorter project schedule
- » Final GMP within the budget

- Unique

- » Engaging a “dream” team
- » Meeting specific project goals
- » Coordinating with other projects
- » Shifting of specific risks

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CMAR delivery is flexible and easily accommodates most  
preconstruction expectations



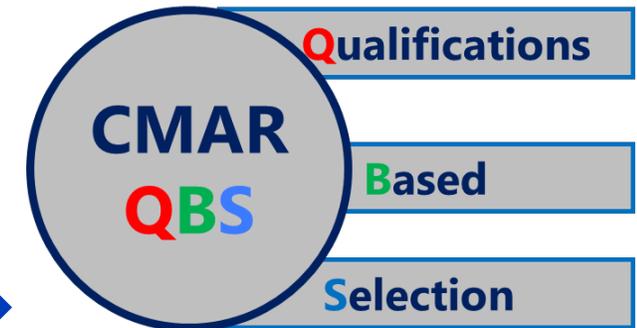
# 1 - QBS process is focused on selecting the best contractor and initiating early project team collaboration

- Two QBS procurement processes

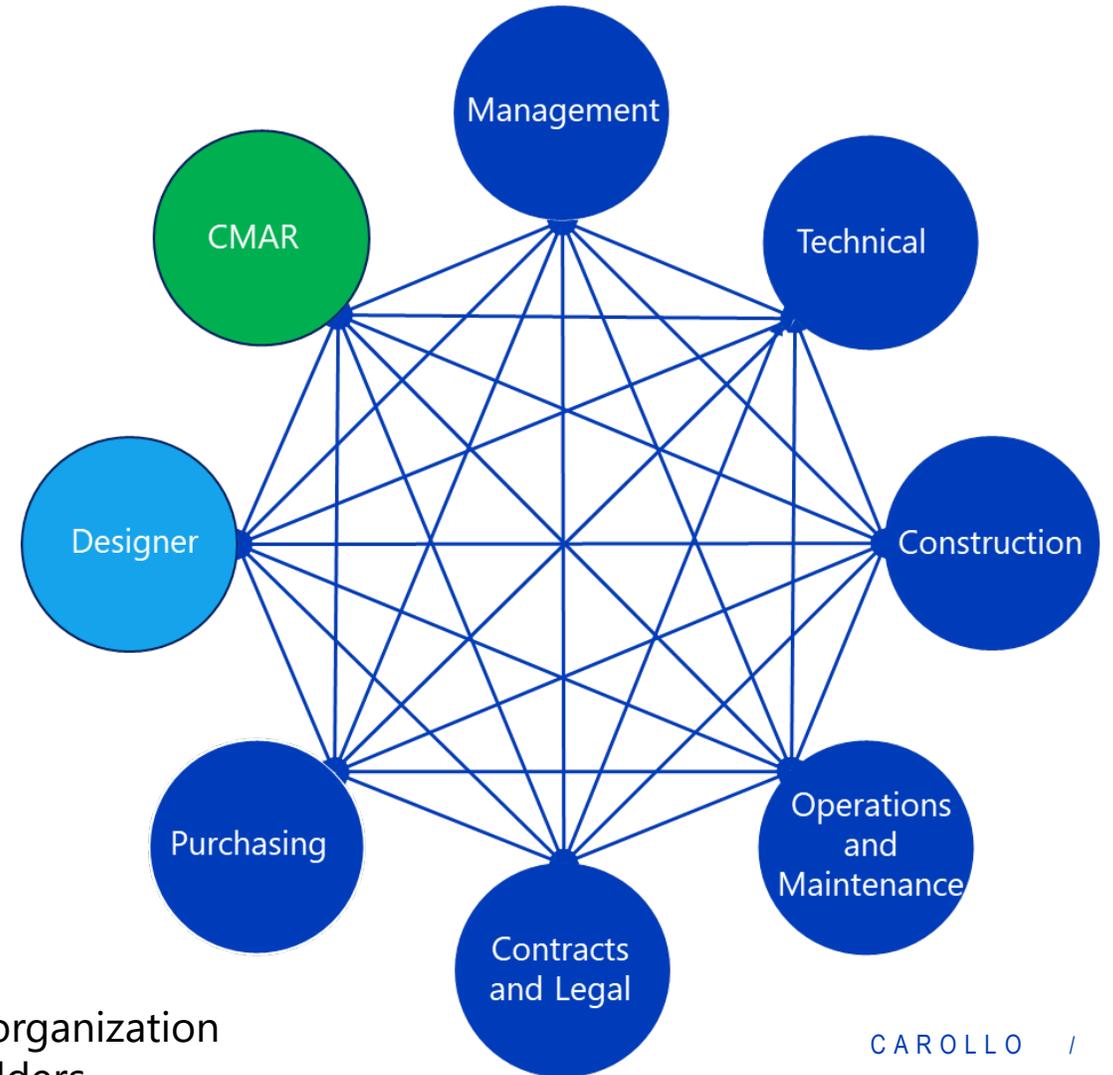
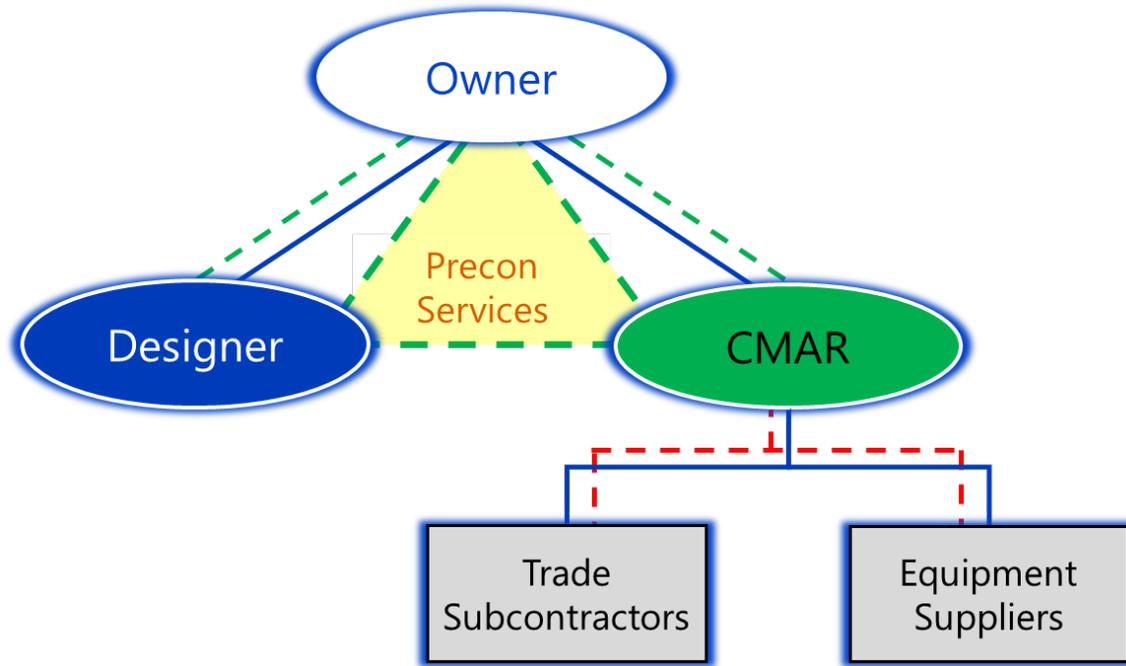
» One step



» Two step



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2 - Contract and communication lines are designed to promote collaboration



● Owner organization stakeholders

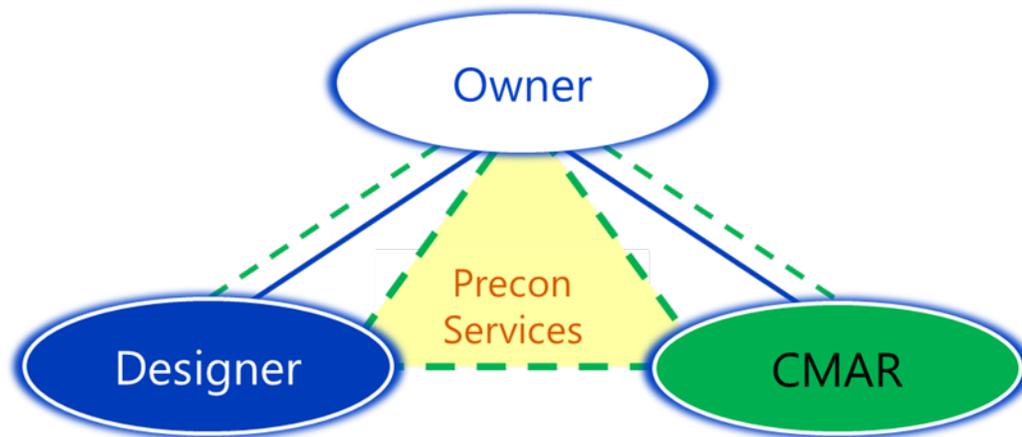
# 3 - Competition and transparency of all project costs promotes trust and confidence

- Buyout process is completely "Open Book"
- Construction cost competition for all work
- Owner makes Best Value decisions



# 4 - Reduced project risk benefits all members of the CMAR project team

- For this delivery method:
  - » All project team members are subject to risk
  - » Risk management is a team effort



Operational

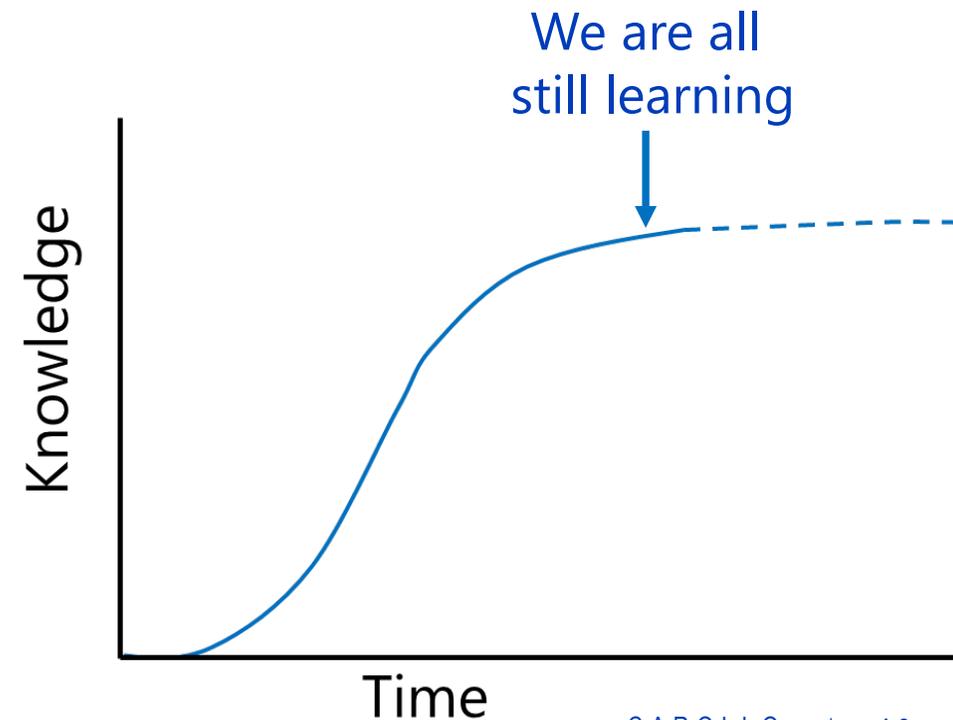
Environmental

Financial

Reputational

# Even if you have a great CMAR Team, do these 4 benefits just automatically happen?

- The 4 benefits don't automatically happen
  - » There is no standard approach to CMAR delivery
  - » Expectations and goals not well established
  - » Varying team/team member experience

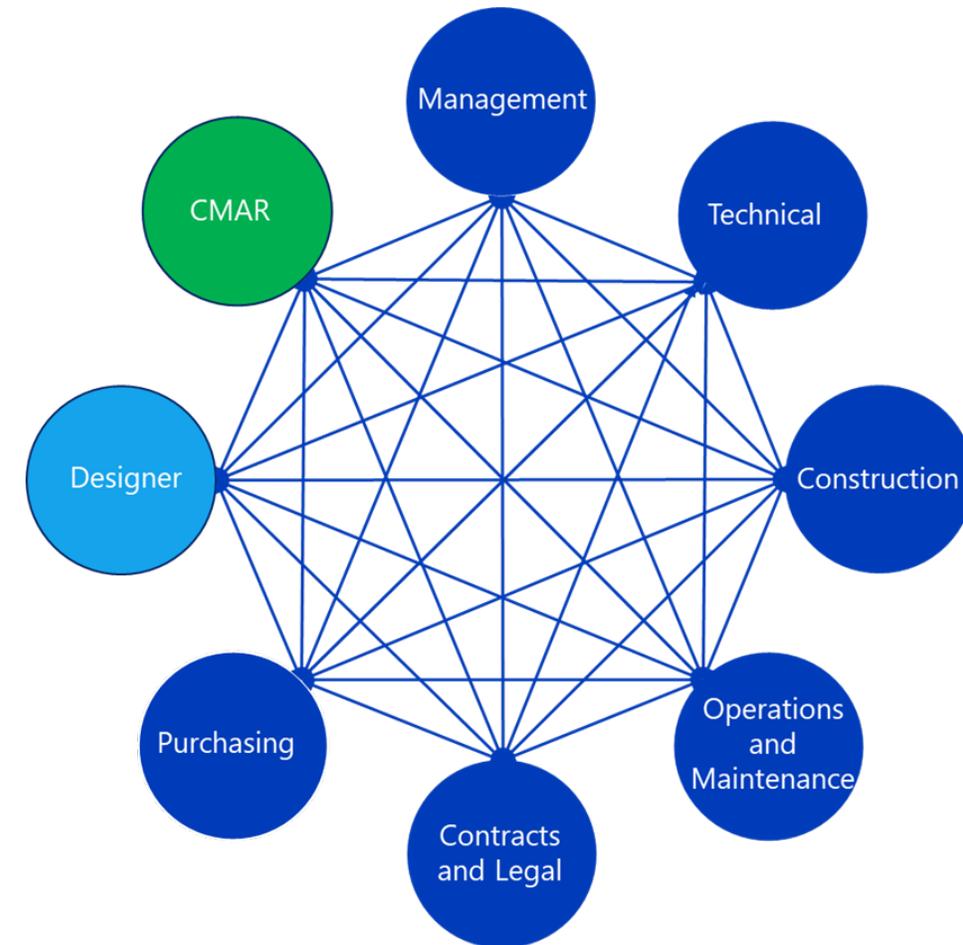


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## The “Big 7” preconstruction services tasks

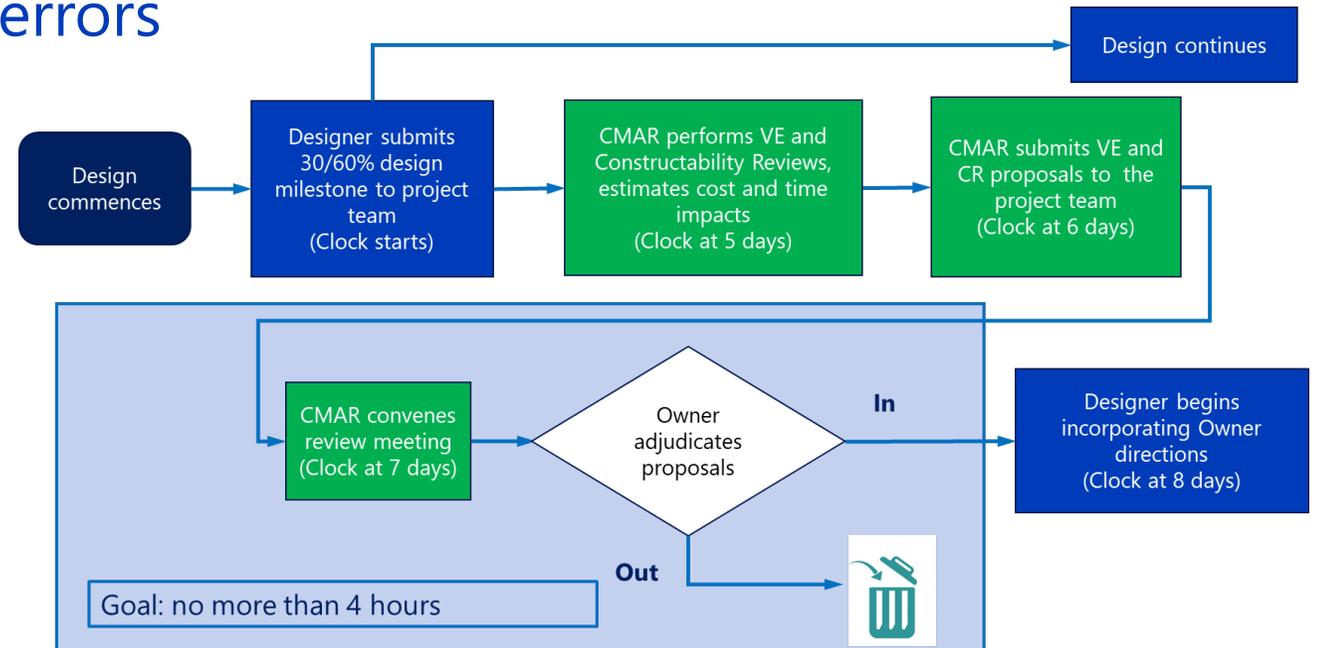
# CMAR project delivery benefits rely on the successful completion of 7 key preconstruction activities

1. Design reviews
2. Site investigations
3. Formal approach to risk management
4. Cost model development & management
5. Early out work packages
6. CMAR procurement plan implementation
7. Training workshops



# 1 – Design reviews drive innovation and efficiency

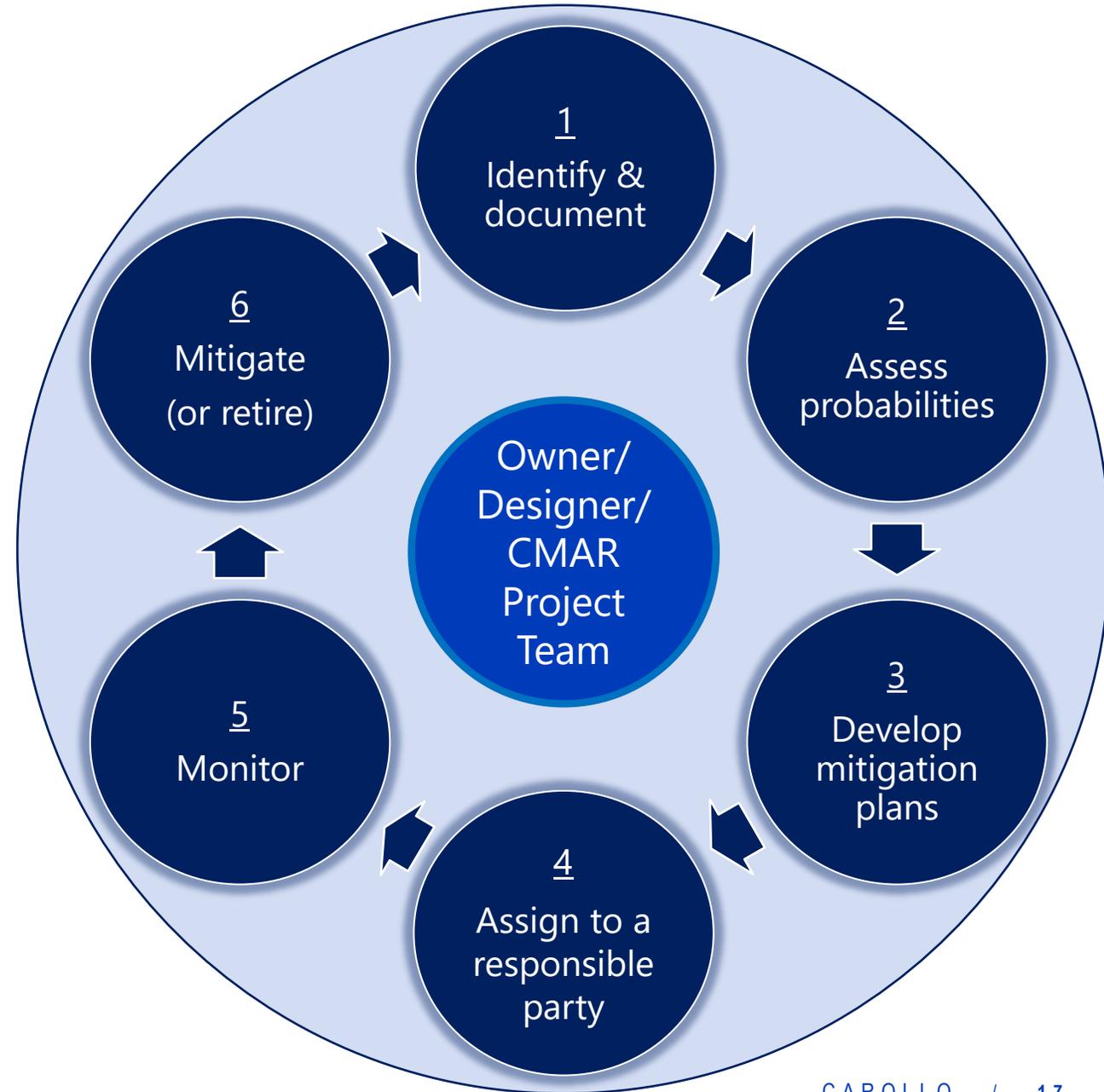
- Review types
  - » Value engineering and constructability
- Review purposes
  - » Identify: savings, risks, design errors
  - » Improve constructability
- Review processes vary
  - » Finite duration – 8 workdays
  - » Focus on needle movers





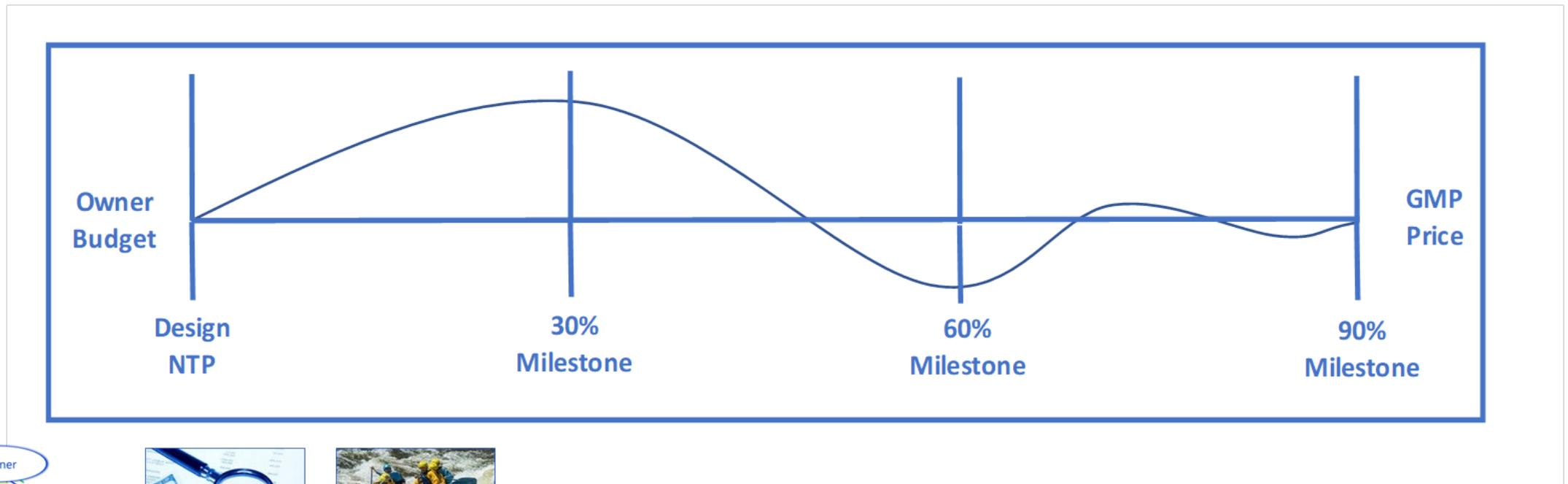
# 3 – Formal approach to Risk Management

- Risk management begins early in the project
- Risk register is regularly updated
- Risk Register helps identify cost and schedule trends



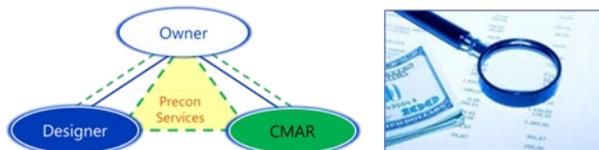
# 4 – Cost modeling helps keep the project scope within the Owner's budget

- Two independent estimates
- Each estimate utilizes a common basis
  - » WBS, crew compositions, labor rates, etc.
- Reconcile estimate costs line-by-line
- Compare results with the budget
- Adjust scope, as needed



# 5 – Early out subcontract and equipment work packages may impact the traditional design process

- Typical design impacts:
  - » Long lead equipment procurement
  - » Early work packages requiring partial IFC designs
    - Site prep, underground utilities, foundations
- Engage the CMAR early, understand their:
  - » Construction and buyout approach
- Assess the impact on design efficiency and effort
- Adjust the design scope of services, as applicable



# 6 – Implementing the CMAR procurement plan requires Designer support

- CMAR premarketing efforts
- Developing technical content for:
  - » RFB's and RFCSP's
  - » Equipment RFQ's
- CMAR's bidding process
- Selection committee membership
- GMP negotiations



## Sunshine Water Treatment Expansion Project CMAR Procurement and Buyout Plan

- 1. CMAR's Approach to Project Procurement**
  - 1.1. Introduction
  - 1.2. Purpose of the Procurement Plan
  - 1.3. Buyout Strategy
  - 1.4. Procurement Practices
    - 1.4.1. Development of Work Areas and Subcontract Packages
    - 1.4.2. Identification of Proposed Self-Perform Work Packages
    - 1.4.3. Competitive Bidding process
- 2. The Project**
  - 2.1. Work Area Identification
  - 2.2. Subcontractor Work Package Descriptions
  - 2.3. Equipment and Material Purchase Package Descriptions
- 3. Receipt and Evaluation of Proposals and Quotations**
  - 3.1. Subcontractor Work Packages
    - 3.1.1. RFSCP Openings
    - 3.1.2. CSP Evaluations
  - 3.2. Equipment Purchase Packages
    - 3.2.1. Quotation Openings
    - 3.2.2. Quotation Evaluations
  - 3.3. Scoring Approach
- 4. Schedule**
  - 4.1. Procurement Milestone Schedules

# 7 – Training workshops educate, inform and set expectations

- CMAR procurement
- CMAR contract development
- Risk management approach
- CMAR competitive bidding process
- Selection committee responsibilities
- GMP development and negotiation
- Project partnering



# Successfully completing these 7 tasks requires coordinating the scope of services with the Designer and CMAR

- 2016 state of the practice for W/WW preconstruction services scope

- The upside
  - » An early attempt at a standardized scope
- Limitations
  - » Summary task descriptions
  - » Only addressed the CMAR's scope services
- But it was a start....

**CONSTRUCTION MANAGEMENT AT-RISK (CMAR) PROCUREMENT**

Two-Step Process  
Step Two:  
**Request for Proposals**

WDCB No. W-3300-2016

Attachment B  
Scope of CMAR Services

REQUEST FOR PROPOSALS 19

The CMAR Firm will provide the following preconstruction and described in the Proposal, and for the price specified:

**A. PRECONSTRUCTION PHASE SERVICES**

Preconstruction-phase services will include:

1. Co-locate during preconstruction at the...
2. Provide a project manager, all Key Personnel meet the CMAR Firm's obligations for...
3. Within 14 days of the notice to proceed the management plan that includes approach to...
4. Consult with, advise and provide recommendations of the planning, design, and proposal...
5. As the design progresses—from about 30% final design, plans and specifications—provide information on material availability, constructability, construction, and independent quantity take-off.
6. At the 60% design completion milestone, complete the project in the allotted time, or...
7. At the 30%, 60% and 90% design completion, manager, estimator, scheduler and superintendent...
8. Provide ongoing value-engineering review, 30%, 60% and 90% design completion milestones...
9. Identify, evaluate and propose cost-effective specifications.
10. Develop independent detailed construction flow forecasts at the 30%, 60% and 90% final...
11. Provide monthly project planning and schedule...
12. Identify long-lead equipment procurement...
13. Identify, evaluate and recommend elements...
14. Make recommendations to the Owner regarding proposals for the major elements of the Work...
15. Advise the Owner regarding ways to gain or...
16. Provide complete, detailed, written CMAR or breakdown with conditions, assumptions, and the Owner's level of design completion.
17. Manage all procurement and construction requirements for procurement of subcontracts...
18. Monitor and maintain quality control over implementation, and W&C.
19. Provide performance bond, payment bond...
20. Provide insurance for the preconstruction...

REQUEST FOR PROPOSALS 20

17. Provide a construction emergency response plan and site safety plan.

18. Develop, implement and maintain a quality management plan that ensures conformance to the project design and to every section of the specifications. Develop a QC program to ensure continuing attention to the production and installation of error-free work.

19. Provide an environmental management plan detailing programs for a storm water pollution prevention plan and handling other concerns required to comply with permits and regulations.

20. Schedule all Project construction-related activities, should be processed through value-based.

21. Identify work that the Proposal amounts to, and should be processed through value-based.

22. Participate in monthly progress meetings created with the Design Engineer.

23. Participate in one Project kick-off meeting.

24. Participate in up to 10 additional meetings as needed.

**B. CONSTRUCTION PHASE SERVICES**

Construction-phase services will include the following:

1. Construction consistent with the relevant to...
2. Discuss Project with subcontractors and their capacity, and worker mechanic availability.
3. Review rates for labor and when a CMAR own forces and systems for selection.
4. Prepare the bids/proposals packages for the Contract.
5. Develop and submit recommendations for improvements, and all other work required or fixed price and the available contract.
6. Coordinate and manage the Work that includes improvements, and all other work required or fixed price and the available contract.
7. Coordinate with various local and state agencies for procurement of materials and equipment.
8. Arrange for procurement of materials and equipment.
9. Manage all procurement and construction requirements for procurement of subcontracts...
10. Monitor and maintain quality control over implementation, and W&C.
11. Provide performance bond, payment bond...
12. Provide insurance for the preconstruction...

REQUEST FOR PROPOSALS 21

15. Implement the construction site safety plan to provide a safe working site for the Project, maintain, update and implement as needed for the emergency response plan.

16. Conduct a meeting with all the contractor and sub-contractors performing major elements of the Work prior to the start of their activities.

17. Obtain any necessary construction permits.

18. Manage storm water runoff and flow.

19. Establish and implement procedures to track, expedite and process all submittals, change orders, and requests for information.

20. Review and process shop drawings and other documents for submission to Design Engineer.

21. Establish a critical path method schedule for the Project, monitor and update the construction schedule monthly, prepare re-work look ahead work schedule consistent with overall schedule.

22. Review and process all pay applications from subcontractors.

23. Conduct monthly progress meetings with the on-site trade foreman or superintendent.

24. Attend monthly meetings with the Design Engineer and Owner staff and provide written monthly progress report and updated schedule.

25. Maintain current hard copies of project as-built drawings, including all subcontracted work, and submit monthly to hard copy, PDF and electronic format, as specified by the Design Engineer.

26. Develop, implement and manage a commissioning, start-up and testing plan necessary for the Owner to accept the Project as completed and ready to use.

27. Expedite and coordinate delivery, storage, security and installation of Owner-procured material and equipment, as applicable.

28. Update and revise the operation and maintenance manual developed by the Design Engineer as necessary.

29. Supervise and manage the warranties provided to the Owner for the equipment and construction work.

30. Receive warranty work items from the subcontractors and vendors, and provide same to Owner upon final completion of the Project, or at a date negotiated by the parties.

31. Conduct a walk-through with the Owner and Design Engineer to ensure that the Owner, Design Engineer, and CMAR Firm are in agreement that the construction phase work is complete before the one-year warranty period effect.

32. Implement close-out procedures necessary for the Owner to accept the Project as being finally complete; provide final invoices from all subcontractors and material suppliers.

33. Complete all construction-phase services and Work, including performance testing, and

34. Prepare a final report on all construction costs.

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# Aligning the Designer and CMAR preconstruction scopes of work provides clarity and establishes responsibilities

- For each project milestone and preconstruction task, provide:
  - » Task narratives
  - » Subtask descriptions
    - Scope of services required
      - Entity leading the task
      - Entities supporting or contributing
      - Level of effort expected
  - » Deliverable identification
    - Description of work product
    - Completion date(s)
    - Format (paper, digital, other)





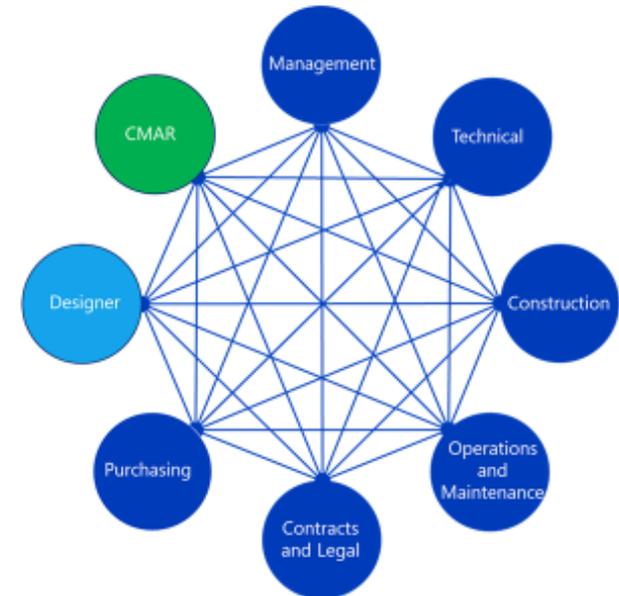
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# Summary and recommendation

# Summary - CMAR delivery is flexible and can accommodate most preconstruction expectations

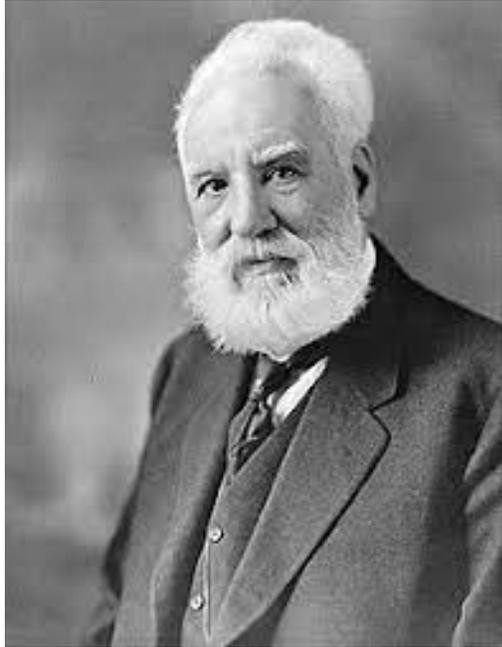
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# — Recommendation



“Before anything else, preparation is the key to success.”

- Alexander Graham Bell

## Planning for CMAR Projects

- Begin with developing an aligned precon scope
- Include this scope in Designer and CMAR procurements
- Refine both scopes during CMAR negotiations considering:
  - » CMAR's construction approach
  - » CMAR's buyout strategy
  - » Project team training needs
- Actively manage the preconstruction scope