
AAPA Executive Management Conference

May 9, 2019 | Facilities Engineering

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Topics

- Information Technology in Engineering and Construction
 - Bidding
 - Online Project Management & Collaboration
- Geographical Information Systems (GIS)
 - Asset Management
- Project Delivery
- Rehab + Reconstruction + CMAR
 - Success Story in the making

Software - Bidding



- Online bidding required in some states.
- La. requires Bid Express
- Used for RFP and general procurement

Online Project Management & Collaboration

DEFINED:

**Cloud-based software
designed to improve
project communication
and collaboration**

Software



- 40% increase in clients each year for last 5 years
 - New Orleans
 - Jacksonville
 - Olympia
- Online bidding module



- 70% increase in companies using Procore
- 70% increase in people using Procore

Procore

- Port of Lake Charles Portfolio
 - Projects
 - Why did we migrate?
 - Board Submissions
 - Discussion on placing environmental permits, etc in file



**How long ago was
that submitted?**

Was I the hold up?

Did the drawings get delivered
to the right person?

Where is that file?

**File is too big
to email.**

Collaboration

- Allows you to keep your team informed and involved.
- Easily add your internal stakeholders to the team.
 - **Operations:** Stevedores, terminal operators
 - **Police/EMS:** Notification of road closers
- Document stakeholder response/approvals

Geographical Information Systems

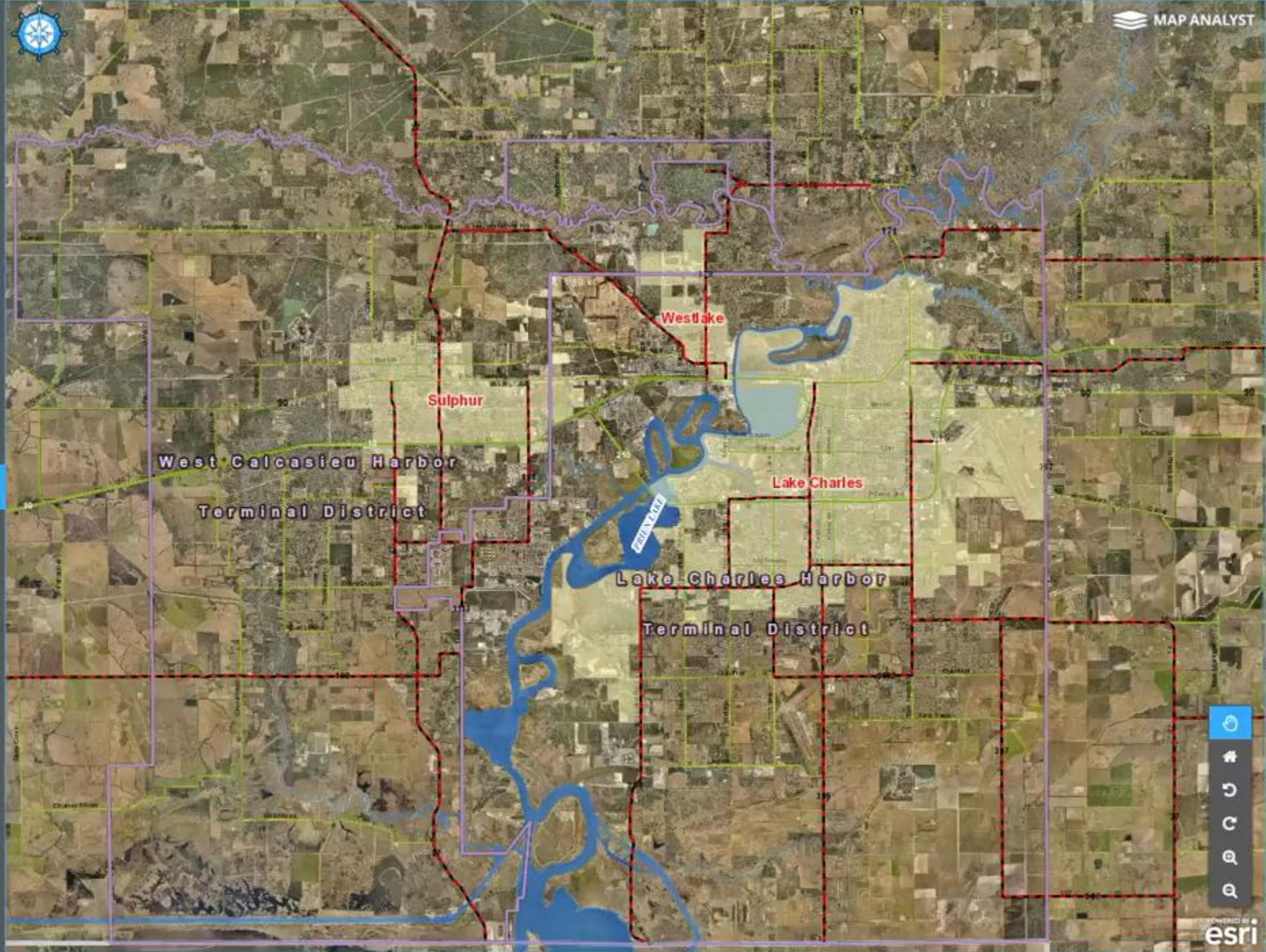
Engineering

Asset Management

Environmental

**Business Development/
Real Estate**

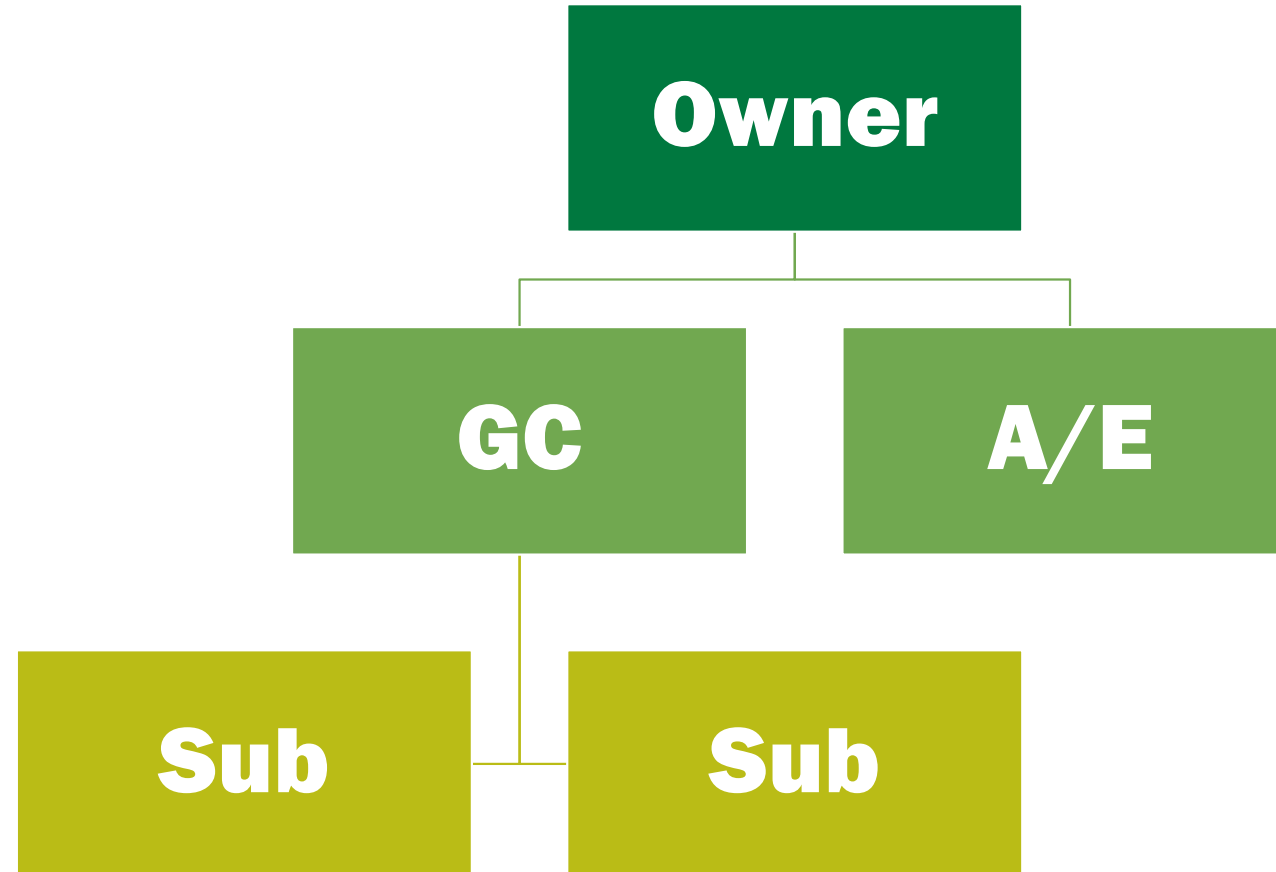
- Reference
- Address Structures
- Railways
- Waterways
- Sewers
- Drainage
- M.P.O. Urban Area
- Ownership
- Leases
- Facility Plan
- Canopy
- Fence
- Structures
- Docks
- Impervious
- Rail R.O.W.
- Roads
- Port District
- Sections
- Streets
- Disposal Areas
- Places
- Zoning
- State Water Bottoms
- Parish Border
- Flood Information
- B.F.E. 2011
- Flood Zones 2011
- Floodways
- La Coastal Zone
- Parish B.F.E.
- Soils
- Soil Order Taxonomy
- Elevation
- Base Flood Elevation
- Flood Depths
- Survey
- Water Bottoms
- Sonar
- Hydrographic Lines and Sounding
- Disposal Easements
- Aerials
- 2016 Aerials



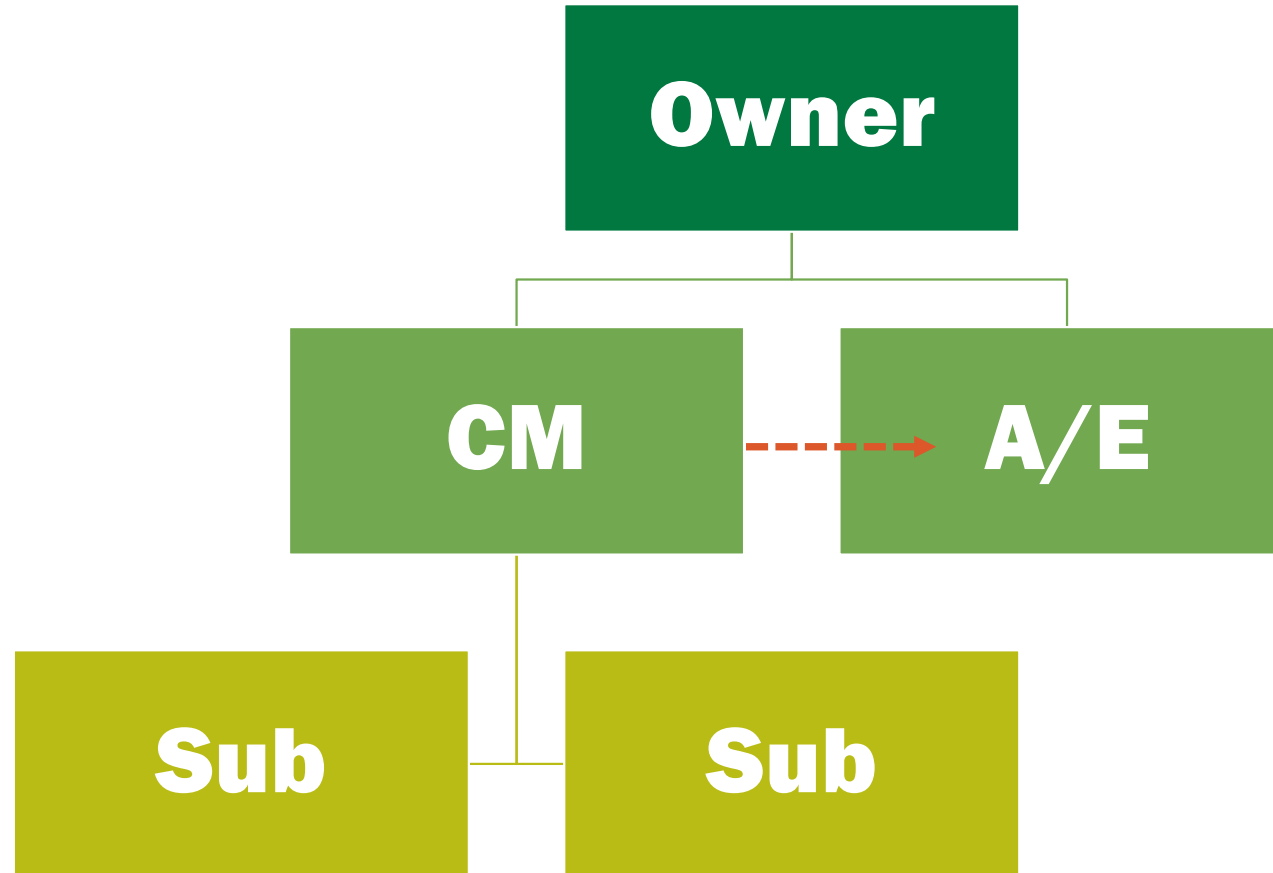
Project Delivery

- Design, Bid, Build
- Early Contractor Involvement (ECI)
 - Construction Manager (CM) at Risk
- Design-Build
 - Type of Public Private Partnership (PPP)
 - **Expanded:** Design, Build, Operation, Finance & Maintain
- Integrated Project Delivery

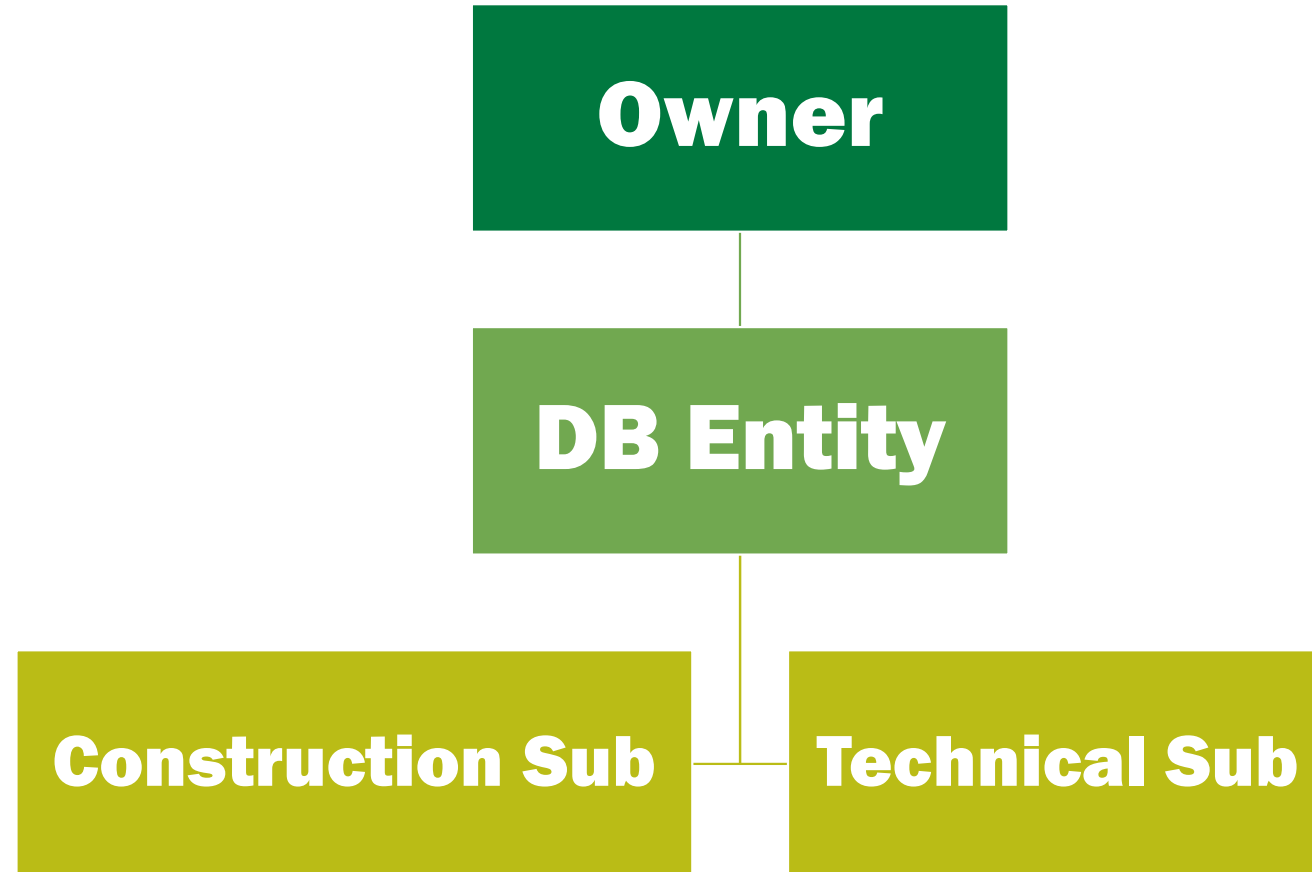
Design Bid Build



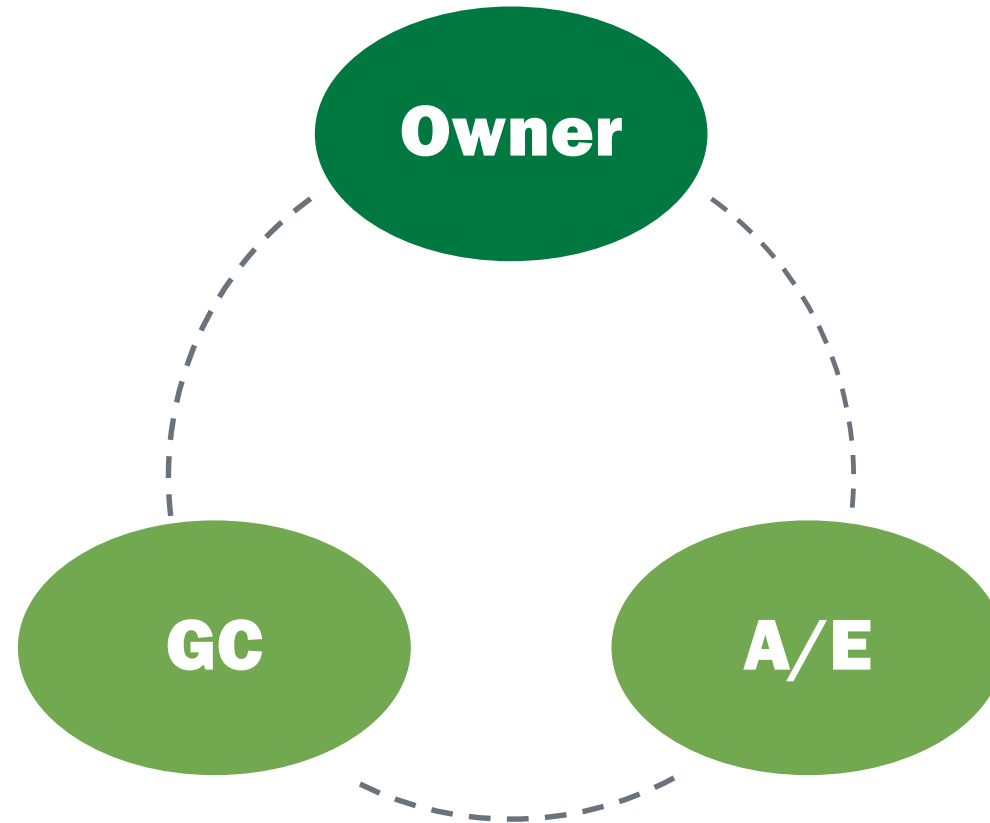
CM @ Risk



Design - Build



Integrated Project Delivery



Designer Procurement

It starts with the Owner

If your process calls for an SOQ, RFQ or RFP

- State what you want
 - Experience
 - Innovators
 - No subconsultants
 - Price?
- Include a legal statement that they are attesting to their abilities and experiences
 - *Submission of a RFQ shall constitute an attestation by the entity submitting the RFQ that all statements and material submitted are true and correct and any statement or information found to be untrue or incorrect or misleading by the District shall, in the sole discretion of the District, constitute grounds to disqualify the contractor providing such RFQ*

Change Orders

Change Orders

- Disliked
- Over budget
- Whose fault
 - Owner induced
 - Designer covering themselves
 - Contractor taking advantage of contractors

Solutions

- Select correct project delivery method
- Pre-Construction due diligence
- Owner-Designer contract language on errors/omissions
- Owner-Contractor contract language
- Dispute resolution board

CMAR Project Case Study

Owner

Lake Charles Harbor & terminal District (Port of Lake Charles) a Political Subdivision of the State of Louisiana.

Project Funding

100% Port.
Original budget estimate was \$4M.
No State or Federal funds.

Project Scope

Replace conveyor belt infrastructure critical to support CITGO and P66 loading operations.

CMAR Justification



September 8, 2015

Hosted a Project Delivery Strategy Workshop with Stakeholders

Project-Specific Goals Identified

- Operate During Construction
- Stay in Budget
- Operable and Maintainable Systems
- Expedited Construction Schedule due to adjacent Operations

Project Advantages using CMAR



Procured \$500,000 worth of long lead items prior to a construction contract. Saved the project 6 months.

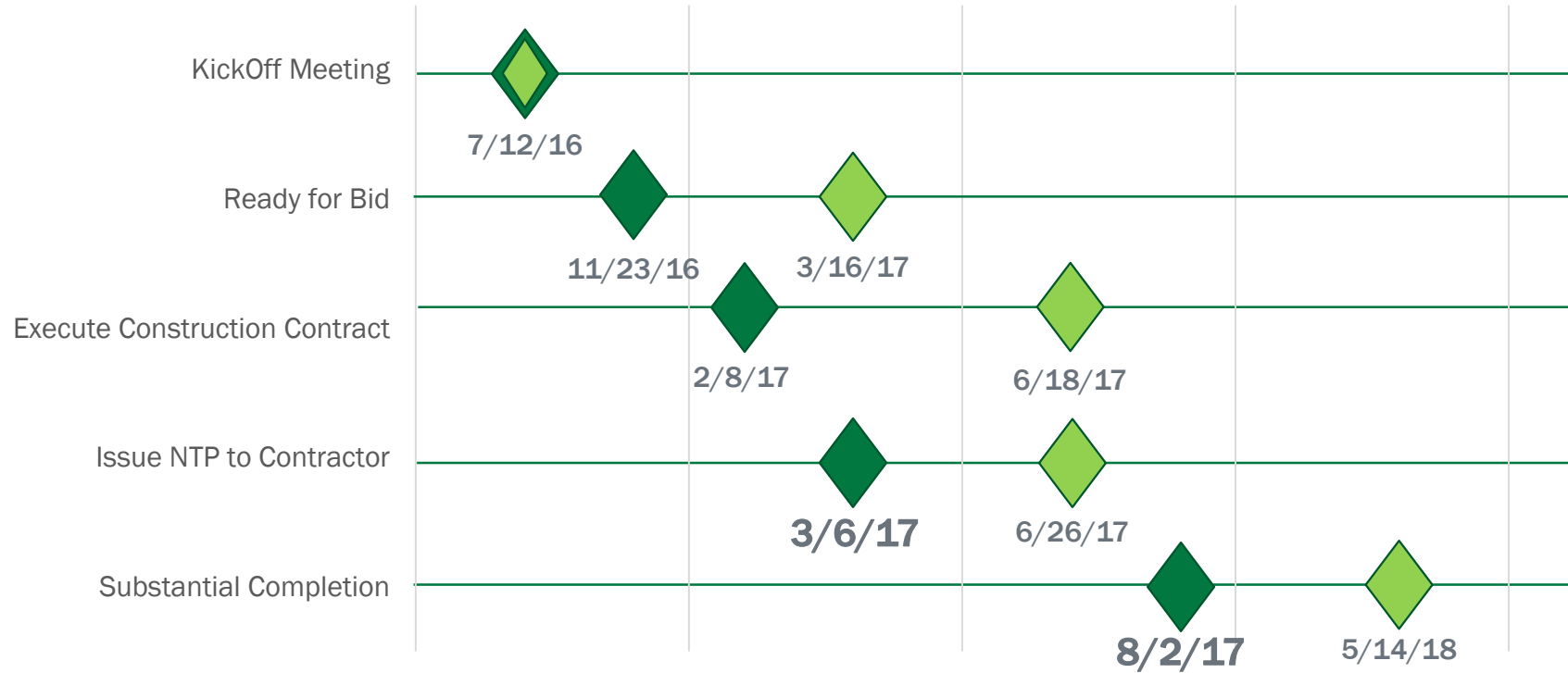


Engineering time and construction dollars were saved in plan development and reviews (collaboration). Contractor offered alternatives that reduced engineering time and saved \$400,000 in construction.



We were able to work around a maximum allowed 30 day outage required by one of the project stakeholders. Conveyor needed to be operational on day 31 and it was.

Milestones



Financials

	Owners' Estimate/Budget	Contractor
Conceptual Scope	\$4,006,555	\$3,205,300
	<i>(includes engineering fee)</i>	<i>(construction only)</i>

* 10 year change order average on Port projects – 13%

	Engineer	Contractor
60% Design Estimate	\$4,670,000	\$4,786,792
90% Design Estimate	\$4,620,000	\$4,435,686
Guaranteed Max Price (GMP)	\$4,750,000	\$4,366,799

	GMP	Change Order	Final	% Change
Project Cost	\$4,366,799	\$133,257	\$4,500,057	3%

CMAR Conclusions

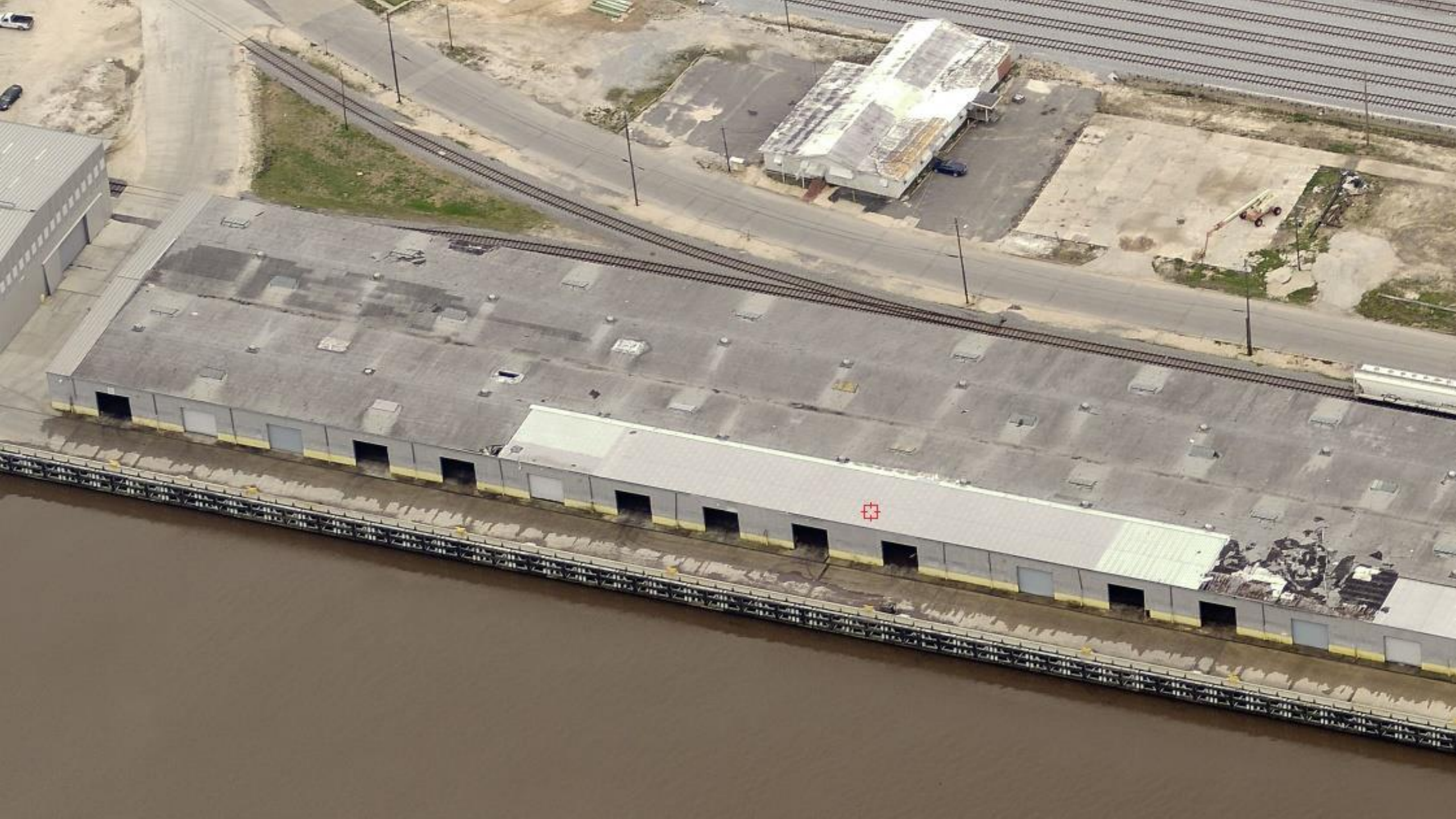
- Desired outcomes achieved
- Saved money and most importantly time
- Change Orders were Owner requested and significantly below Owner average
- Still had issues common to Design/Bid/Build such as punch list and warranty items

Road Trip Ideas

- Construction of Berth and Shed 1 Costs and Issues.
 - Must be a quicker and cheaper way
- Brainstorm
 - Lt weight aggregate behind bulkhead
 - Different project method delivery
- Berth 2/3 Lessons Learned into Practice
 - Concept
 - CMAR
 - Rehab

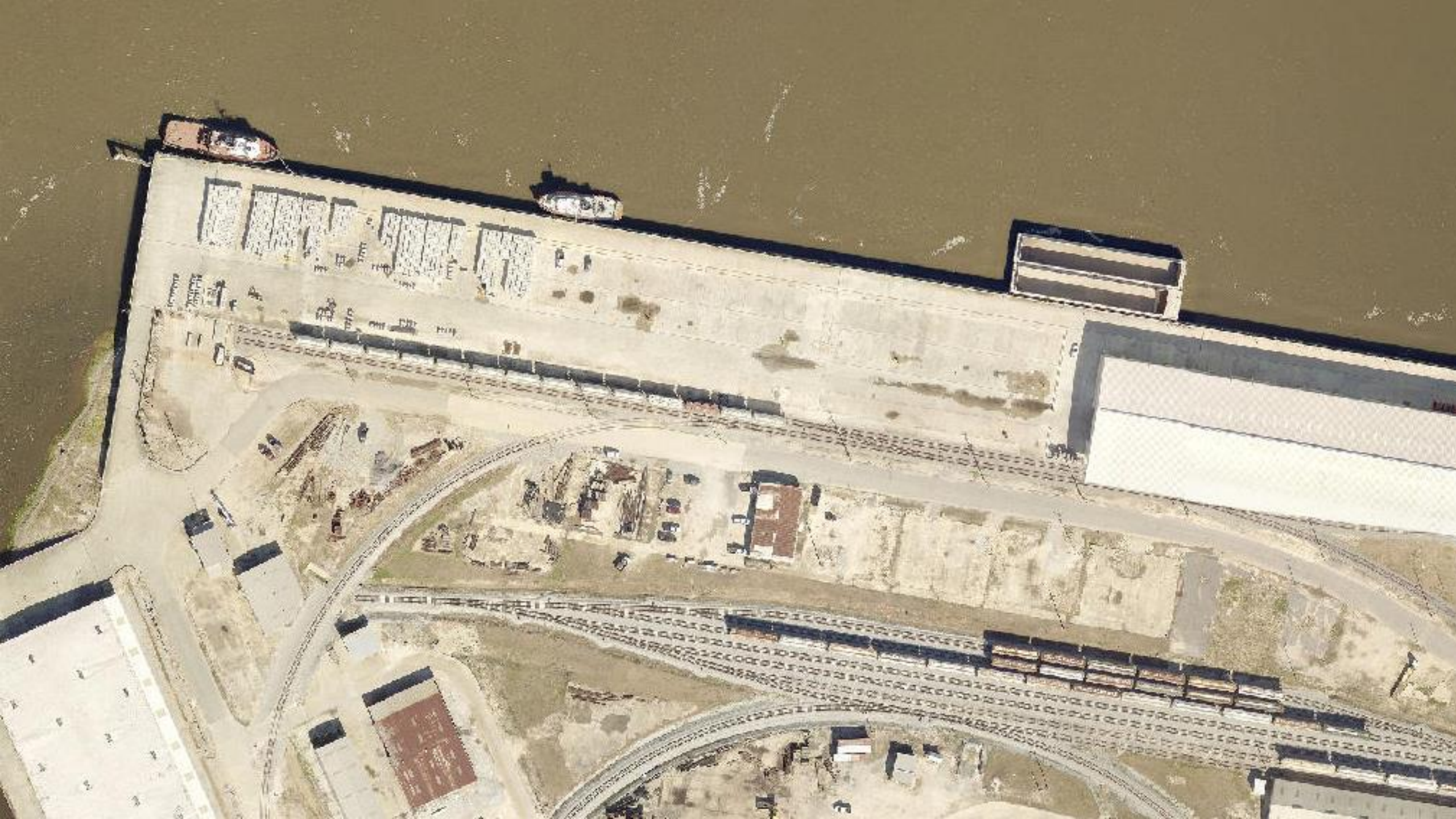
Rehab vs. Reconstruction

- Technologies in rehabilitation
 - Carbon Fiber
 - Pile Wrapping
 - Roof Membranes
 - Soil Treatment









CMAR Collaboration

- Conversation with contractor led to a meeting with a structural engineering firm specializing in carbon fiber reinforcement.
- After initial meeting we realized this could save time and money.

Reconstruct wharf only

\$136/SF

Yields a capacity of 500-1000 PSF

Built in 2004

Reconstruct Shed and Berth 1 reconstruct

\$174/SF

Capacity @ 1200 PSF

Built in 2014

Reconstruct Berth 2/3

\$225/SF

Capacity @ 2000 PSF

Planned construction 2019/2020

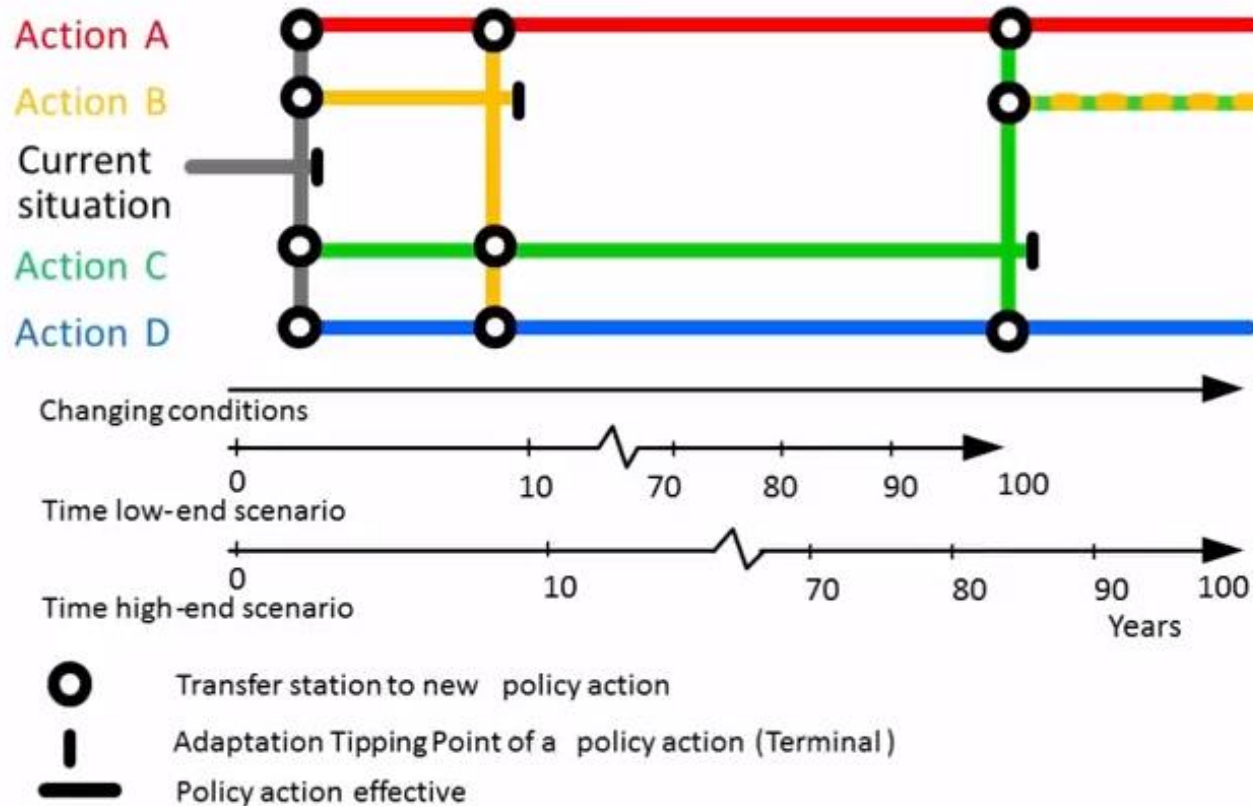
Rehab wharf section

\$62/SF

Capacity 1000-2000

Planned construction 2019/2020

Dynamic Adaptive Policy Pathways



Time horizon 100 Years

Pathway	Costs	Benefits	Co-benefits
1	+++	+	0
2	+++++	0	0
3	+++	0	0
4	+++	0	0
5	0	0	-
6	++++	0	-
7	+++	0	-
8	+	+	---
9	++	+	---

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Key Takeaways

- Fully utilize your technology to solve problems across your enterprise.
- Set yourself up to select the best consultant, then trust but verify.
- Use the best project delivery method for your project.
- Try to incorporate a design process (DAPP) that will get you to the end goal with a variety of paths.
- Challenge the project team.

Thank You

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