

Alternative Project Delivery: How to and Lessons Learned

July 18, 2015



Facilitator: Bryan T. Veith, PE

What's In Store For You Today?

- Panelist Introductions
- Presentations
 - Contractor
 - Vertical
 - Transportation
 - Water/Wastewater
 - Engineer
 - Water/Wastewater
 - Transportation
 - Owner
 - Water/Wastewater/Solid Waste
- Facilitated Questions and Questions from Audience



Alternative Project Delivery Use Increasing and Growing in Popularity

**40% of Market Compared to
29% in 2005**

**50% of Market for Projects
Greater than \$10M**



We Don't Always See Things the Same Way



Bringing You Industry
Experts With Diverse
Perspectives For A
Common Goal

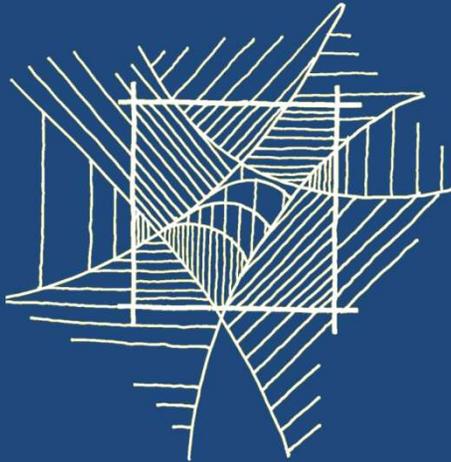
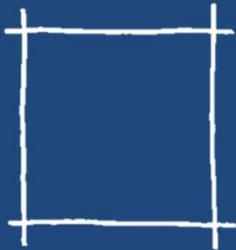
Case Study: Progressive Design-Build Southbank Riverwalk, Jacksonville



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2015

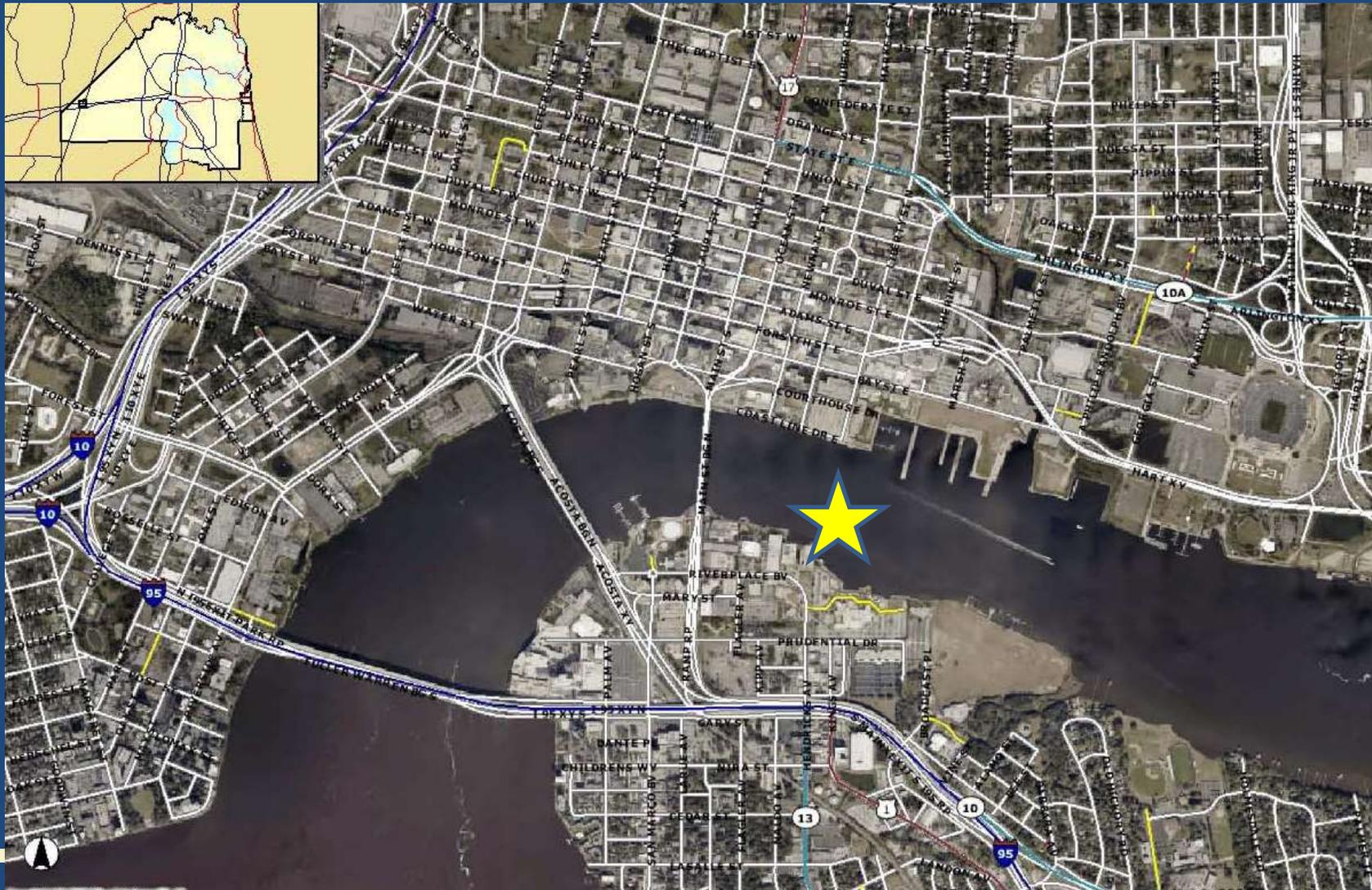


Main Drivers for Selection of Progressive Design-Build Delivery



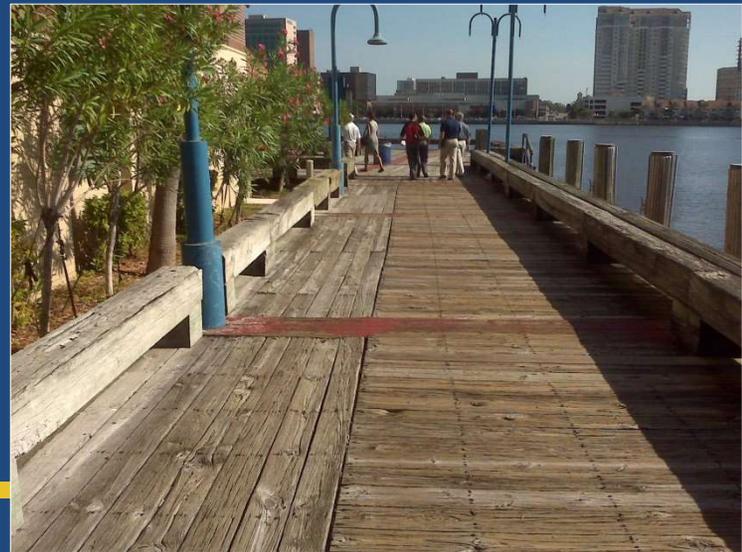
- \$17 Million Budget vs. \$30 Million Previous Study
- 7 Riverfront Stakeholders - Private
- Avoid Uplands – 75% Over Water Structure - Innovation
- Provide Permanent Berths – Lease Space – 3rd party Involvement
- 50 Year Structure – Durable Finishes
- Interactive, Inviting, Functional

City of Jacksonville Context



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Existing Conditions



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Previous Study Estimated \$30 Million – City's Max Budget was \$17 Million



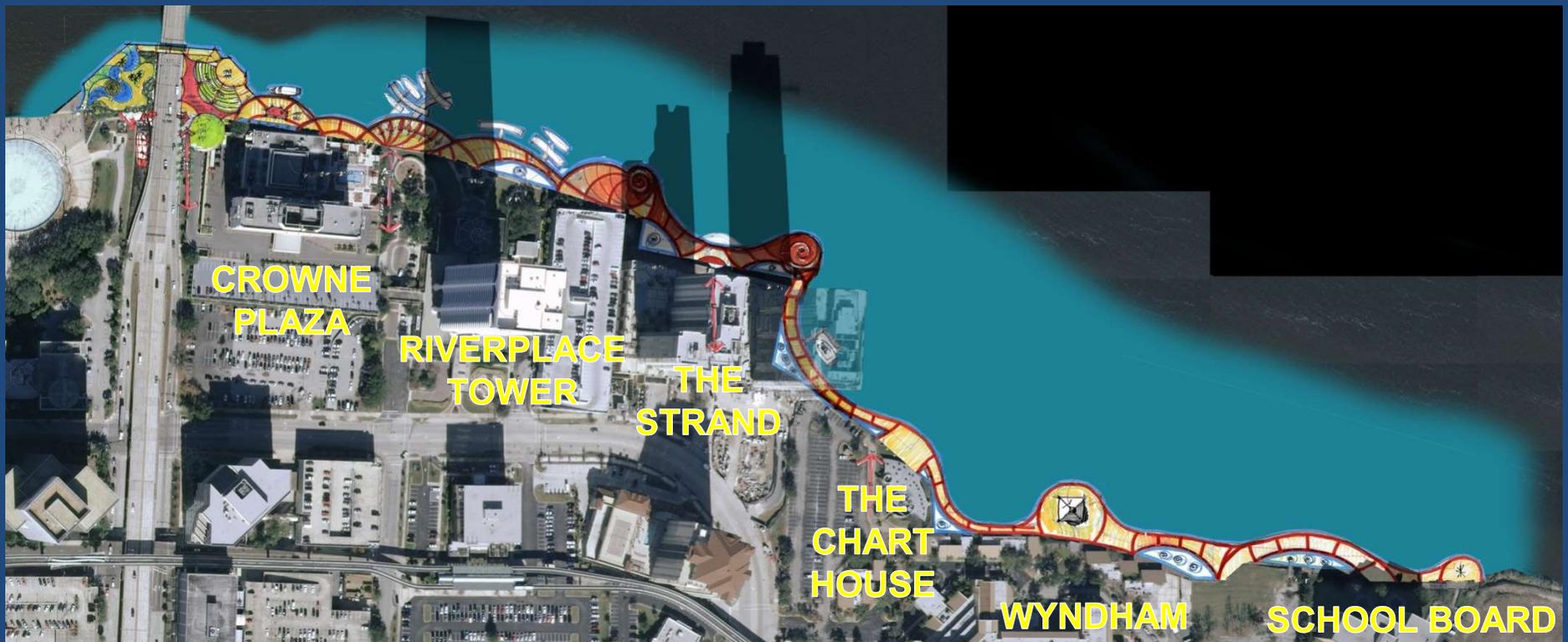
Rough Draft
May 11, 2009



City of Jacksonville's Southbank Riverwalk Reconstruction

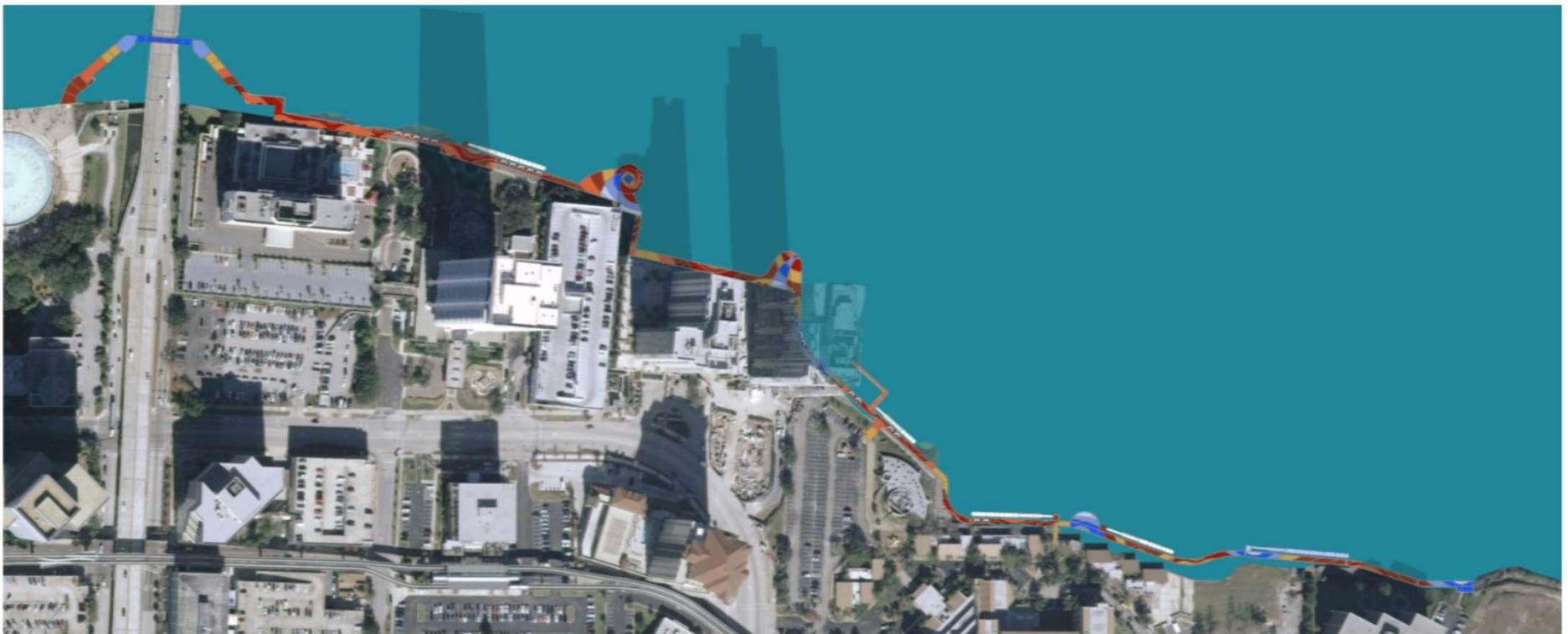
 Prepared for the City of Jacksonville by the Department of Public Works
Engineering Division in Coordination with Jacksonville Economic Development Commission

Southbank Riverwalk Early Design Concept



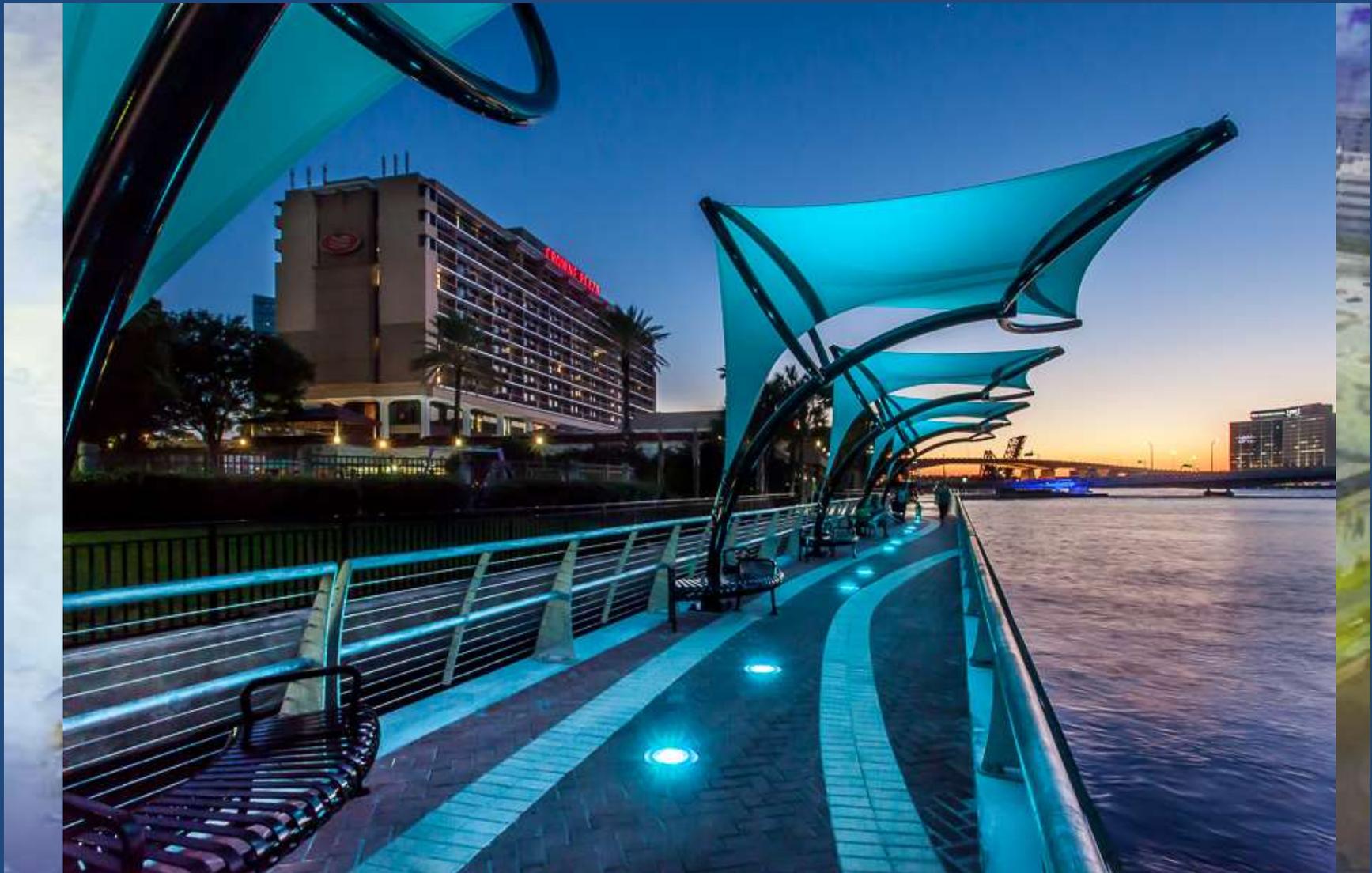
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Southbank Riverwalk Final Design



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Procurement Lessons Learned



Good

- Single Step RFQ -Qualification Based Selection (QBS)
 - Rank Firms then Negotiate Scope of Services
- RFQ
 - Scope of Project Defined
 - Schedule Expectations
 - Form of Contract
 - Project Budget
 - Evaluation Criteria and Scoring

Preconstruction/GMP Lessons Learned



Good

- Multiple Design Deliverables with Real Costs-15/30/60GMP/100
- Workshops with City - Collaborative
- Bid Packages and Sealed Bids to Develop GMP – Transparency
- Changes with New Mayor – Project Stalled/Concessions Made

Not so Good

- Private Property Legal Agreements not Complete
- Revised Sealed Bids After GMP – Potentially Inflated GMP and Lost Time

The Walsh Group

The Builder of Choice





Design-Build Experience



\$1.671 Billion in DB revenue 2014 - **#8** on *ENR* list



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Design-Build Experience



Notable/Current Florida Projects





Best Practices/Lessons Learned

Procurement Phase



Best Practices-Teaming



Lessons Learned



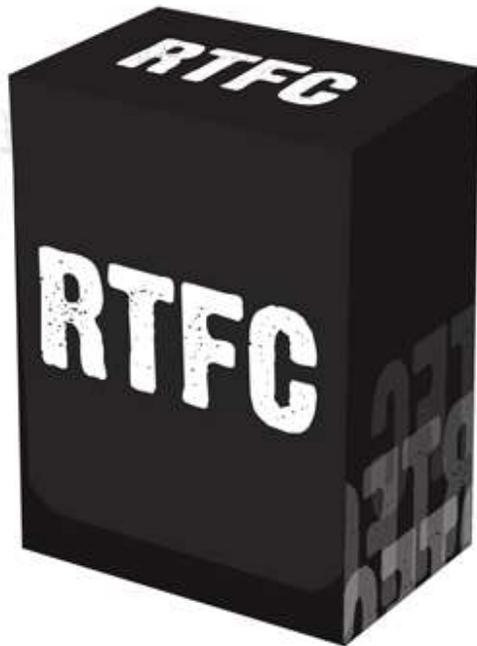


Best Practices/Lessons Learned

Procurement Phase



Best Practices-Agreements



Lessons Learned





Best Practices/Lessons Learned

Procurement Phase



Best Practices-Strategy



Lessons Learned





Best Practices/Lessons Learned

Delivery Phase



Best Practices-Staffing

Lessons Learned



WE WANT YOU!





Best Practices/Lessons Learned

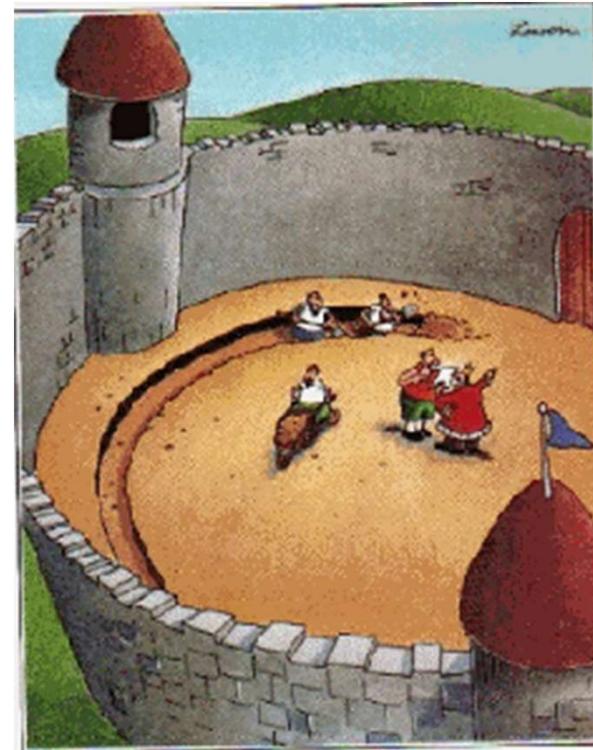
Delivery Phase



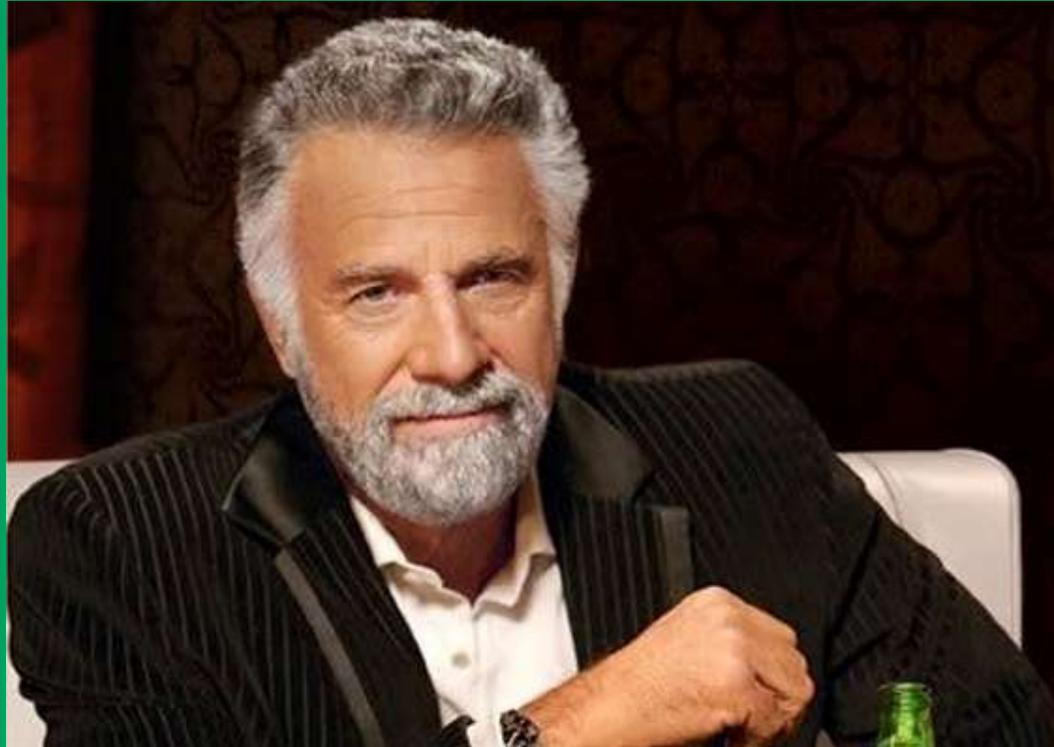
Best Practices-Document



Lessons Learned



Builds.....then Designs



Thank You

Alternate Project Delivery: How To & Lessons Learned In Water/Wastewater

Mark A. Kelly



Is Alternative Delivery the Solution?

- Obstacles to using Design-Build / CMAR / P3
 - Does your staff have alternate delivery experience?
 - Does the procurement staff have alternate delivery experience?
 - Does your Council / Board understand the process?

Is Alternative Delivery the Solution?

- What are your project Drivers
 - Are there schedule / timing issues?
 - Do you have budget concerns / issues?
 - Is the potential treatment process or technology new?

Is Alternative Delivery Right for You?

- Items to Consider when Selecting a Delivery Method
 - Does CCNA or Local Ordinances Policies match your needs?
 - What role do you want to play in Decision Making?
 - What Staff / Resources are Available to Manage the Process?
 - What will their Level of Involvement be?
 - Can / Will they act as the DCP?

Is Alternative Delivery Right for You?

- What is your position on.....?
 - Performance Based vs. Prescriptive Selection
 - Risk Allocation
 - Cost Certainty



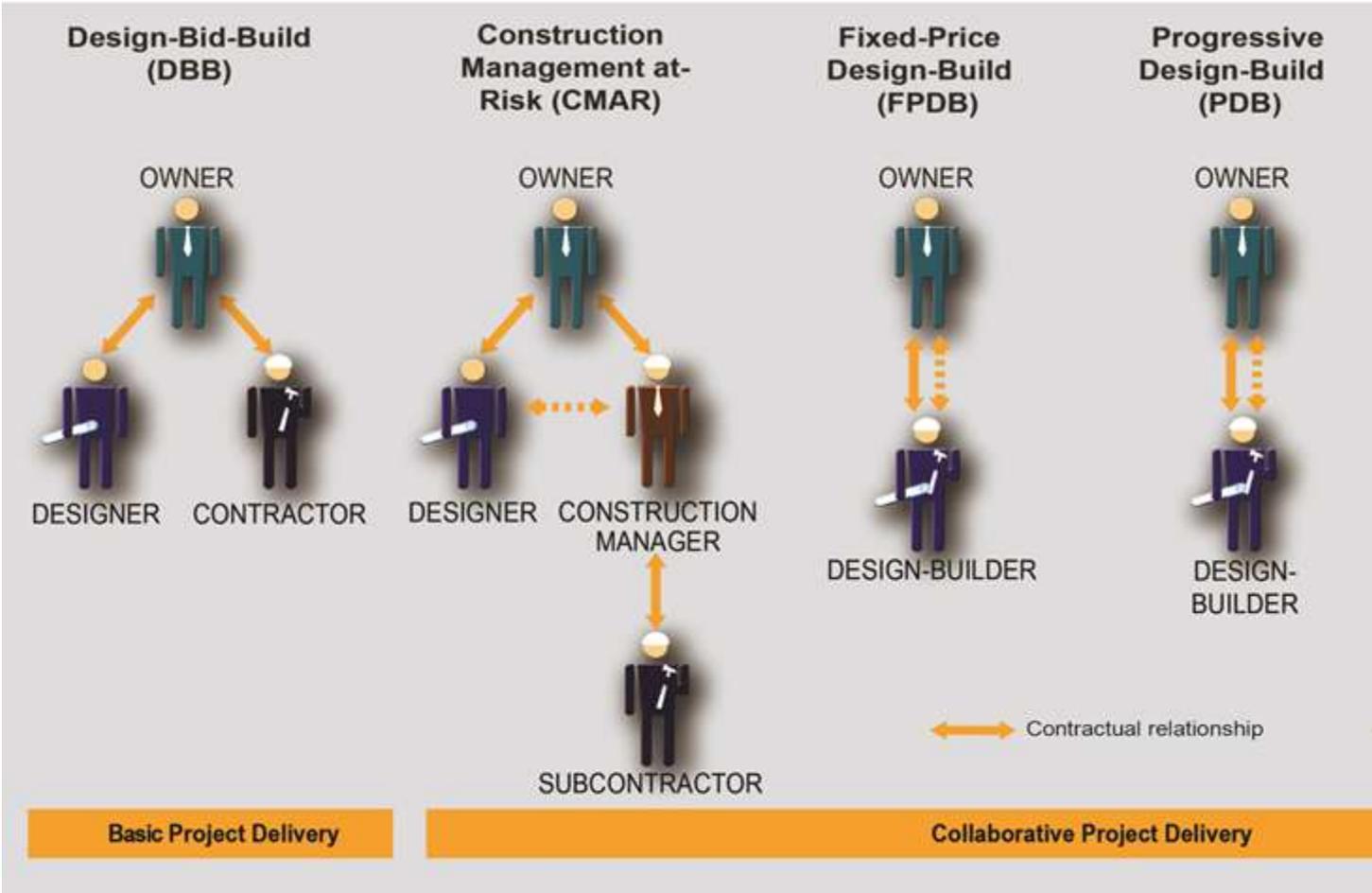
Design-Build

Municipal Water & Wastewater

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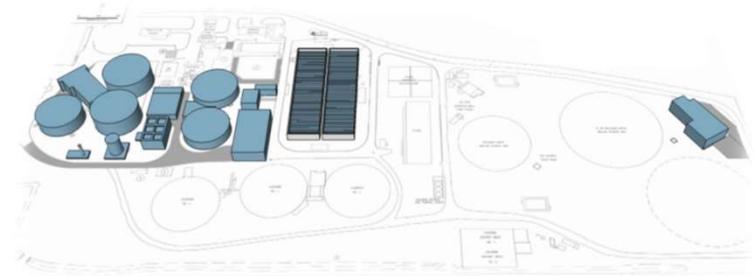
Delivery Method Options



SWWRF – Biosolids Upgrade

Overview

- Owner: City of St. Petersburg, FL
- Value: \$67,000,000
- Delivery Method: Construction
Manager at-risk (CMAR)
- Scope:
 - New Digesters
 - Dewatering system
 - Primary Clarification
- Procurement: Qualifications, fee, GC's



City of Annapolis WTP – Case Study

❖ Overview

- Owner: City of Annapolis, MD
- Value: \$32,000,000
- Delivery Method: Design-Build
- Scope: New 8MGD WTP,
decommission existing facility
- Procurement: Hybrid – RFQ,
Shortlist (3), Base and Alternate
Construction Cost Limit (CCL)



Opequon Water Reclamation Facility – Case Study

❖ Overview

- Owner: Frederick Winchester Service Authority
- Value: \$27,800,000
- Delivery Method: Design-Build
- Scope:
 - New Green Energy Center
 - CHP
 - High Strength Waste Receiving
 - Ostersa Phosphorous System
- Procurement: Qualifications Only



Sandy Run Creek WPCP – Case Study

❖ Overview

- Owner: City of Warner Robins, GA
- Value: \$27,800,000
- Delivery Method: Design-Build
- Scope: Upgrade and expansion
- Procurement: Single step qualifications based



City of Venice WTP Membrane Replacement

❖ Overview

- Owner: City of Venice, FL
- Value: \$6,700,000
- Delivery Method: Design-Build
- Scope: Replace ROEM system, SCADA system upgrade
- Procurement: Two-step Qualifications Based Selection





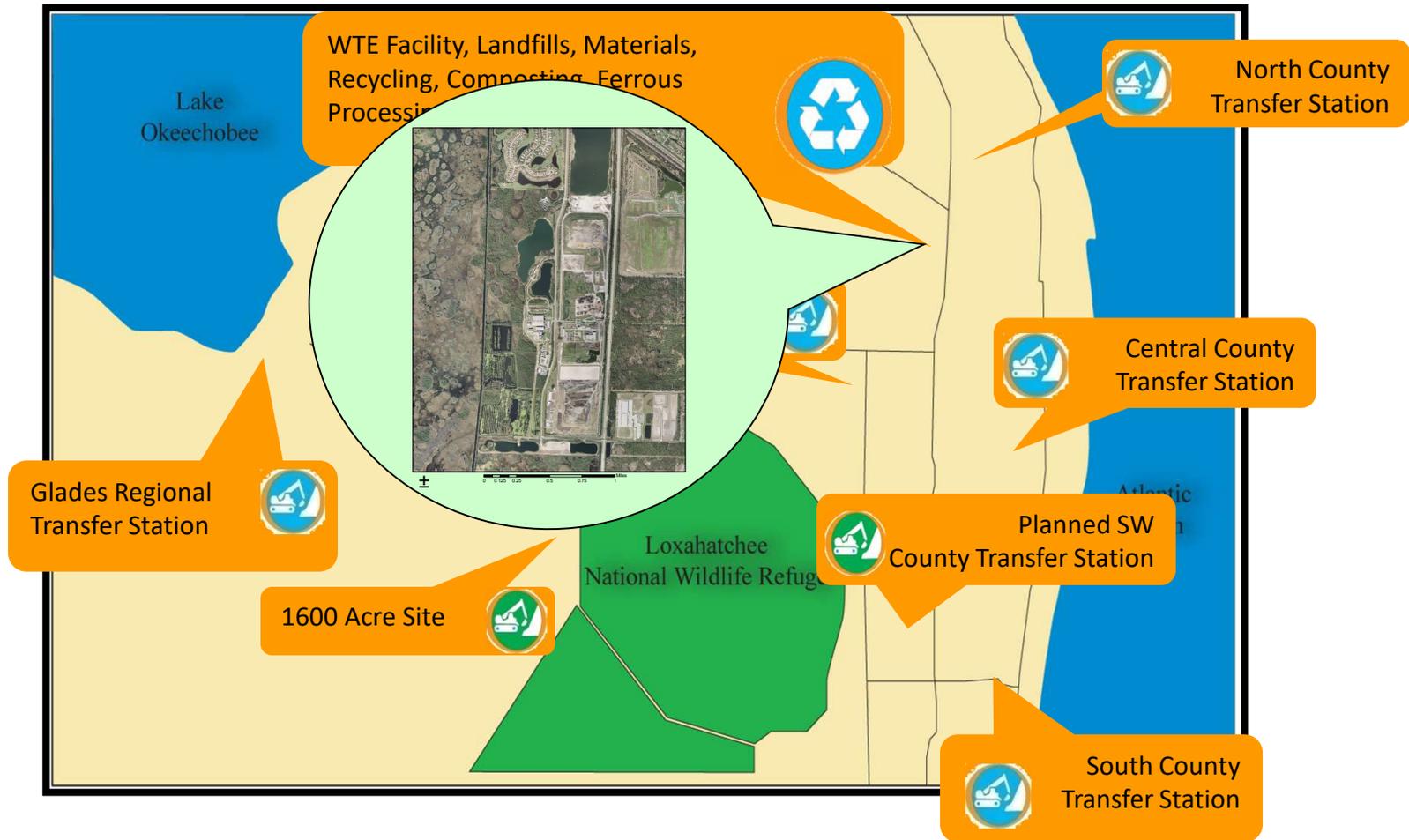
Ray Schauer

Director of Engineering & Public Works
Solid Waste Authority of Palm Beach County

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Integrated Solid Waste Management System



Solid Waste Authority “Resource Recovery Park”

- The Solid Waste Authority of Palm Beach County has developed an award-winning solid waste management system that includes the following facilities to service the residents and businesses in Palm Beach County, Florida:

- Two Renewable Energy Facilities
- Recovered Materials Processing Facility
- Six Transfer Stations
- Class I Landfill
- Class III Landfill
- Biosolids Processing Facility
- Two Household Hazardous Waste Facilities



Design - Bid - Build



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EPC / Design - Build



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Design – Build - Operate



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Design – Build - Operate



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Lessons Learned

- One Size does not fit all
- Be Very Specific
- Pre Qualify (experience, safety, financials, QA/QC)
- Early Integration of Commissioning
- *Quality – Speed – Low Price*



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Alternative Project Delivery

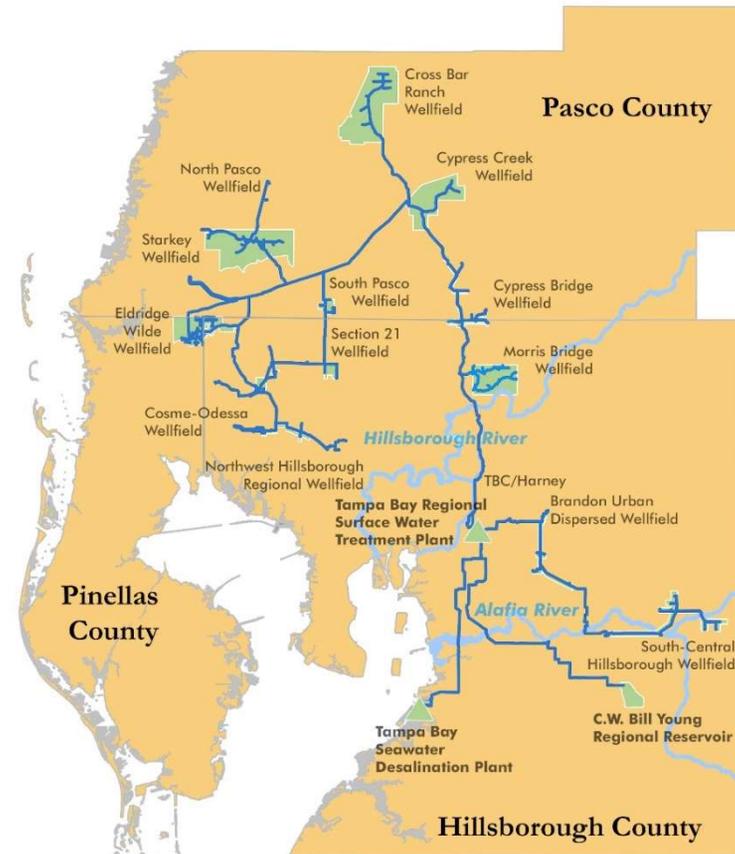
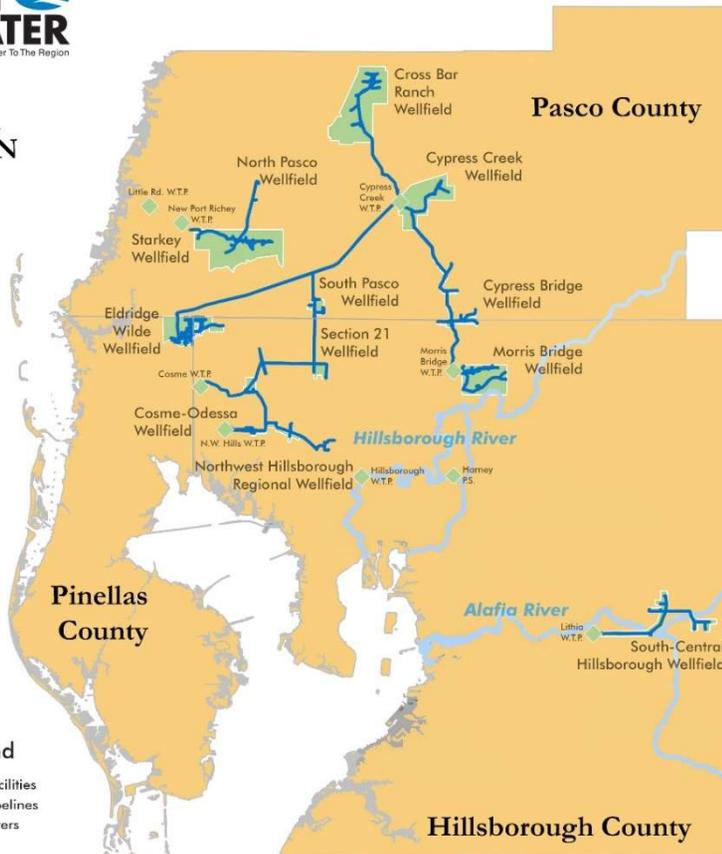
Tampa Bay Water
Amanda Rice, P.E.
O&M Section Leader

A Regional Water Supply Authority



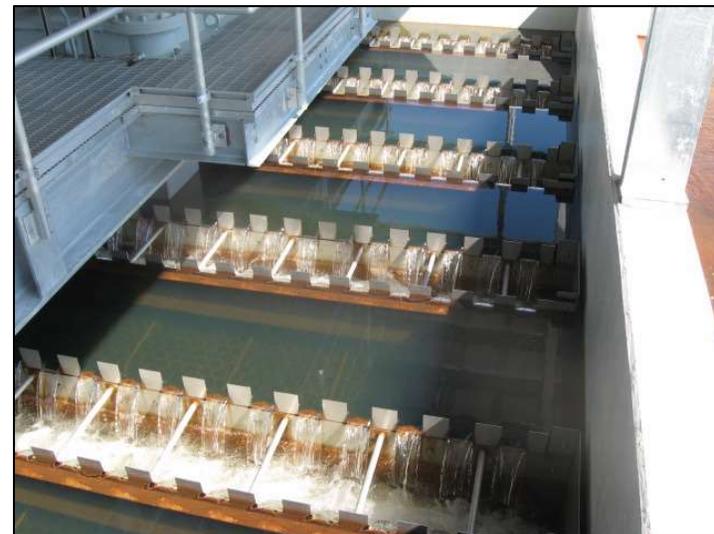
1999

CURRENT



Surface Water Treatment Plant

- Design-Build-Operate
- 15-year service contract
- \$89 million
- Completed in 2002
- Initial capacity 66 mgd
- Veolia/CDM



Surface Water Treatment Plant Expansion

- Design Build Operate / CM-at-Risk
- \$127 million GMP at 30% design
- Competitive bidding
- Open book review
- Increase to 120 mgd
- Extension of service period to 2023



Surface Water Treatment Plant Expansion Costs

- Approved budget - \$139.6 million
 - Veolia contract (GMP) - \$126.8 million
 - Owner's allowance - \$7 million
 - Owner's engineer - \$5.8 million

- Actual expenses - \$111.7 million
 - Veolia contract - \$108 million
 - Owner's allowance - \$0
 - Owner's engineer - \$3.7 million



Tampa Bay Seawater Desalination

- \$158 million total capital
 - \$110 million initial construction
 - \$48 million remediation
- 25 mgd capacity
 - 1999: Initial project awarded - DBOOT
 - 1999 – 2003: Three bankruptcies - project is converted to DBO
 - 2004: Remediation contract awarded - DBO
 - 2007: Remediation project complete



Lithia Hydrogen Sulfide Removal Facility

- South-Central Hillsborough Wellfield
- Ozone treatment
- Modified Design-Build (EPCM)
- \$28 million GMP based on bidding results
- Final cost - \$25.6 million
- Completed in late 2013



Reservoir Renovation

- Long-term fix for soil-cement cracking
- Design-Build with 5-year maintenance term
- \$129 million firm fixed price
- Kiewit – Design Builder
- Completed late 2014



Lessons Learned

- Assemble a team that understands the process
- Draft your documents before you begin
- Request comments on contract from submitters
- Include major subcontractor qualification requirements
- Pilot studies must be representative, and followed
- Clearly define permitting responsibilities
- Define reasonable major/interim schedule milestones
- Clearly define success/completion requirements
- Acceptance test must demonstrate all requirements

Palm Beach County Alternative Delivery



Design-Build



CMAR



Metric	Design-Build vs. Design-Bid-Build	Design-Build vs. CM@R
Unit Cost	6.1% lower	4.5% lower
Construction Speed	12% faster	7% faster
Delivery Speed	33.5 % faster	23.5% faster
Cost Growth	5.2% less	12.6% less
Schedule Growth	11.4% less	2.2% less

Source: Construction Industry Institute (CII)/Penn State research comprising 351 projects ranging from 5K to 2.5M square feet. The study includes varied project types and sectors.

Stephen McGrew, PE, DBIA, M. ASCE

Palm Beach County Water Utilities

- Design-Build began in 2006
- Completed \$32M in Design-Build
- Qualifications based selection
F.S.287.055 “CCNA”
- Disaster Recovery Contract – 5 years (2013 - 2018)
 - Hurricane Hardening
 - Post Disaster Reconstruction and Operational Support
 - CDM Constructors, Inc.
- Optimization & Improvements – 3 years (2015 - 2018)
 - Multiple Authorizations up to \$2M each (no cumulative cap)
 - Globaltech, Inc.
 - Cardinal Contractors, Inc.



Palm Beach County Water Utilities 5 year Capital Improvement Plan

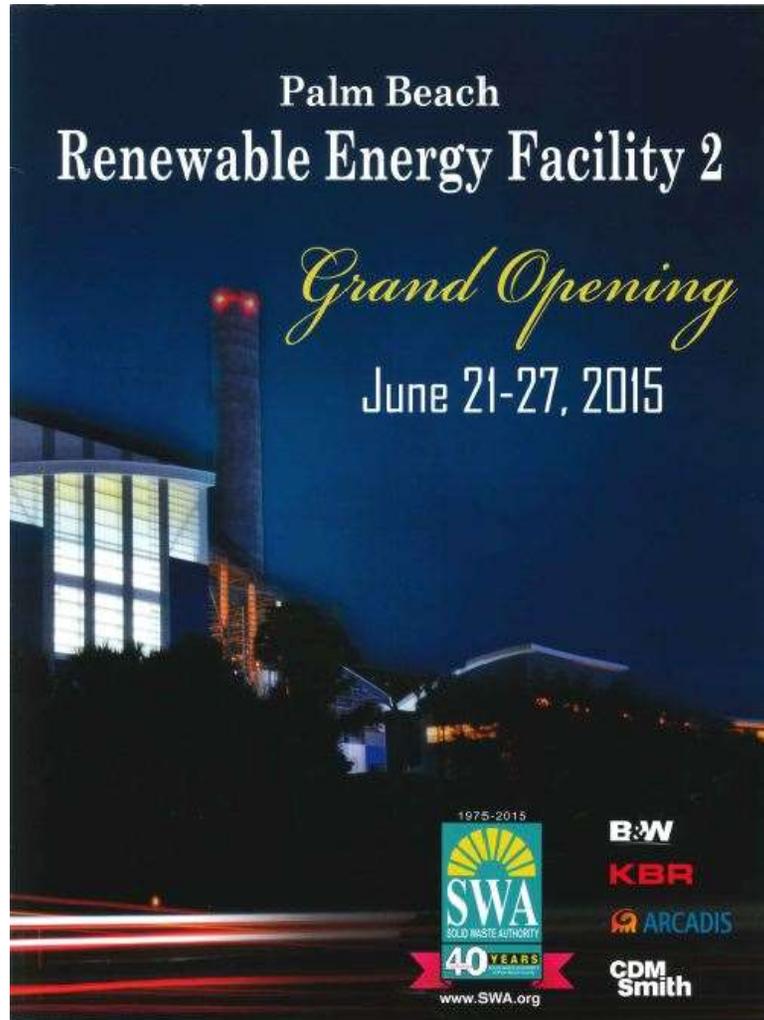
- **Program Manager – MWH Americas, Inc.**
- **\$340M - 5 Year CIP**
 - \$132M Treatment Plants
 - \$208M Conveyance (pipelines, pump stations)
- **31 Program Packages (16 Active, 15 Future)**
 - 25 Design-Bid-Build projects
 - **6 Construction Manager at Risk (CMAR) or Design-Build projects**

Palm Beach County Water Utilities



- Continuing Design-Build Contracts have been beneficial to have high quality on projects less than \$2M.
- An integrated Design-Builder or a co-located Engineer & Contractor design-build team is recommended.
- The innovation and collaboration of Design-Build adds value and reduces time.
- Continuing CMAR Contracts for buildings less than \$10M has reduced change orders.

Palm Beach County Solid Waste Authority



- \$670M Design-Build
- P3 (Public-Private Partnership, 20 year operating agreement)
- Visitor center designed for LEED Platinum

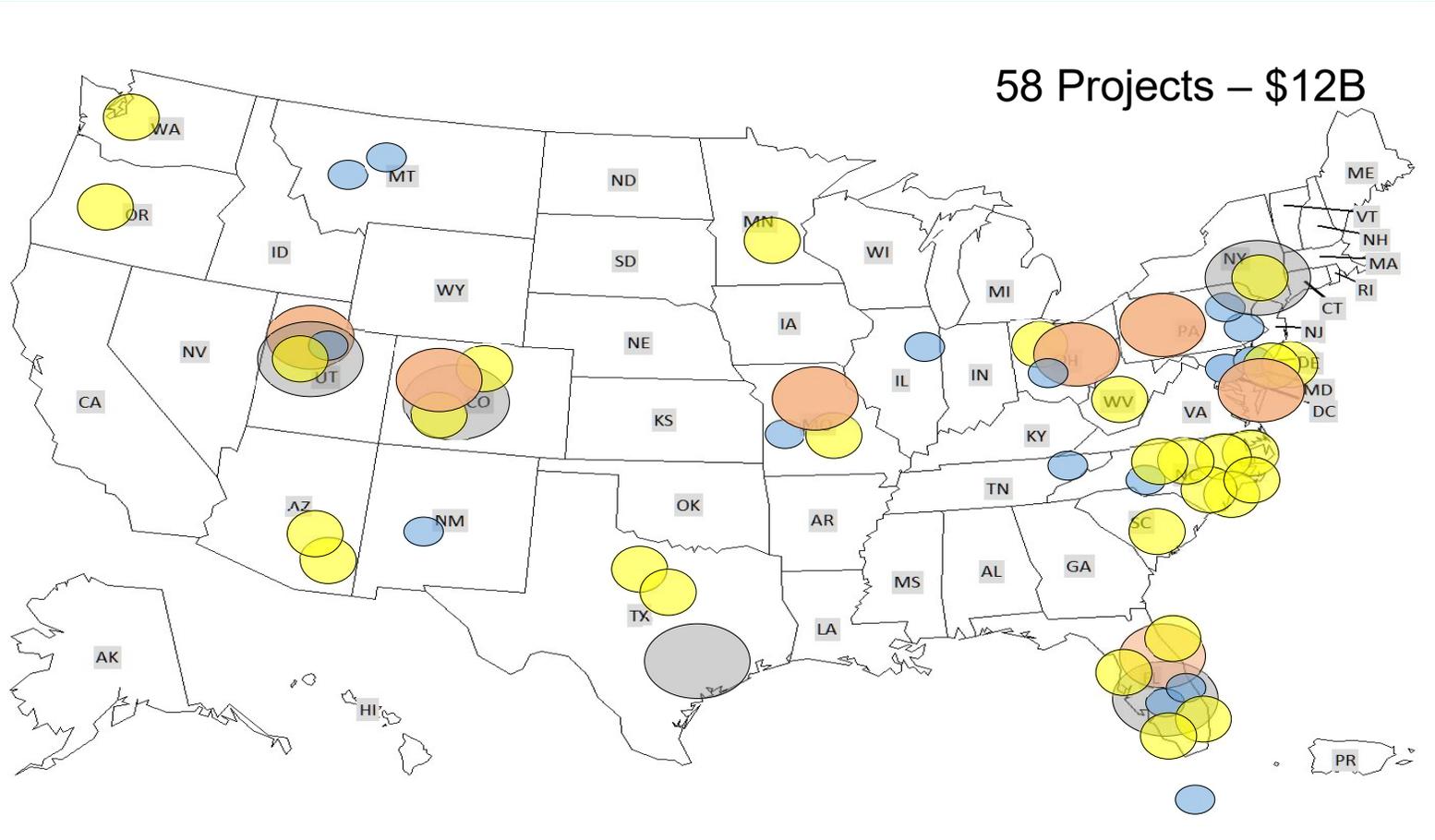


HDR Engineering

Tim Dougherty, Sr VP

Transportation Integrated Delivery Director

HDR Transportation Design Build



Significant Projects

- New NY Bridge (Tappan Zee) \$3.5B
- I-4 Ultimate \$2.3B
- Eagle P3 – \$2B
- I-15 CORE – \$1.4B
- IH 35E – \$1.3B
- Pennsylvania RBRP – \$900M
- Johnson County Gateway – \$235M
- Hebert C Bonner Bridge
- Wilmington Bypass
- I-85 Reconstruction
- Flagler Memorial Bridge
- South Link Sound Transit



HDR's Best Practices Procurement

- Choose Projects / Owners Carefully
- Design Builder should pay for preliminary designs
- Balance odds of winning and investment
- Manage the proposal efforts
- Identify and plan for risk – Scope, Schedule, Cost



HDR's Best Practices Delivery

- Colocate as many designers as practical
- Understand what drives a contractor
- Define an early design lockdown
- Go “Big” at the startup
- Overestimate the time needed for Quality Control / Release for Construction



HDR's Best Practices Contracting

- Review all “Up Stream” contracts that will pass through requirements to Designer
- Protect your Standard of Care in the Professional Services Agreement
- Your contract must control when there is conflict in terms
- Define responsibilities for preliminary and final construction quantities
- On P3 Projects – Understand how payment flows from the Developer to Designer



HDR's Design Build Future Trends

- More Owners and agencies will procure design build
- Project are getting larger (\$1B+) – and smaller (< \$5M)
- P3 projects provide more opportunity – Design, LTA, IQF, GEC, O&M, VfM
- E&O Insurance industry is changing
- Experienced senior design managers are in short supply
- Variation of alternative delivery



Alternative Project Delivery

(Integrated Project Delivery)

**Rod Pope, PE, DBIA
Brown and Caldwell
July 18, 2015**



Brown and Caldwell is a long-time leader in the water industry

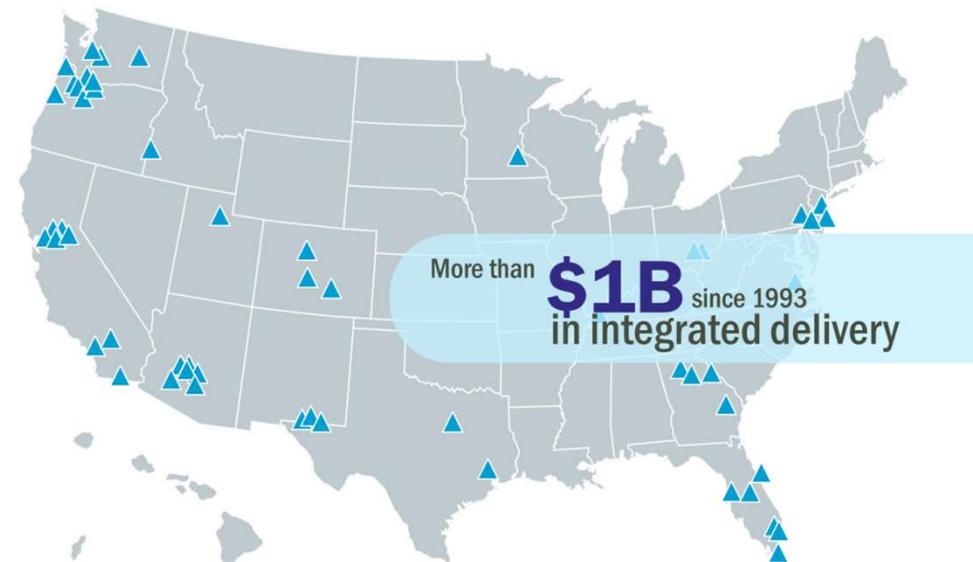
100% U.S. water and environmental services

ENR: 15th in U.S. Water and Wastewater Services

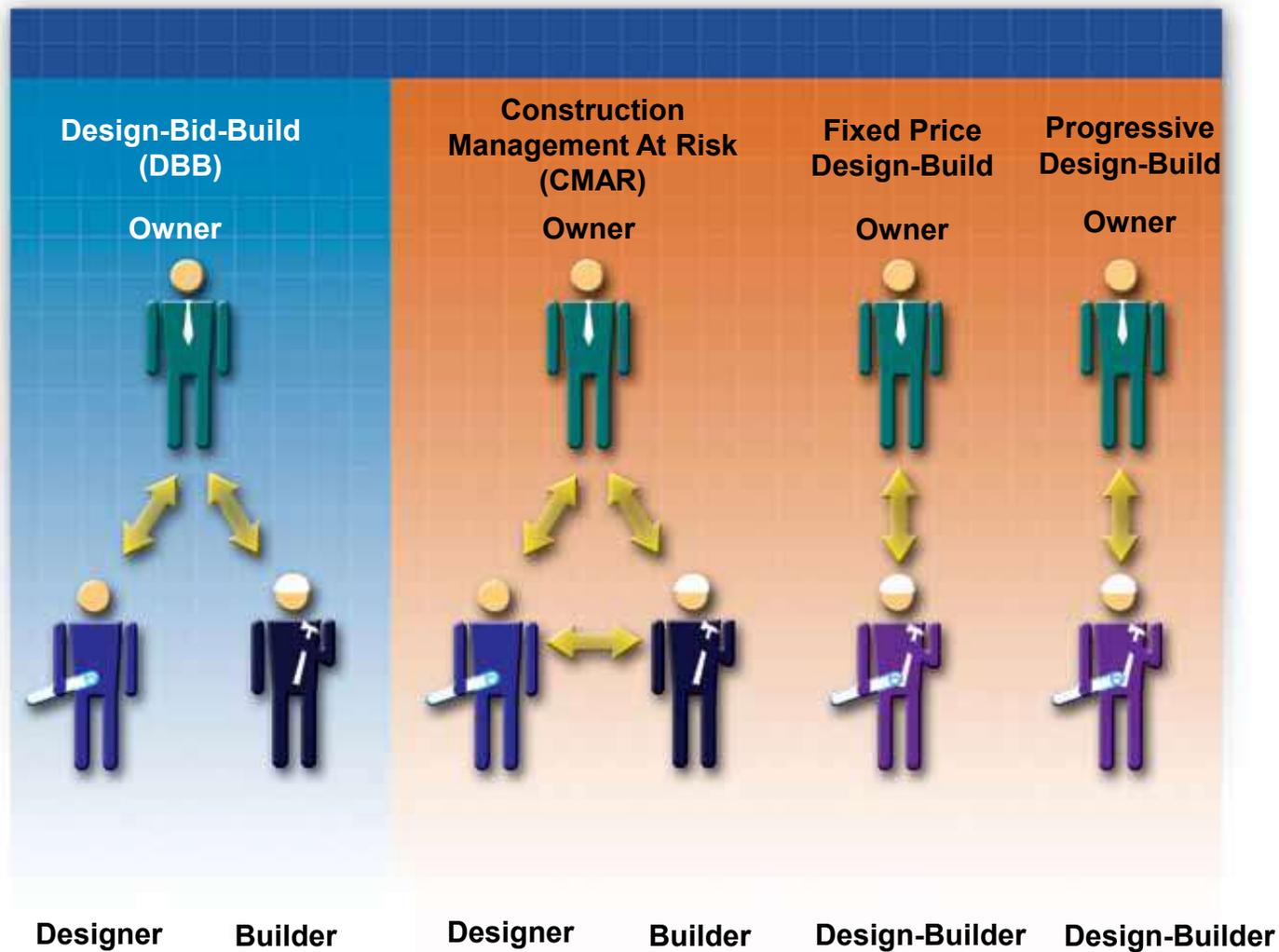
Employee owned

65+ year history

Full service partner



Project Delivery Options



Design-Bid-Build

Advantages

- Established and most understood
- No legal barriers
- Engineer works for Owner
- Well established legal precedents
- Insurance and bonding well defined
- Suitable for competitive bidding to get lowest initial price



Disadvantages

- Owner warrants design to contractor (Owner remains responsible for design errors and omissions)
- Two contracts to manage
- Initial low price may not be best final cost
- Can be adversarial
- Low barrier for “responsible and responsive bidder”



Miami Dade North District WWTP

- Headworks
- 112.5 MGD



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Construction Management at Risk (CMAR)

Advantages

- Qualifications-based Selection
- Early involvement with contractor, who assists in developing least cost solutions
- Faster delivery schedule
- Allows direct owner input into the scope, features, and operational aspects of the design
- Fewer claims and legal issues
- Often fewer/no change orders and/or money returned to owner

Disadvantages

- Loss of single-point accountability
- Owner remains responsible for design errors and omissions
- Cost for construction is not known at the time of initial contract signing

Winter Haven Wastewater Treatment Plant

- Produce public access reuse quality effluent
- 7.5 MGD
- \$16 million
- Completed in 2008



Fixed Price Design-Build

Advantages

- Owner contracts with a single entity
- Selection can be on best value
- Cost of design and construction known at contract signing
- Cost is determined through a competitive process
- Schedule is fixed at contract signing
- Single point of accountability for design and construction
- Public acceptance tends to be high with lump-sum contract award

Disadvantages

- Traditional owner design engineer relationship diminished
- More rapid and earlier decision making needed by owner regarding scope and quality



Miami Dade South District WWTP

- Expansion of Co-Generation Facilities
- 112.5 MGD

Progressive DB is combination of Fixed Price DB and CMAR

Progressive DB

Captures the essence of DB .

- Single point of accountability



And, includes the

Benefits from
Construction

Management at Risk

- Maximum (CMAR) owner control
- Maximum collaborative approach
- Benefits of

Nancy Creek Pumping Station
preconstruction

- 100 MG
- \$30 Million
- Winner of the 2006 DBA Design-Build National Award for Water/Wastewater Projects

services

Progressive Design-Build

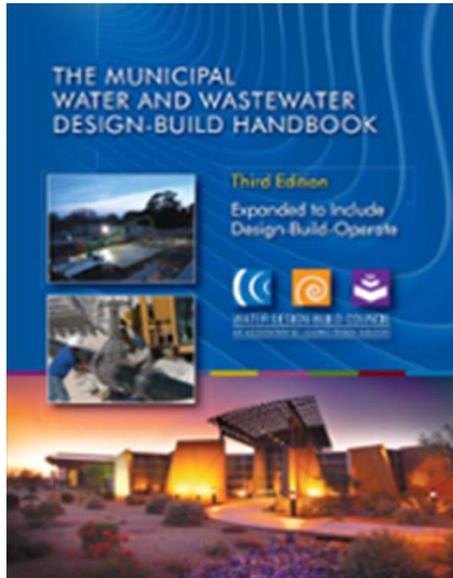
Advantages

- Owner selects based on Qualifications
- Owner works with the Design-Builder to develop the design
- Design-Builder submits a price for the construction during design

Disadvantages

- Cost for construction is not known at the time of initial contract signing
- Cost is determined through a combination of negotiated and competitive processes
- An effective public education program may be needed to overcome concerns with construction price negotiation

Resources are available



www.waterdesignbuild.org



www.dbia.org

Questions for our Panelists?

- Charlie Rocheleau
- Dave Pupkiewicz
- Mark Kelly
- Bryan Bedell
- Mandi Rice
- Stephen McGrew
- Ray Schauer
- Timothy Dougherty
- Rod Pope



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