

Design-Build Project Delivery When Business As Usual is Not Good Enough

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WATER DESIGN-BUILD COUNCIL
AN ASSOCIATION OF LEADING DESIGN BUILDERS

Presentation Overview

- Water Design-Build Council – Who are We?
- Overview of Project Delivery Options
- Which Delivery Method is Best?
- Case Study Examples
- Design-Build and the “Economic Stimulus” Bill



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Water Design-Build Council



- Trade organization of leading providers of design-build for water and wastewater treatment
- Communicate the benefits of using design-build delivery in North America
- Define and develop design-build delivery best practices to promote collaborative relationship between owners and service providers
- Foster seamless integration of design and construction, innovation, speed, improved quality control and single point accountability

Why are owners choosing design-build?

SINGLE POINT ACCOUNTABILITY

HAVING THE BUILDER INVOLVED
IN THE DESIGN PROCESS

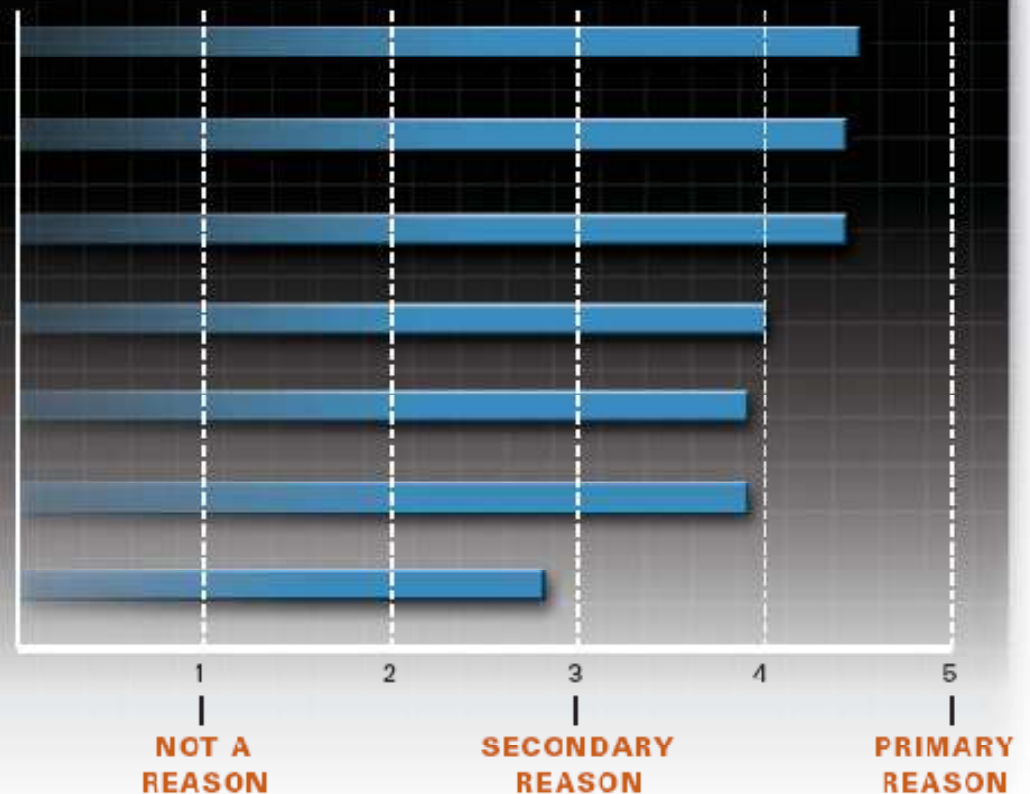
SPEED OF DELIVERY

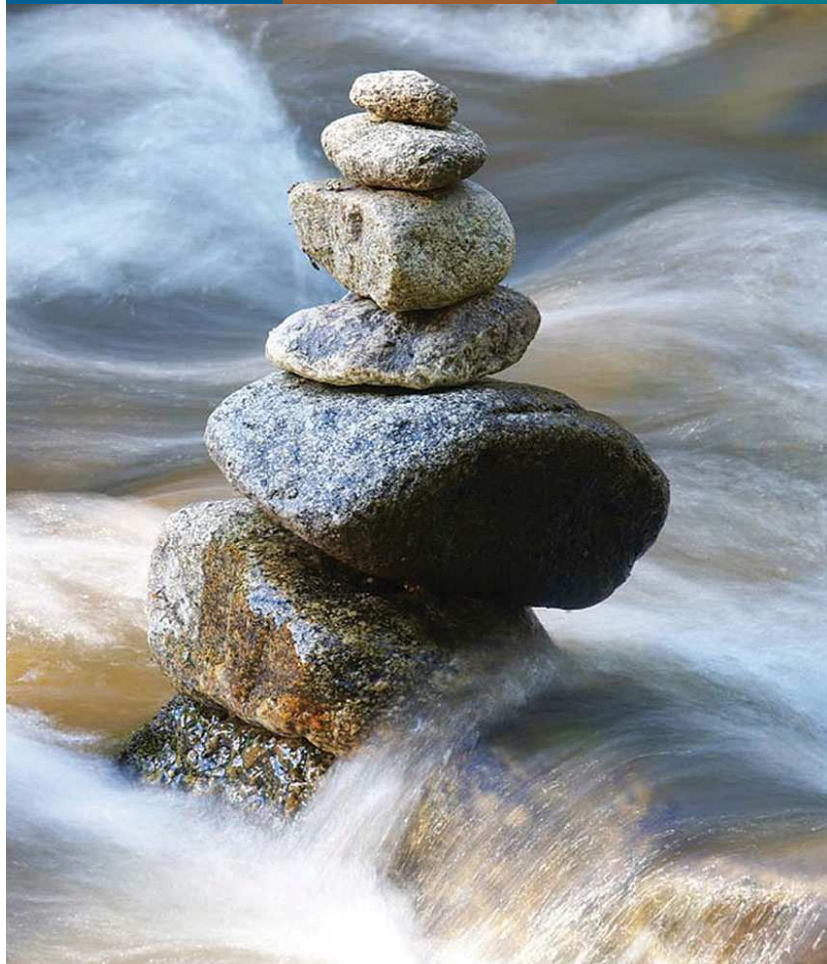
PRICE CERTAINTY

CONSTRUCTION QUALITY

FEWER CHANGE ORDERS
AND CLAIMS

LOWER COSTS



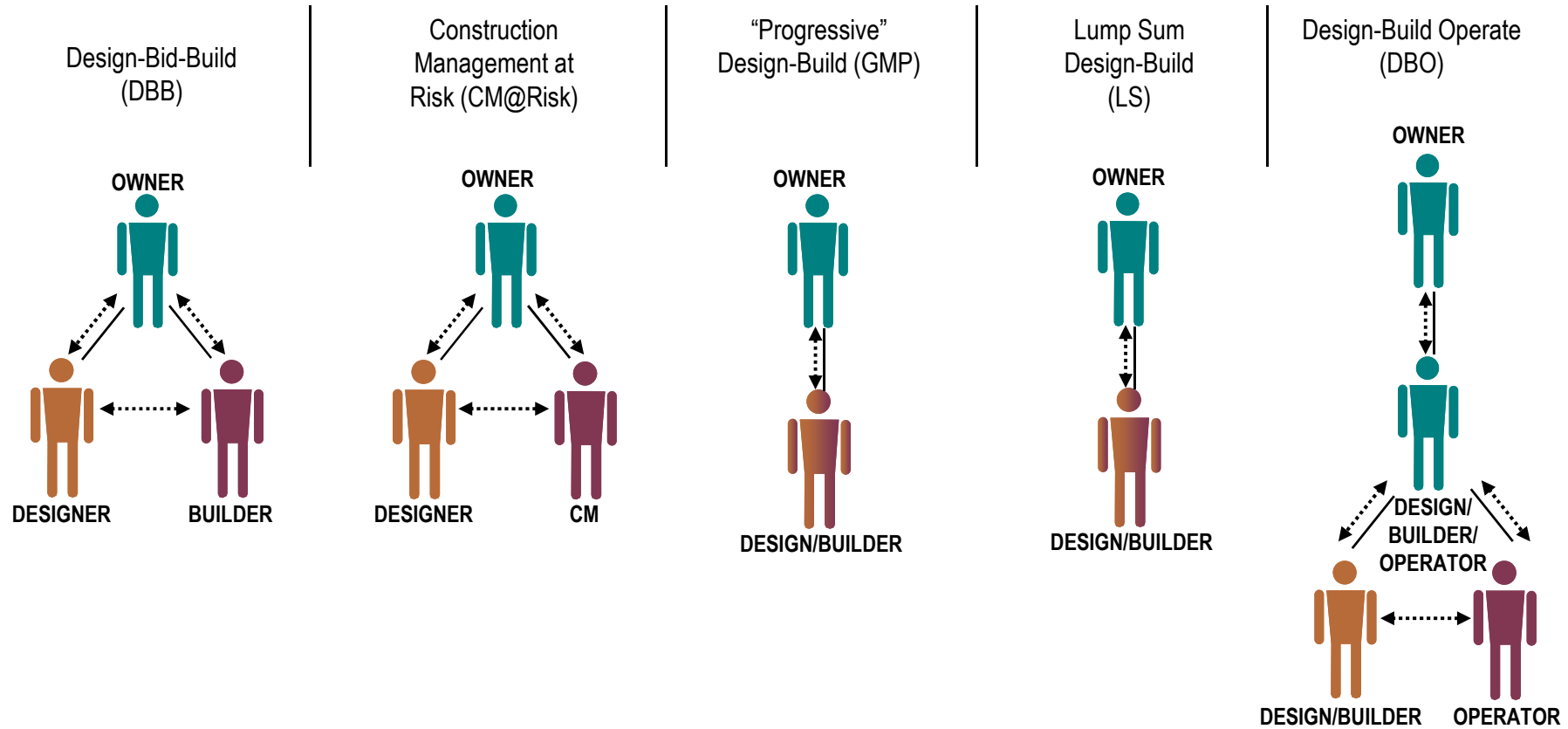


Overview of Project Delivery Options



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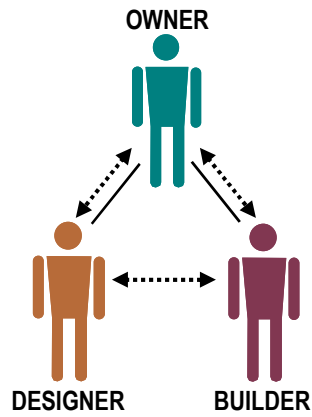
Project Delivery Options



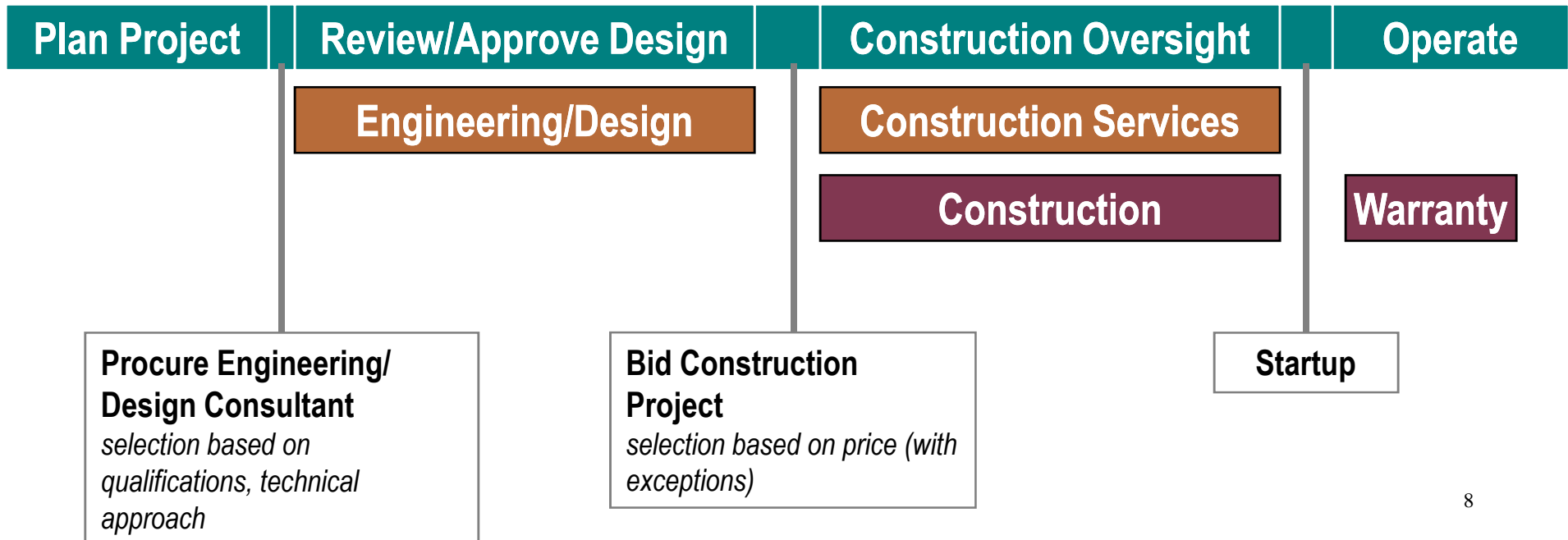
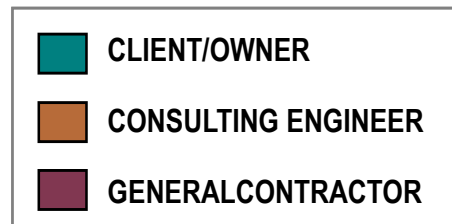
TRADITIONAL DELIVERY

ALTERNATIVE DELIVERY

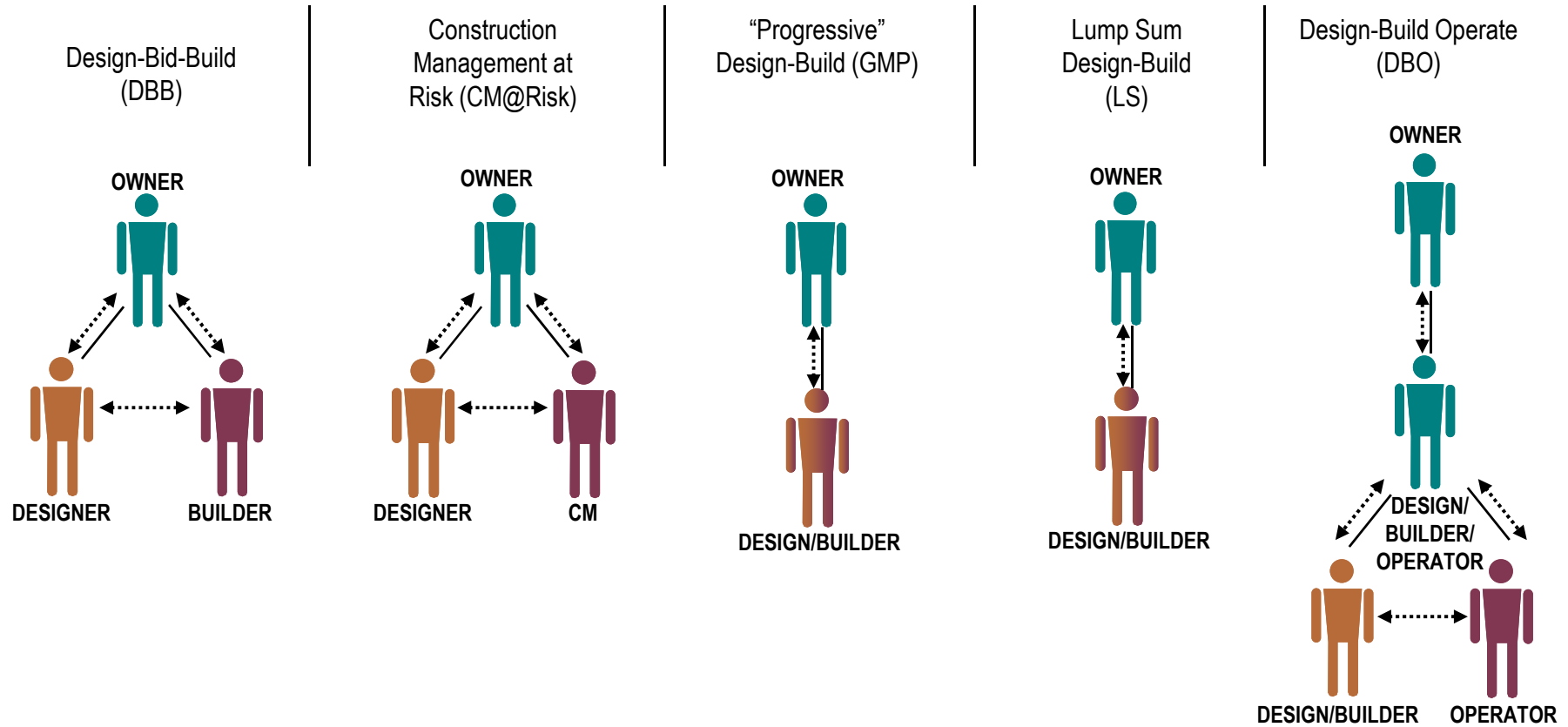
Starting Point: Traditional Design-*Bid*-Build Procurement



- Defined, proven process
- Distinct milestones to ensure expected results
- Manage to known challenges (unknowns: change orders)
- Traditional “cast” of participants



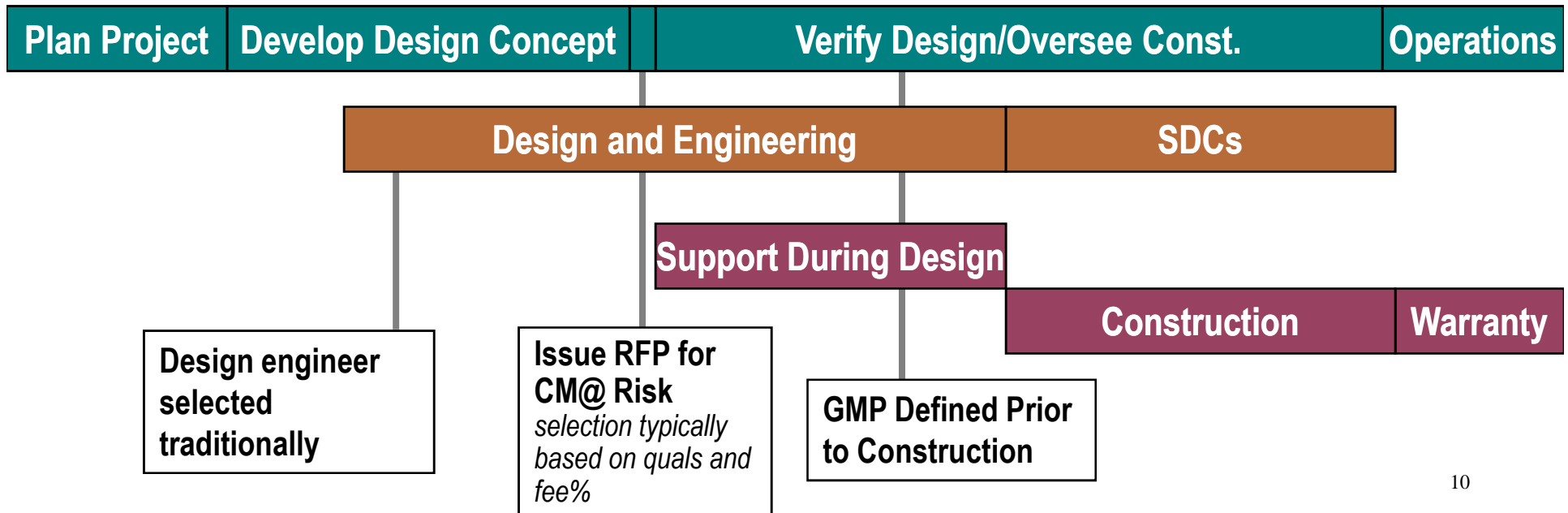
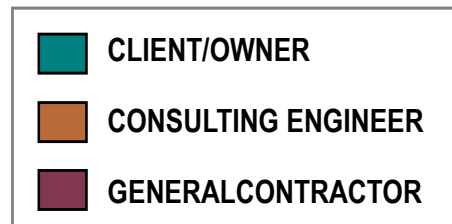
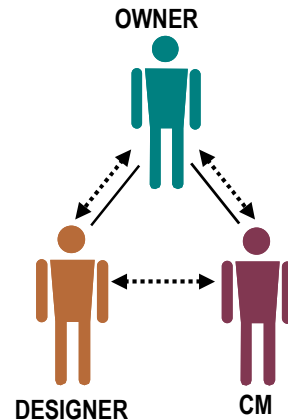
Project Delivery Options



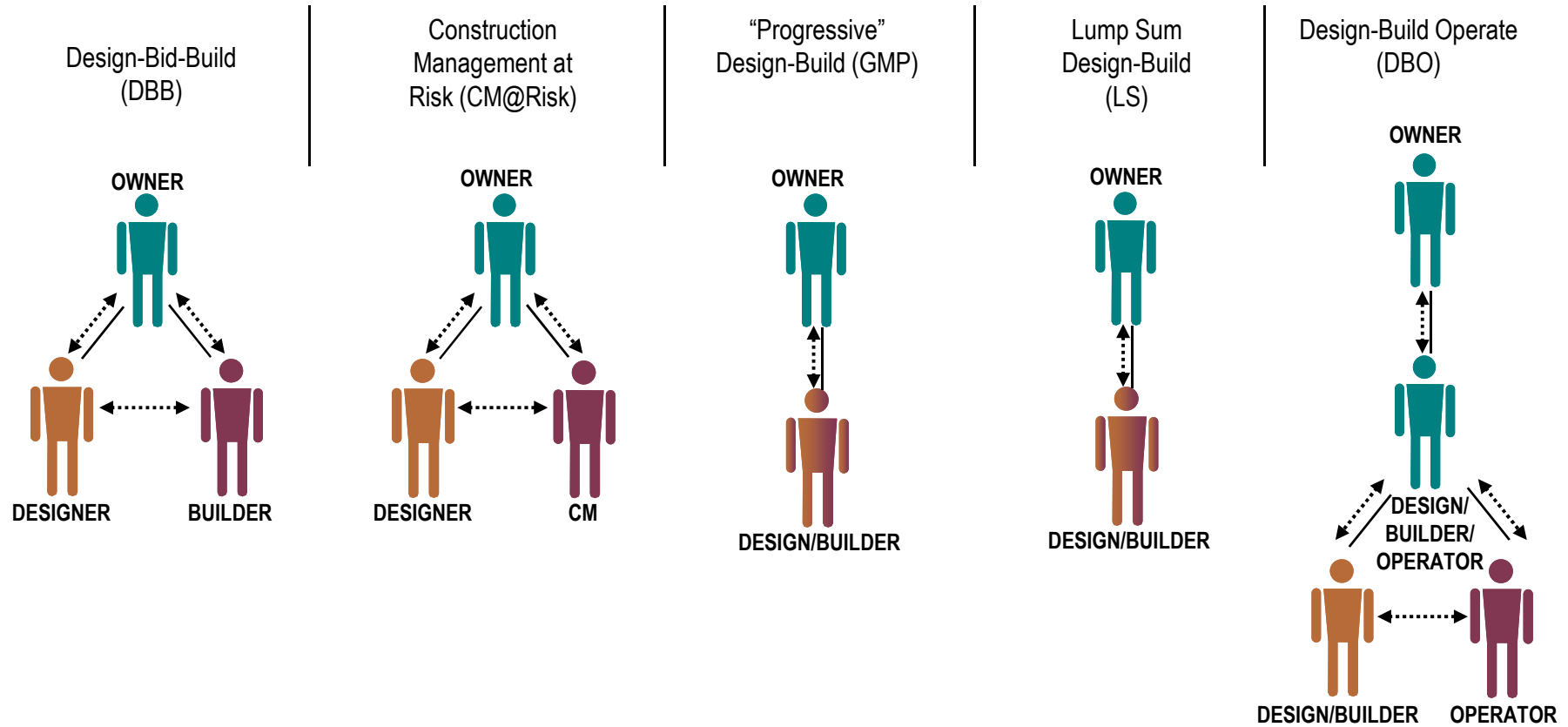
TRADITIONAL DELIVERY

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Construction Management at Risk (CM@Risk)



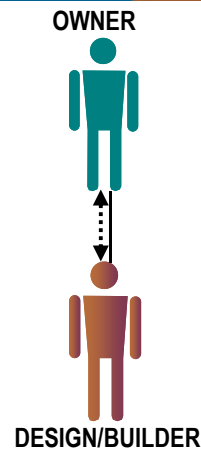
Project Delivery Options



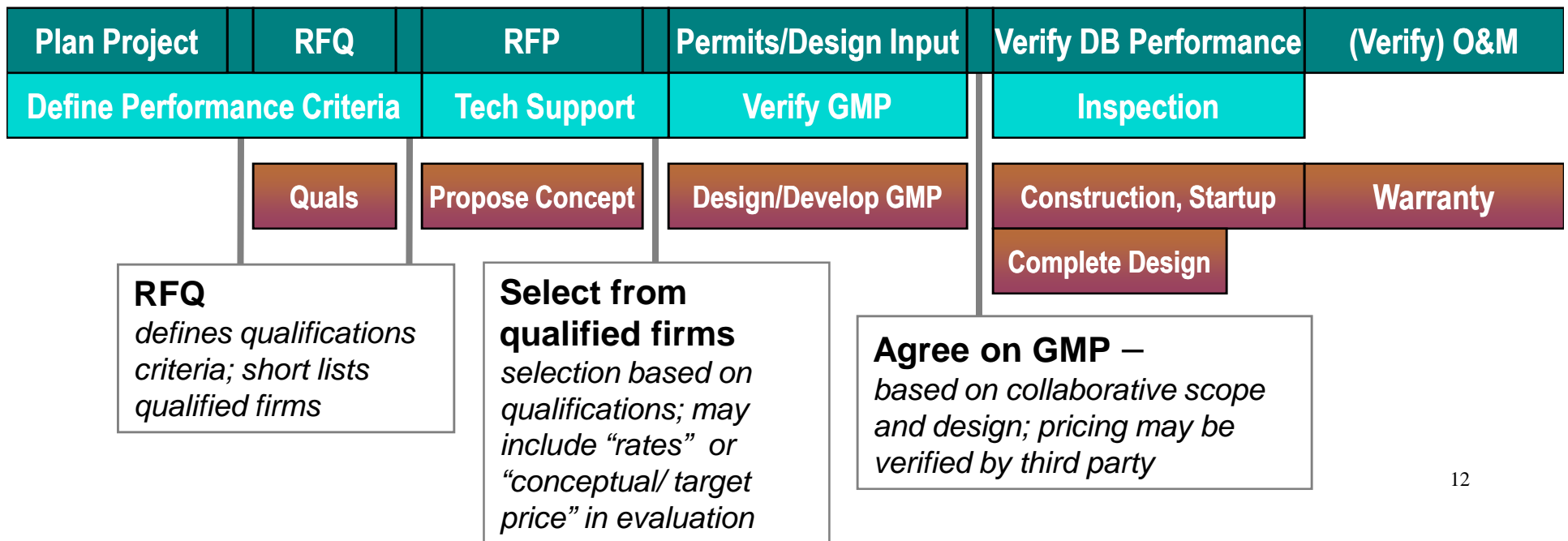
TRADITIONAL DELIVERY

ALTERNATIVE DELIVERY

“Progressive Design-Build” Procurement Model



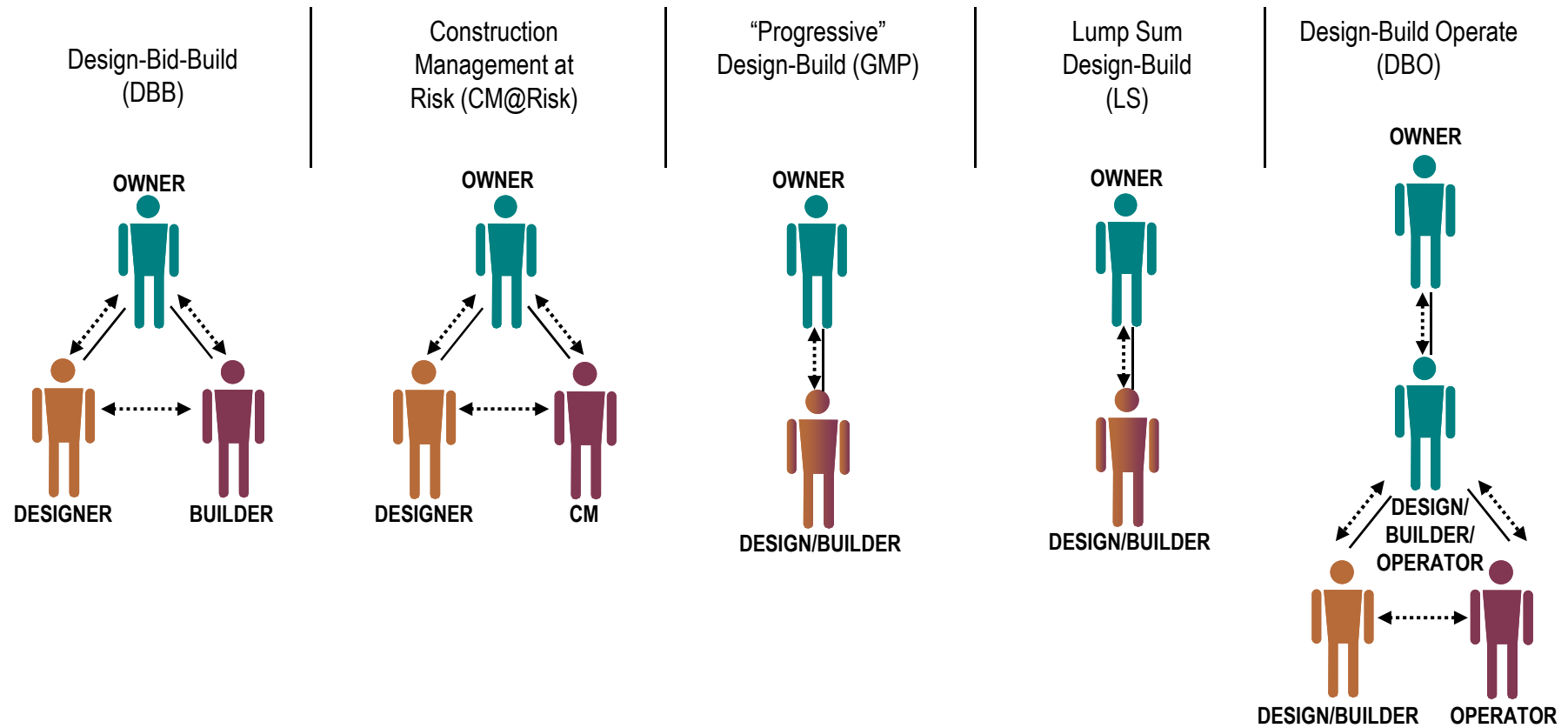
- “Progressive” model can be qualifications-based or include some form of “price/cost-related” criteria for selection
- Offers owners maximum flexibility/opportunity to collaborate on permitting/design
- Owners have an “off-ramp” in case of permitting issues or if GMP can’t be negotiated
- Very successful evolving model





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Project Delivery Options



TRADITIONAL DELIVERY

ALTERNATIVE DELIVERY



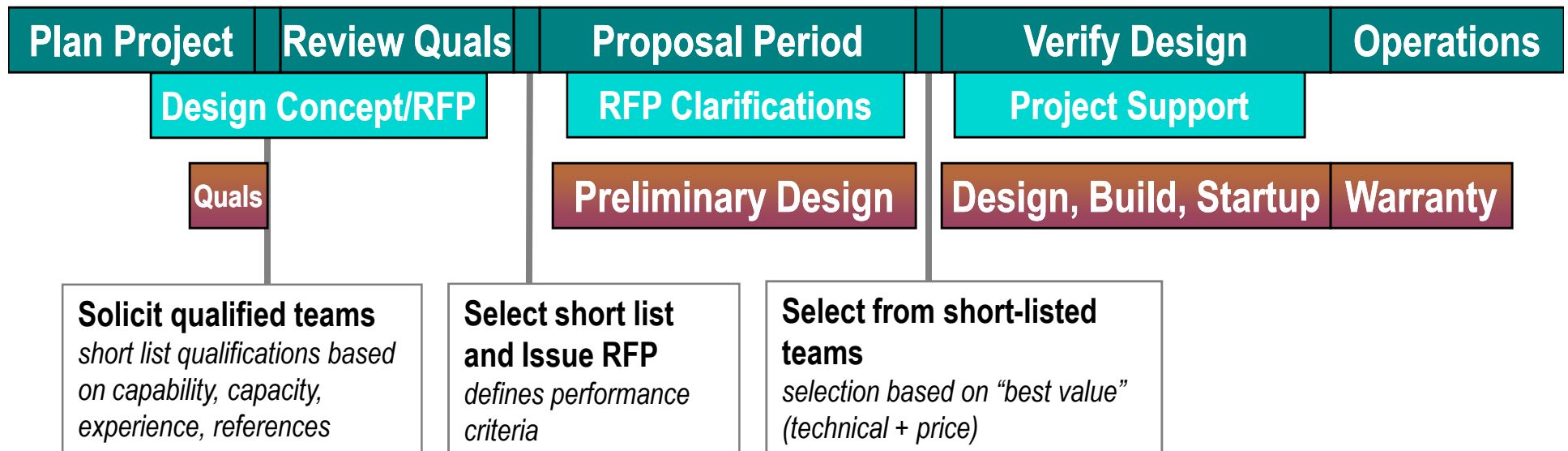
Typical Two-Phase Lump Sum (LS) Design-Build Procurement Model

OWNER



DESIGN/BUILDER

- Many “flavors” available to you - two-phase selection is typical
- Variable milestones depending on the project
- Manages to unknown challenges through risk allocation



Key Comparisons Between Traditional and Design-Build Approaches



Traditional Design-Bid-Build

- Owner controls most aspects of design... and must accommodate discrepancies
- Multiple procurements
- Quals for engineers, price for contractors
- Multiple contracts/points of contact among designers, contractors

Design-Build

- Owner controls performance criteria, but not design detail...and is not responsible for discrepancies
- One procurement, multiple phases
- Qualifications, then combination of technical and price ("best value")
- Single contract/single point of accountability

Key Comparisons Between Traditional and Design-Build Approaches

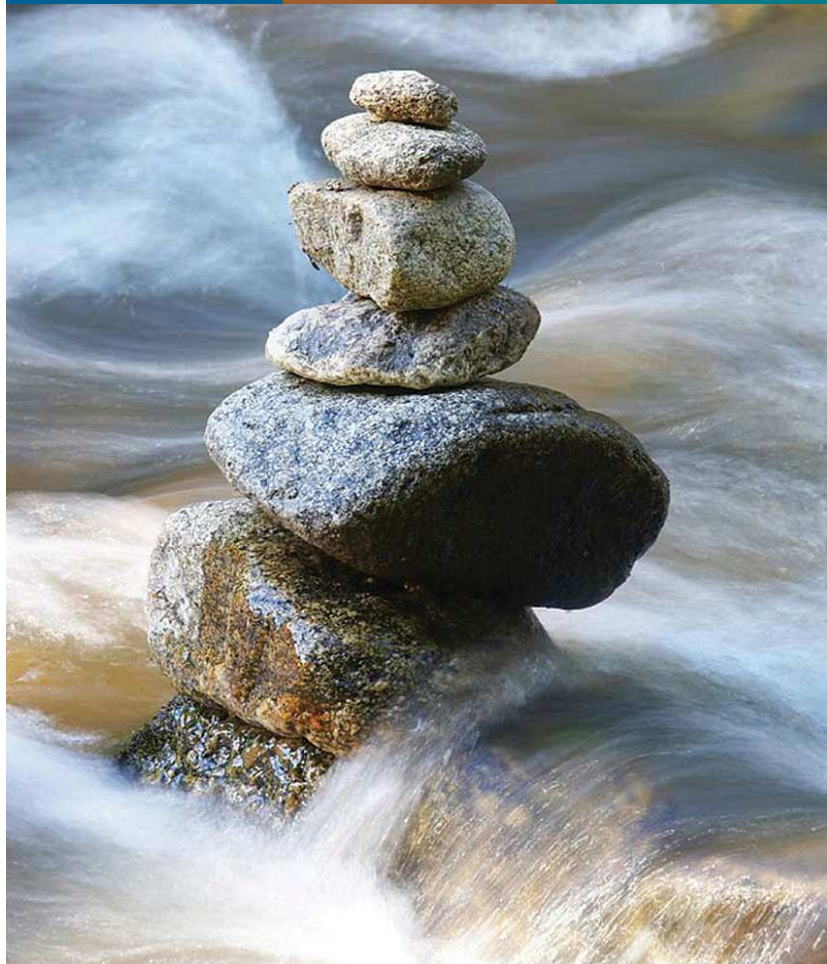


Traditional Design-Bid-Build

- Standardized selection process
- Specifications-based requirements
- Significant owner investment toward the end of the process (during construction)
- Others?
 - Collaboration - limited to design period
 - Schedule - constrained
 - Price - unpredictable
 - Quality - low bid

Design-Build

- Each procurement unique
- Performance-based requirements
- Significant owner investment at the beginning of the process (defining performance criteria)
- Others?
 - Collaboration – can include Contractor
 - Schedule - potentially faster
 - Price - no Contractor change orders
 - Quality - promotes innovation



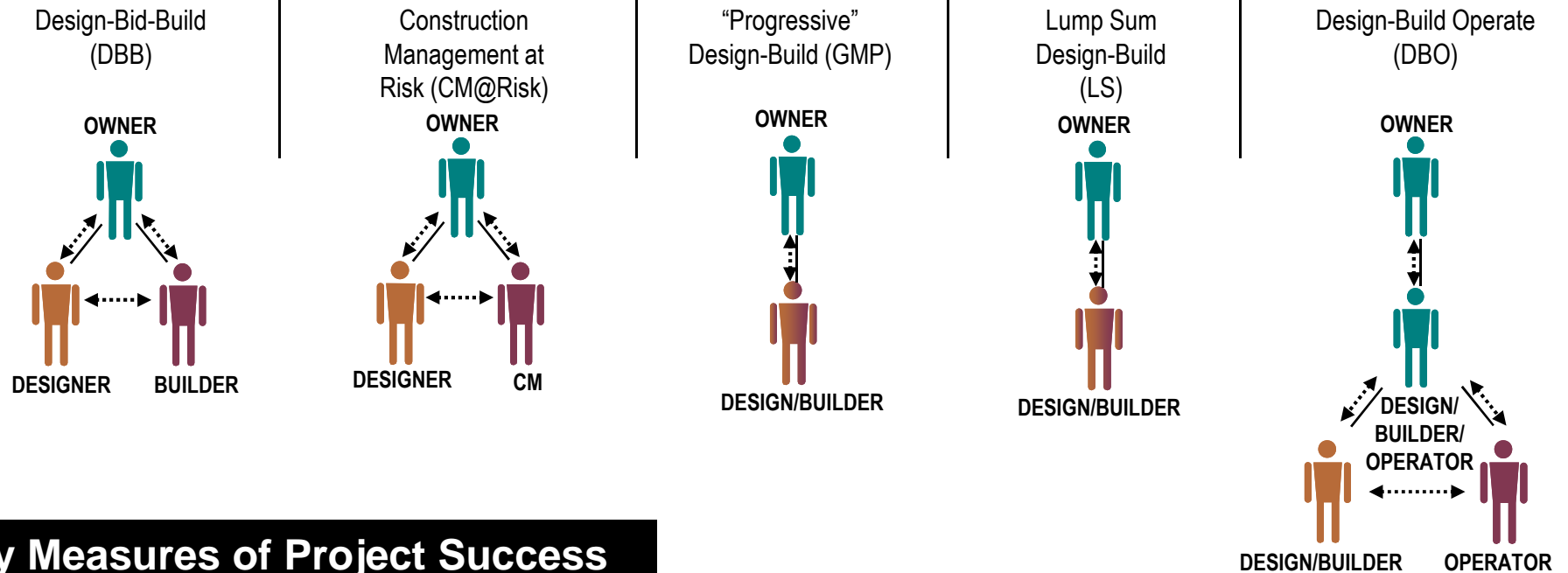
Which Delivery Method is Best?

*Benefits and Challenges
of Each Delivery Model*







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Project Delivery Options

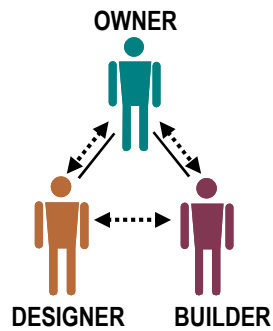


Key Measures of Project Success

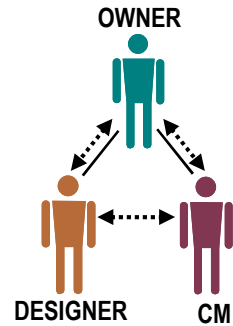
-  **Opportunity for Owner Collaboration** (*especially during construction*)
-  **Project Schedule**
-  **Cost Control** (*more control = fewer changes, better value*)
-  **Quality** (*including design intent, innovation, installed quality*)

Project Delivery Options

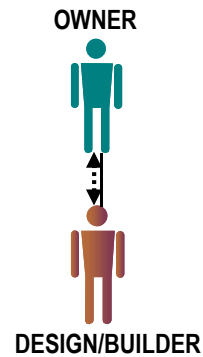
Design-Bid-Build (DBB)



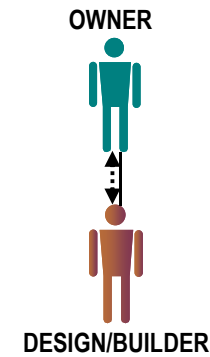
Construction Management at Risk (CM@Risk)



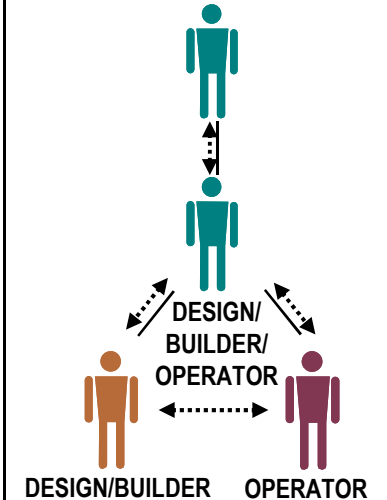
"Progressive" Design-Build (GMP)



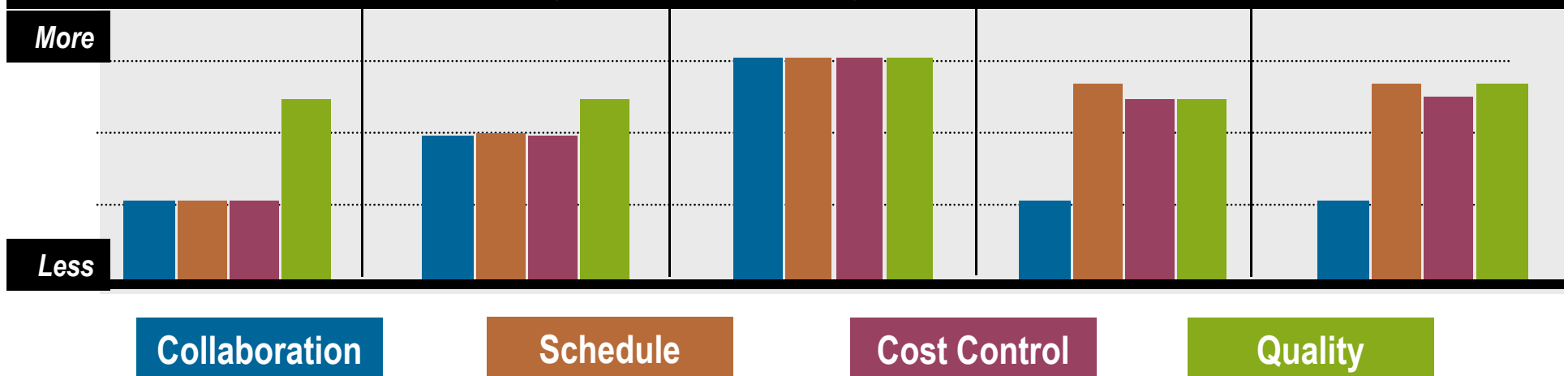
Lump Sum Design-Build (LS)



Design-Build Operate (DBO)



Key Measures of Project Success

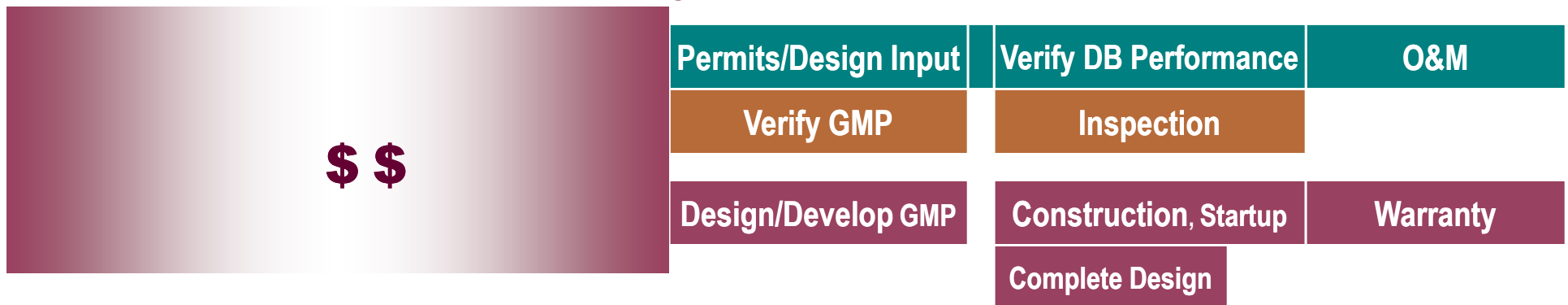


Invest in the *Project*, not the *Procurement*

Progressive Design-Build reduces the complexity and cost of the procurement process

- Owner's staff time and additional technical support for procurement
- Stipends for multiple unsuccessful proposers
- Industry investment in design for proposal
- Additional risk included in ultimate project cost (more unknowns = higher contingency)

Progressive DB (GMP)



Lump Sum DB (LS)





Shorten the Procurement Schedule

Progressive Design-Build reduces the time it takes to select a Design-Builder

- Timing: can procurement process start before all basis of permits are certain?
- Duration: does proposal period need to allow time for design/detailed pricing?
- Potential for delay: how many issues/technical questions might arise?

Progressive DB (GMP)

Months	Permits/Design Input	Verify DB Performance	O&M
	Verify GMP	Inspection	
	Design/Develop GMP	Construction, Startup	Warranty
		Complete Design	

Lump Sum DB (LS)

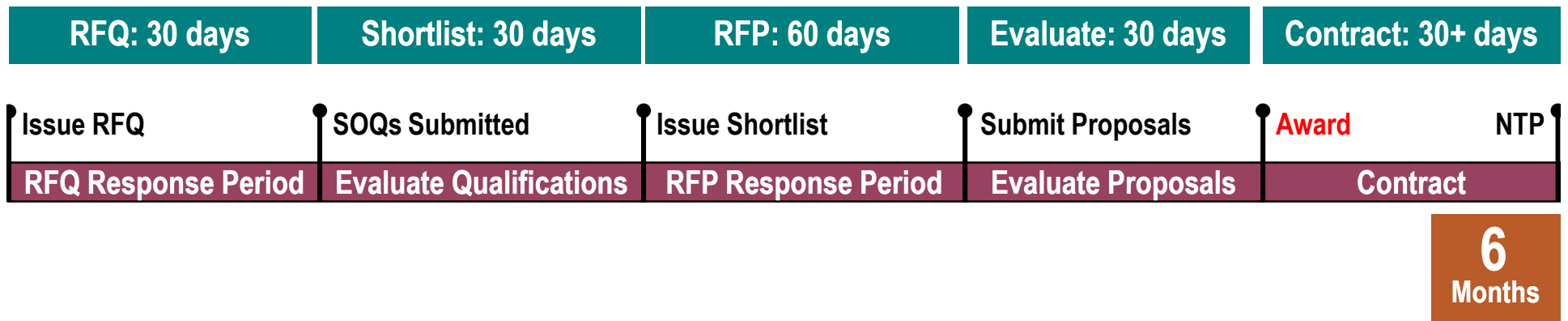
Year+	Verify DB Performance		O&M
	Verify Design	Inspection	
	Complete Design, Construction, Startup		Warranty



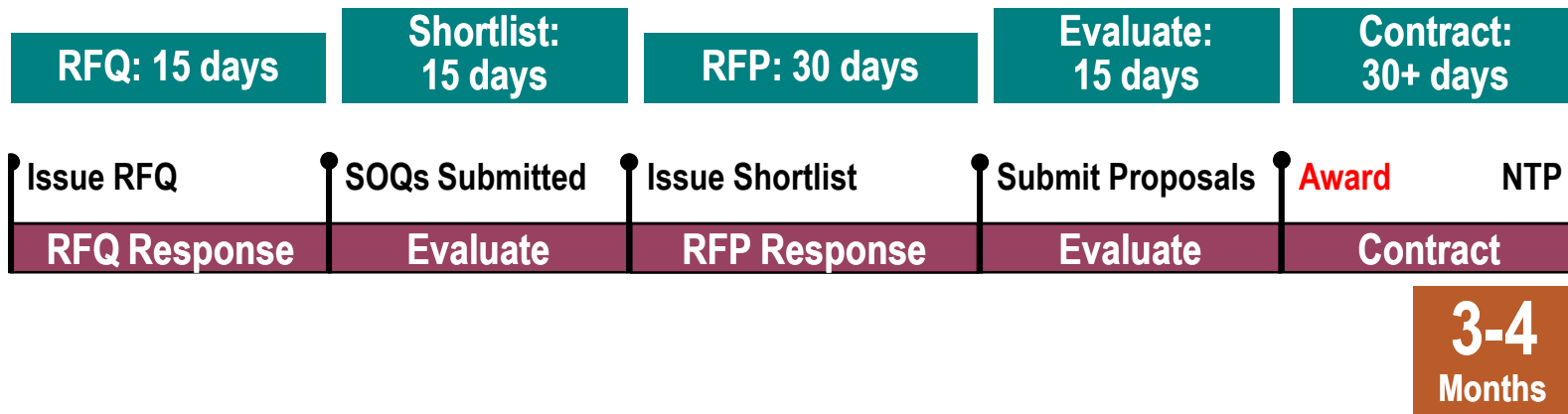
Schedule Comparison

Design-Build Procurements

Typical Progressive Design-Build Procurement



Fast-Track Progressive Design-Build Procurement

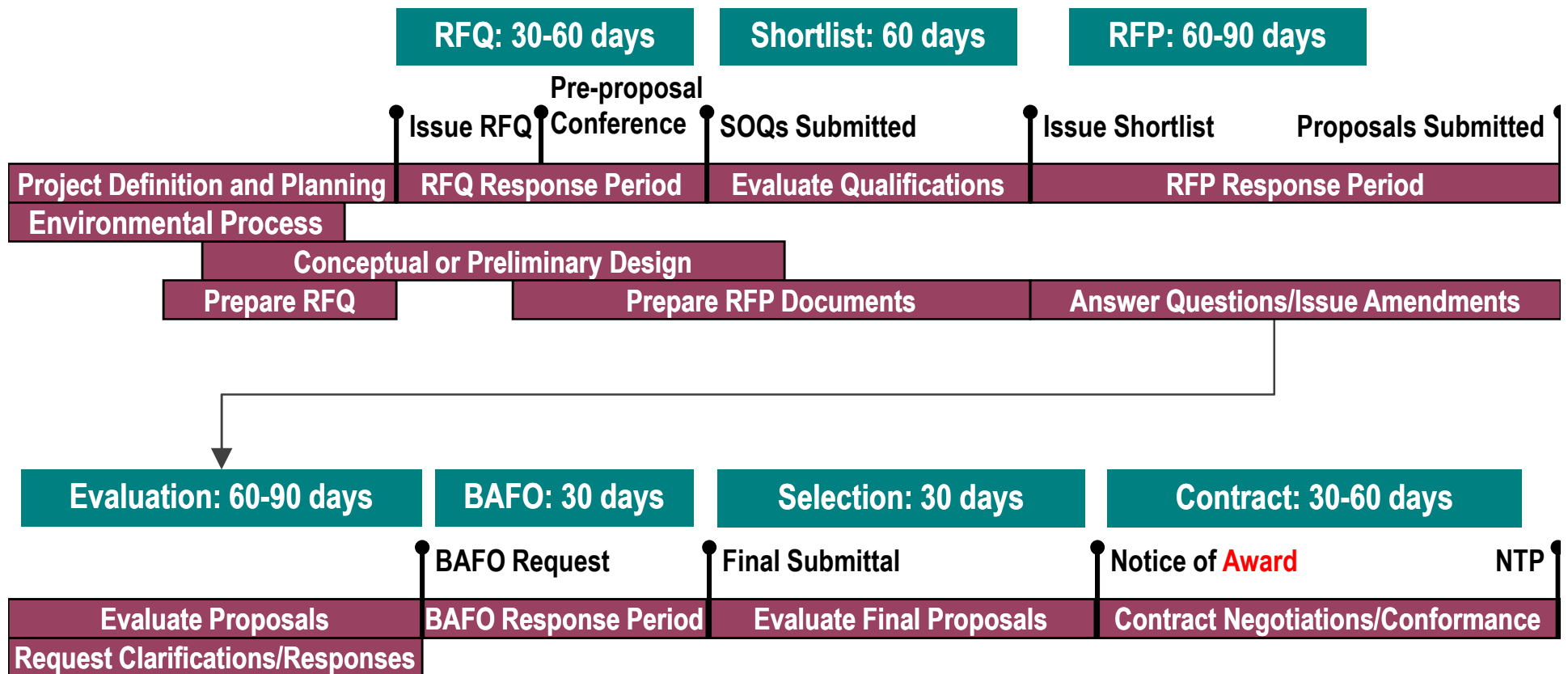




Schedule Comparison

Design-Build Procurements

Lump Sum Design-Build Procurements



1+
Years

Additional Pros and Cons: Performance or Prescriptive Lump Sum?



Lump sum procurements can vary widely between
“Performance-Based” and “Prescriptive”

Performance-Based Lump Sum

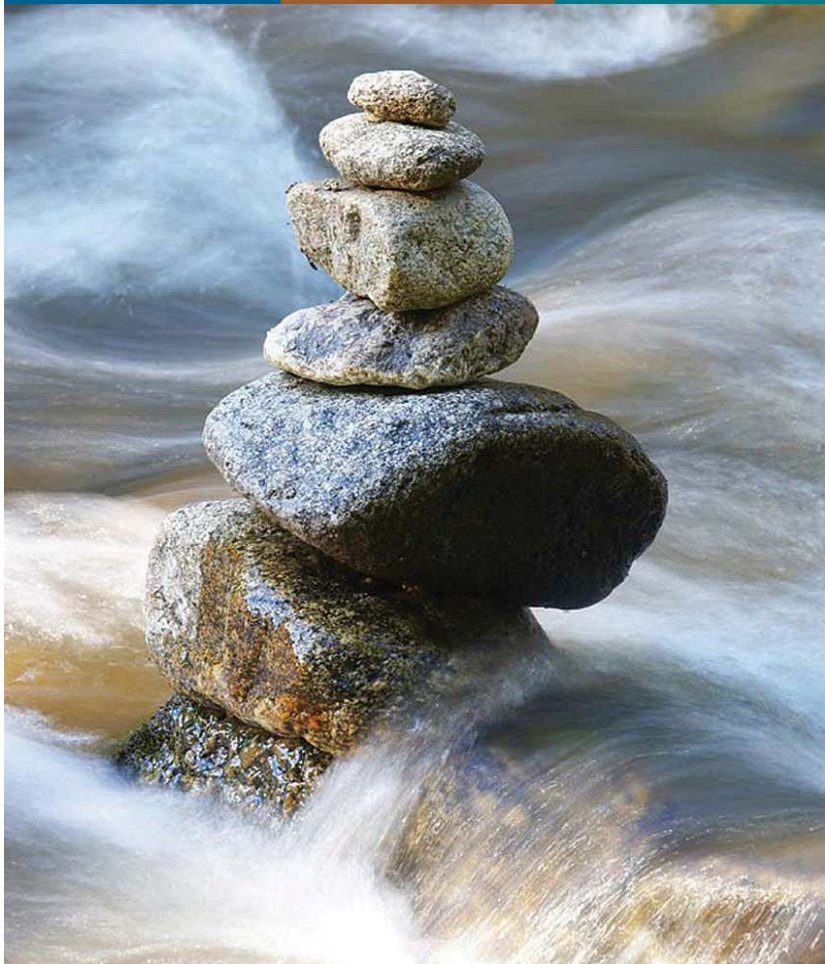
- RFQ/RFP includes maximum 10-15 percent design concept
- Requirements are stated as measurable performance objectives
- Few, if any, specific approaches/processes design-builder must use
- Provides design-builders' flexibility on how to meet objectives
- Can require a lump sum price or a "target" price
 - "Target" lump sum can be adjusted after award, as directed by owner
or as scope become better defined
- This model is often used to accelerate schedule

Preferred when owner has a clear vision for how facility must perform, with limited resources, time, interest in the specific method for gaining required performance.

Prescriptive Lump Sum

- RFQ/RFP includes at least a 30 percent complete design
- Requires specific approaches design-builder must follow
- Requires lump sum price with proposal
 - Must include all costs and risks
- As-bid lump sum adjusted only for owner's changes
- “Alternative” concepts can be considered
- Stipends often paid to unsuccessful Proposers

Preferred when owners are very clear on their preferences and want to use design-build to accelerate the schedule while allowing selection based on a combination of qualifications and a lump sum price.



Project Case Study: Haworth, NJ

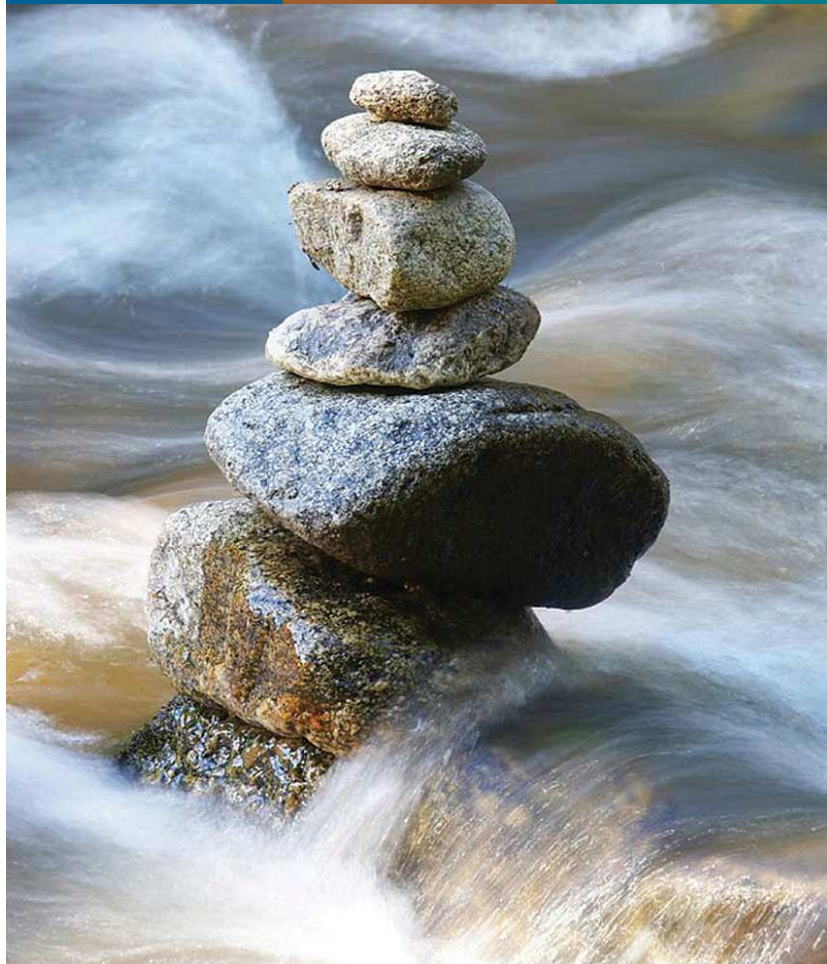


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Advanced Technologies Improve Water Quality and Performance

- New Ozonation System
- Dissolved Air Flotation (DAF)
- Chlorine Contact Tanks
- Residuals Handling





Project Case Study: Bonita Springs, FL



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Bonita Springs Overview

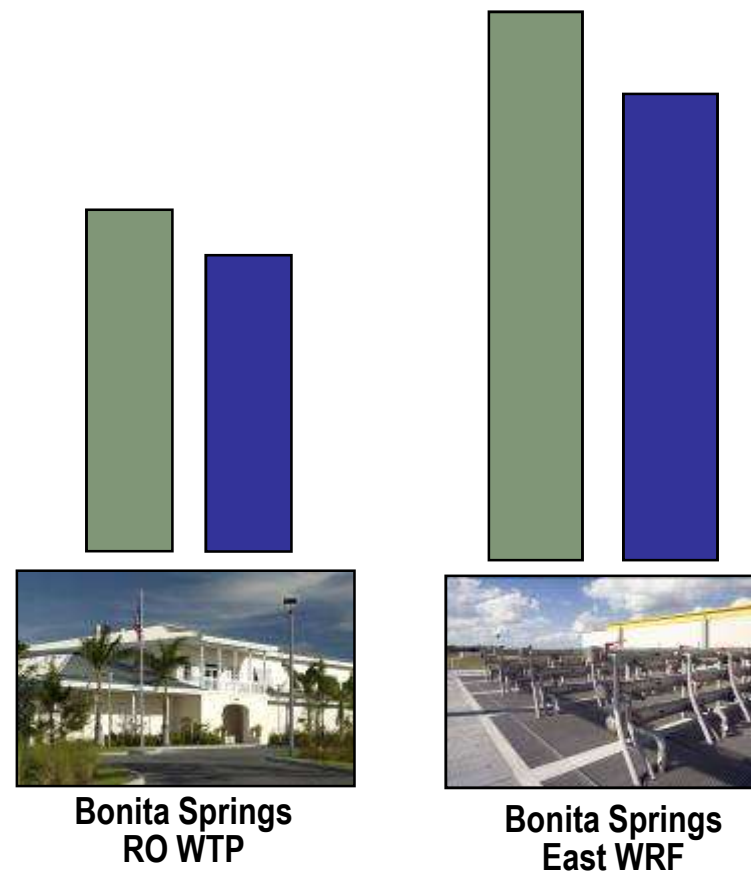
- Multiple progressive DB projects totaling more than \$100 M in capital construction cost
- 6 MGD expandable to 12 MGD RO WTP
- 4 expandable to 8 MGD WRF
- DBIA and ASCE Project Awards

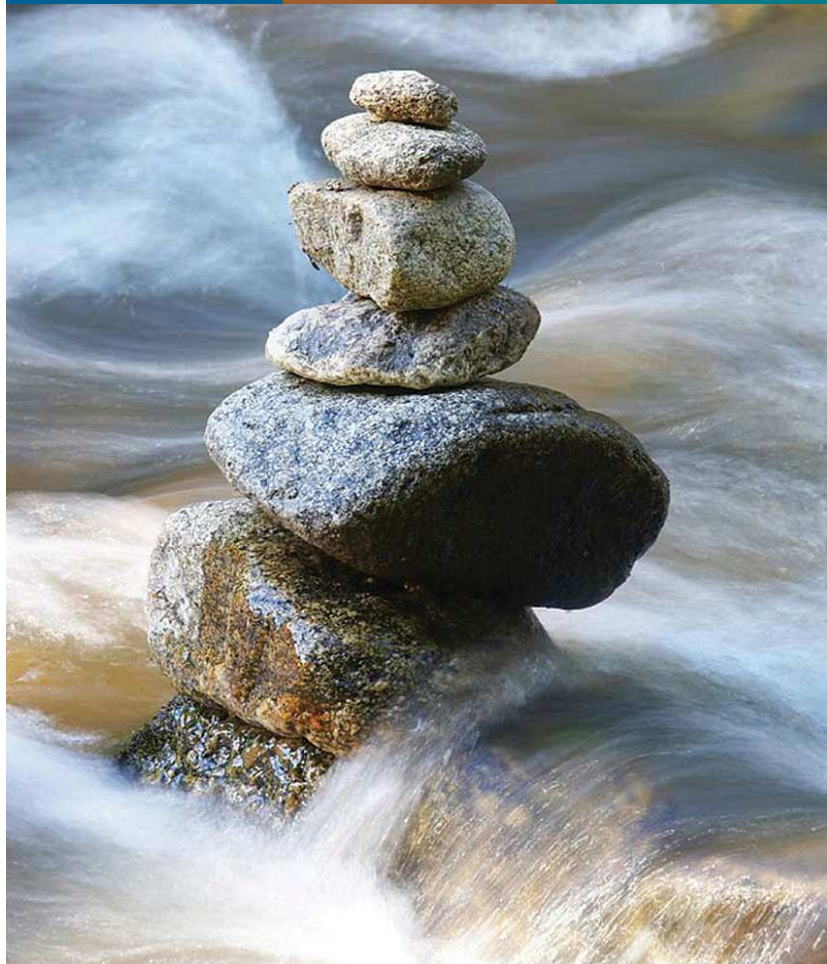


Successful Project Delivery

- Significant owner/design-builder collaboration in all project phases
- Flexibility – meeting present and future needs with expandable facilities
- Accelerated project schedules
- Thorough scheduling, quality and cost control

■ GMP
■ Completed Cost






American Recovery and Reinvestment Act of 2009

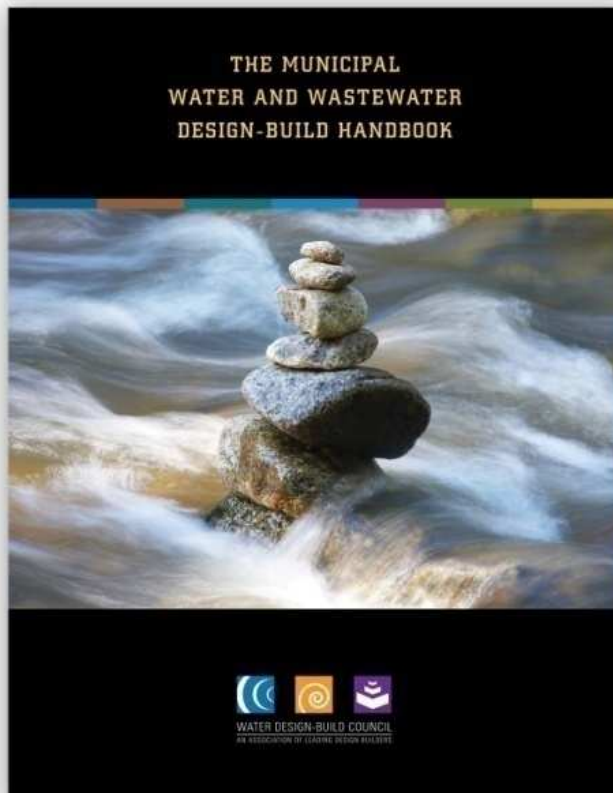
The Role of Design-Build



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Role of Design-Build in Securing “Economic Stimulus” Funds

- 
- Fastest delivery method to achieve “shovel ready” status as required in American Recovery and Reinvestment Act of 2009
 - Maximum flexibility to deal with potential uncertainty of funding-dependent project schedules
 - Maximum flexibility for collaboration with owner and technical innovation to achieve “green benefits”
 - Single point of responsibility for process performance and warranty issues
 - “Open book” nature of contract ensures transparency and clear documentation on how stimulus funds are invested



Thank you

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