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Design-Build Delivery:

WATER INDUSTRY PERSPECTIVE

PRESENTED BY:

Lisa Washington, CAE – Design-Build Institute of America

Laura Kirkwood, PE, Assoc. DBIA – Hampton Roads Sanitation District

Anna Pridmore, PhD, PE, DBIA – Structural Technologies

Lisa Washington

Executive Director/CEO,
Design-Build Institute of America

Biography:

Lisa Washington joined the Design-Build Institute of America (DBIA) in 2004 as Vice President of Education and Conferences and was named DBIA's Executive Director/CEO in 2009. Engineering News Record (ENR) named Lisa one of the *Top 25 Newsmakers of the Year* in 2013 for her work in leading a coalition that resulted in the Corps of Engineers significantly enhancing their design-build procurement processes. She was inducted into the National Academy of Construction in 2023 for "transformational leader in design-build with strong collaborative efforts to standardize best practices."

Washington currently serves on the Board of Regents of the National Institute of Building Sciences Collaboration Academy. In her spare time, she is an American Red Cross Blood Drive leader and a youth mentor/advisor at her church. She holds the Certified Association Executive (CAE) credential and a Master's in Nonprofit Management from the University of Maryland.

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Laura Kirkwood

Director of Design & Construction
Hampton Roads Sanitation District

Biography:

Laura Kirkwood is a Director of Design & Construction for the Hampton Roads Sanitation District (HRSD). She has worked for HRSD for fourteen years, beginning in Planning, Capital Project Management and now leading a Department that manages over forty capital projects across the south side of the Hampton Roads region. Laura managed the award-winning DBIA project Woodstock Park Off-line Storage Facility in Virginia Beach. Prior to HRSD, she held process and quality engineering roles with a large cement manufacturing company. A major role for HRSD's Engineering Division includes implementing HRSD's $3.8B, 10-Year Capital Improvement Program, of which the Design and Construction Departments play a large part.

Laura received her Bachelor's Degree in Chemical Engineering from Georgia Tech and a Masters in Environmental Engineering from Old Dominion University. Laura is the current chair of the VWEA Sustainable Utilities Committee and is active in her community through the United Way. She is currently pursuing her MBA at William and Mary.

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Anna Pridmore

Senior Vice President, Water/Wastewater Infrastructure, Structural Technologies

Biography:

Anna Pridmore, PhD, PE, DBIA is a Senior Vice President for Structural Technologies, leading the company's efforts in the Water/Wastewater market with a focus on design-build rehabilitation of civil infrastructure. Anna delivers pursuit, startup, and executive oversight for large design-build projects across the United States and Canada. She has over 20 years of interdisciplinary experience specializing in large diameter pipeline asset management and renewal, with over 500 inspection and rehabilitation projects implemented to date. Anna is Vice-Chair of the Water/Wastewater Committee for Design Build Institute of America (DBIA) and was recently elected to DBIA's National Board.

She is a committee member for Water Collaborative Delivery Association, was the past chair of the Pipelines Division of American Society of Civil Engineers (ASCE) and servs as Vice Chair for the development of the AWWA C305 subcommittee. She serves as an instructor for DBIA, ASCE and EUCI, teaching technical content related to collaborative delivery and civil infrastructure renewal as well as courses on engineering ethics and diversity in engineering.

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First things first…

What is Design-Build?

The single contract for both
Design *and* **Construction**
is the fundamental difference between
Design-Build
and other Delivery Systems

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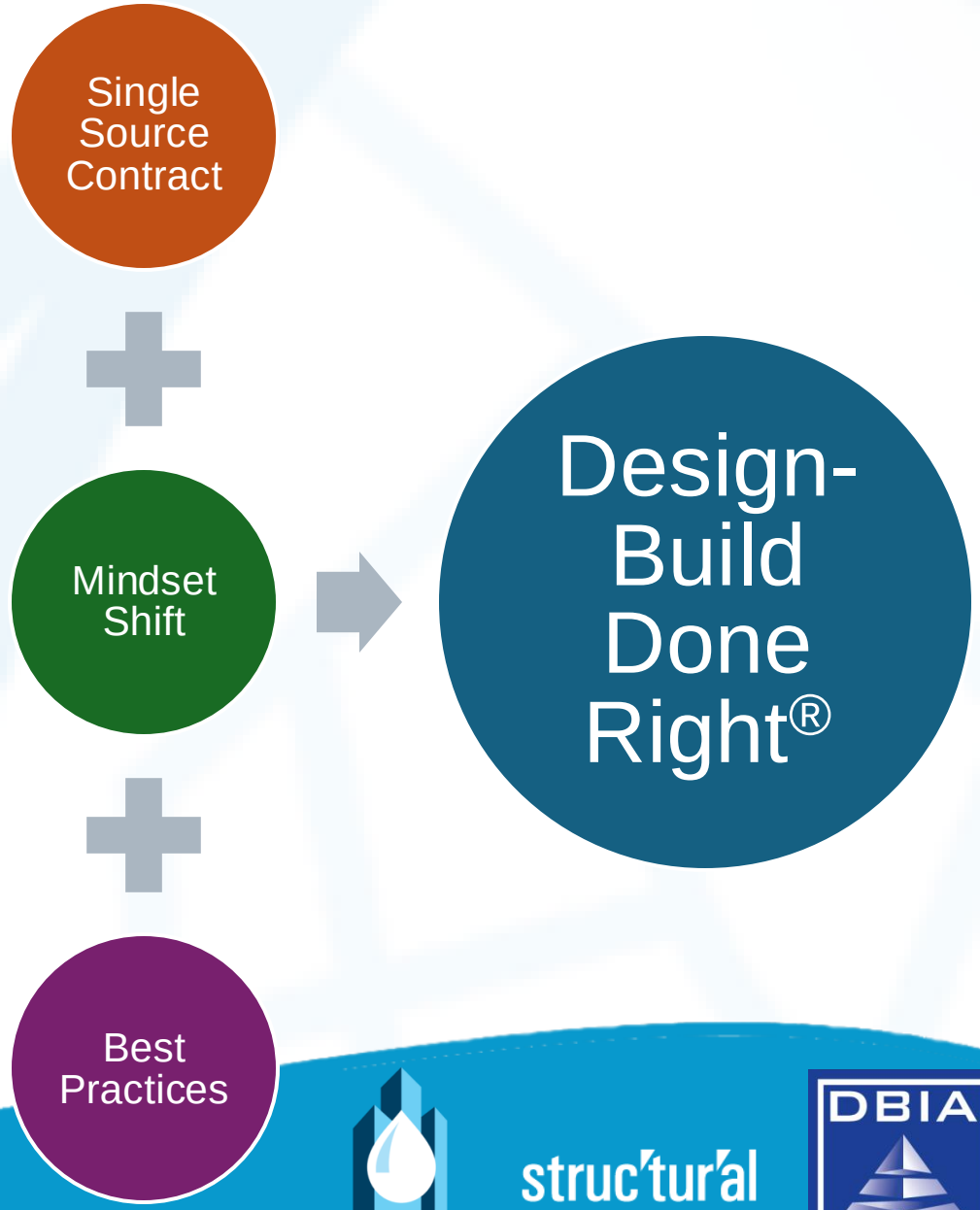
Design-Build Defined

In all other project delivery systems, there are separate contracts for design and construction. The single contract for both design and construction is the Design-Build distinction.



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Strategic Project Delivery Planning

Project Delivery System

Identifies contractual relationships between parties in a construction project. It defines when and how each party will fulfill its responsibilities.

Most Common Project Delivery Systems

- Design-Build, Progressive Design-Build
- Construction Management at Risk
- Design / Bid / Build

Less Common Project Delivery Systems

- Integrated Project Delivery (IPD)
- Public-Private Partnerships (P3)
- Multiple-Prime Contracts

How Teams are Organized

Procurement Method

Establishes how the Owner will select the providers of design and construction services needed to complete the project.

Common Procurement Methods

- Best Value
- Qualifications Based Selection (QBS)
- Low Bid
- Negotiated
- Sole Source (Directly Selected)

How Teams are Selected

Contract Format

Designates the basis on which the parties will be paid for performing the work of the project.

Common Contract Formats

- Lump Sum (Fixed Price)
- Guaranteed Maximum Price (GMP)
- Cost Plus Fee
- Target Price
- Unit Price

How Teams are Paid

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The Flexibility of Design-Build

	Best-Value Design-Build	Progressive Design-Build
Design-Builder Selection	Two-step procurement process that seeks most highly qualified teams, then design and cost proposal.	Design-Builder selected primarily on qualifications and collaborate to reach a mutually agreeable design concept and contract price.
Design	• Owner defines project criteria in procurement documents • Competing DB teams prepare preliminary proposals. • Selected Design-Builder and Owner complete design collaboratively post-award	Owner and Design-Builder collaboratively begin and advance design after selection of design-builder.
Price	Price established at time of contract award.	Design-Builder does not commit to a price at contract award.

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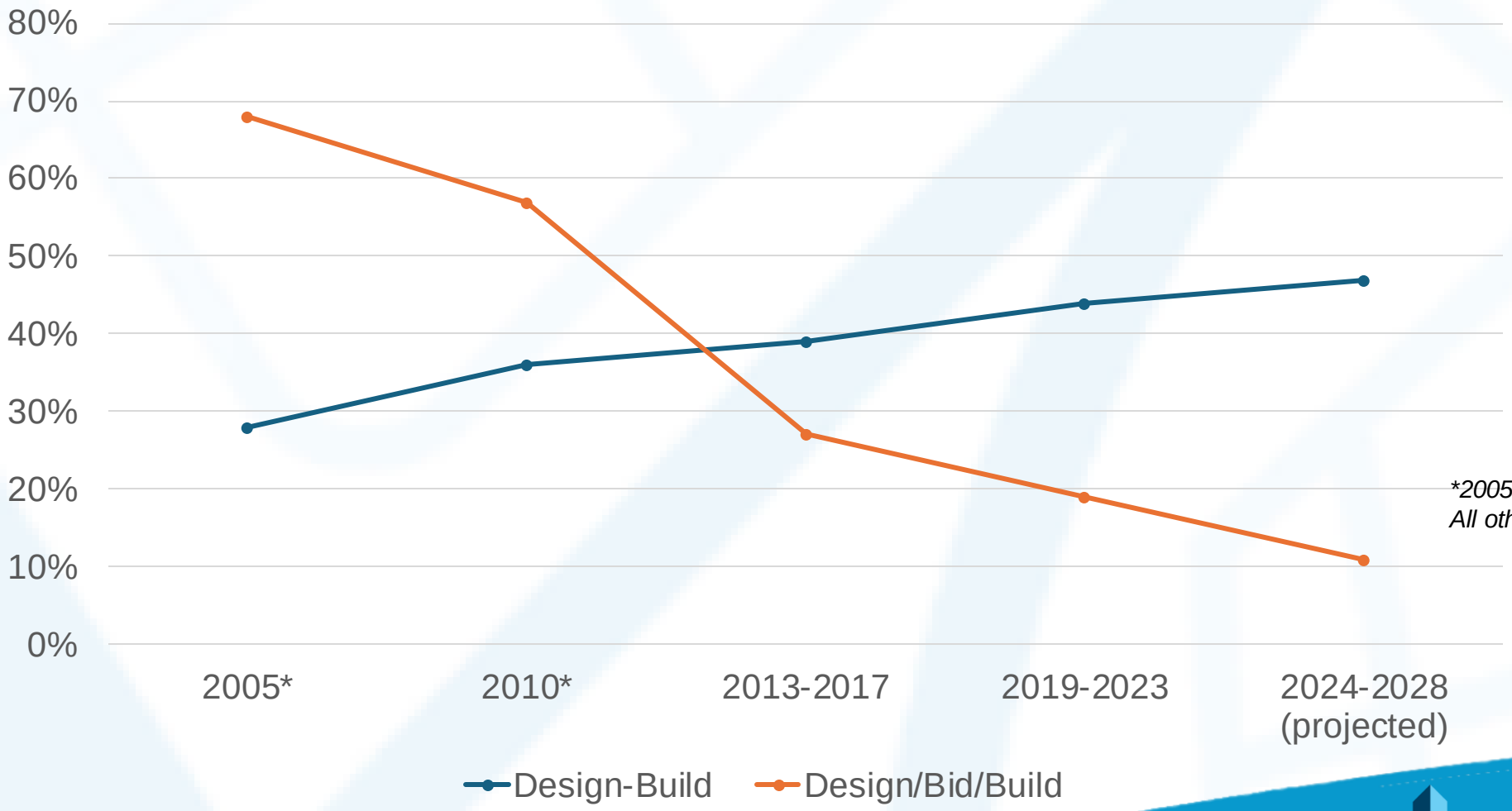
Project Delivery Trend Data



**2005 and 2010 Data based on RS Means research. All other data is based on FMI research.*

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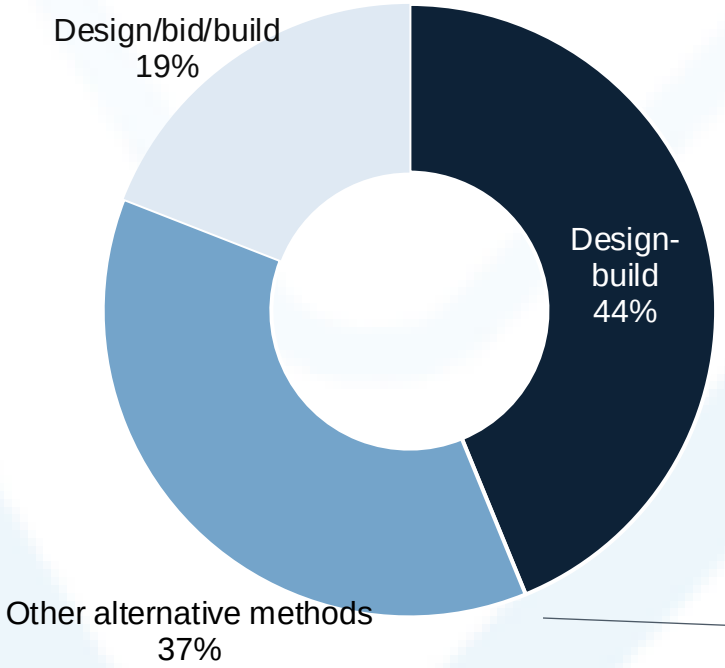
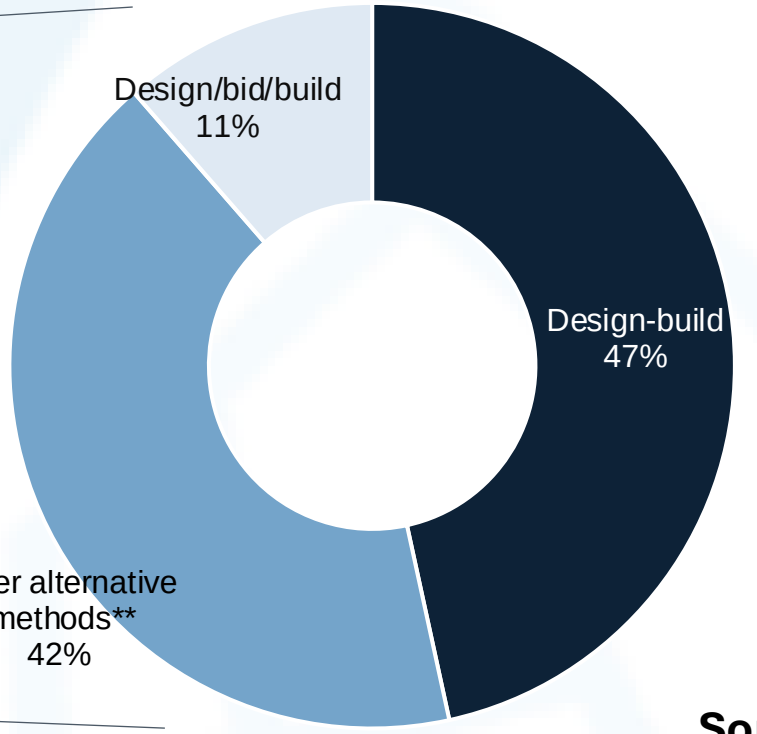
Market Sizing

2019-2023 CPiP*: $3,995



2024-2028 CPiP: $5,493



Source: FMI

**CPiP: Construction put in place*
**Other alternative methods includes CM/GC, CMAR, EPC and IPD*
****Percentages are based on estimated utilization across construction spending.*

Distribution of Delivery Method Utilization

Source(s): FMI

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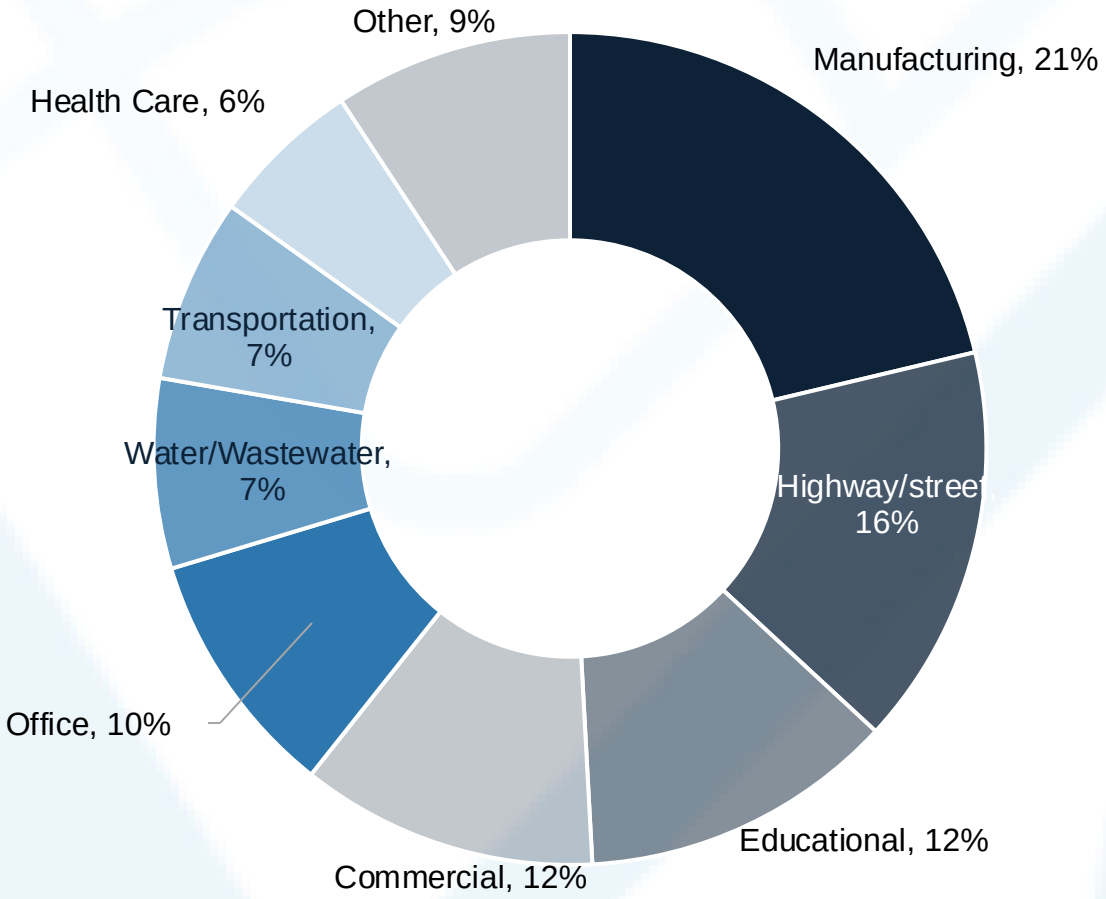
Market Sizing

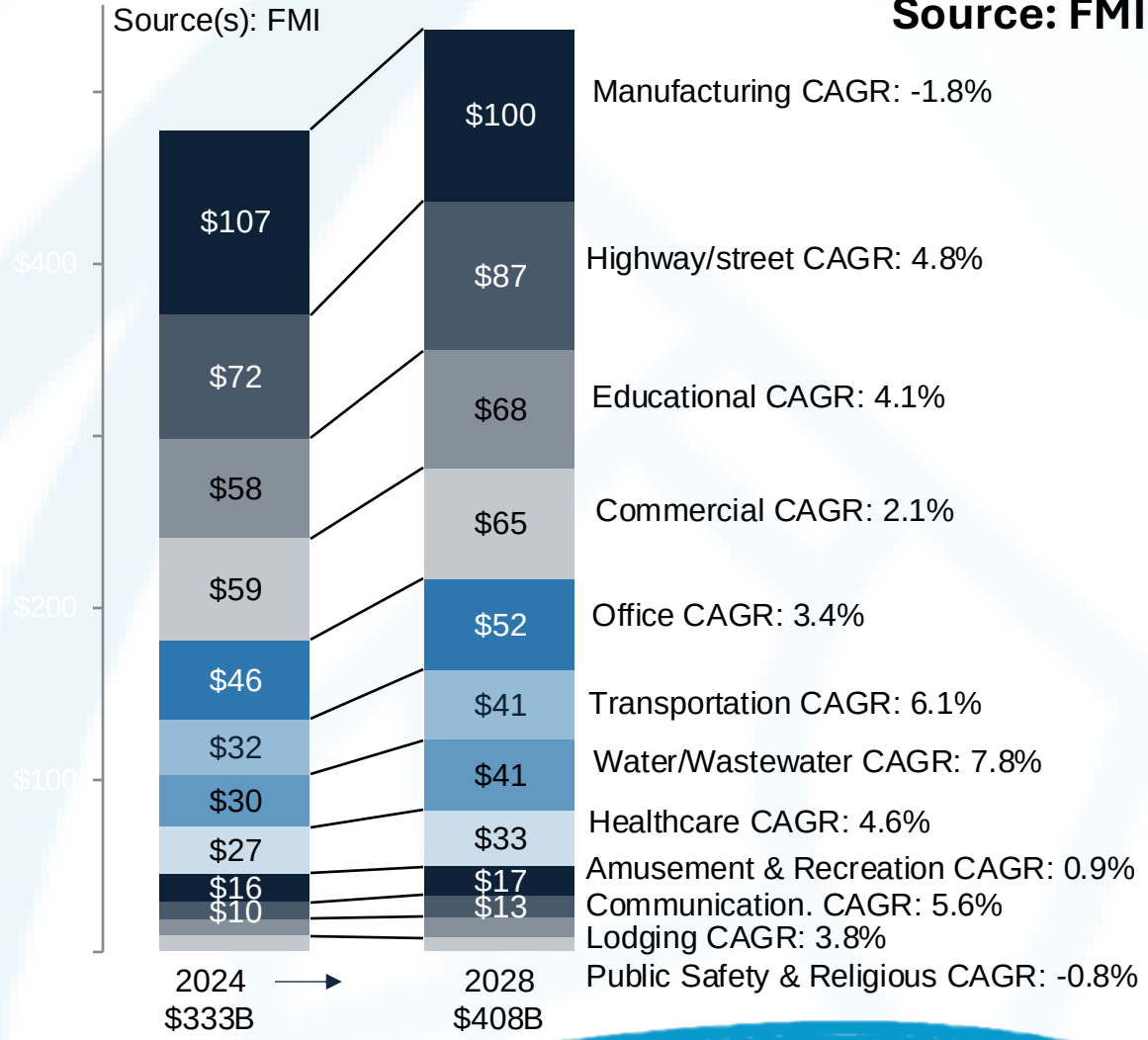


*Other includes: Public safety, religious, A&R, and lodging

Distribution of Forecast Spending by Segment
Source(s): FMI

Distribution of forecast spending by segment
CPiP spending, 2024, 2028
Source(s): FMI

Source: FMI



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Design-Build Legislative Authority

Design-Build Not Authorized

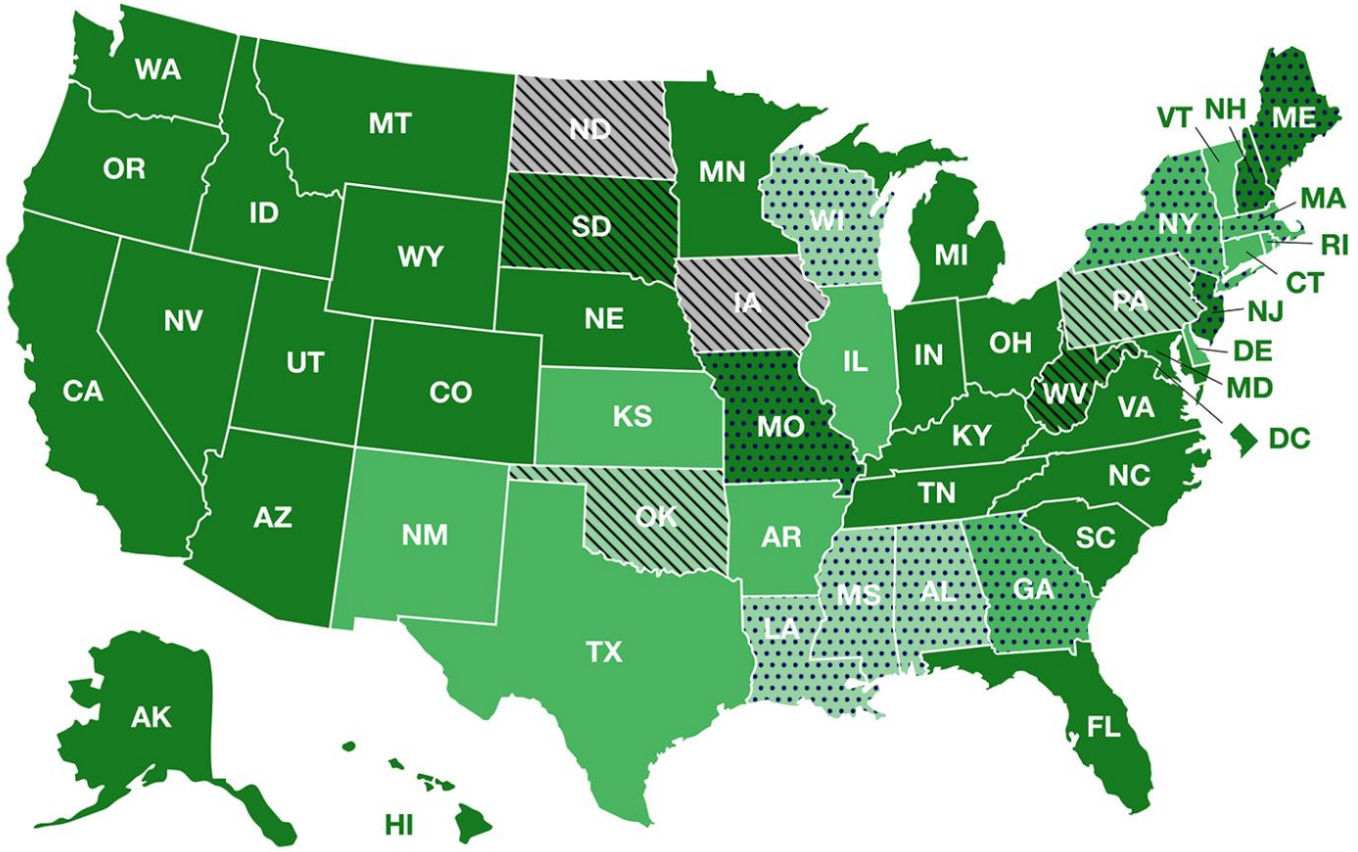
Design-Build, including Progressive Design-Build, is permitted by most agencies for all types of design and construction*

Progressive Design-Build Not Authorized

Design-Build is a limited option

Design-Build, including Progressive Design-Build in some instances, is widely permitted*

Progressive Design-Build is a limited option



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Design-Build Performance

102% faster
than traditional Design/Bid/Build

61% faster
than Construction Manager at Risk (CMAR)

3.8% less cost growth
than traditional Design/Bid/Build

Source: CII/Penn State

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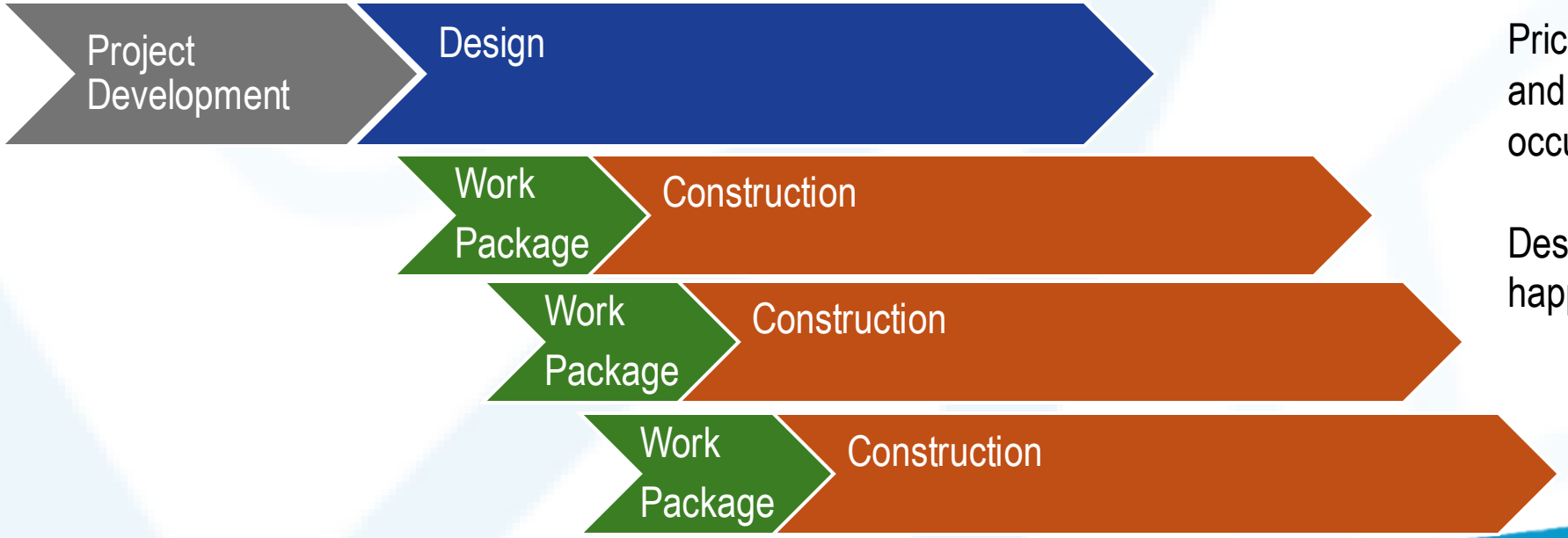
Fast Tracking

Some Project Delivery Systems (DBB) are Linear and Sequential

Some Project Delivery Systems (DB) Facilitate Fast Tracking



Price confirmation and Contract Award occur earlier

Design and Construction happen concurrently

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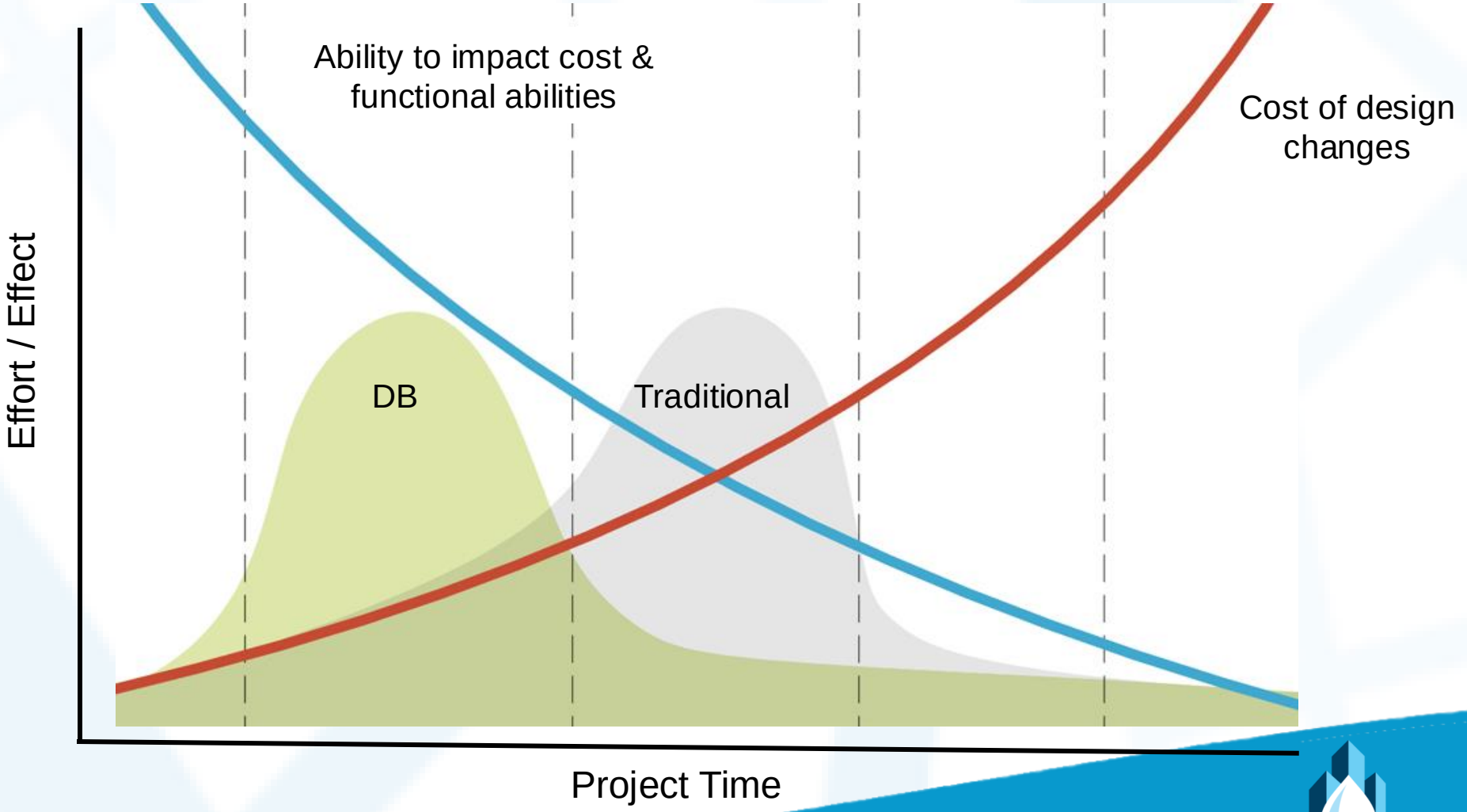
Design-Build Mitigates Risk



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Drivers for Water Sector Owners Considering Design-Build

- D-B Team ability to assist with grant and loan requirements
- D-B method can expedite the work and assist with funding sources
- Faster delivery of CIP projects
- D-B method can expedite work and facilitate consent decree commitments
- D-B Team can use creative ways to engage with underutilized businesses (UBE)

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Drivers for Water Sector Owners Considering Design-Build

- Complex projects require a collaborative and integrated team
- Use of diverse and knowledgeable team to deliver the project results in outcomes that often exceed original expectations
- Management of project risks (schedule and budget)
- Great Engineers and Contractors want to use this project delivery method!

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Supportive Organization

I. Procuring Design-Build Services | Best Practice 1 - Strategic Project Delivery Planning Implementing Technique b.

*Owners should **create an organizational culture** that supports the successful procurement and execution of Design-Build Project, with key personnel (including consultants serving as Owner Advisor) who are experienced in Design-Build Best Practices and are educated, trained in and understand, among other things:*

1. The procurement, contracting and execution of Design-Build Projects;

2. The importance of setting expectations and fostering an integrative and collaborative relationship among everyone involved in the project; and

3. The potential impact of procurement and execution decisions on the Owner, Design-Builder and Stakeholders; including attainment of project goals and critical success factors, as well as appropriate allocation of risk.

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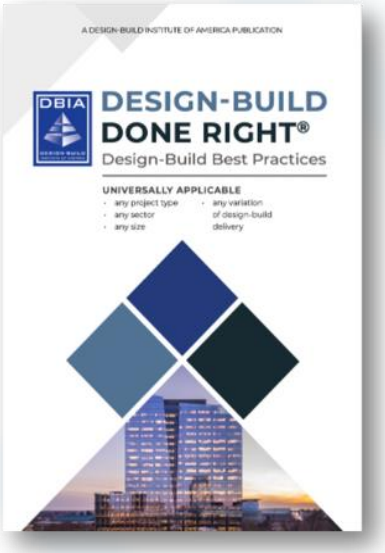
Stakeholder Engagement

I. Procuring Design-Build Services | Best Practice 1 - Strategic Project Delivery Planning Implementing Technique c.

Grand re-opening of Woodstock Park in Virginia Beach after a 2-year closure for construction of HRSD's off-line storage facility and City's park improvements

*"Owners should **identify** and **involve** key project **stakeholders** at the **early** stages of project planning.*

Stakeholder goals, expectations, challenges, constraints and priorities should guide all project planning, procurement, implementation and operations / maintenance."



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Risk and Opportunity Assessment

I. Procuring Design-Build Services | Best Practice 1 - Strategic Project Delivery Planning Implementing Technique f.

Risk Register for Projects

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		7 Mile/Nevada TM Renewal and GBH	1/3/2022	PM Name:	Brandon Keezer
		Great Lakes Water Authority (GLWA or Ow			
				Reviewer:	
				Total Monetized Risk	$1,815,000

Risk Level based on Impact and Probability Table

Quantitative Probability	$ 1,000	$ 10,000	$ 50,000	$ 100,000	$ 250,000	$ 500,000	$ 1,000,000	$ 5,000,000
10%	$100	$1,000	$5,000	$10,000	$25,000	$50,000	$100,000	$500,000
30%	$300	$3,000	$15,000	$30,000	$75,000	$150,000	$300,000	$1,500,000
50%	$500	$5,000	$25,000	$50,000	$125,000	$250,000	$500,000	$2,500,000
70%	$700	$7,000	$35,000	$70,000	$175,000	$350,000	$700,000	$3,500,000
90%	$900	$9,000	$45,000	$90,000	$225,000	$450,000	$900,000	$4,500,000

			Risk Analysis			Risk Response				Risk Monitoring		
Risk Category	7 Mile, GBH, Both	Risk Description	Potential Impact Description	Potential Cost Impact	Quantitative Probability	Monetized Risk	Potential Health & Safety Impact	Risk Response Strateg	Mitigation Actions (Preventative or Contingency)	Lead DB Team Member	Stage in Project when Risk Needs	Complete by Date
1- Health and Safety	Both	Confined Space related safety risks			10%	$0	Medium		Prepare detailed H&S Plan and Contruction Risk Summary	Brandon Keezer	Phase 2	
1- Health and Safety	Both	Significant Weather Events During on-site activities			30%		Medium			Brandon Keezer	Task 3 and Phase 2	
2- Regulatory and Permitting	Both	Phase 2 permit or easement delays; specific permits not identified or obtained late in the process; delayed agency review			30%	$0	N/A			Brandon Keezer		
2- Regulatory and Permitting	Both	Phase 1 permit or easement delays; specific permits not identified or obtained late in the process; delayed agency review	Late changes to documents due to late permits/reviews. Delay to final deliverable.	$50,000	70%	**$35,000**	N/A	Mitigate/Reduce	Action: Engage stageholder/agencies early to make them aware, hold meetings/workshops of this project and confirm timelines for reviews. Action Required: - Understand permitting requirements as part of planning	Tom Gossiaux	Task 4 and Task 5 Phase 1.	

Draft risk register developed for GLWA's 7-Mile Nevada & GBH projects, addressing inspection & renewal for 28,000LF of 42-48in and 39,000LF of 48in water mains

*"Owners should implement a rigorous and equitably balanced project **risk** and **opportunity assessment** early in the procurement process.*

Update and refine the risk and opportunity assessment as the project proceeds from procurement through project execution."

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Single Contract Implications

- Reliable finished water supply
- AWWA Class IV fully structural lining system with no reliance on host pipe
- Minimal disruptions throughout duration of project and maintaining uninterrupted, high-quality water service during construction
- Comprehensive as-built documentation of vertical and horizontal alignment to optimize access points and excavation
- Strict Hydraulic Requirements – Limits the reduction in pipe diameter
- Provide community, neighborhood, stakeholder meetings & outreach
- Coordinate with all regulatory agencies as needed to design permittable project

Project objectives for GLWA's 7-Mile Nevada and GBH projects

SECTION I. PROCURING DESIGN-BUILD SERVICES

Best Practice 2 | Design-Build Oriented Procurement Plan

Implementing Technique d.:

Performance-Based Requirements

*"Owners should develop their Design-Build procurement with the goal of **minimizing** the use of prescriptive requirements and **maximizing** the use of **performance-based requirements**."*

The use of performance-based requirements empower integrated Design-Build teams to use innovation and creativity to deliver Projects that achieve the optimized best value; focused on the Owner's primary reasons for undertaking the Project

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Integration is a Mindset

The genius of "**and**"

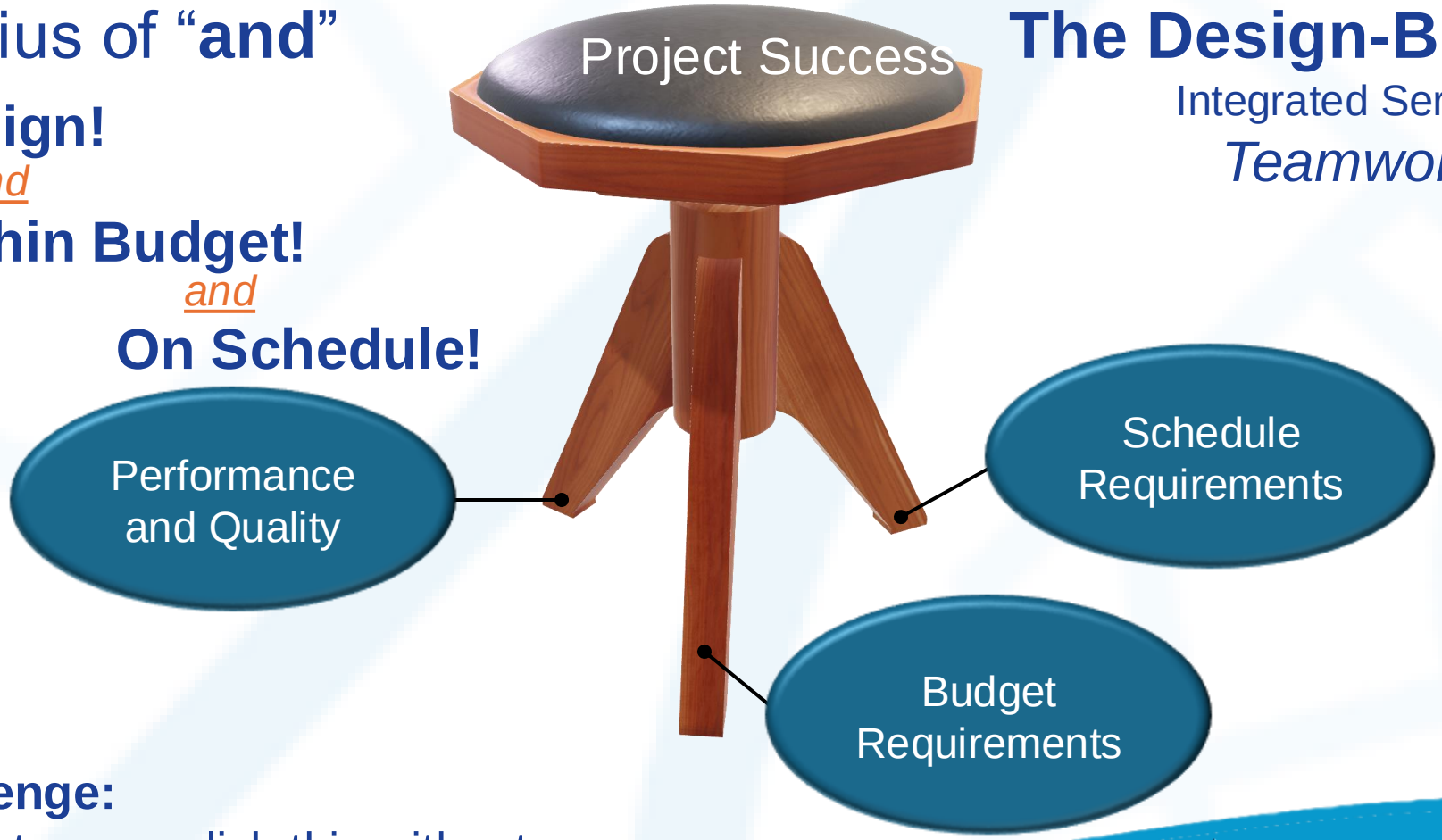
High Design!

and

Within Budget!

and

On Schedule!



The Design-Build Way

Integrated Services

Teamwork!

Challenge:
Cannot accomplish this without an integrated services mindset

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Qualifications Focus

I. Procuring Design-Build Services | Best Practice 2 – Design-Build Oriented Procurement Plan Implementing Technique a.

"Owners should use a procurement process that:

1. *Focuses heavily on the qualifications of the Design-Builder and its key team members more significantly than price, and*
2. *Rewards design-build teams that have a demonstrated history of successfully integrating and collaborating using similar delivery systems on Projects"*

Evaluation Criteria	Weight
Technical Work Plan	50%
Experience and Qualifications	30%
Project Team and Key Individuals	20%

Sample scoring criteria

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Other Selection Methodologies: LPTA vs. Best Value

The Owner "***Sets the Bar***" in the solicitation

LPTA is a Limbo Contest

Minimally Acceptable | Cheapest Price

Best Value is a High Jump Contest

*Must be **Best** to Win | Exceed Expectations*

LPTA: "*Low Price, Technically Acceptable*"

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Best Value Evaluation and Selection Methodologies

DBIA Position Statement

PRINCIPLES OF BEST VALUE SELECTION

- The basis for evaluating Best Value proposals should be clearly articulated by the Owner in the RFQ + RFP
- Non-Price evaluation and selection factors should dominate the Owner's Best Value process to select a Design-Builder
- The evaluation criteria established in the RFP should be strictly followed by the Owner when making a selection

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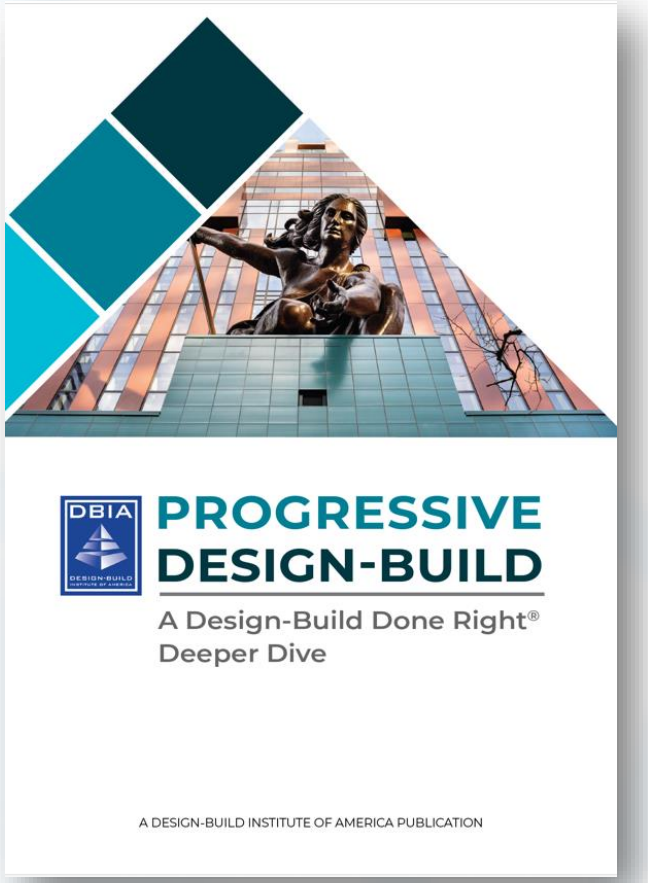
Progressive Design-Build

Qualifications Based Selection

I. Procuring Design-Build Services
Best Practice 4: **Progressive Design-Build Procurement**

"An Owner using a Progressive Design-Build process that does not request a project price, schedule or design during the procurement should implement a procurement that:

- *Seeks to engage the Owner and Design-Builder in an integrated and cohesive strategic partnership for the development of the project;*
- *Focuses primarily on qualifications and proposer's integrated process for selection of the Design-Builder; and*
- *Formalizes the joint effort of advancing the design to a point of mutual commitment to scope, quality, schedule, commercial terms and contract price to occur after selection of the Design-Builder."*



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Progressive Design-Build

Qualifications Based Selection

Typical Non-Cost Selection Factors

- *Team Qualifications and Past Performance*
- *Key Personnel*
- *Key Trade Partners*
- *Project Approach*
- *Creativity*

DBIA believes that a pure
Qualifications-Based Selection (QBS) process
is a highly effective way of procuring a design-build team
and ensuring project success

DBIA's "*Progressive Design-Build Deeper Dive*" Document and Progressive Design-Build Elective Courses provide more detailed insight into key issues, such as:

- *One-Step vs. Two Step procurement*
- *How to evaluate price in the selection process when required by public statute*
- *Contracting approaches*
- *Extent of design advancement prior to contract price commitment*
- *Considerations unique to Progressive Design-Build*

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Progressive Design-Build

Off-Ramp

I. Procuring Design-Build Services
Best Practice 4 – **Progressive Design-Build Procurement**
Implementing Technique d.

*"The procurement should clearly identify the process for the Owner to exercise the '**Off-Ramp**' provision of progressive design-build procurement if the Owner and Design-Builder are unable to agree on design, schedule, commercial terms and / or contract price."*

Off-Ramp provisions of the procurement should clearly define:

1. *Circumstances under which the parties may cease contract negotiations and exercise the off-ramp provisions of the procurement, including notification and procedural processes for doing so;*
2. *Payment due the Design-Builder for the earned value of design-build services;*
3. *Rights of the Owner to use the work product of the Design-Builder for subsequent procurements associated with the project; and*
4. *Rights of the Owner to take assignments of subcontracts and material purchase orders.*

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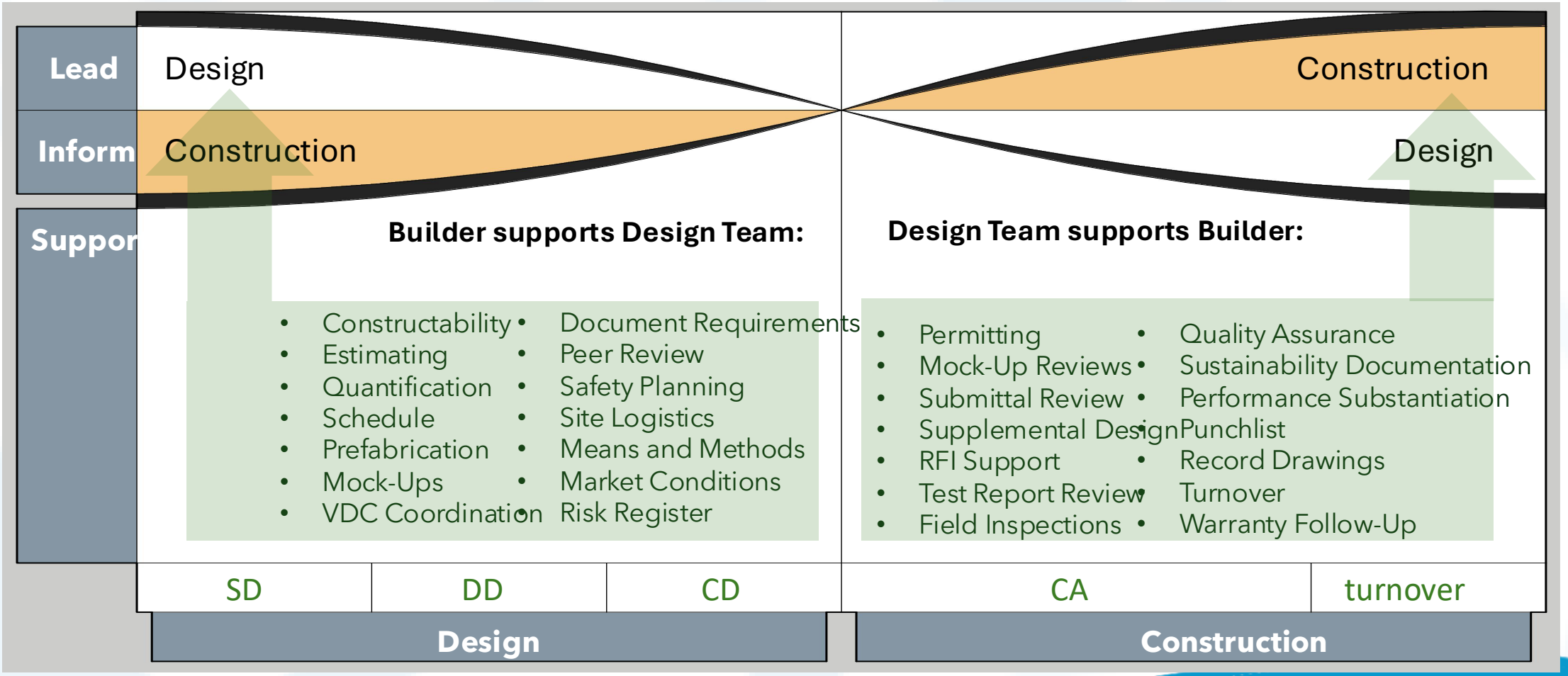
Designing to "Build"

INTEGRATING THE ENTIRE PROJECT Team



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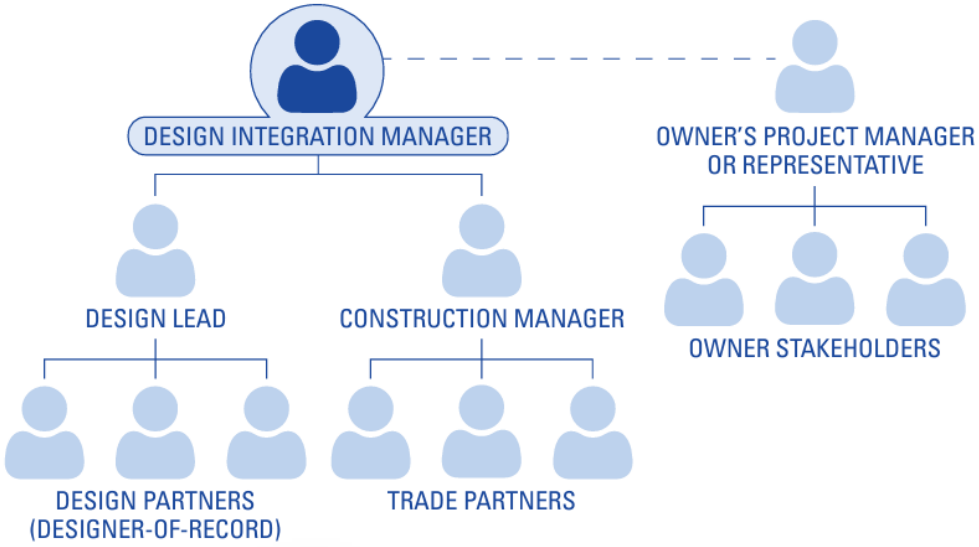
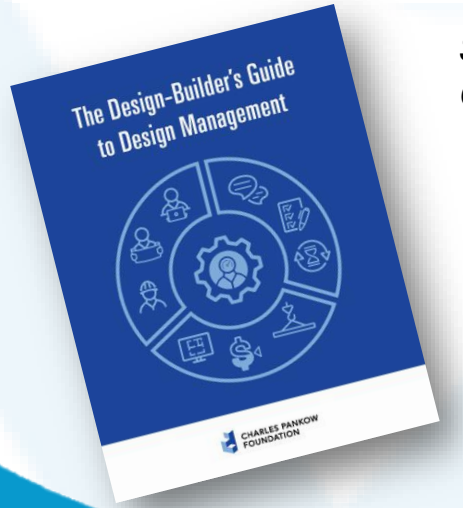
Get Organized: Key Design-Build Team Roles





Source: The Design-Builders Guide to Design Management

Design Integration Management *is emerging as a new career path for trained design and construction professionals*

Design Integration Manager

- Does not perform actual design
- Facilitates the *Shift Left* - integrating design with construction early in the project
- Manages flow of design effort and deliverables to support construction
- Facilitates the "marriage" between design professionals and the estimating team
- Advocates for Owner's design excellence goals within the design-build team
- May be the Design-Builder's primary Owner contact during design phases

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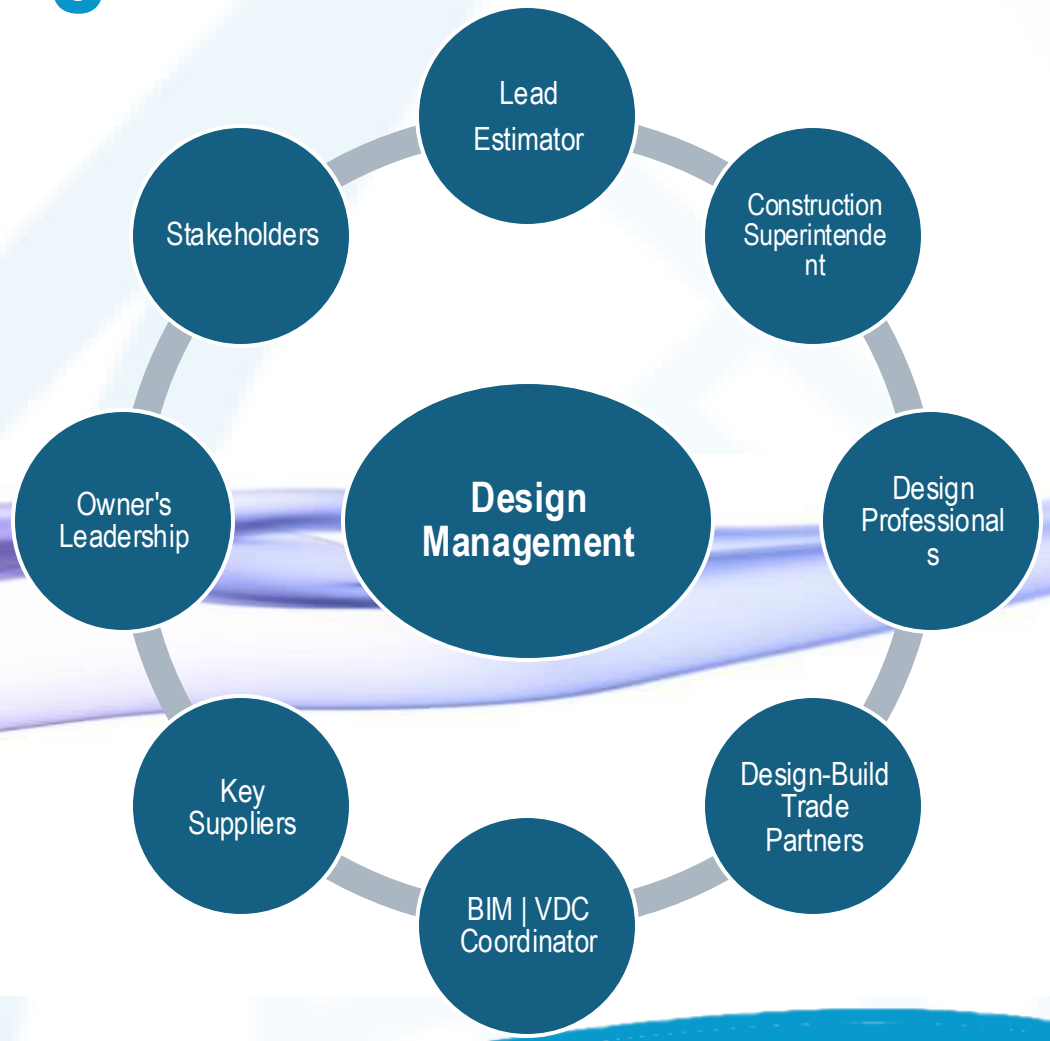
Get Organized: Key Design-Build Team Roles

Successful execution of roles and relationships requires a true **TEAM** effort



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Get Organized: Creating a High Performing Team

Building Team **trust** occurs in phases

Owner *and*
Stakeholders
Prior to development of Project requirements and criteria documents

Design-Builder
During Team formation and upon receipt of Owner's Procurement Documents

Owner *and*
Design-Builder
Starts during proprietary pre-proposal meetings. Continues immediately after selection, during validation

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Get Organized: Creating a High Performing Team

Tools of High Performing Teams: **Joint Goal Setting**

Leads to a shared sense of ownership

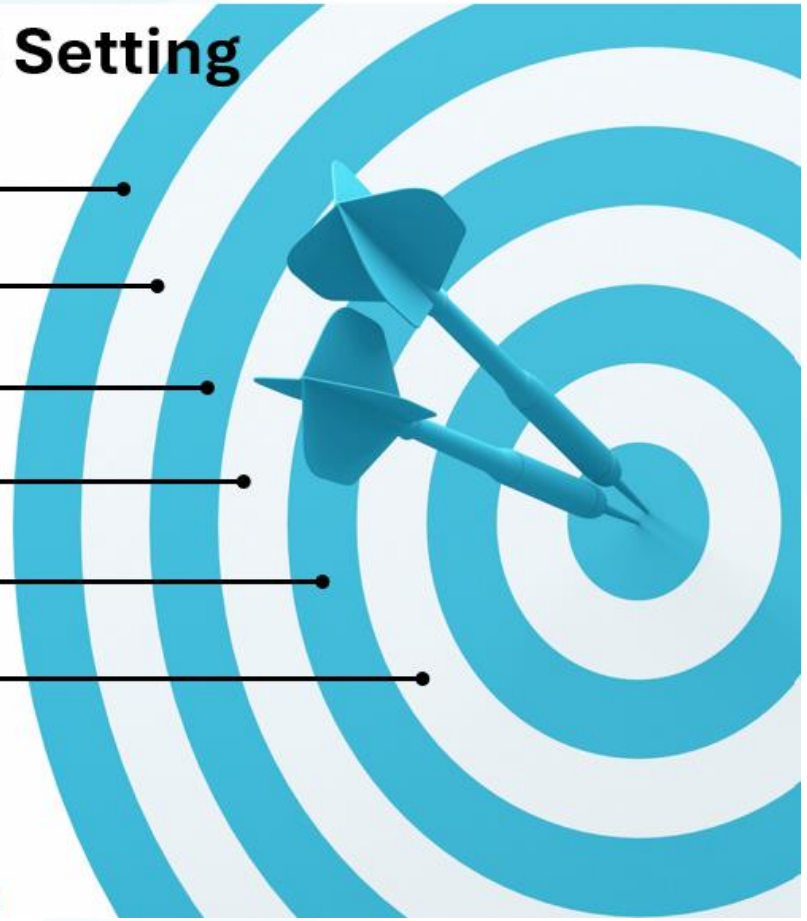
Fosters clarity and alignment

Develops a shared understanding for the nuances of each goal

Whole Team buy-in to Project goals

Important to prioritize goals as a Team

Introduce and reinforce goals when new Team members are added



Commitment to **Project Goals**
instead of individual goals
promotes Team integration *and* cohesion

- Charter
- Communication Matrix
- Issue Resolution Process

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Post Award First Steps: Project Planning

III. Executing Design Build Projects
Best Practice 3 – Exemplary Communications
Implementing Technique g.

Transparency

“The Design-Builder should clearly, thoroughly and expeditiously advise the Owner about any issues that might impact:

- *Contract Price*
- *Schedule*
- *Material matters affecting the Project*

as this will enable the Owner to make timely and informed decisions on how to address such issues.”

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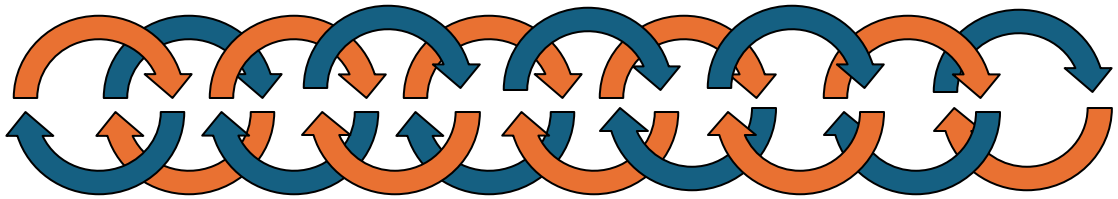
Design-Build integrates two distinct functions

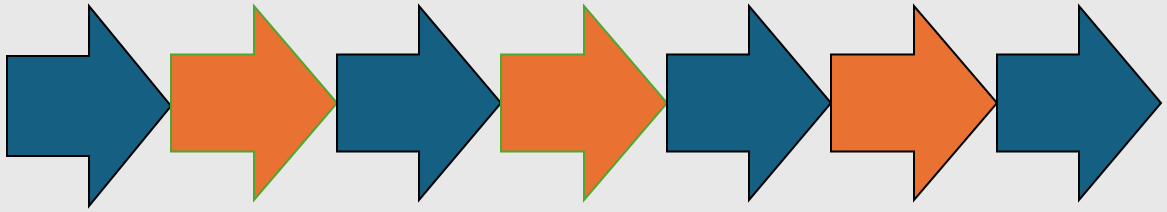
Cloud Like



Design Process - Iterative

How are Projects designed?

Clock Like



Construction Process - Sequential

How are Projects constructed?

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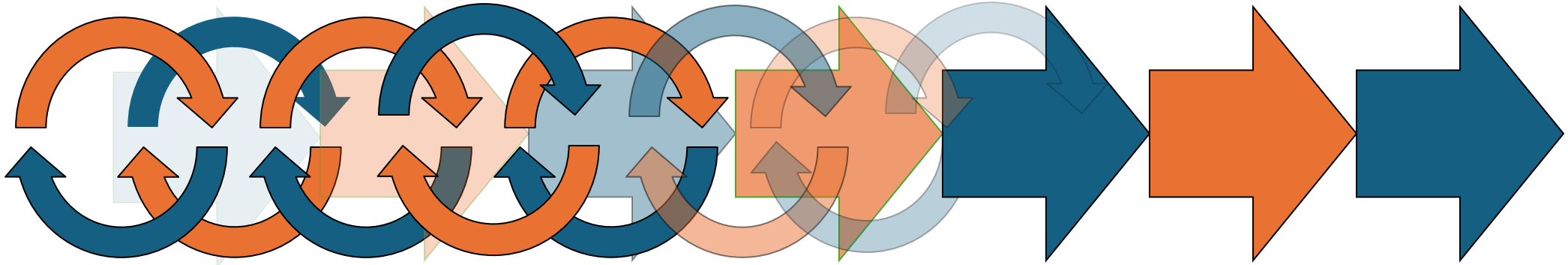
Construction: Sequential



Design: Iterative

Design and Construction must be
Managed as one ***integrated process***

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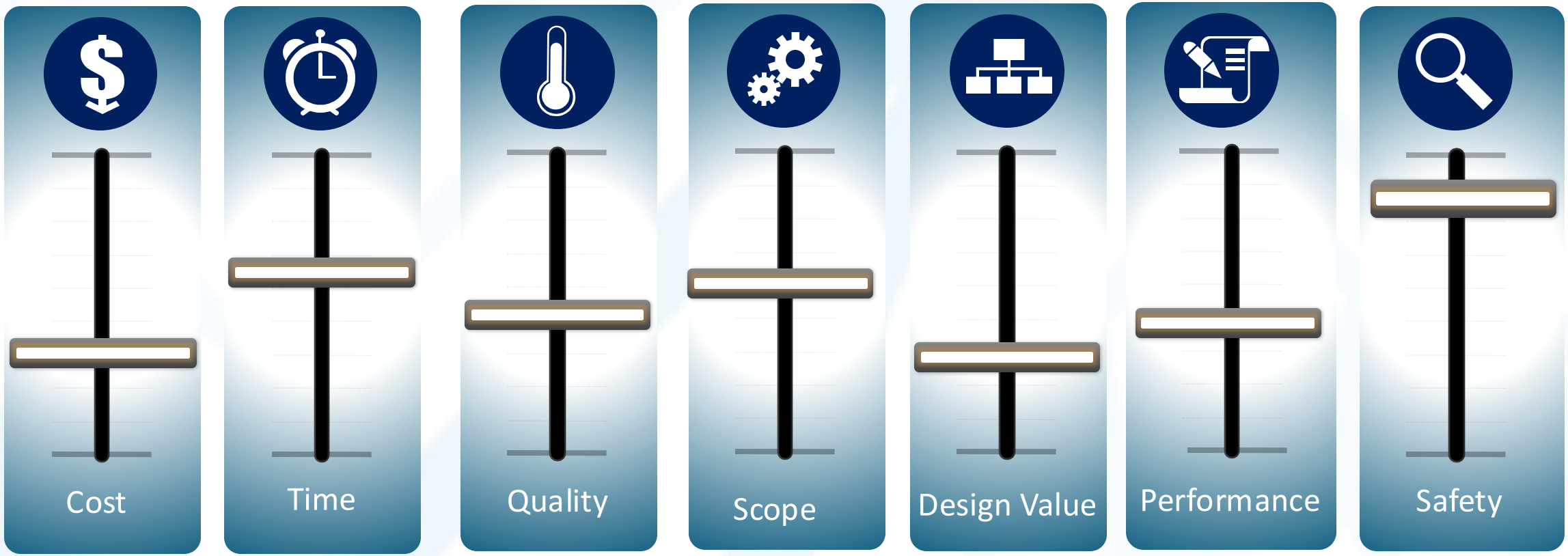
Integrated Problem Solving

Tweaking One Element Can Affect All Others



Integrated problem solving creates the opportunity to optimize the Project

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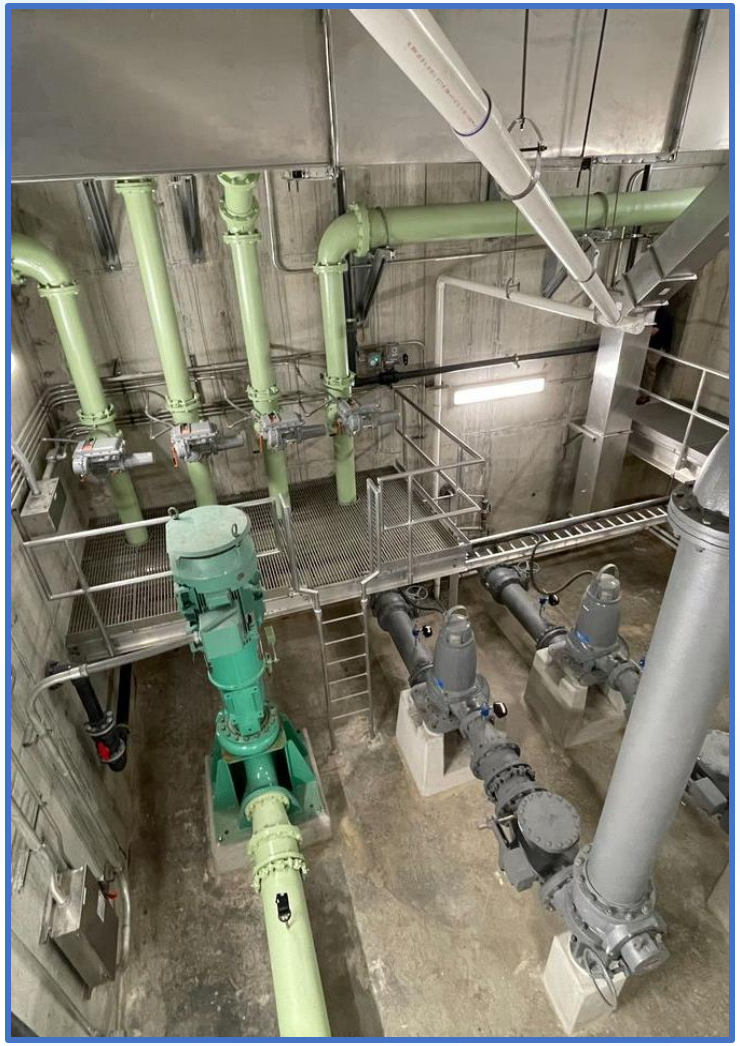
Introduction & Project Drivers

- Part of HRSD's Regional Wet Weather Management Program
- Manage wet weather flows after the closure of a major treatment plant, a strategic move benefiting the region both financially and environmentally
- Coordination of work with other CIP projects
- Site location to benefit both HRSD and the City of Virginia Beach
- Coordination with neighbors and local skating community



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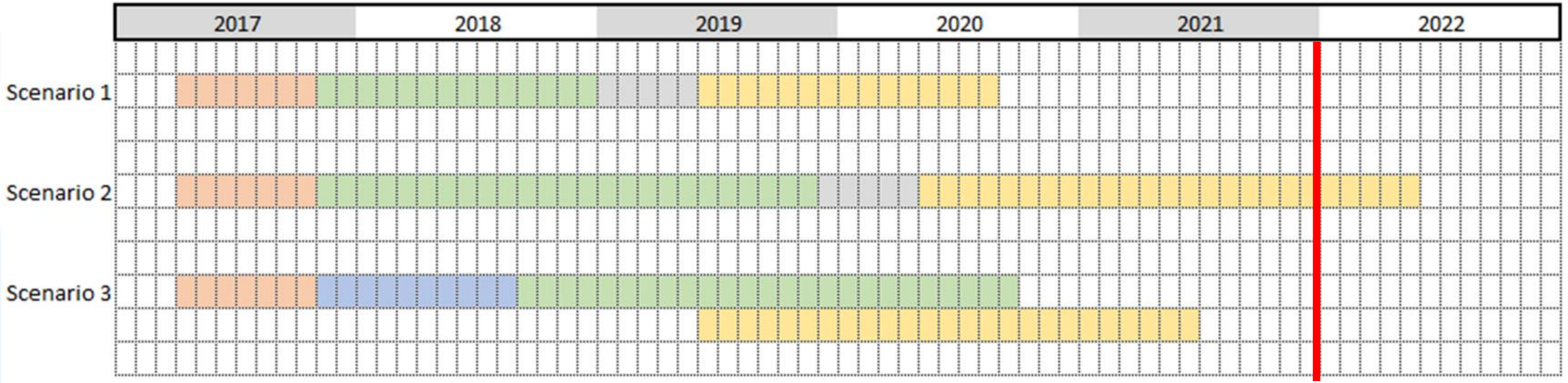
Schedule Scenarios and Actuals



- Preliminary Engineering
- D-B Procurement
- Design
- Preconstruction
- Construction

1. Proposed D-B-B Procurement – First Schedule
2. Possible D-B-B Procurement, more realistic Design/Construction durations
3. Actual D-B Procurement

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Outcomes

- Early price certainty
- Project was delivered on schedule and on budget
- Good communication with HRSD, City and residents
- Ability to manage scope of work using allowances and contingencies
- Highly visible project site which included art and educational features

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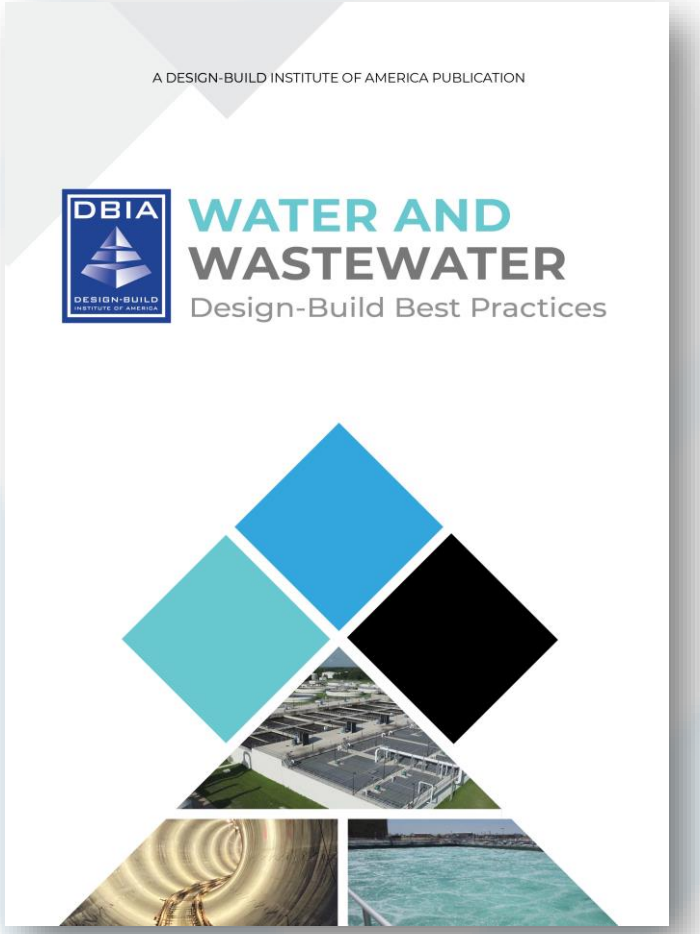
Important Resources



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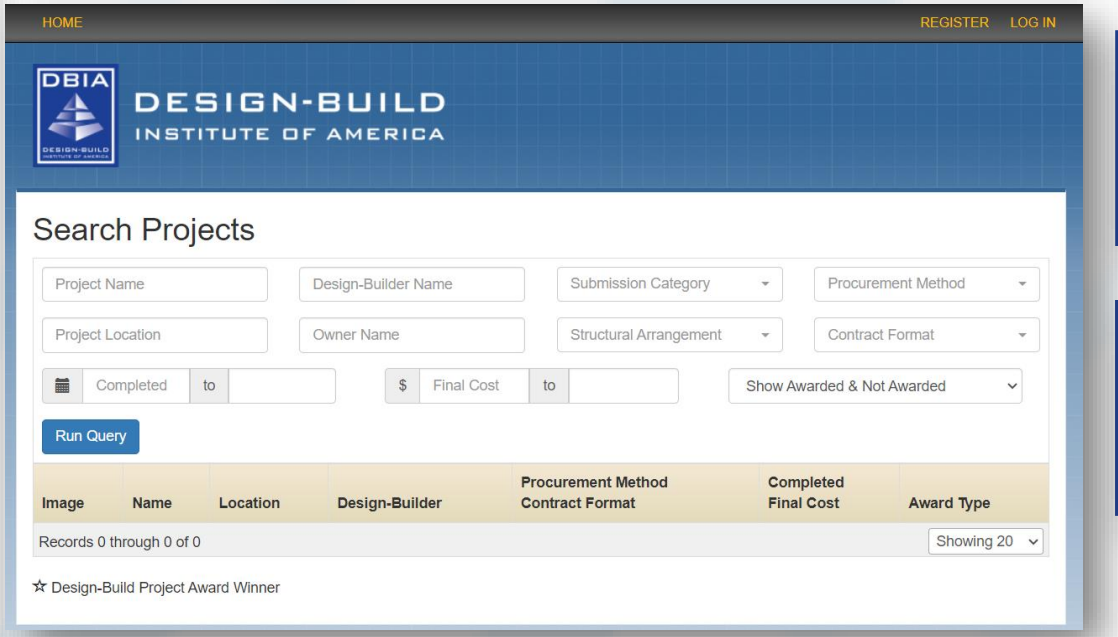

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Questions?

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