

# FYI in 45 Building Smarter and Safer in 2019

Panelists:

Mike Picard

Jim Calderone

Moderated by:

Andrew Beaton

*December 6, 2018*



**CDM  
Smith**

# Today's Discussion

- ▶ How effective planning will drastically improve your ability to keep projects on budget and on schedule
- ▶ How to use the components of your safety program to drive positive changes, and what to look for in selecting safety-conscious contractors
- ▶ The power of design-build to achieve greater efficiency and better end products

# Our Panel



**Michael P. Picard**

Senior Vice President, Project  
Development & Estimating Manager



**James T. Calderone, DBIA**

Senior Vice President, Industrial Unit  
Director of Design-Build



# Building a Successful 2019

# Major Challenges

## Challenges

**Budgeting effectively**

**Risk transfer & responsibility**

**Maintaining safety**

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**Budgeting effectively**

**Risk transfer & responsibility**

**Maintaining safety**

## Solutions

**Feasibility studies before the project starts**

**Tap into design-build**

**Prioritize safety**

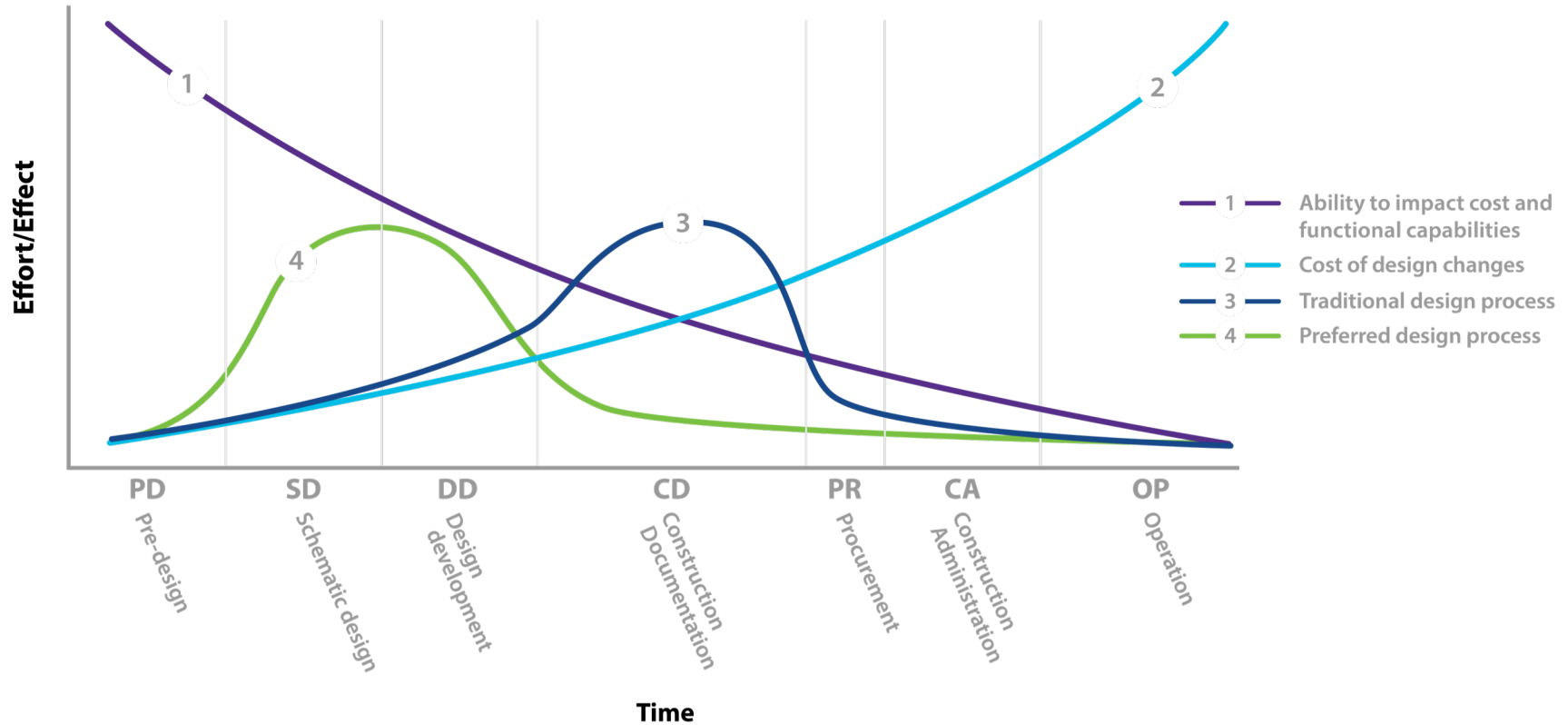


# The Power of Front-End Loading

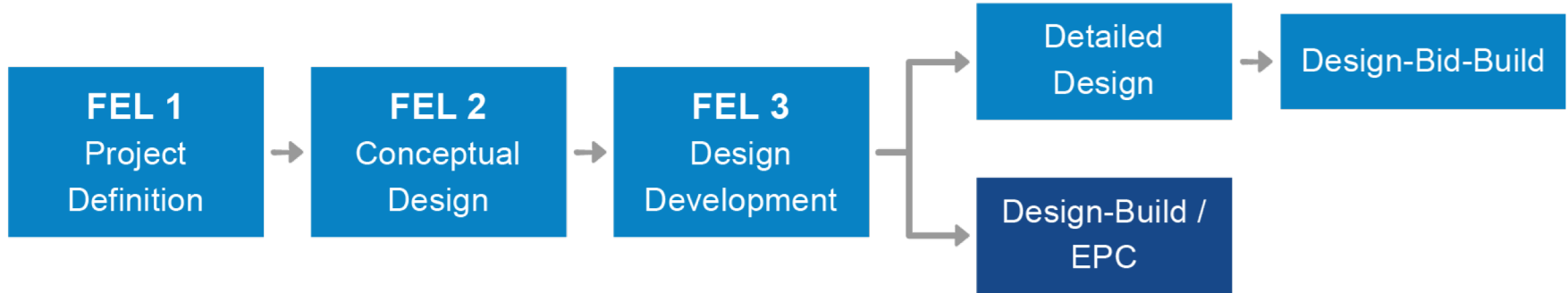




# To FEL or Not to FEL



# FEL Process



# FEL Process

	FEL 1	FEL 2	FEL 3
Objective	Project Definition	Conceptual Design	Design Development
Design Discipline Support	Conceptual	Design Advancement	Design Advancement
<b>Engineering</b>	<b>5-10%</b>	<b>30%</b>	<b>60-70%</b>
<b>Cost Estimate</b>	<b>+/- 50%</b>	<b>+/- 30%</b>	<b>+/- 10%</b>
Deliverables	<ul style="list-style-type: none"> <li>• Define need</li> <li>• Technologies</li> <li>• Business Case</li> </ul>	<ul style="list-style-type: none"> <li>• Options Analyses</li> <li>• PFDs</li> <li>• Permits</li> <li>• Risk</li> <li>• Weigh options</li> </ul>	<ul style="list-style-type: none"> <li>• Define selected option</li> <li>• PFDs</li> <li>• P&amp;IDs</li> <li>• MB</li> <li>• Equipment</li> <li>• Line List</li> <li>• Costs</li> <li>• Definition</li> </ul>

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# Importance of FEL

1

Opportunities to revisit scope without losing time or money

2

Define **Needs** vs. **Wants**

3

Value engineering early to find efficiencies

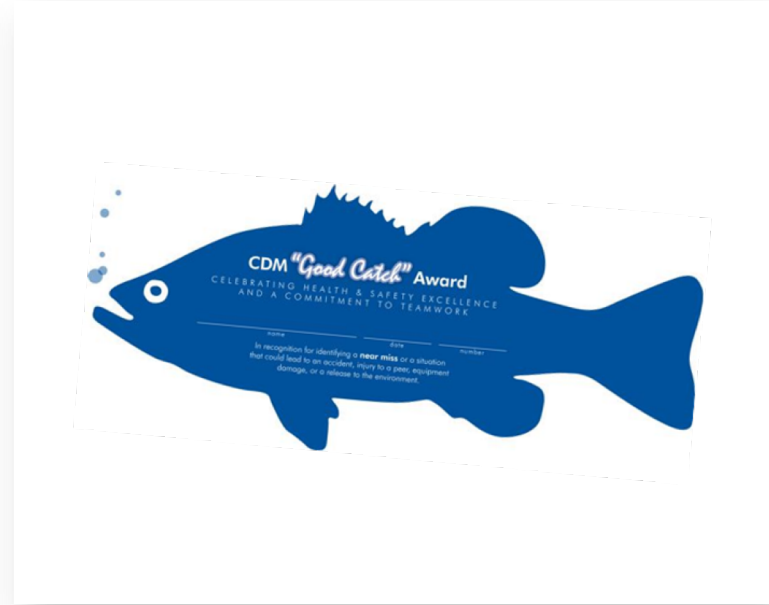
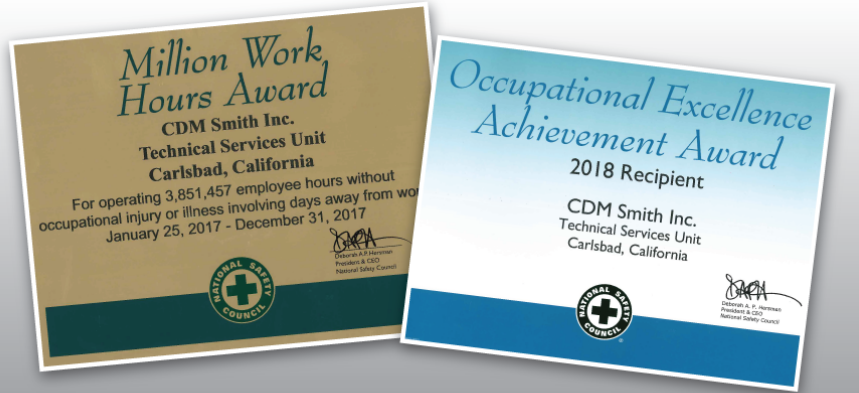


# Safe Projects in 2019

# Keys to Achieving Safety

- Hire companies that prioritize safety
- Have detailed, modern safety plans in place

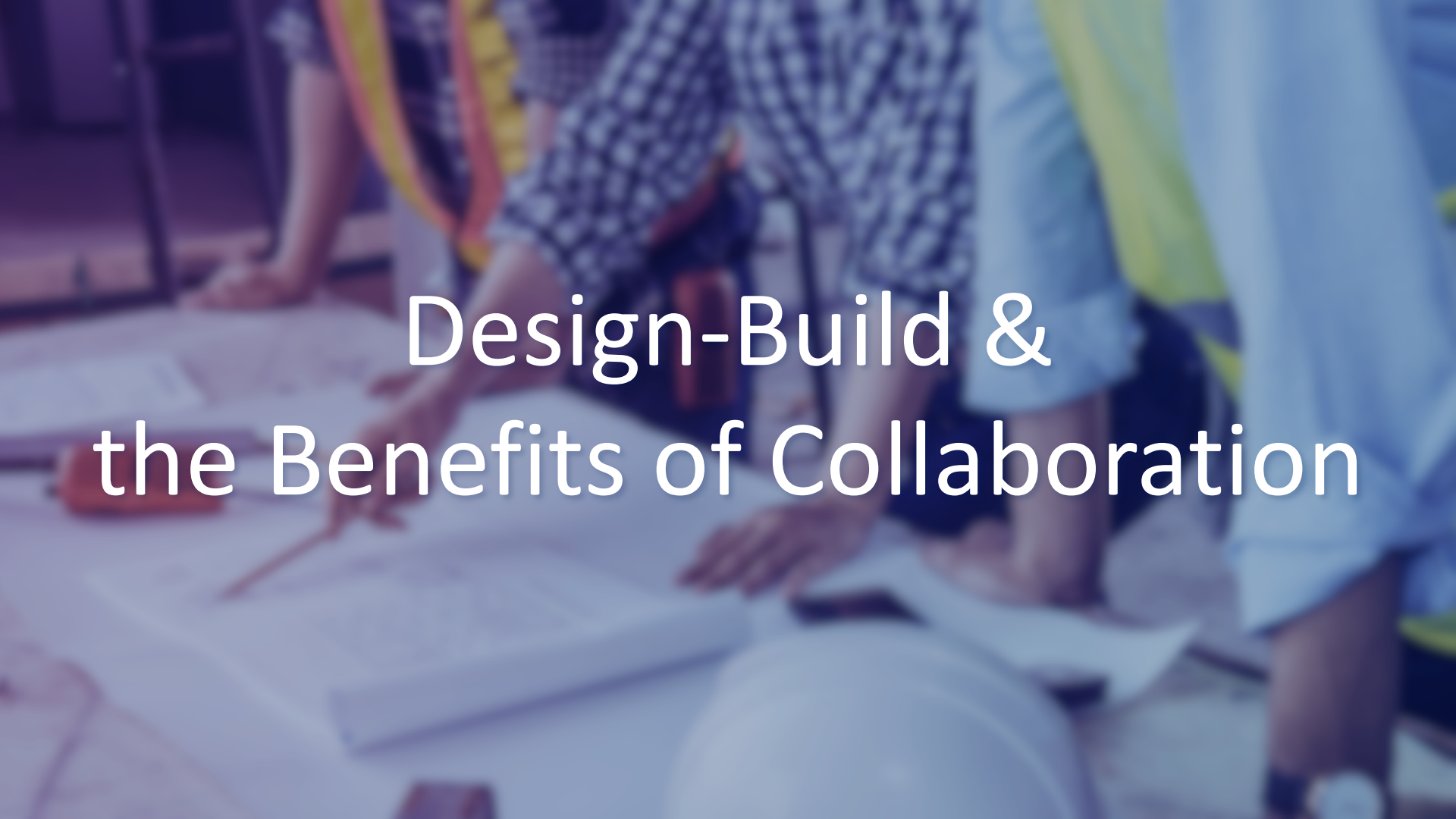
# Safety Culture





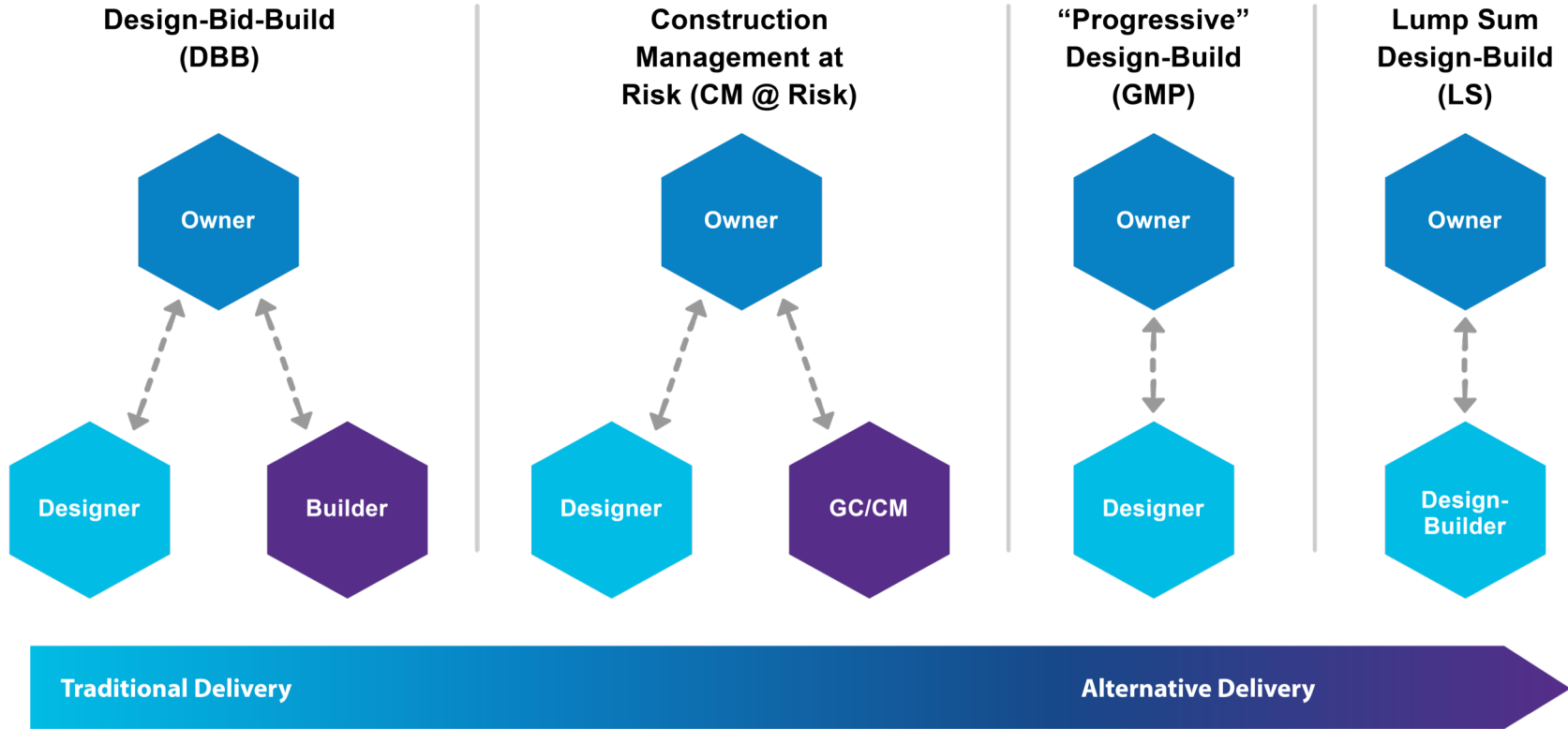
# Keys to Achieving Safety

- Hire companies that prioritize safety
- Have detailed, modern safety plans in place
- Regular audits and near miss reports
- Realistic schedules
- Get your construction team involved early

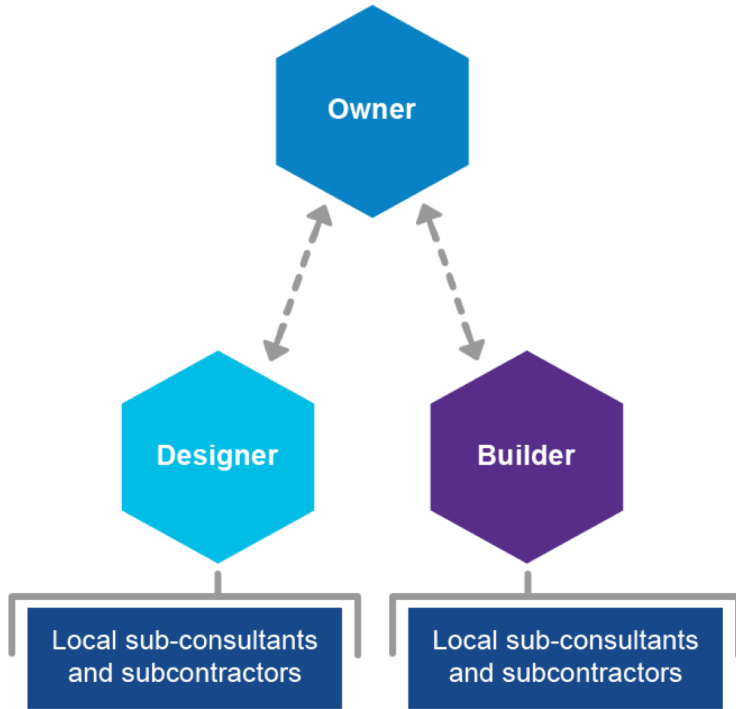


# Design-Build & the Benefits of Collaboration

# Project Delivery Methods



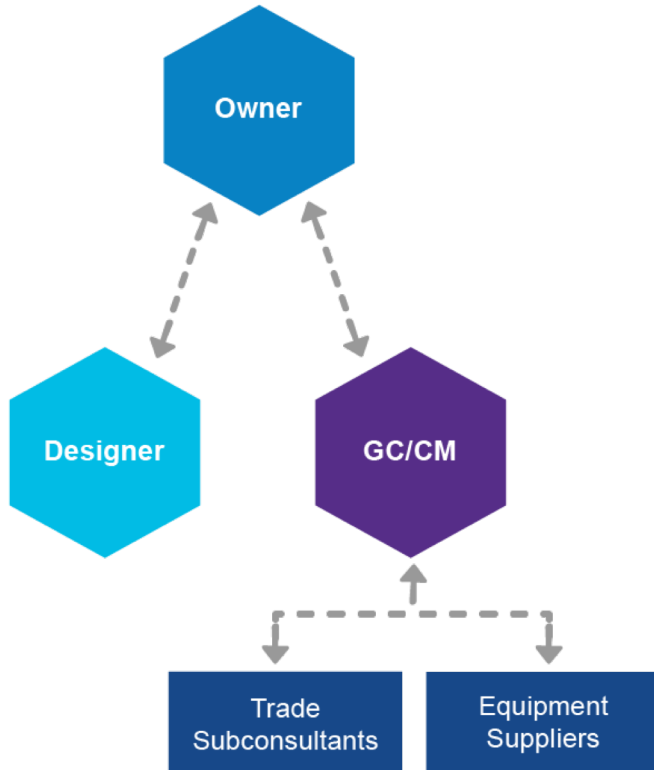
# Design-Bid-Build (DBB) Drawbacks



## Disadvantages

- ▶ Low-bid contractor selection
  - ▶ Increases risk of change orders, disputes, and claims
- ▶ Multiple contracts for owner to manage
- ▶ Owner bears majority of risk
- ▶ No collaboration between designer and builder during design

# Construction Management At Risk (CM @ Risk)



## Advantages

- ▶ Utilize some non-cost factors for contractor selection
- ▶ Increase collaboration
- ▶ Maintain traditional relationship with designer

## Disadvantages

- ▶ No single-point accountability
- ▶ Multiple contracts for owner to manage
- ▶ Cost for construction is not known at the time of initial contract signing

# Advantages of Design-Build

- ▶ Fewer change orders
- ▶ Reduced potential for claims and litigation
- ▶ Single point of responsibility
- ▶ Shortened project timeline

# Penn State Study



6%

**Lower cost &  
change orders**



12%

**Faster  
construction time**



33%

**Faster  
project time**



8

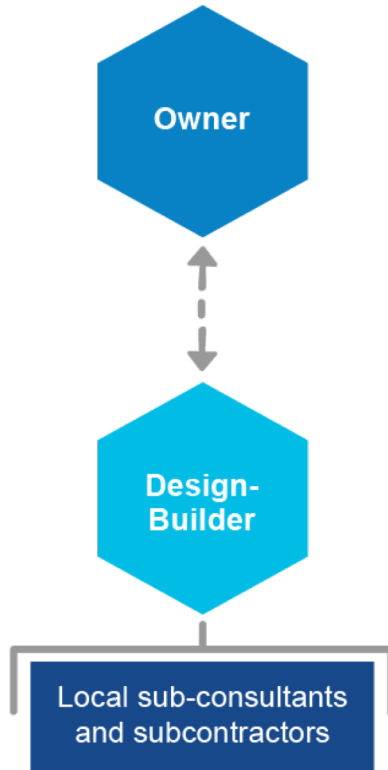
**Quality  
categories with  
higher scores**

# Advantages of Design-Build

- ▶ Fewer change orders
- ▶ Reduced potential for claims and litigation
- ▶ Single point of responsibility
- ▶ Shortened project timeline
- ▶ Enhanced constructability of engineered project plans
- ▶ Overlapping of design and construction phases
- ▶ Efficient communication and integration



# Lump Sum Design-Build



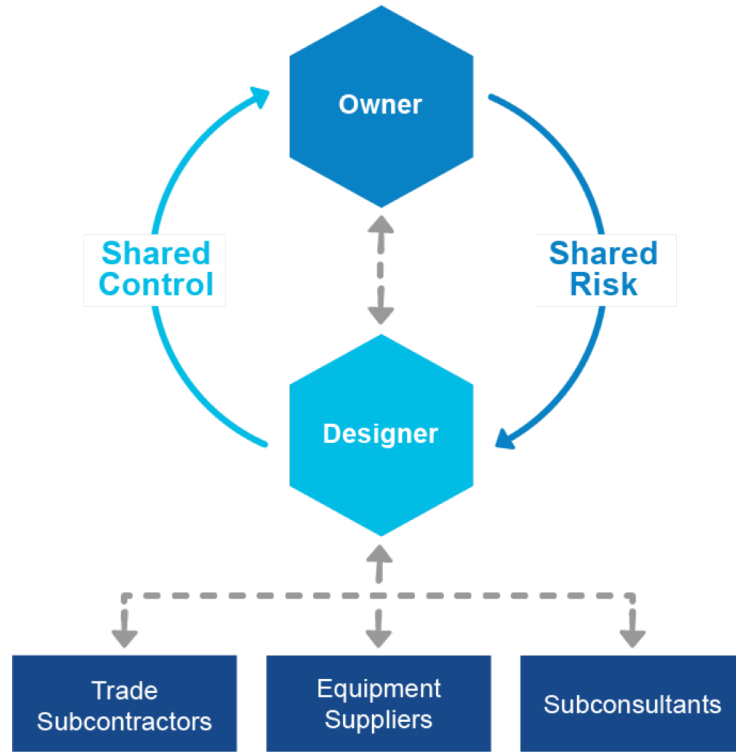
## Performance Lump Sum

- ▶ When Owner has clear vision for how facility must perform, with limited interest on how that performance is achieved
- ▶ **Requires 10-30% design completion**
- ▶ Design is completed with no input from the owner with exception of performance criteria

## Prescriptive Lump Sum

- ▶ When Owner has definable preferences and specific detailed requirements.
- ▶ **Includes 10-30% design**
- ▶ Owner's preferences are clearly defined

# Progressive Design-Build (GMP)



## Advantages

- ▶ GMP is usually provided at design milestones (60%-90%-final)
- ▶ Uses competitive contractor bids
- ▶ Transparent open-book approach
- ▶ “Off-ramp” option
- ▶ Complete flexibility

# Design-Build to Full Potential





# Case Study



**ARCONIC**  
Innovation, engineered.

# Concepts in Action

- Understand the value of planning
- Good handle on different delivery mechanisms
- Safety is a major priority







A blurred background image showing several people wearing safety vests (yellow and orange) gathered around a table. They appear to be reviewing documents or blueprints. The scene is dimly lit, possibly outdoors at dusk or dawn. The overall tone is professional and collaborative.

# Final Thoughts

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- 1 Pick the right delivery method to suit your goals
- 2 Safe firms work with safe firms

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- 1 Pick the right delivery method to suit your goals
- 2 Safe firms work with safe firms
- 3 Spend your money on planning
- 4 Work with an integrated team



# Questions & Answers

# Contact Information

## Panelists



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## Moderator



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Thank You