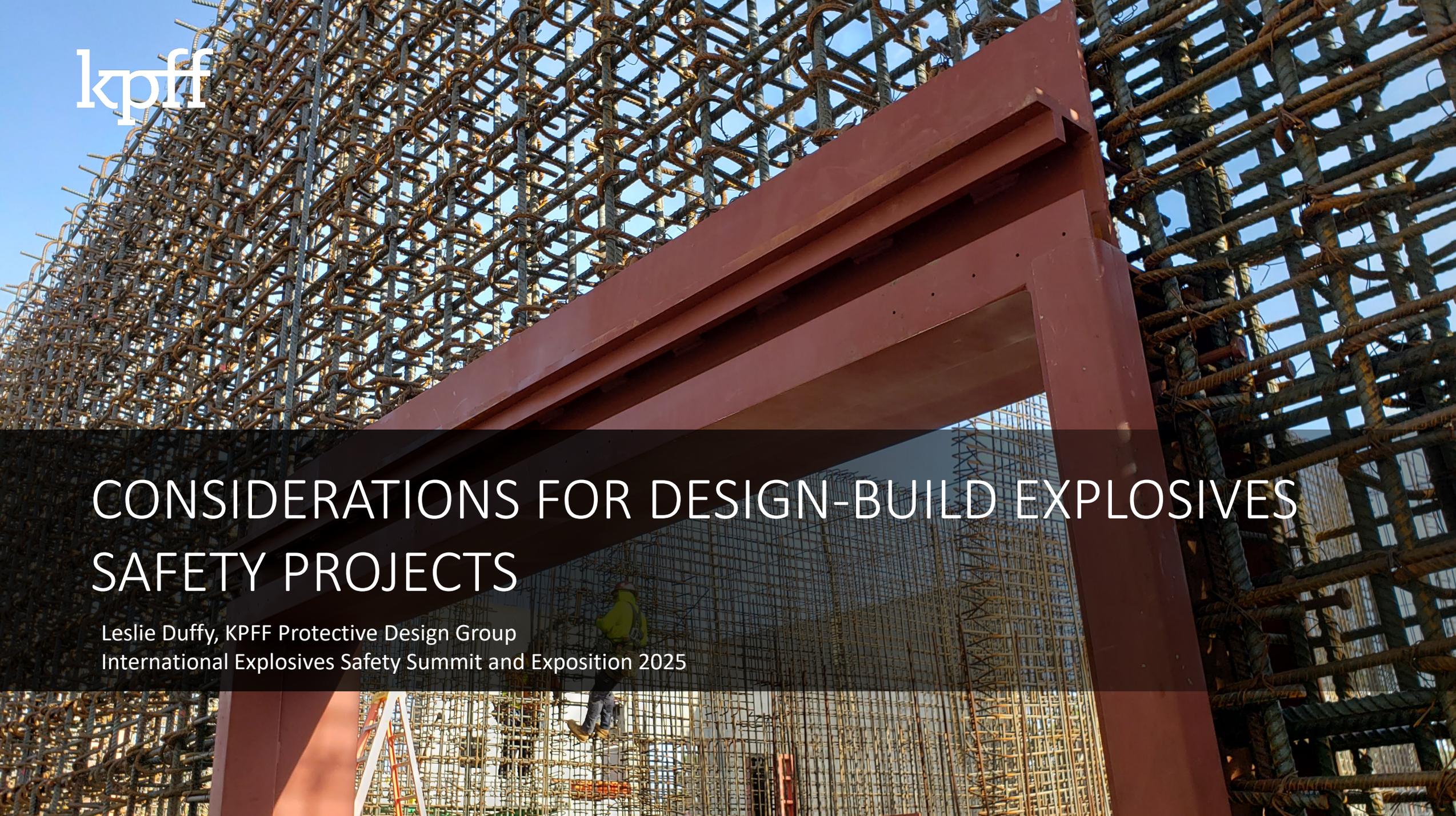




CONSIDERATIONS FOR DESIGN-BUILD EXPLOSIVES SAFETY PROJECTS

Leslie Duffy, KPFF Protective Design Group
International Explosives Safety Summit and Exposition 2025



Agenda

Explosives Safety Overview

DWESB Review Process

Design Process

Bid Phase

Case Studies

Key to Success

Explosives Safety

Protecting personnel or equipment from an accidental explosion (detonation or deflagration) associated with hazardous material.



Role of the Blast Engineer

Gather Information

Verify Quantity Distances

Design Protective Construction

Discipline Coordination

DWESB Review Process

Preliminary
Approval vs.
Final Approval

Site Plans vs.
Protective
Construction

Project Delivery Method

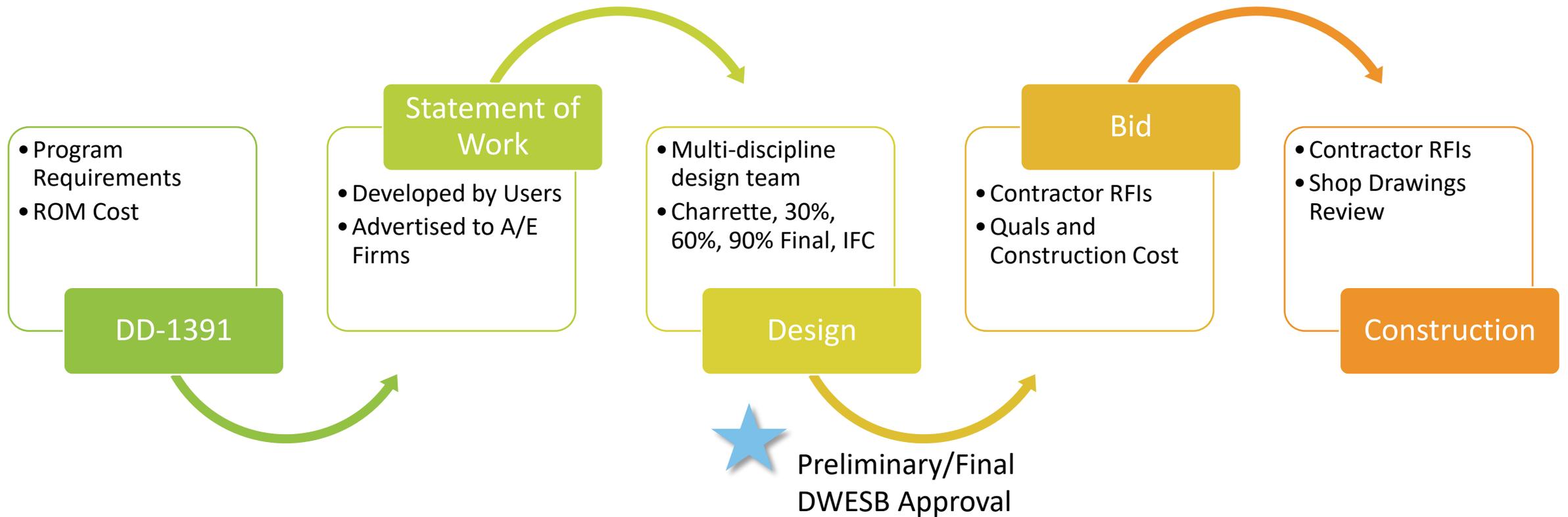


Project Delivery Methods

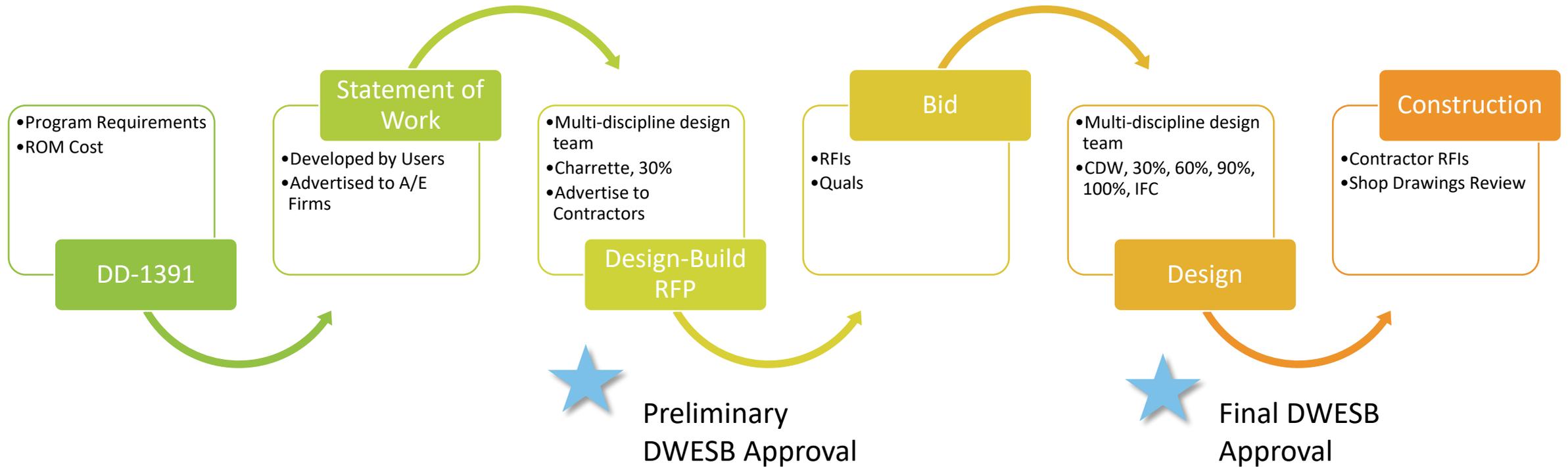
**Design-Bid-
Build**

**Design-
Build**

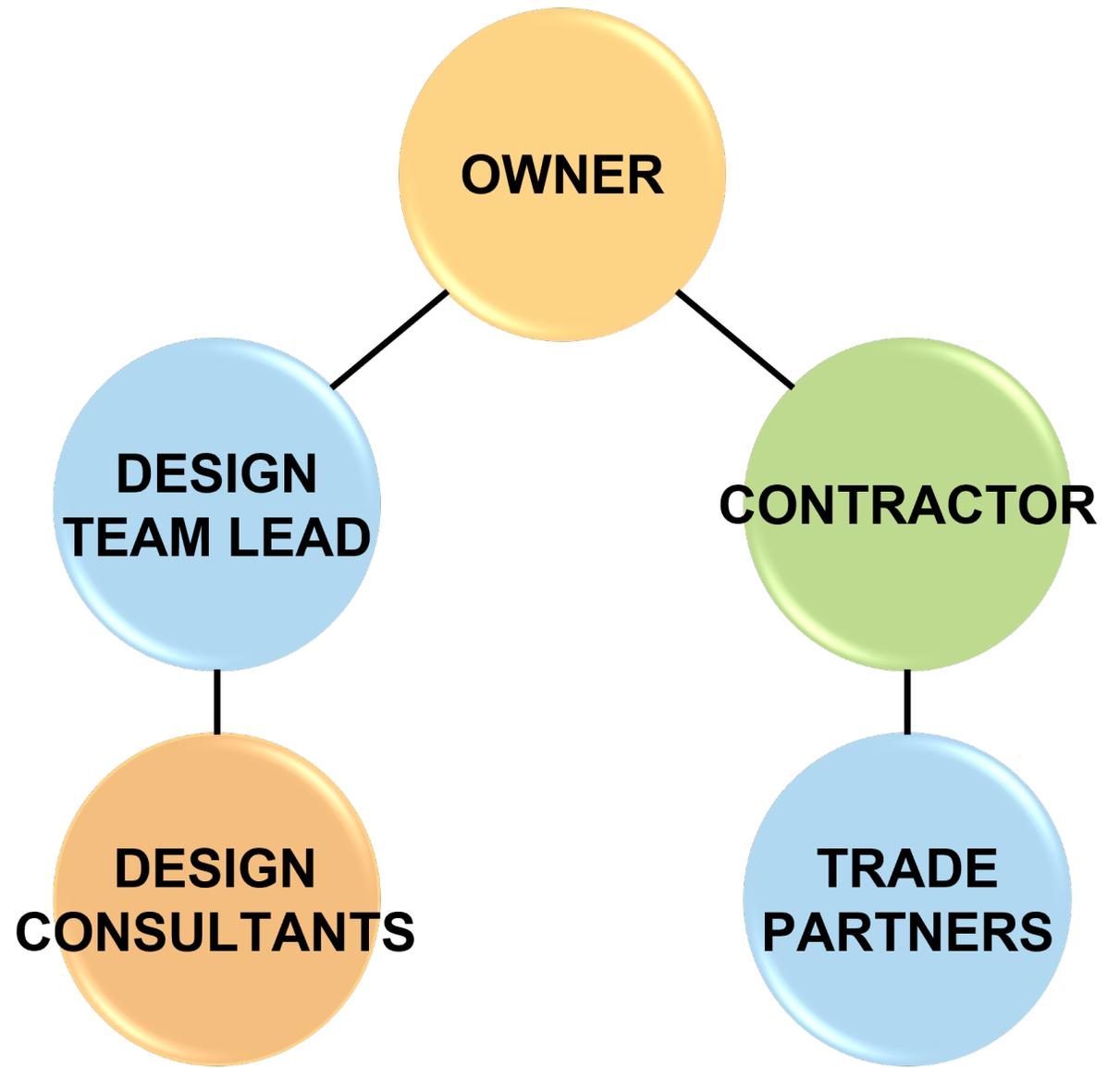
Design-Bid-Build



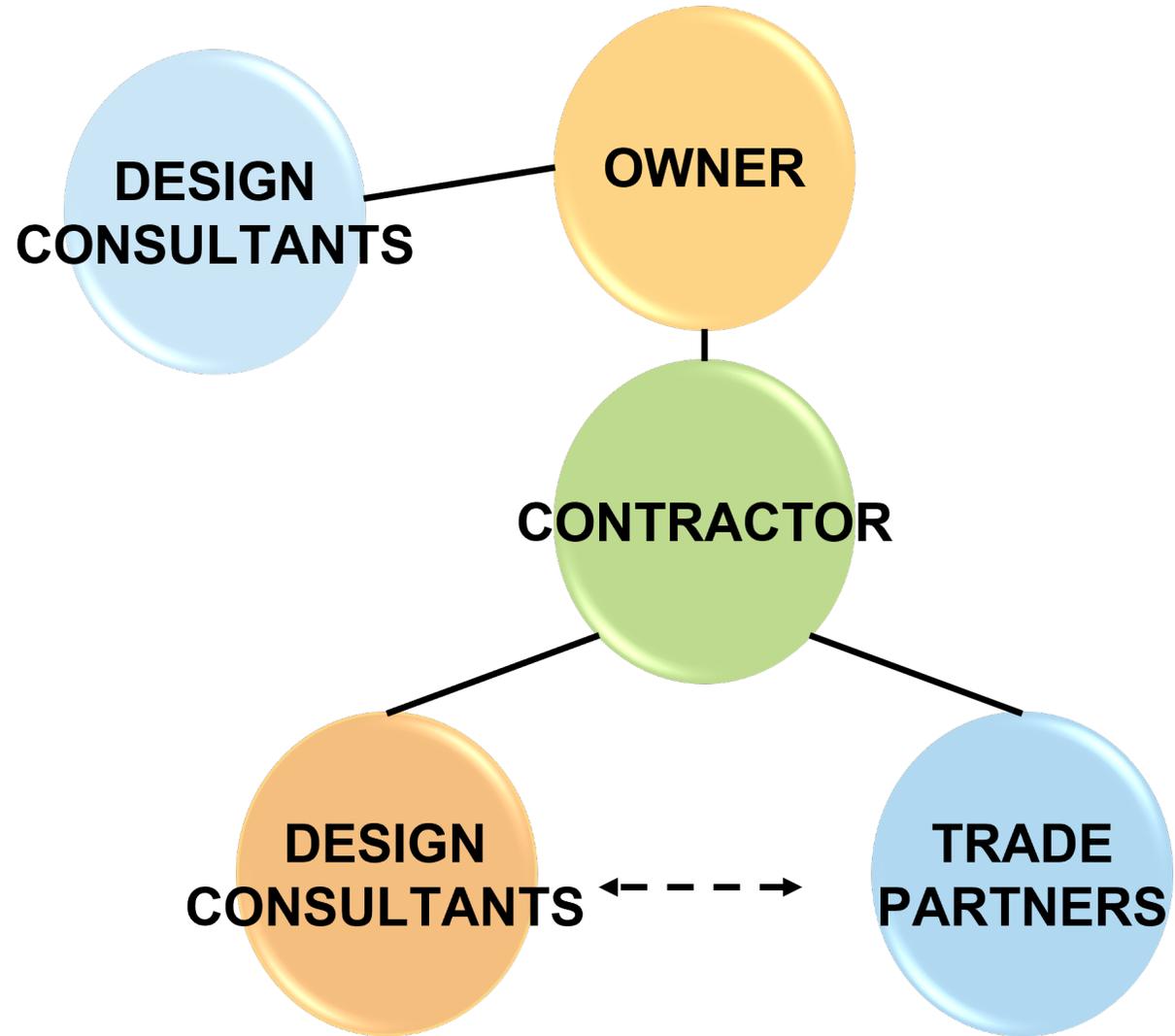
Design-Build



Design-Bid-
Build



Design-Build



Design-Build



Bid Phase

**1. How
much will
this cost?**

**2. When can
we start
building?**

Case Studies

Explosive Safety Challenges

Project A -

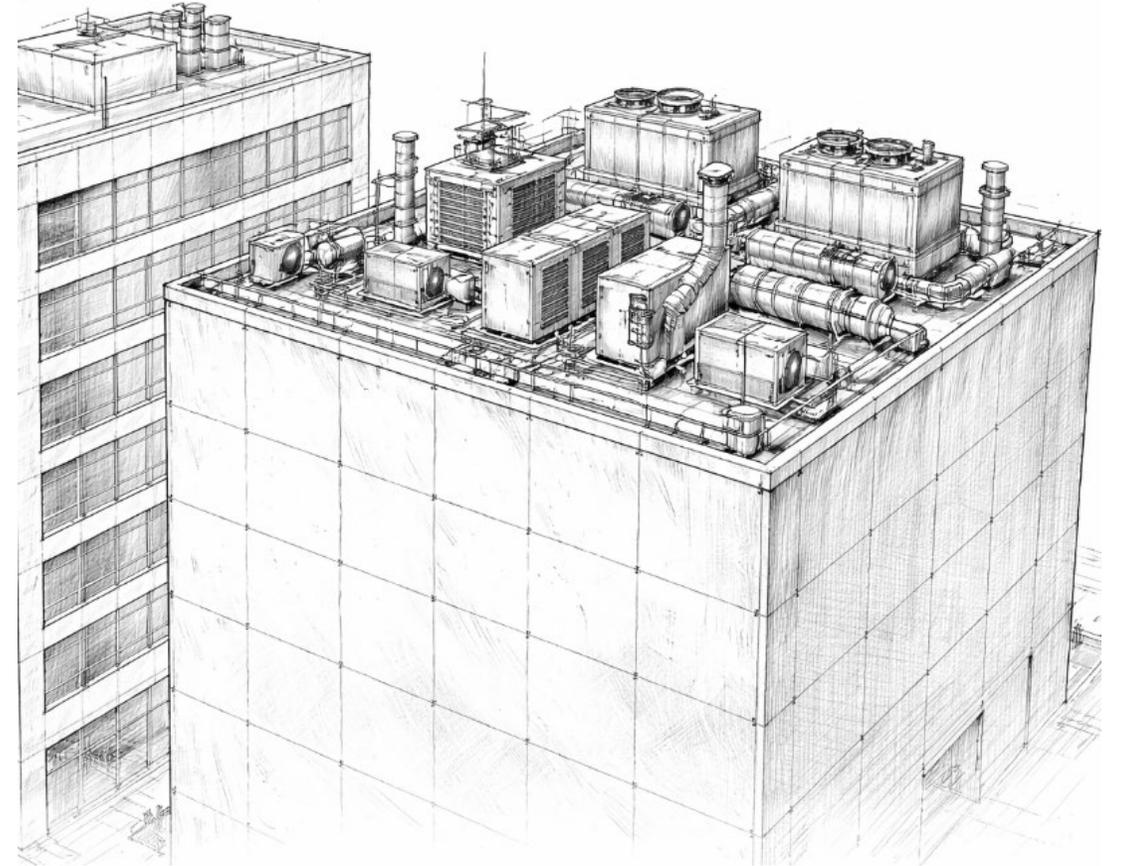
Overview

- Explosive operating space built next to existing admin building
- Required protective construction to fully contain an explosive event

Issue

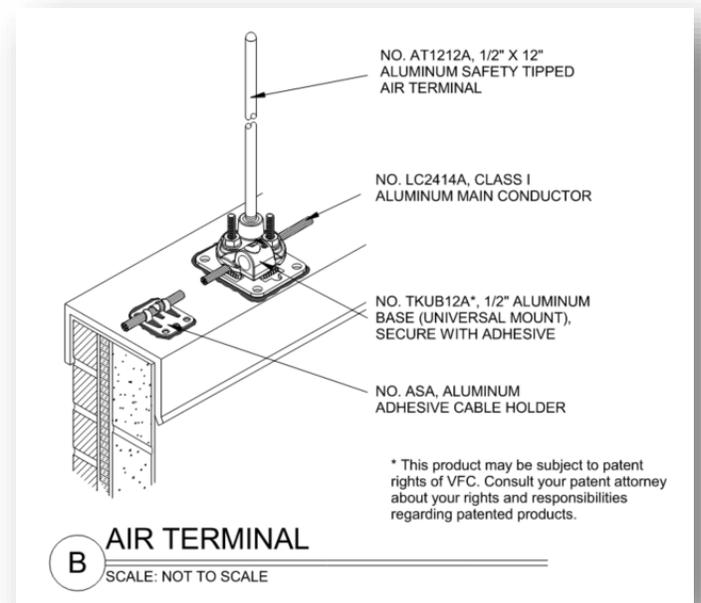
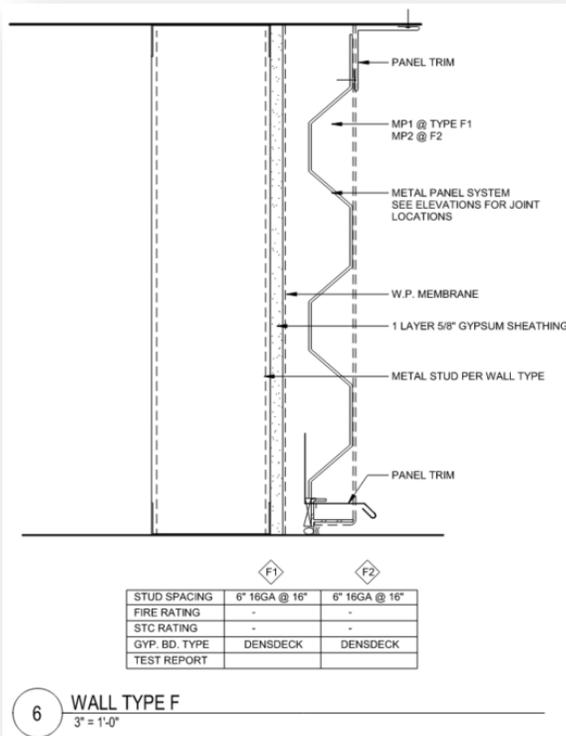
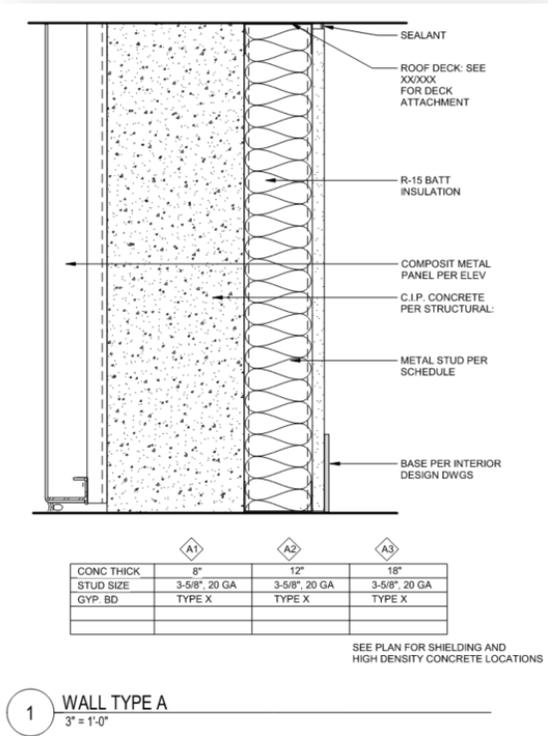
- Late design change added several roof penetrations
- Penetrations triggered: Increased roof height to meet exposure limits
- Re-evaluation of blast, fragment, and thermal passage
- Structural redesign of protective construction

Result: ~10% increase in concrete + reinforcement volumes



Project B

Design-Build



Project C & D

Design-Build

Requirements

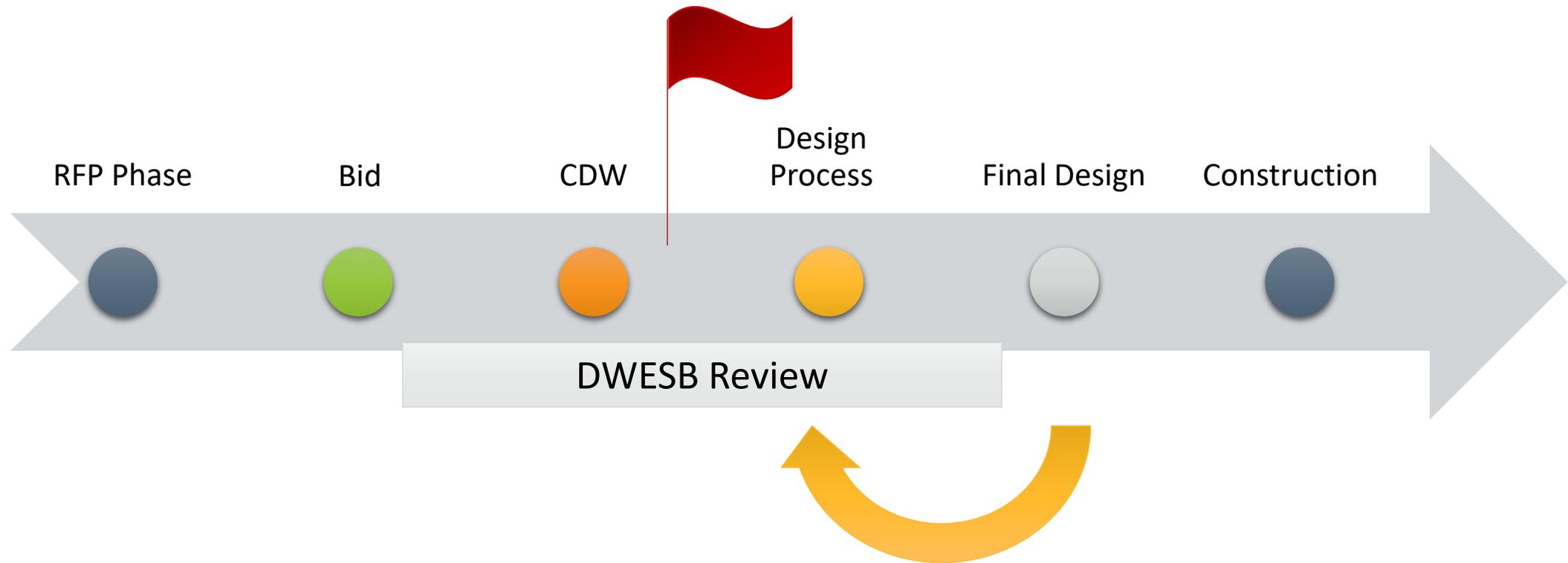
The project must meet [redacted] requirements and has been submitted to [redacted] for approval to mitigate the lengthy review process. Post award, the Design-Builder must support this process and provide additional information [redacted] may require. In order to be able to [redacted] government in this endeavor and to properly coordinate explosive safety [redacted] Build team as the design is developed and finalized, the Design-Builder must have relevant experience in design and construction of Safety Design and have relevant experience in design and construction of Safety facilities. Design approval is contingent upon [redacted] or changes to any of these elements, the Design-Builder must be notified by the Design-Builder.

**Skipped Preliminary Approval –
Submitted for Final Approval at
time of DB RFP**

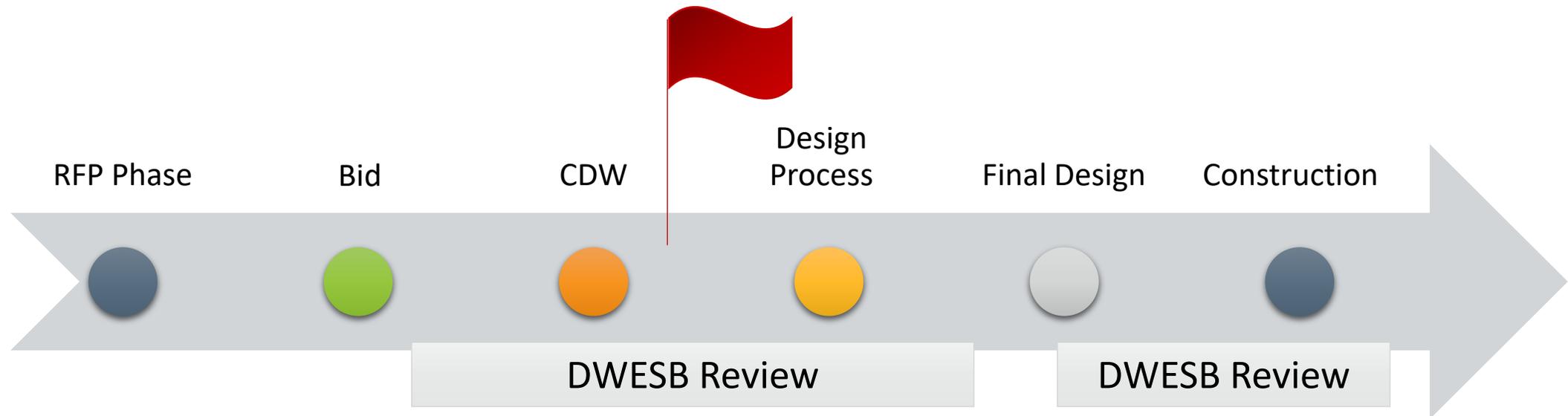
[redacted] walls, slabs and framing including strength, thickness, [redacted] variations
[redacted] placement of openings in protective construction partitions, slabs, and walls
[redacted] Protective Construction blast dampers, poppet valves, and sleeves

This concept design is proposed to the DB Contractor with programmatic elements developed to a level that is required for various governmental agencies' approval such as [redacted]. Any alterations to approved elements may put the project at risk of schedule delays due to approval processes and must be discussed with the KO prior to proceeding. If there are alterations or changes to any of these elements, the project must be resubmitted to [redacted] at the risk of the Design-Builder.

Project C Timeline



Project D Timeline



Recommendations

Keys to Success

Keys to Success

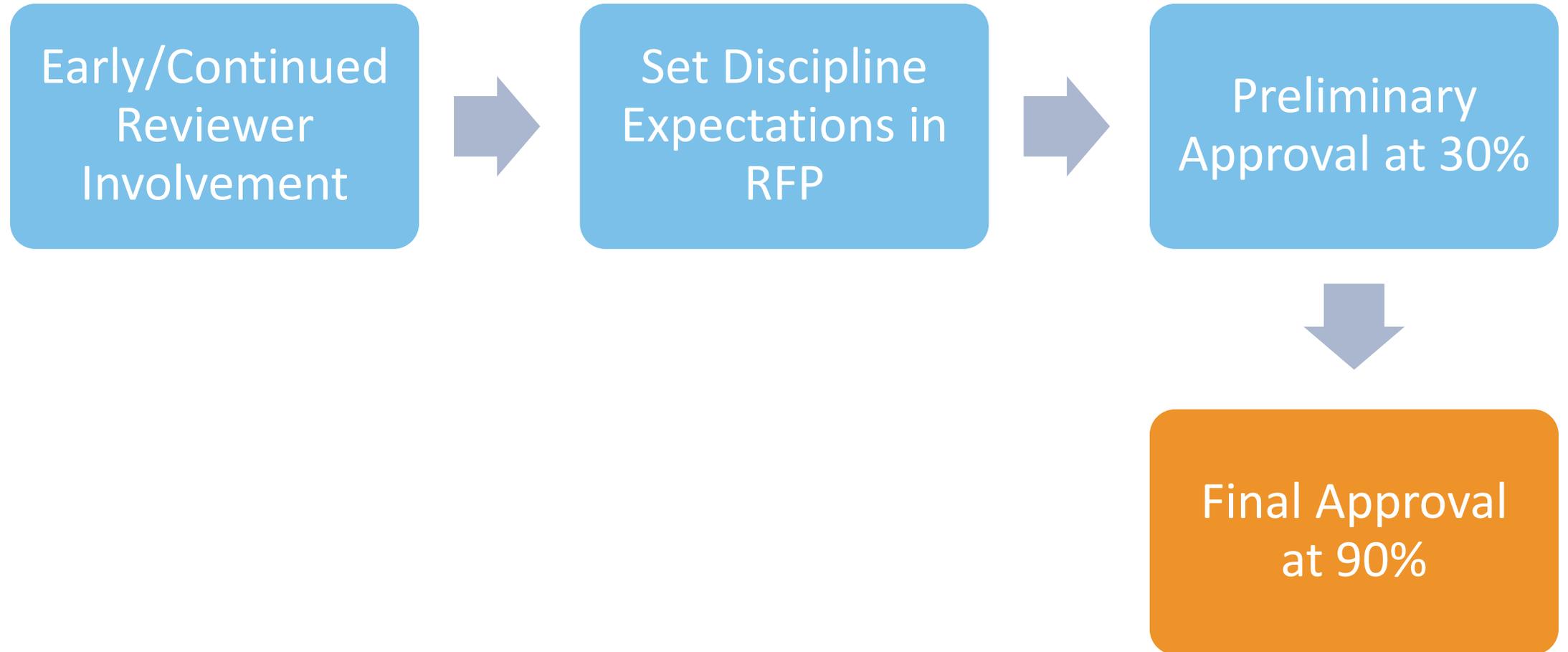
DWESB Reviewer Involvement

User Engagement

Reviewing Bids

Managing Expectations

Review Process



User Engagement



Information Gathering



Participate in Concept
Design Workshop



Review Bids

Reviewing Bids



Experience is critical. Require qualifications as part of bid process.



Review RFIs closely.



Take notice of low bids. Low bid = change orders.



Take notice of accelerated schedule. Sign of inexperience.

Expectations

Change
Orders

Schedule
Delays



CONCLUSION