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

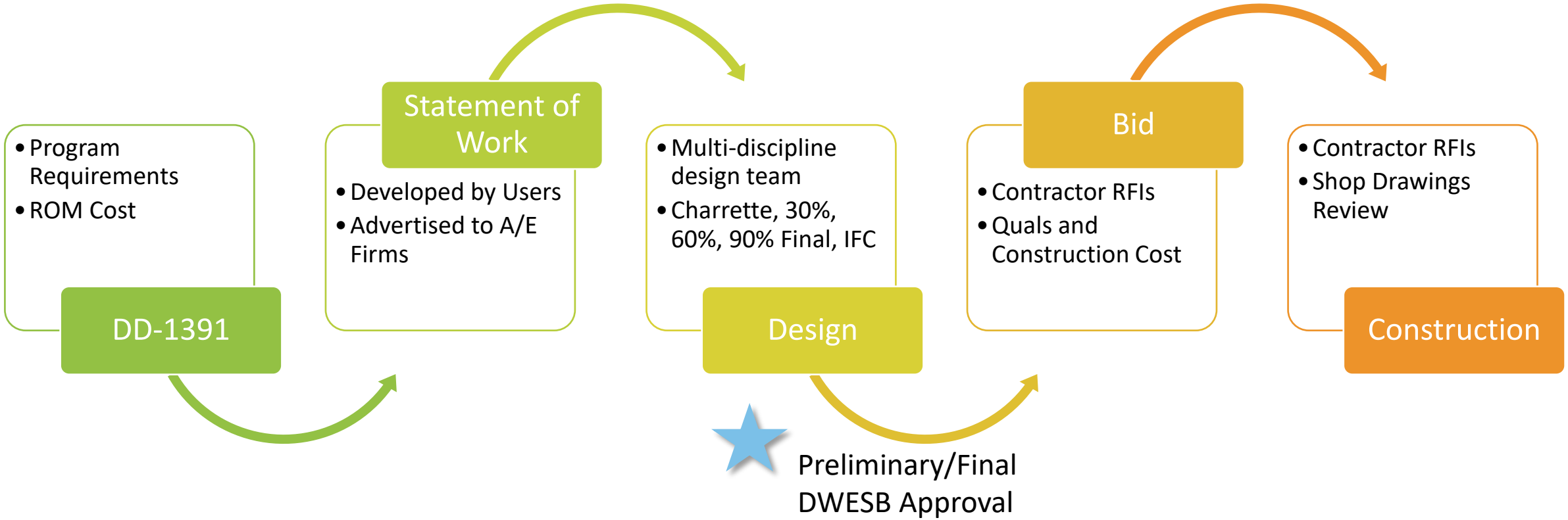
Project Delivery Method

Project Delivery Methods

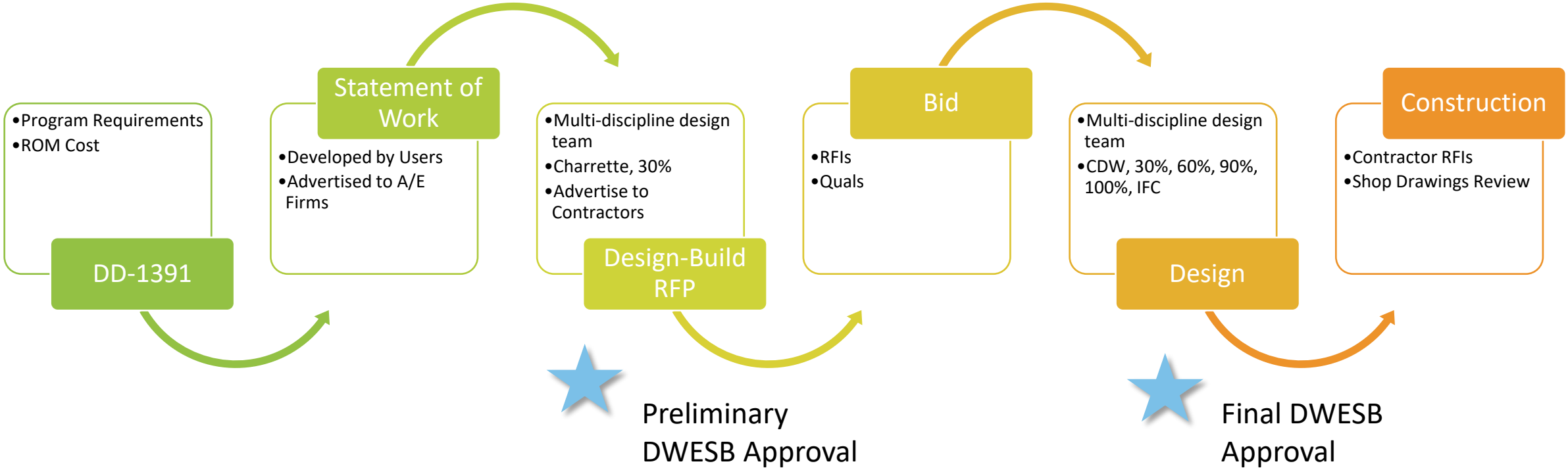
Design-Bid-Build

Design-Build

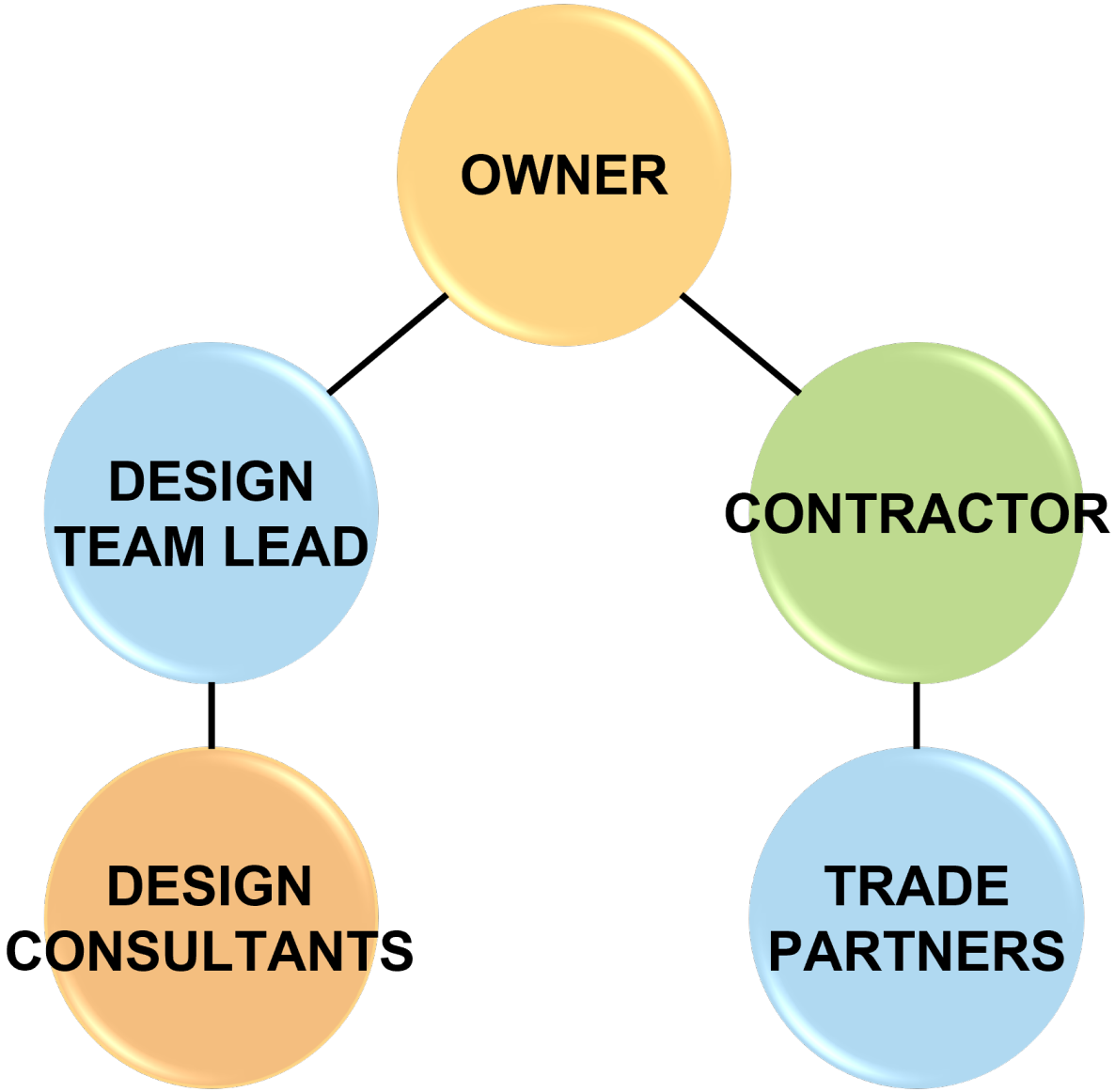
Design-Bid-Build



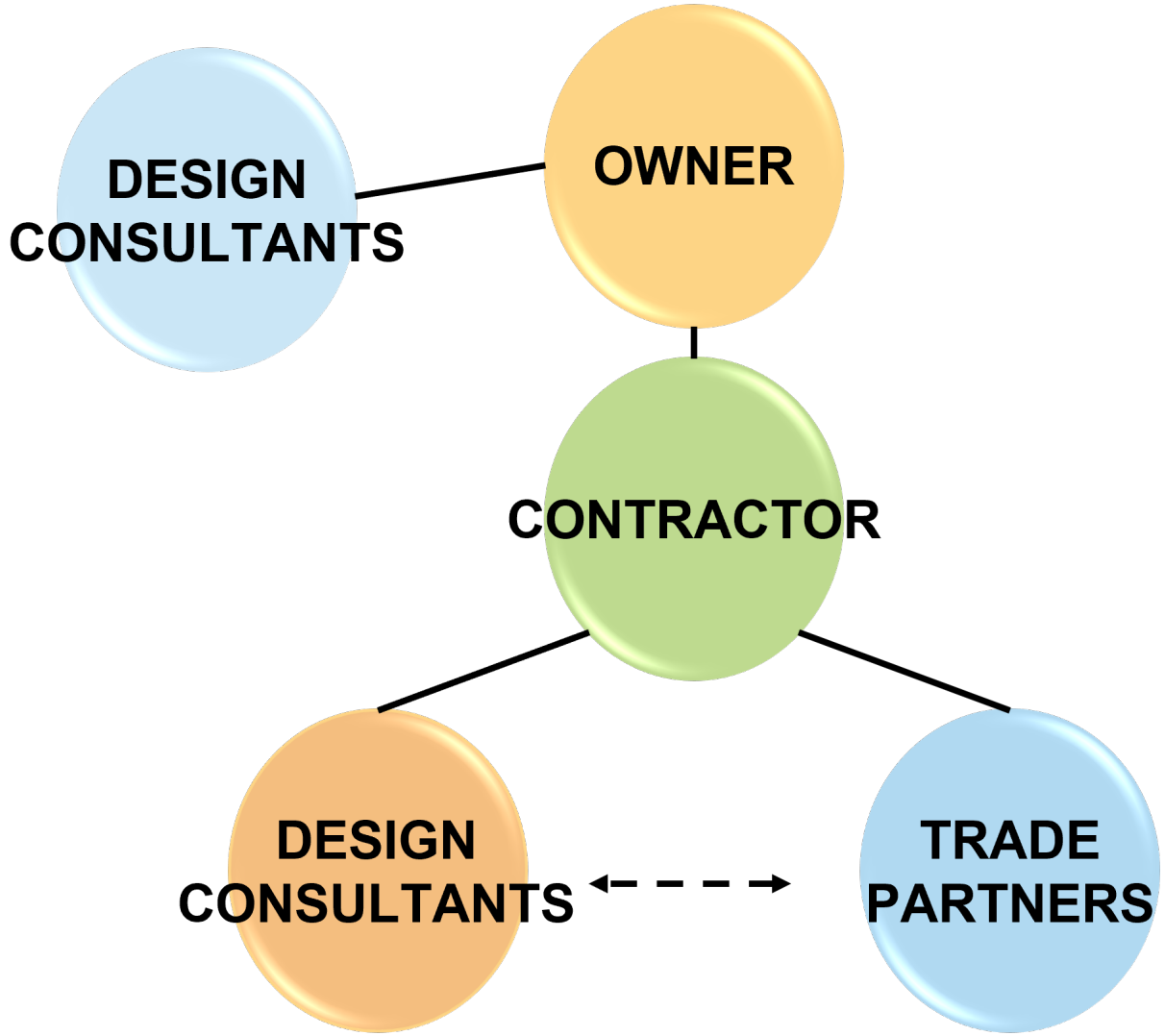
Design-Build



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 -

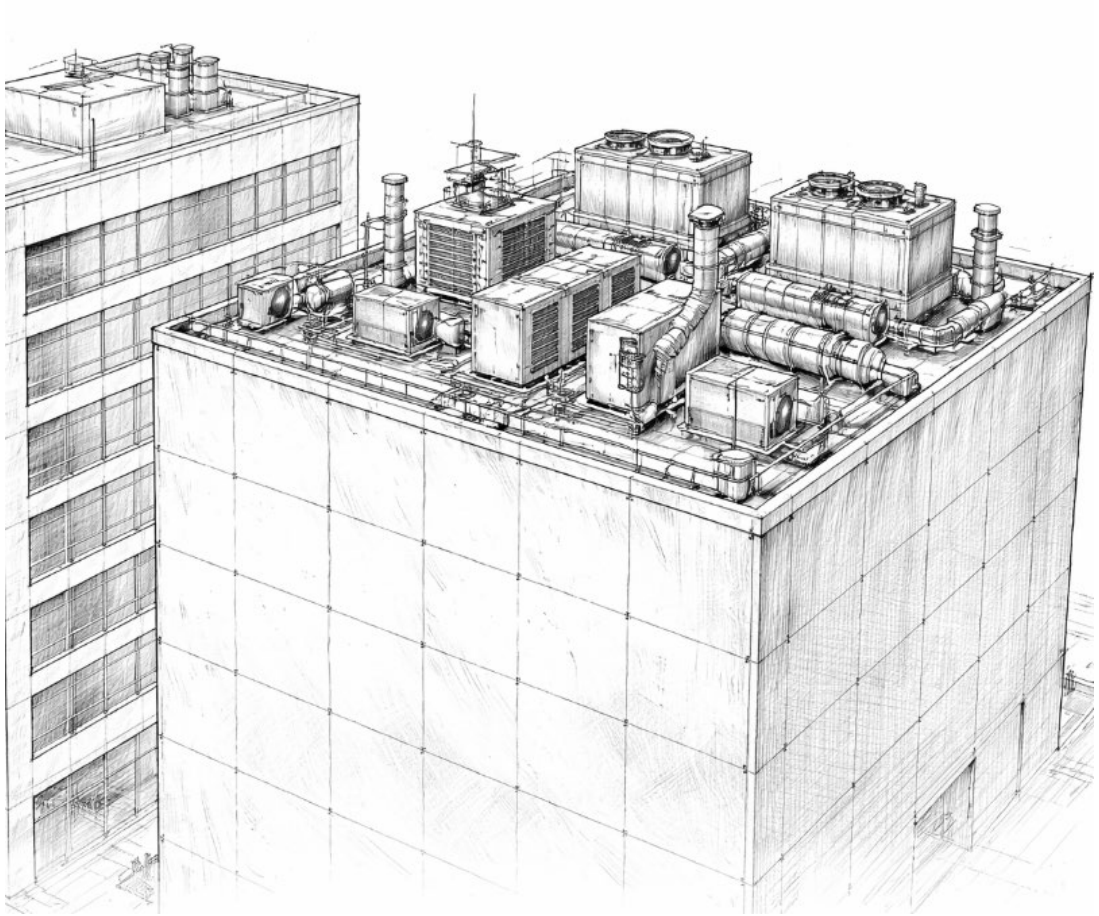
Overview

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

Issue

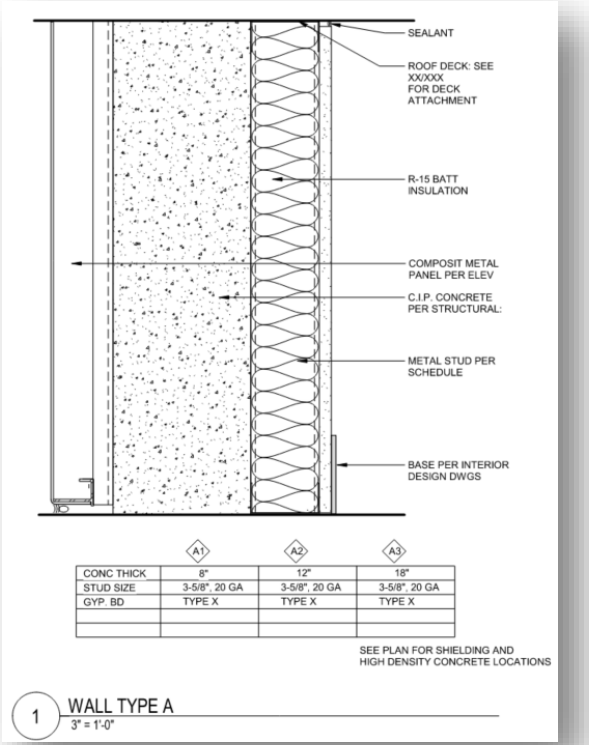
- Late design change added several roof penetrations
- Penetrations triggered: Increased roof height to meet exposure limits
- Re-evaluation of blast, fragment, and thermal passage
- Structural redesign of protective construction

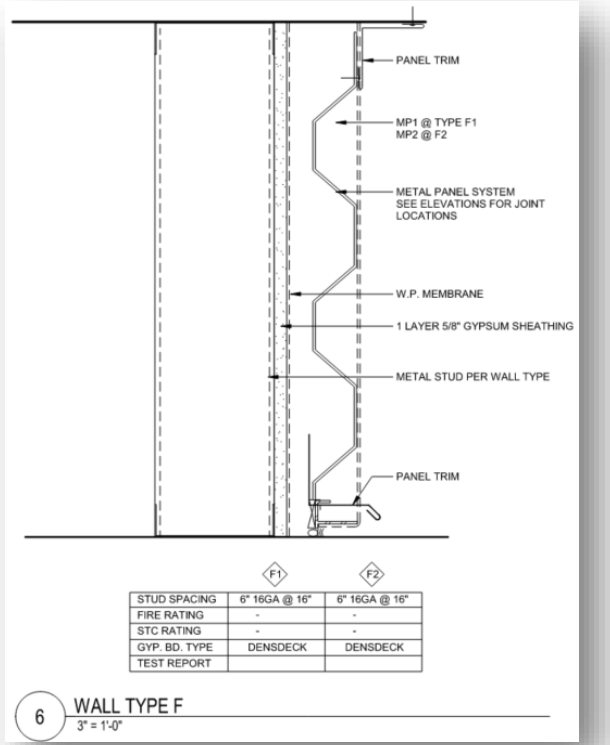
Result: ~10% increase in concrete + reinforcement volumes

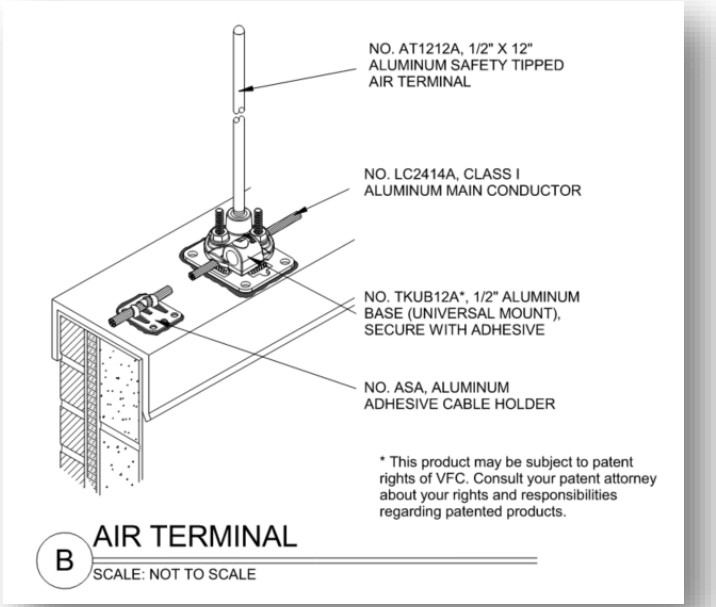


Project B

Design-Build

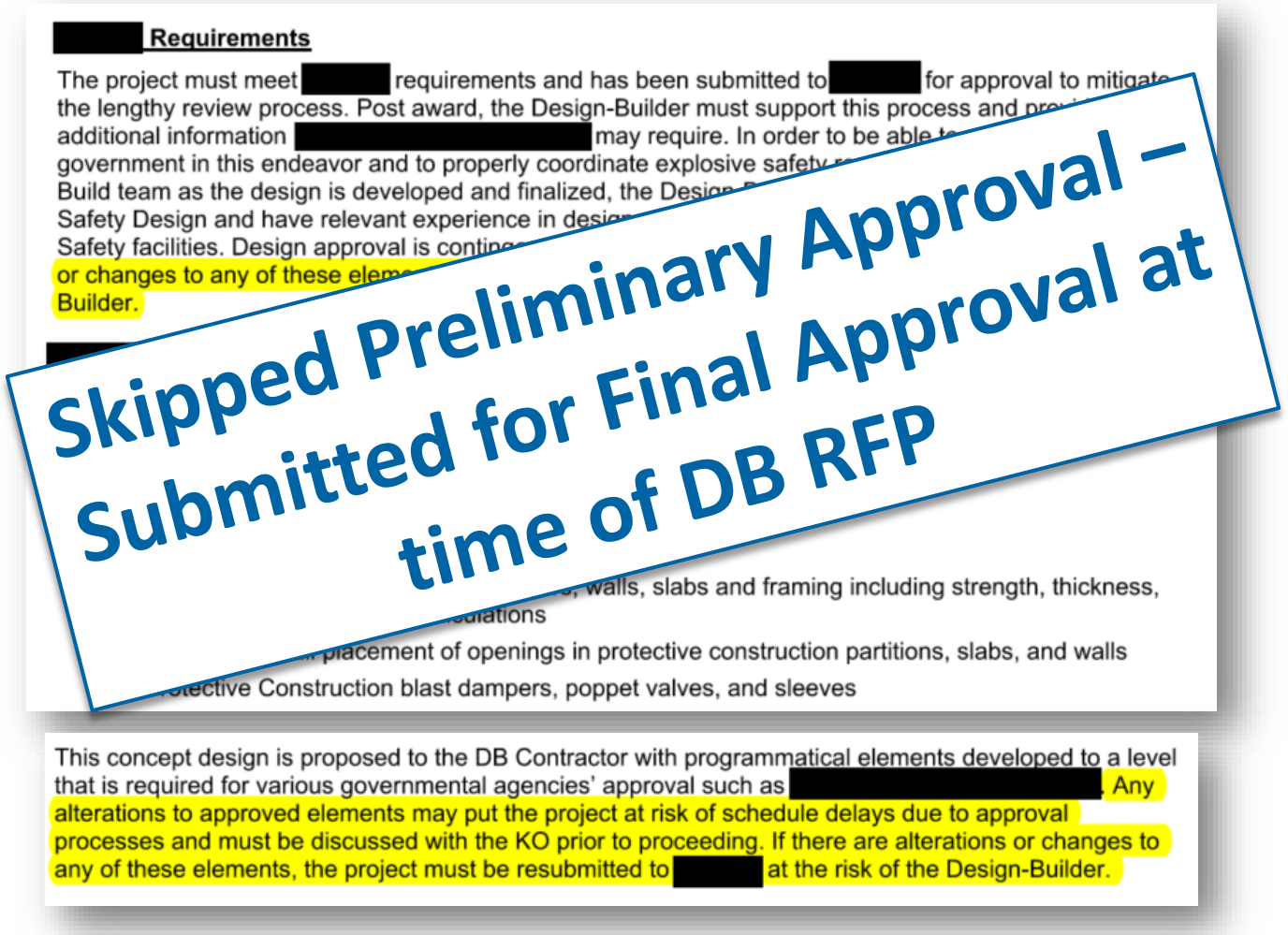




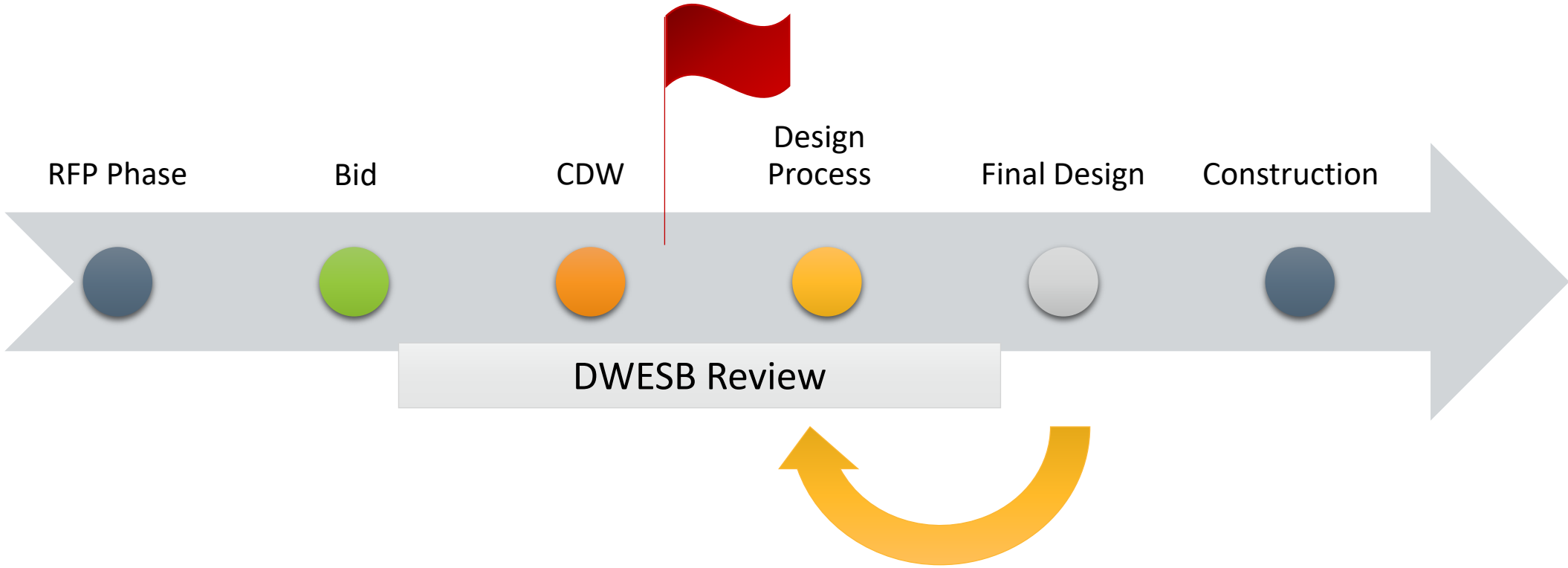


Project C & D

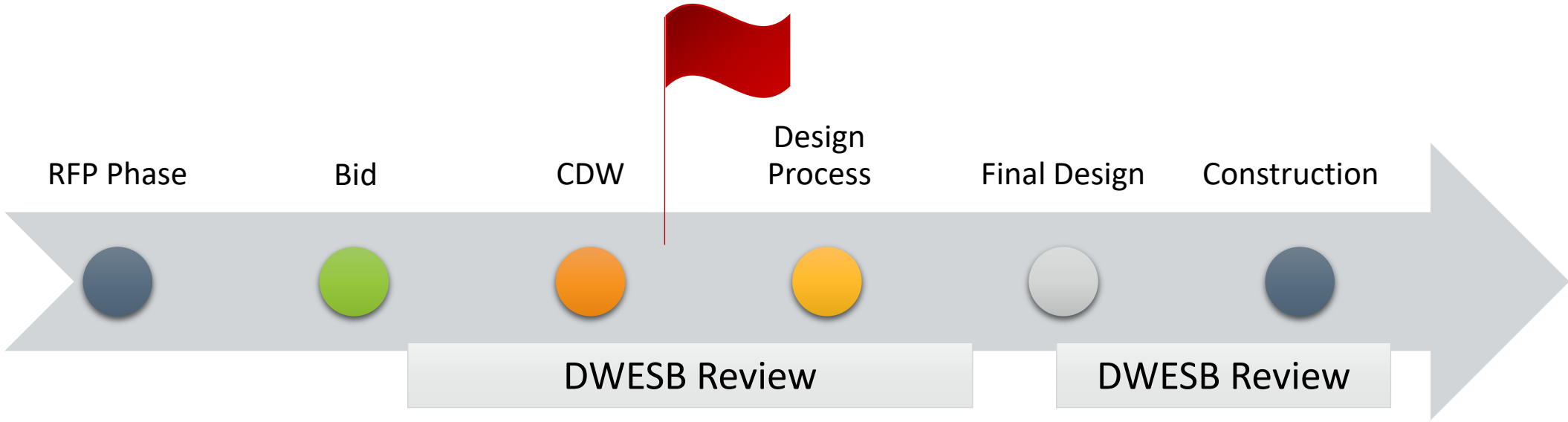
Design-Build



Project C Timeline



Project D Timeline



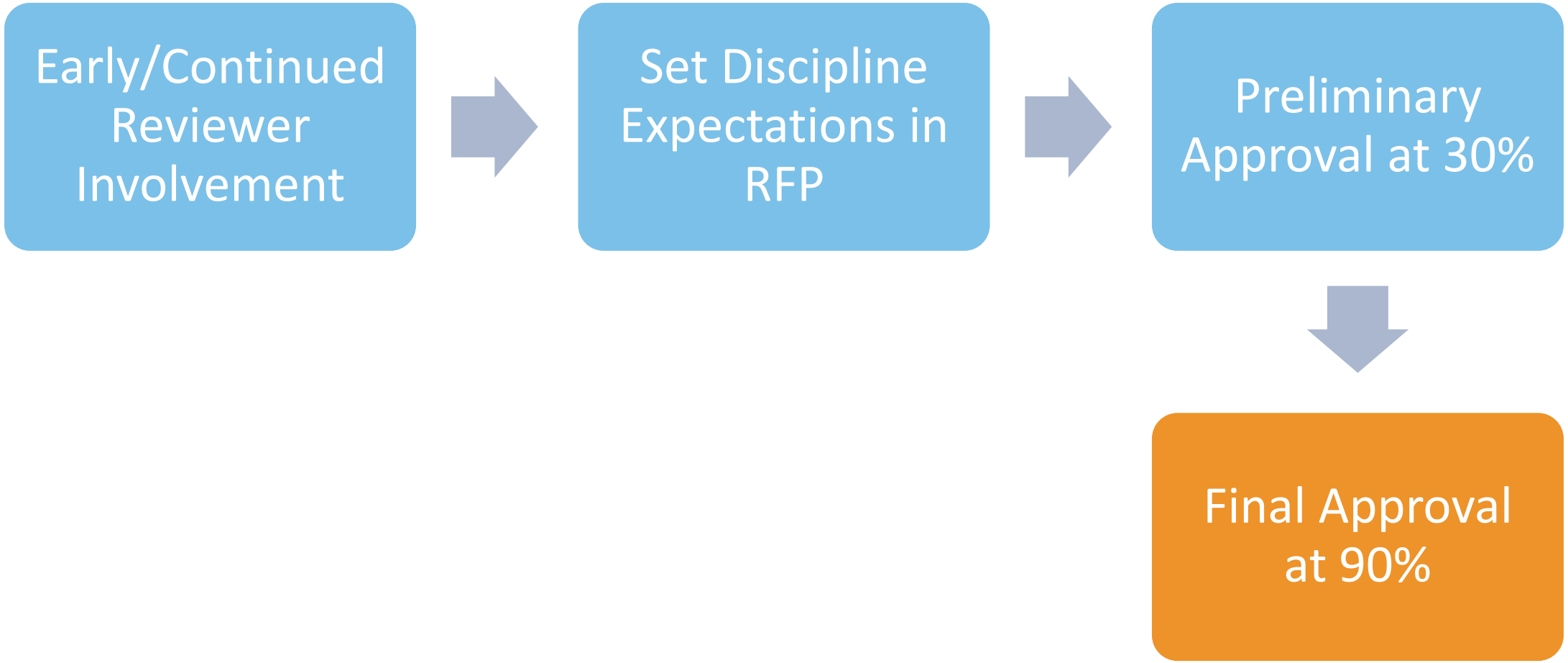
Recommendations

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