Construction Manager/ General Contractor (CM/GC) in Transportation Infrastructure Programs

Tim Dodson P.E., M.ASCE

OREGON DEPARTMENT OF TRANSPORTATION

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Your Instructor

Tim Dodson P.E., M.ASCE

- Principal Project Manager, Oregon Department of Transportation
- Variety of technical and managerial positions in development of highway and bridge projects
- Over past 10 years, managed consultants delivering 48 full-service outsourced projects
- Helped develop ODOT's protocols for design-build contracting; project manager of agency's first Design-Build project
- Start-up PM for Interstate 5 Willamette River Bridge, ODOT's first CM/GC project
- B.S., M.S., civil engineering, Oregon State University

Today's Objective

By the end of our hour, you should gain:

- Understanding of CM/GC team members' roles
- Understanding of contractual and functional team member relationships in CM/GC
- Appreciation for the project management opportunities associated with CM/GC
- Understanding of CM/GC team procurement strategy, including primary scoring categories
- Appreciation for advantages of CM/GC over design-build

Let me tell you a story

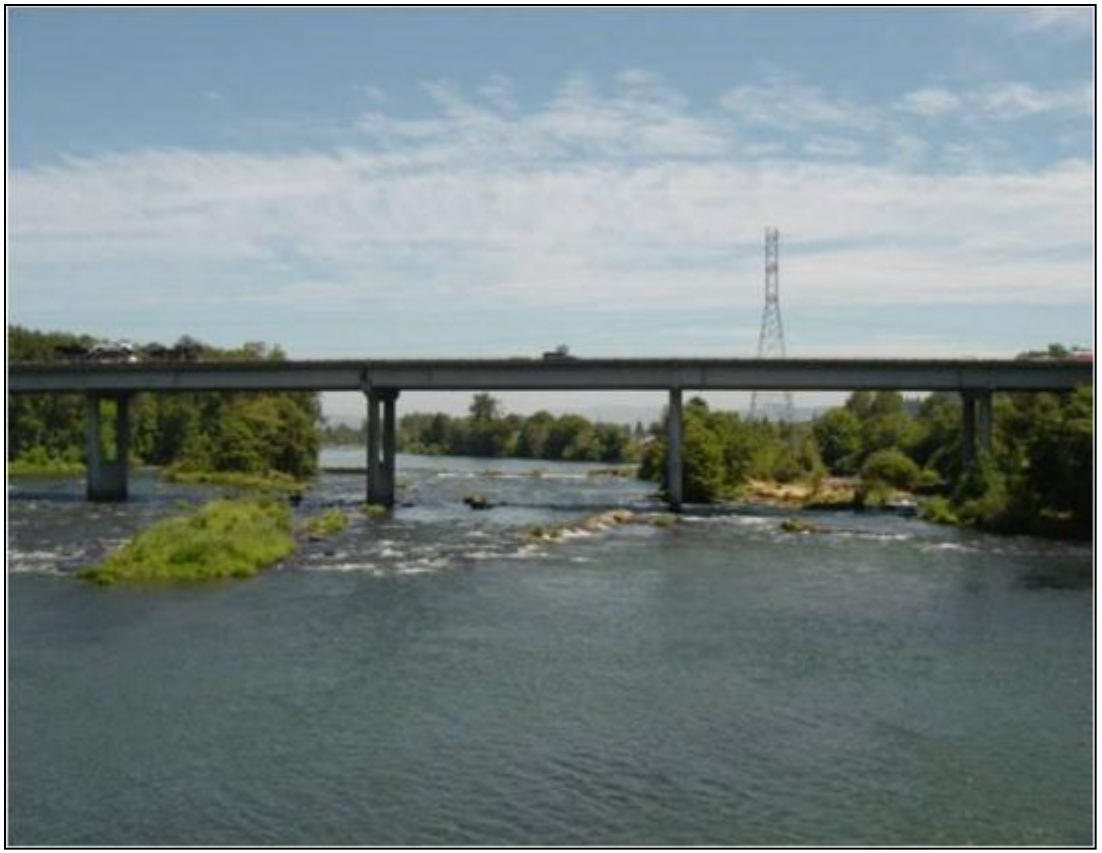
Once upon a time there was a bridge:

- Built 50 years ago
- Helped complete Interstate 5 in Oregon

Let me tell you a story

Fifty years later:

- I-5 over the Willamette River in Eugene, Ore.
- Main West Coast route between Mexico and Canada



The discovery

- Distress discovered
- Load limits imposed
- Commerce threatened

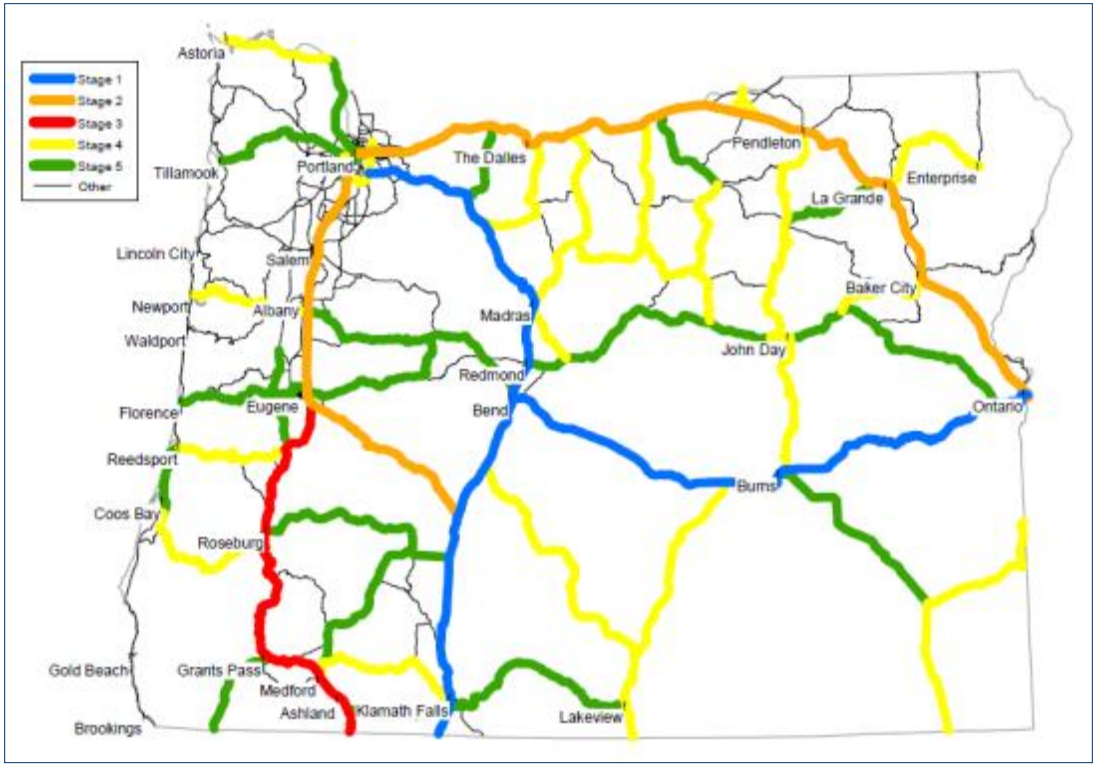
A major problem – and temporary relief

- Rerouting of trucks
- Safety concerns
- Impacts to business
- Emergency declared
- Detour bridge

OTIA III State Bridge Delivery Program

A statewide solution:

- Third Oregon Transportation Investment Act
- $1.3 billion program
- Crafted to stimulate Oregon's economy

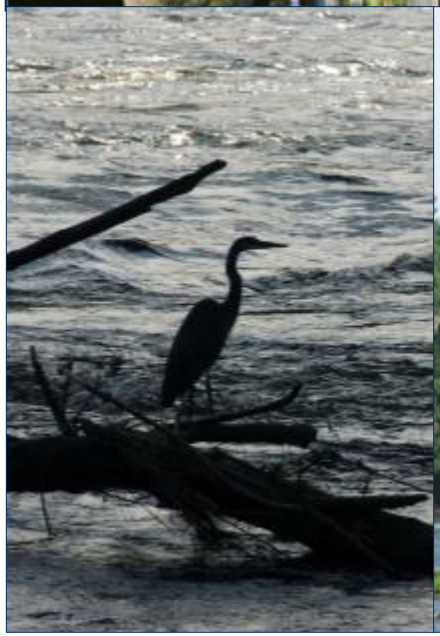


About the Willamette River Bridge Project

- ODOT's largest bridge replacement project
- Construction budget: $157 million

Replacing the Willamette River Bridge

- The work zone includes:
  - Parks
  - Natural area
  - Bike-ped paths
  - River
  - Railroad
  - Power lines
  - Four-lane boulevard
  - Multiple jurisdictions
- Situation: Complex!



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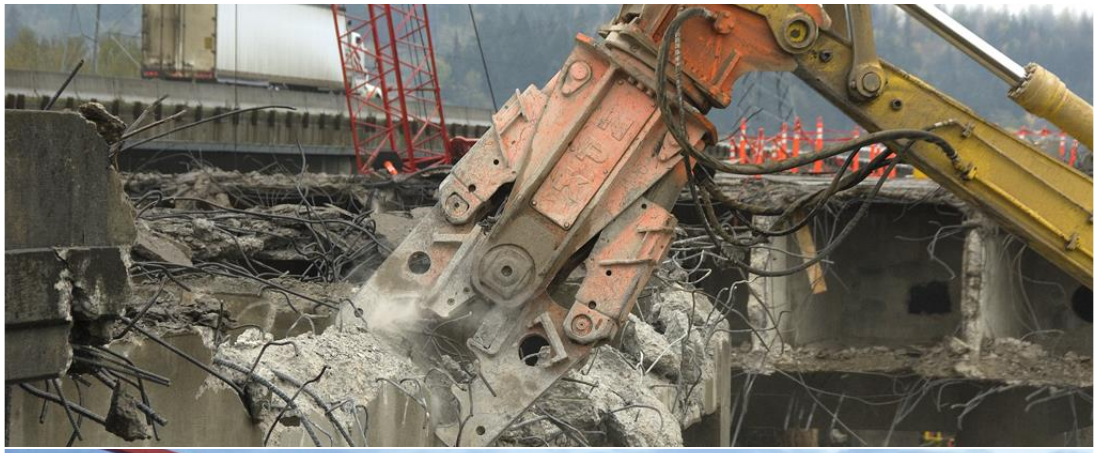
Willamette River Bridge Project

Replacing the Willamette River Bridge

- Demolish:
  - Existing bridge
  - Canoe Canal Bridges
  - Detour bridge
- Reconstruct roadway
- Construct 14 new bridge spans. Types:
  - PT reinforced concrete deck girder
  - PT reinforced concrete box girder
  - “Signature” reinforced concrete deck arch



Replacing the Willamette River Bridge

- Build seven retaining walls, two sound walls
- Create new bike path viaduct
- Reconfigure another riverside bike path

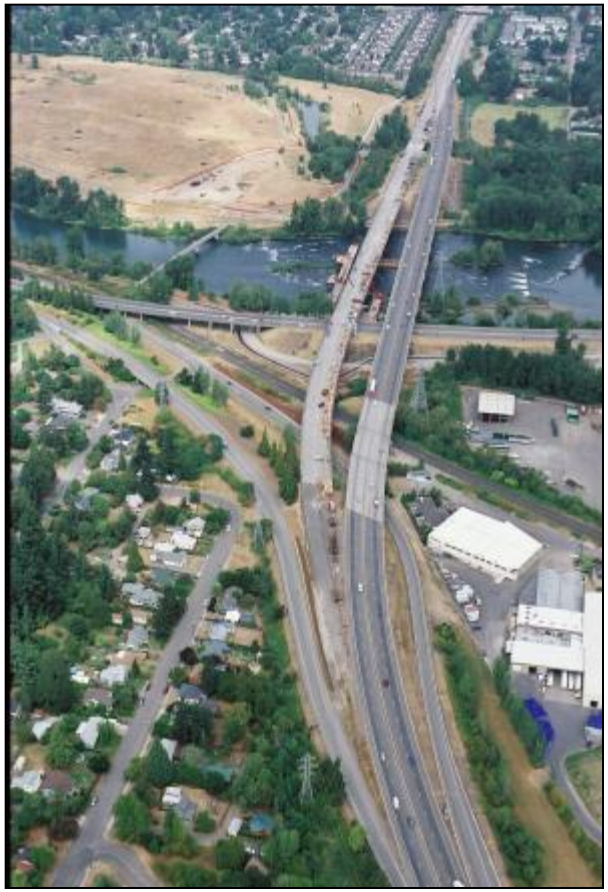
Replacing the Willamette River Bridge

- Reduce the height of the Canoe Canal wall
- Restore channel of Augusta Creek
- Provide for design enhancements

Environmental considerations

- Accelerated permitting
- Debris containment
- Design impacts
- Park constraints and staging

About CM/GC



What you'll hear today:

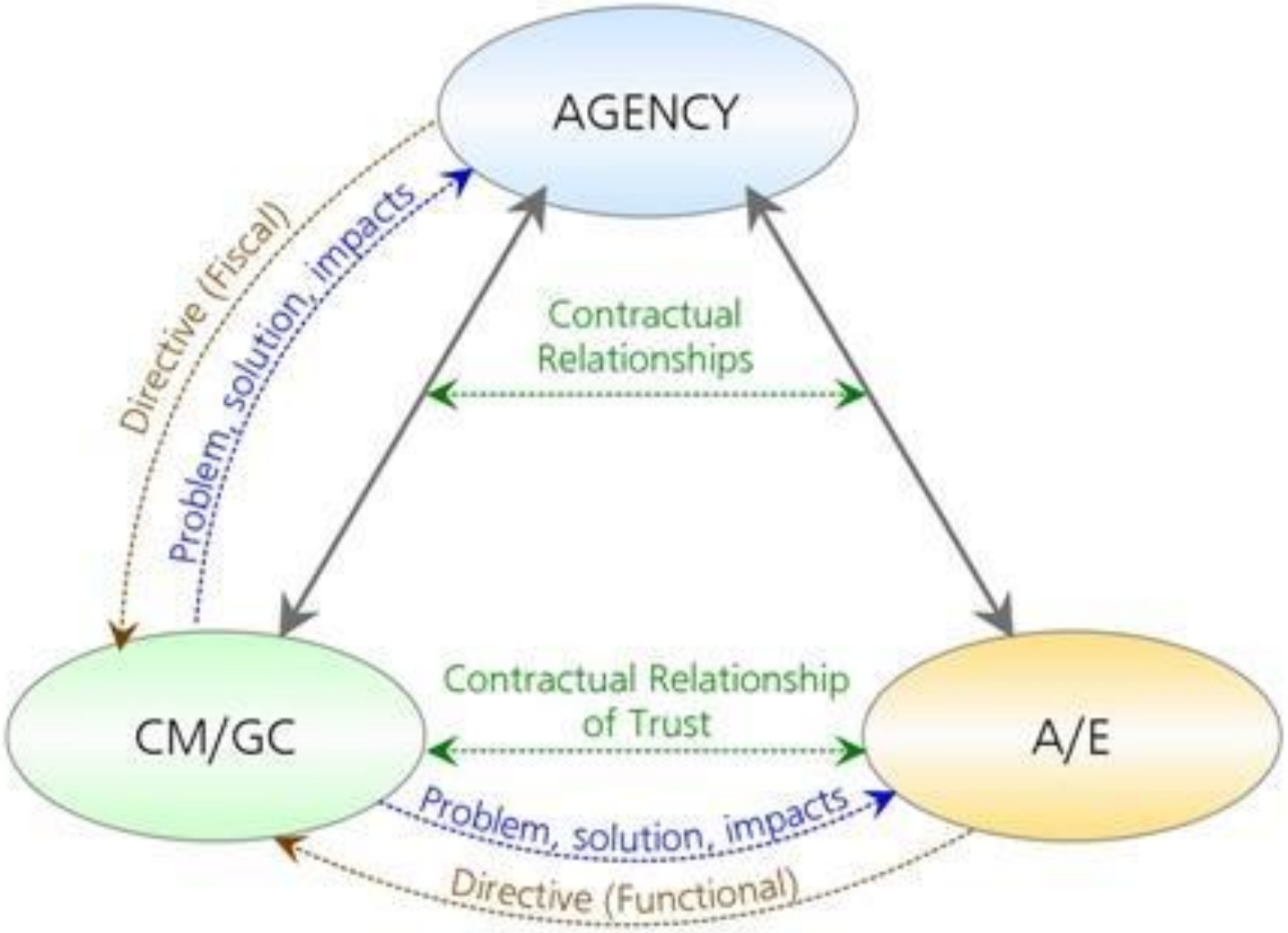
- What CM/GC is and what it isn't
- How ODOT used the CM/GC method for a large bridge replacement project
- What you should consider before using CM/GC
- Lessons learned and how to get the best results when using CM/GC

About CM/GC: Overview

The three-legged stool:

- Owner
- A&E
- CM/GC

CM/GC contract relationships



WRB's CM/GC contract partners

- Tight competition for the contract
- Deciding factor:

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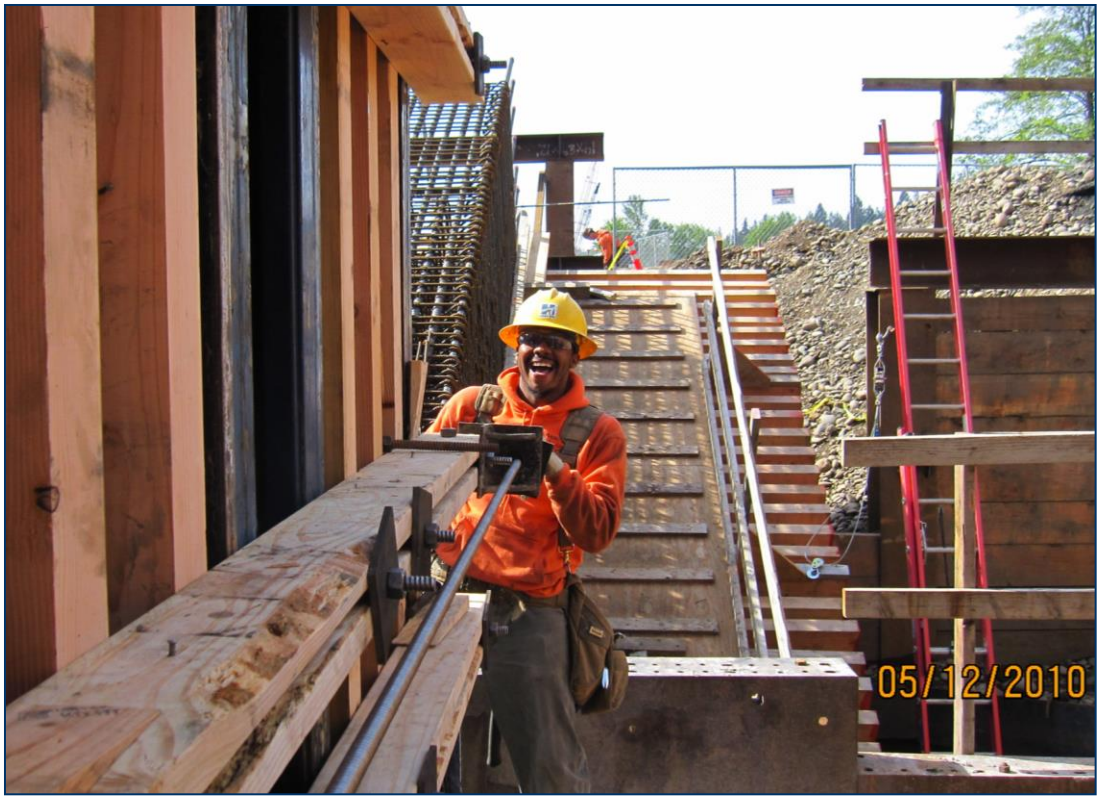
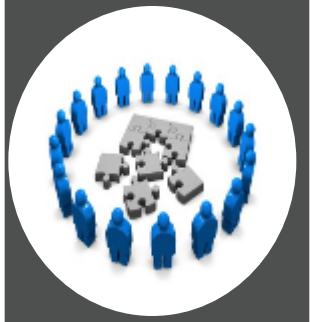


WRB's CM/GC contract partners

- Local partners:
  - Design firms:
    - OBEC Engineering
    - T.Y. Lin International
  - Contractors (CM/GC):
    - Hamilton Construction, supported by Slayden Construction

Why CM/GC



Fosters collaboration

Increases owner control and involvement

Manages risk

Accelerates delivery

Increases flexibility

Focuses on cost, value and problem solving

1. Fosters collaboration

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Fosters collaboration

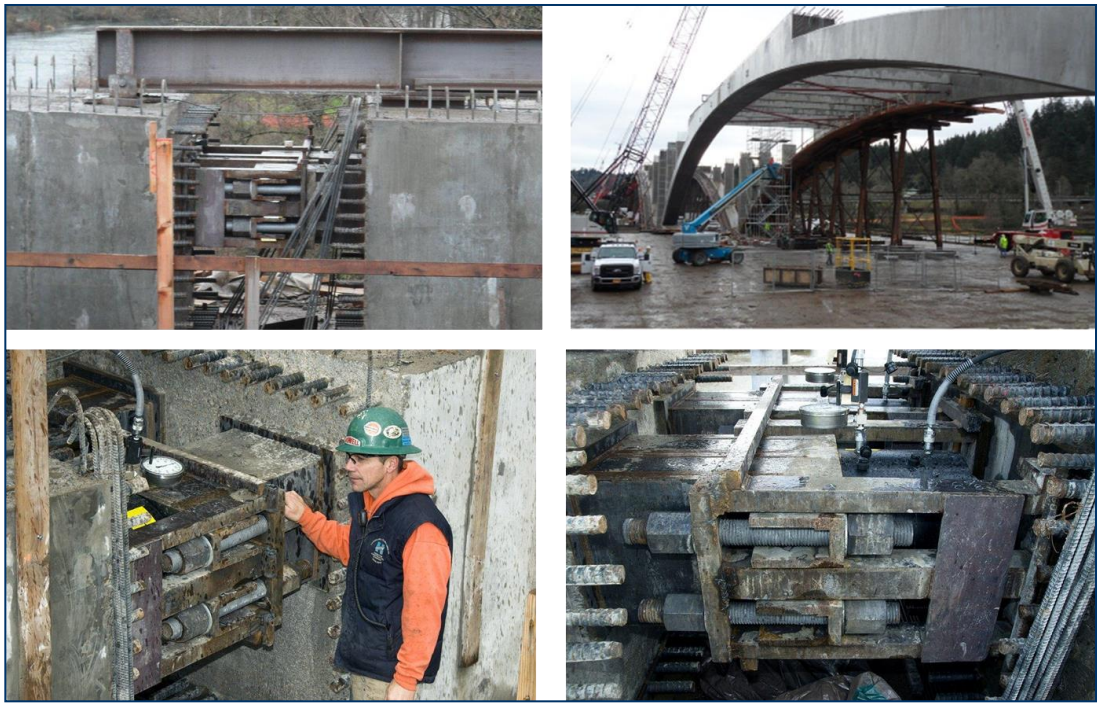
Collaboration with A&E and CM/GC:

- Collaborating on design
- Design incorporates construction expertise
- Designer understands constructor's viewpoint

Fosters collaboration

Collaboration with A&E and CM/GC:

- Arch jacking for precompression
- Special concrete mix
- Load transfer control
- Spandrel column verticality



Fosters collaboration

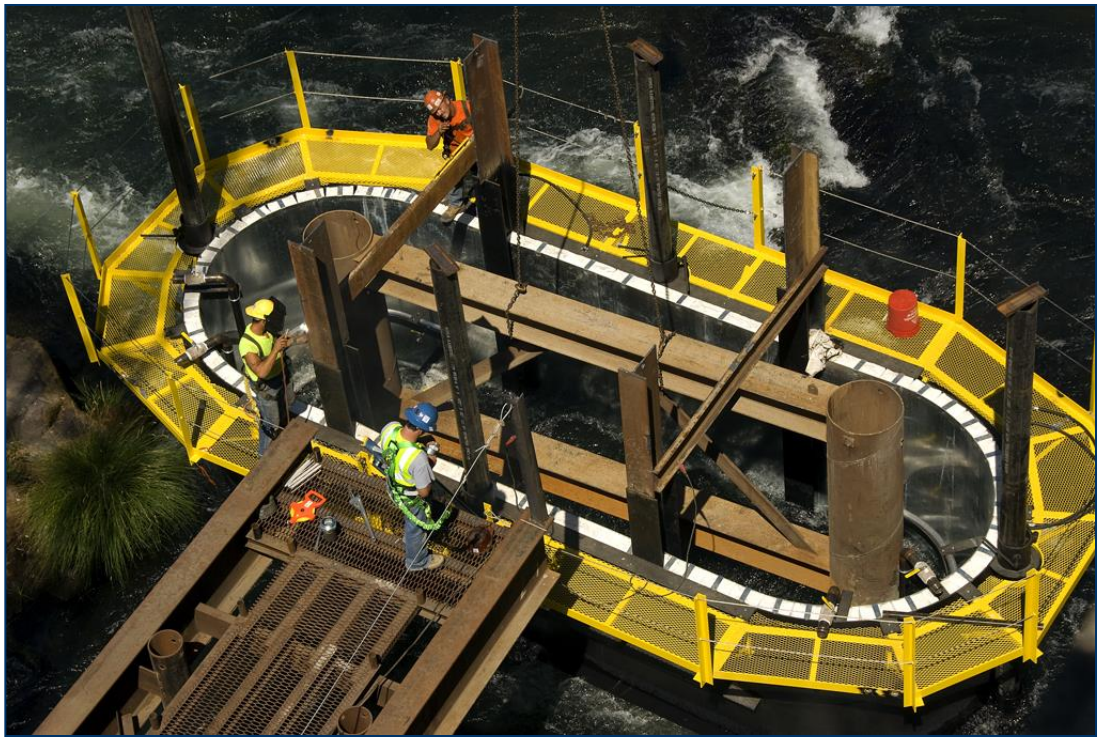
Collaboration with A&E CM/GC and Artist:

- Foundation Design
- Site design
- Construction staging

Fosters collaboration

Collaboration with regulators:

- Adjusting to changed in-water work window
- Bubblator sound attenuator for fish
- Replacement land for staging area



Fosters collaboration

Collaboration with jurisdictions:

- Cities
  - Bike viaduct
- Parks
  - Bike paths
  - Saving trees
- Community
  - Mobility
  - Design
  - Art

Fosters collaboration

Collaboration with Tribes:

- Heritage rocks
- Structure name
- Milestone ceremonies

2. Increases owner control and involvement

Increases owner control and involvement

Objective: Improved relationship with cities

- Drove engagement
- Input incorporated into project design
- Scope changes handled easily

Increases owner control and involvement

WRB: Unconventional

- Extended design phase
- Early Work Amendments
- No GMP

3. Manages risk

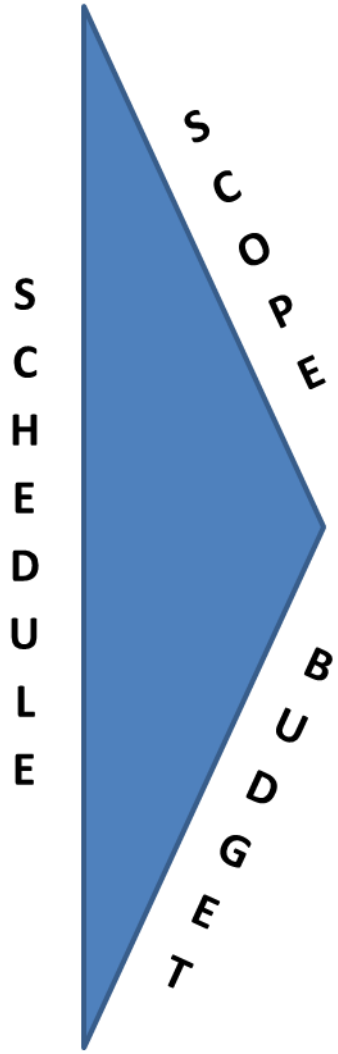
Manages risk

Opportunities to manage risk during:

- Preconstruction
- Negotiation
- Construction

4. Accelerates delivery

Accelerates delivery



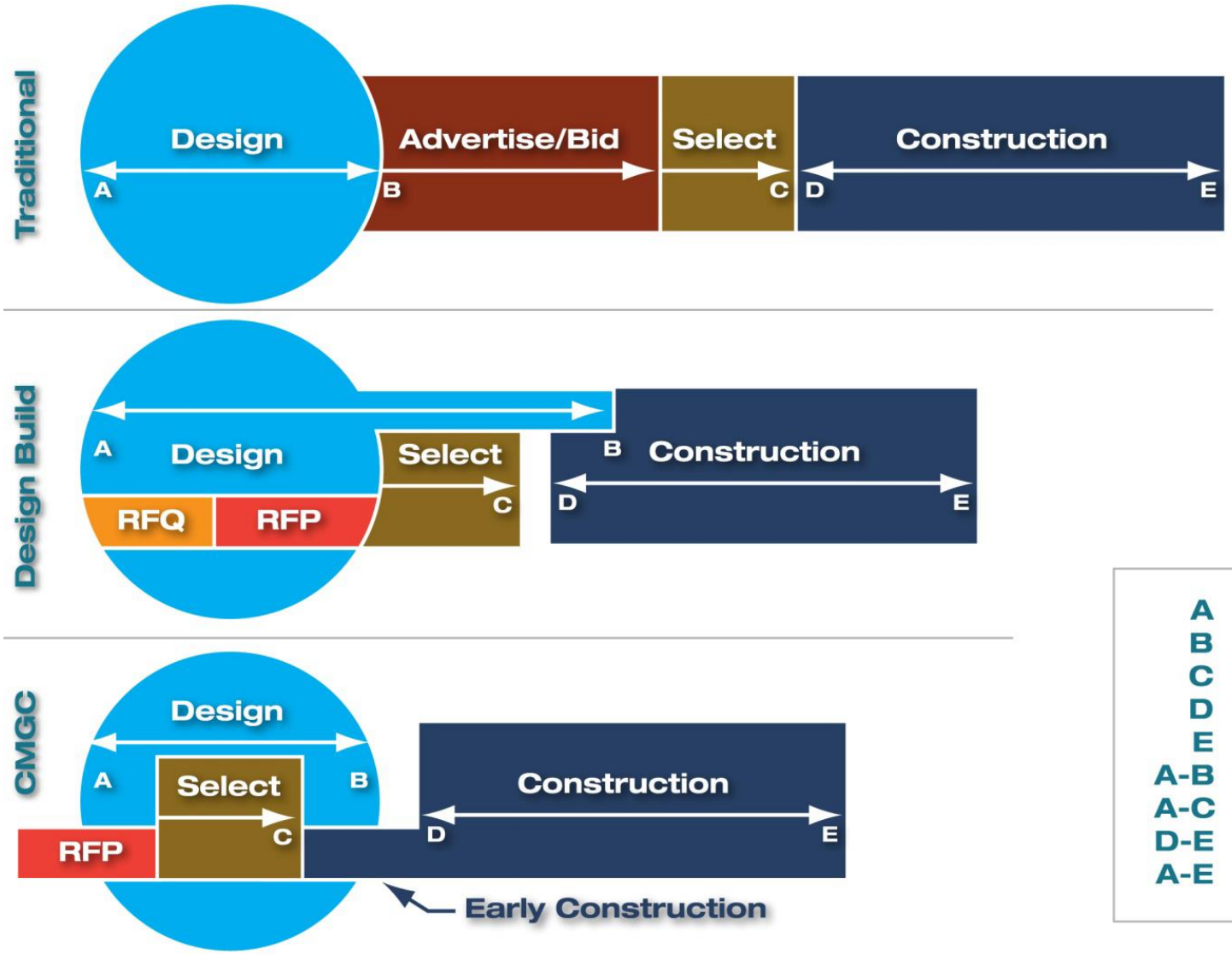
For the WRB project, **schedule** was paramount

- Creative scheduling
- Real-time decisions

Accelerates delivery

Completion Scenarios

Accelerates delivery



Accelerates delivery

Acceleration examples:

- Temporary inlets
- Single-sloped barriers
- Key: Contractor is getting paid to help produce VE ideas

5. Increases flexibility

Increases flexibility

Design phase:

- Engages external parties, resolves conflict
- Local jurisdictions, agencies, regulators
- Incorporates public input, informs public of consequences

Increases flexibility

Community involvement informs final design:

- Advisory committees
- Workshops
- Open houses
- Site tours
- Webcasts, videos, newsletters and blog posts

Increases flexibility

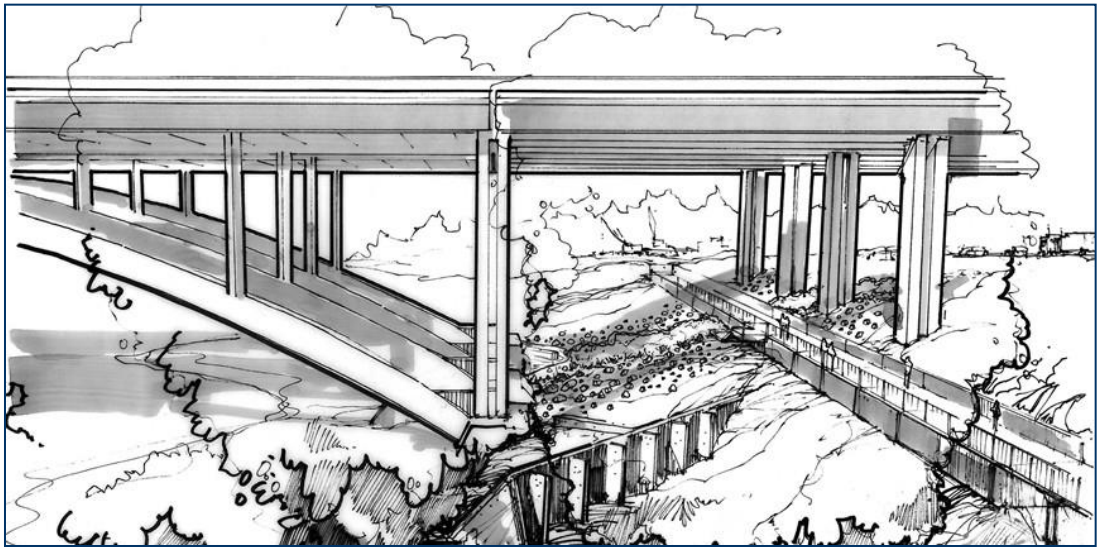
Flexibility of method:

- Early Work Packages
- Samples of successful approaches
- Variety of selection criteria

Increases flexibility: Example outcome

Southside bike path:

- $4 million solution added mid-project
- Utilized used girders
- Environmental constraints
- No way to plan in advance

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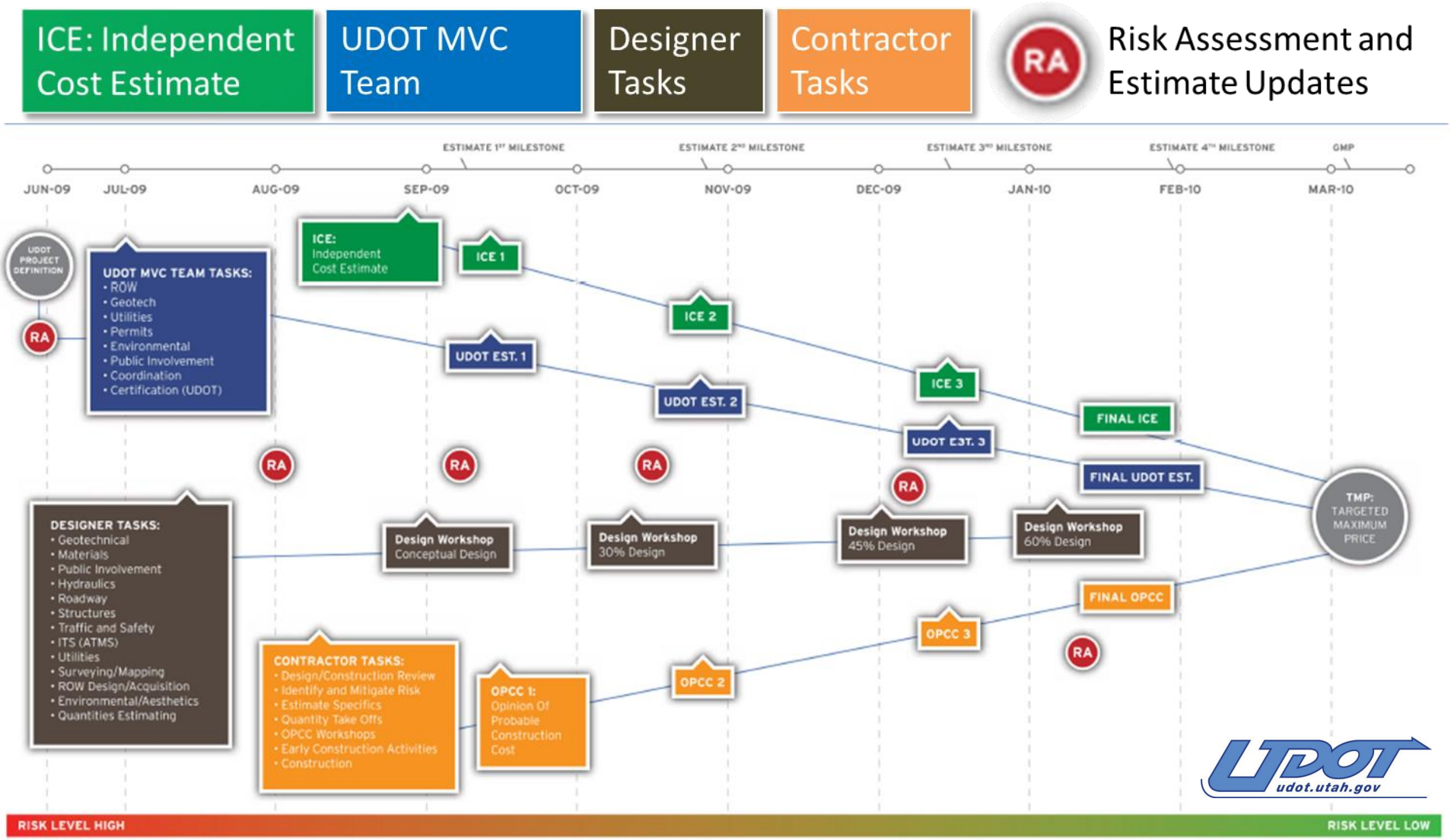
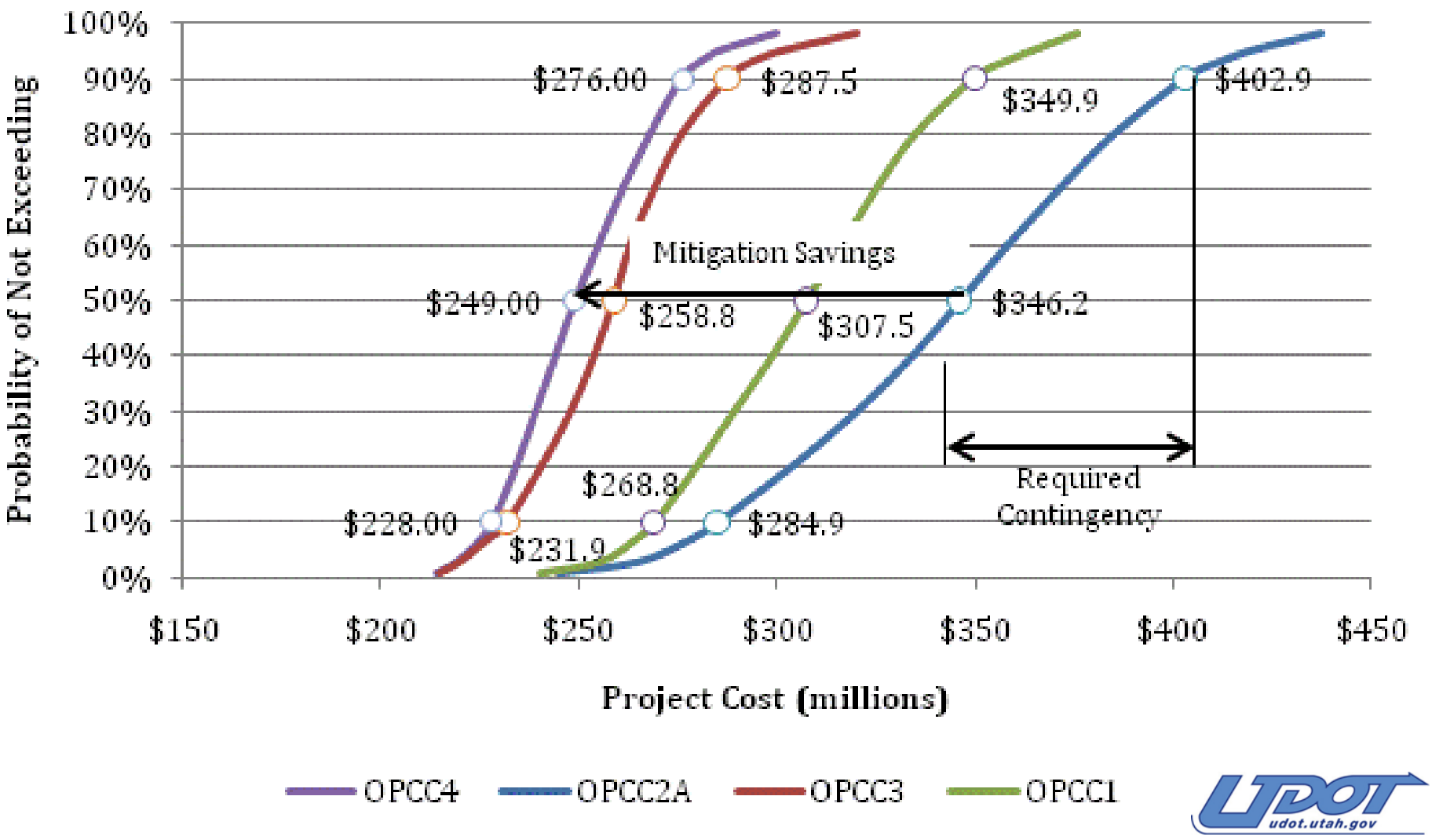
6. Focuses on cost, value and problem-solving

Focuses on cost, value and problem-solving



Focuses on cost, value and problem-solving



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Summary: Why CM/GC

CM/GC is effective for:

- Fostering collaboration
- Increasing owner control and involvement
- Managing risk
- Accelerating delivery
- Increasing flexibility
- Focusing on cost, value and solving problems

How to get started

About CM/GC: Federal interest

CM/GC and SEP-14:

- Special Experimental Project No. 14
- Innovative Contracting
- Alternative Contracting
- MAP-21: SEP-14 approval no longer required

About CM/GC: Federal oversight

CM/GC and SEP-14:

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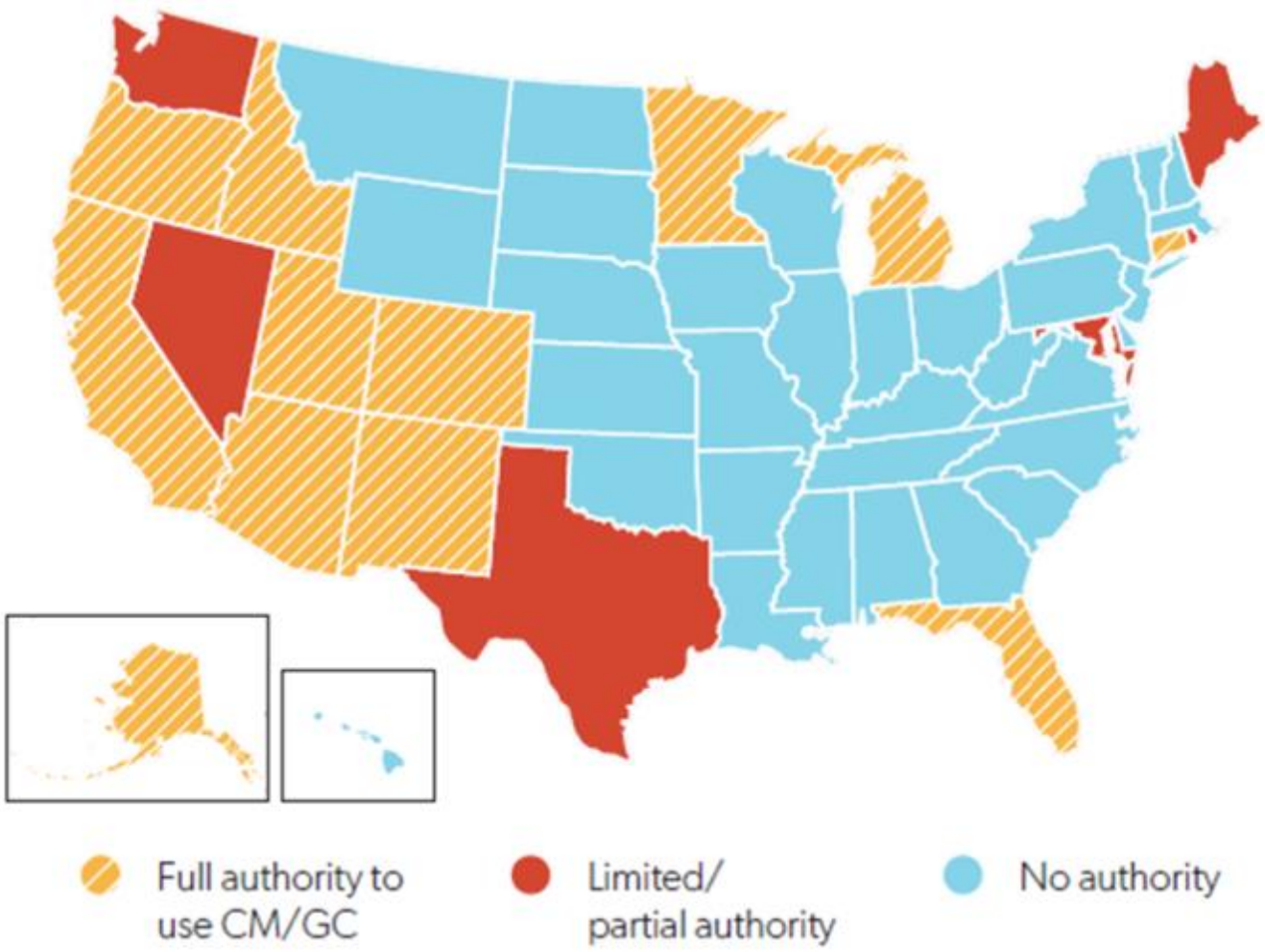
U.S. Department of Transportation

Federal Highway Administration

CM/GC state authority: Gaining ground but new to many



The Owner's role in CM/GC

- Extensive
- Continuous
- Greater than DB or DBB.
- Leading and facilitating relationships
- Keys for Owner PM:
  - Decision-making
  - Quality assurance
  - Managing two contracts

The Owner's CM/GC support team

- Engineering expertise
- Construction expertise
- Independent Cost Estimator (ICE)
- Public involvement
- Administrative support

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oregon bridge delivery partners℠

The owner's CM/GC support team

Technical design review and oversight

- Bridge structures
- Roadway
- Environmental
- Hydrology, stormwater
- Surveying
- Mobility
- Permitting
- Railroad and utilities
- Geotechnical

Procuring a CM/GC team

Procurement strategies and the Willamette River Bridge experience

Procuring a CM/GC team

Choosing the right A&E:

- Collaborative team attitude
- Understanding of CM/GC
- Technical Capability
- RFQ, RFP and Interview

Procuring a CM/GC team

Choosing the right CM/GC:

- Collaborative team attitude
- Understanding of CM/GC
- Construction capability
- Price component

Procuring a CM/GC team

- Consult with experienced owners
- FHWA has resources
- Hire experienced assistance

Comparison: CM/GC vs. Design-Build contracting

- Owner control
- Value vs. Profit
- Owner cost-savings

Summary

- **Success depends on the owner's active participation.**
- **Each of the three contractual entities — owner, A&E firm and contractor — must possess a strong team orientation.**
- **CM/GC allows owners to cost-effectively resolve project challenges.**

Q & A

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Oregon Department of Transportation

Addenda and Additional Information

Construction Manager/General Contractor (CM/GC) in Transportation Infrastructure Programs

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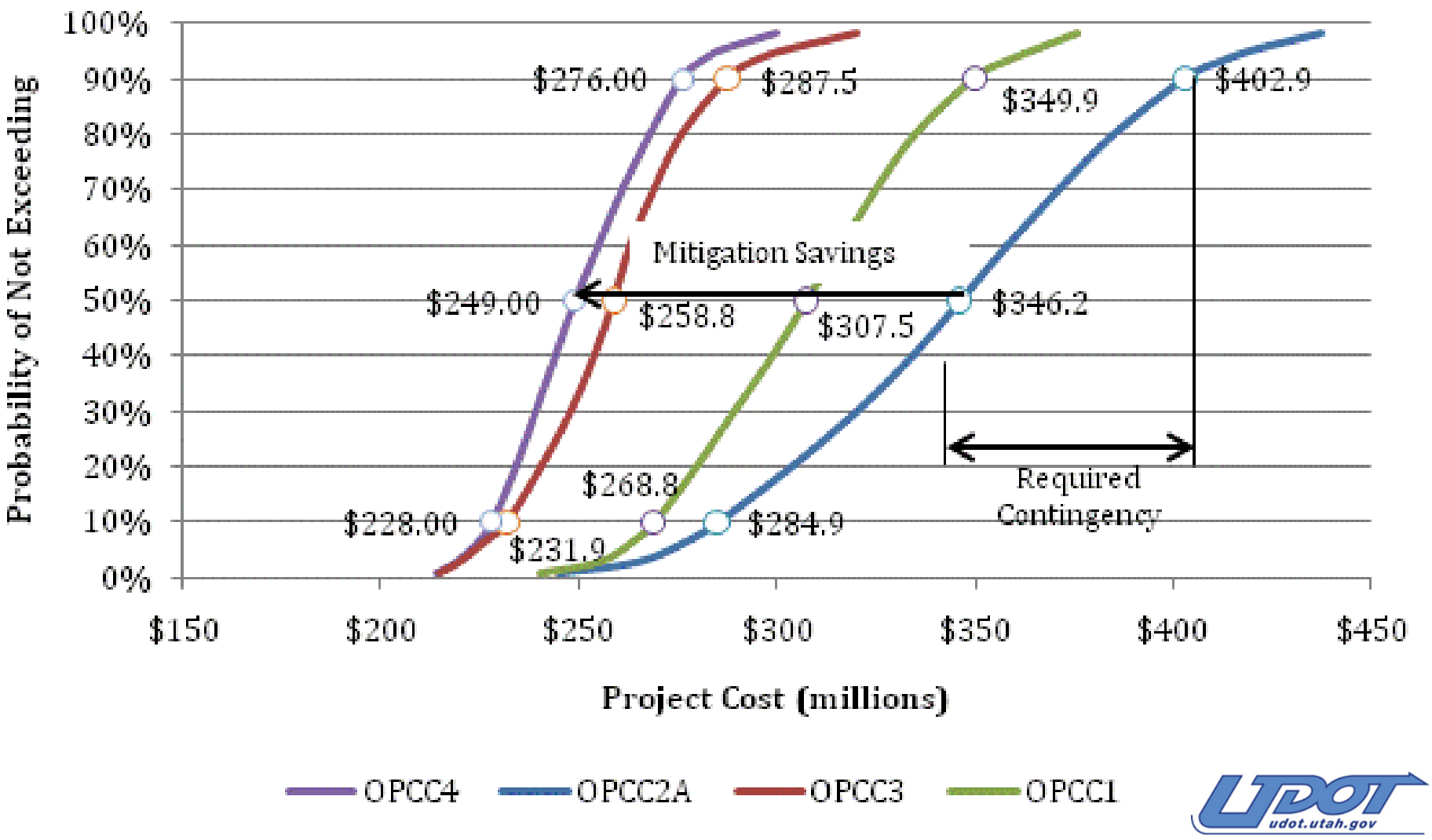
Focuses on cost, value and problem-solving



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Resources

- FHWA CM/GC Project Delivery Program Guide
  www.fhwa.dot.gov/construction/cqit/cm.cfm
- Sample Oregon DOT CM/GC Documents
  www.oregon.gov/ODOT;HWY/MPB/WRB.shtml#CM_GC_Procurement_Documents
- Sample CM/GC State Legislation
  www.fhwa.dot.gov/construction/contracts/cmgc_statutes.cfm

Additional WRB project issues, tactics and activities

Public involvement opportunities

- WRB examples:
  - Cities
  - County
  - Parks
  - Stakeholder groups
- Design enhancements

Design enhancements