Tools for Making Decisions in Project Selection and Delivery

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Overview

- Trends
- Caltrans Innovative Procurement Program
  - Project Delivery Systems
  - Decision Drivers for Project Delivery
  - Selection Tools
- Lessons Learned
- Resources
DOT Reality

- High attrition (loss of experience)
- Limited resources (changing environment)
- Growing funding gap
- Changing capital programs
- Public expectations
Project Delivery

Overall process by which a project is:

- Designed,
- Constructed, and/or
- Maintained, Operated, Financed
Project Delivery Systems

- Design-Bid-Build (Traditional)
- Innovative Alternatives (Caltrans):
  - Design Sequencing
  - CM @ Risk
  - Design-Build
    - Low Bid
    - Best-Value
Project Delivery Systems

**Public Sector Model:**
- Separation of Services for Design and Construction
- Owner retains risk of performance

**Private Sector Model:**
- Single Entity provides Integrated Services
  - Design
  - Construct
  - Operate
  - Maintain
  - Finance
- Contractor assumes greater risk of performance
Decision Drivers for Alternative Project Delivery

- Accelerate Delivery
- Single Point Responsibility
- Reduce Owner Staffing
- Early Cost Certainty
- Reallocate risk
- Minimize impacts to public
- Potential for lower costs or lower maintenance (Life Cycle Cost)
- Increase quality
- Innovate
## Design-Bid-Build

### Project Criteria
- Design must be 100% complete to begin construction
- Owner can best manage risk (third party coordination, etc.)
- Prescriptive specifications

### Advantages
- Well established and understood
- Clearly defined roles
- Suitable for competitive bidding
- No legal barriers in procurement
Design Sequencing

- Linear projects or repetitive design features
- Concurrent design and construction possible
- Minimal third party issues
- Fast-tracking (early construction)

Owner

Designer

Constructor
CM at-Risk

Project Criteria
- Complex projects with multiple phases
- Limited time or funding constraints
- Projects that are difficult to define or subject to change

Advantages
- Transfer construction cost/performance risks to CM (GC)
- Opportunity for fast-tracking
- GMP w/ shared savings provides incentive to control cost/time
Design-Build (Low Bid)

Project Criteria

- Small to medium projects
- Minimal third party (ROW, utility) complications
- Time sensitive (user impacts)
- Greater design detail (more prescriptive specifications)

Advantages

- Accelerate (fast-track) delivery
- Single point responsibility for final design, construction, and other services
Design-Build (B-V)

- Medium to large projects
- Opportunity for innovation
- Time sensitive (user impacts)
- Less design detail (scope can be defined using performance requirements)
- More time/cost for procurement (two-step)
- Accelerate (fast-track) delivery
- Earlier cost and schedule certainty
- Single point responsibility
- More risk allocated to D-Builder
- Potential for innovation and reduced life-cycle $
Project Selection Decision Tool

1. Assemble List of Candidate Projects
2. Convene Selection Committee
3. Evaluate Project Scope/Characteristics
4. Evaluate Project Success Criteria
5. Design-Bid-Build
6. Design-Sequencing
7. Design-Build/Low-Bid
8. Design-Build/Best-Value
9. Project Delivery Decision
Project Selection Decision Tool

1. Assemble List of Candidate Projects
2. Convene Selection Committee
3. Evaluate Project Scope/Characteristics
## Worksheet 1

### Project Scope and Characteristic Criteria

<table>
<thead>
<tr>
<th>1a) Where is the project in the project development process?</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ A. Detailed or final engineering stage</td>
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<tr>
<td>☐ B. Preliminary design</td>
</tr>
<tr>
<td>☐ C. Conceptual engineering stage</td>
</tr>
</tbody>
</table>

Align project characteristics with project delivery objectives or drivers
# Project Scope Scorecard

## Project Scope and Characteristics Scorecard

<table>
<thead>
<tr>
<th>Category</th>
<th>Design-Bid-Build</th>
<th>Design-Sequence</th>
<th>Design-Build/Low Bid</th>
<th>Design-Build/Best-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1a) Development Phase</td>
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<td>1b) Size/Complexity</td>
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<td>1c) User Impacts During Construction</td>
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<tr>
<td>1d) Right-of-Way Limitations</td>
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<td>1e) Environmental Permitting</td>
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<td>1f) Utility or Third-Party Issues</td>
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<td>1g) Work Restrictions/Traffic Requirements</td>
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<td>1h) Quality Standards/Benchmarks</td>
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</tbody>
</table>

- **Green**: Delivery method is **highly appropriate** for characteristic or success criteria
- **Orange**: Delivery method is **appropriate** for characteristic or success criteria
- **Yellow**: Delivery method is marginally appropriate for characteristic or success criteria
- **Red**: Delivery method should **not** be considered
Project Selection Decision Tool

- Design-Bid-Build
- Design-Sequencing
- Design-Build/Low-Bid
- Design-Build/Best-Value

Evaluate Project Success Criteria

Project Delivery Decision
## Worksheet 2

### Success Criteria

<table>
<thead>
<tr>
<th>2a) Schedule Issues</th>
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</thead>
<tbody>
<tr>
<td><strong>1.</strong> Can time savings be realized through concurrent design and construction activities (fast-tracking)?</td>
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<tr>
<td>❑ A. No more than typical</td>
</tr>
<tr>
<td>❑ B. More than typical</td>
</tr>
<tr>
<td>❑ C. Much more than typical</td>
</tr>
</tbody>
</table>

| **2.** Can the schedule be compressed? |
| ❑ A. No more than typical |
| ❑ B. More than typical |
| ❑ C. Much more than typical |

Align project success criteria with project delivery objectives or drivers
## Success Criteria Scorecard

<table>
<thead>
<tr>
<th>Success Criteria</th>
<th>Design-Bid-Build</th>
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<th>Design-Build/Low Bid</th>
<th>Design-Build/Best-Value</th>
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</thead>
<tbody>
<tr>
<td>2a.1) Schedule: Concurrent Design/Construct</td>
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<td>2a.2) Schedule: Compression</td>
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<td>2b.1) Innovation: Scope</td>
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<tr>
<td>2b.2) Innovation: Performance Specifications</td>
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<td>2c.1) Quality: Materials and Methods</td>
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<td>2c.2) Quality: Designs</td>
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<td>2c.3) Quality: Warranties</td>
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<td>2d.1) Cost: Lower Costs</td>
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<td>2d.2) Cost: Lifecycle Costs</td>
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<td>2d.3) Cost: Funding Committed</td>
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<td>2d.4) Cost: Cost of Procurement</td>
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<td>2e.1) Staffing: Department Expertise</td>
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<tr>
<td>2e.2) Staffing: Design Oversight</td>
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</tr>
<tr>
<td>2e.3) Staffing: Construction Oversight</td>
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- Delivery method is highly appropriate for characteristic or success criteria
- Delivery method is appropriate for characteristic or success criteria
- Delivery method is marginally appropriate for characteristic or success criteria
- Delivery method should not be considered
Project Selection Decision Tool

Design-Build/Best-Value

Project Delivery Decision
Lessons Learned

1. Alternative delivery methods not appropriate for every project

2. If used for the right project, alternative delivery methods can help achieve project goals
   - Reduced Cost
   - Accelerated delivery
   - Innovation
   - Enhanced quality/performance

3. Systematic decision making improves potential for success
Additional Resources

- NHI Course No. 134058 – Alternative Contracting
- FHWA Websites:
  - Program Administration
    - http://www.fhwa.dot.gov/programadmin/contracts/
  - Alternative Contracting Community of Practice
  - National Highway Specification Website
- The Fifth Edition of the AASHTO Primer on Contracting for the 21st Century
  - http://construction.transportation
- AASHTO D-B Taskforce website
  - http://designbuild.transportation.org/?siteid=63
Additional Resources (cont’d)

- Caltrans Innovative Procurement project website

- Representative alternative contracting websites
  - Florida DOT [http://www.dot.state.fl.us/construction/altcontract.htm](http://www.dot.state.fl.us/construction/altcontract.htm)
  - North Carolina [http://www.ncdot.org/doh/preconstruct/altern/design_build/default.html](http://www.ncdot.org/doh/preconstruct/altern/design_build/default.html)
  - Minnesota DOT [www.dot.state.mn.us/const/tools/innovativecontract.html](http://www.dot.state.mn.us/const/tools/innovativecontract.html)
Questions?

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