A True Partnership in Developing Vermont’s Design-Build Program

Evolution of a Design-Build Program through Implementation of Best Design-Build Practices
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Presentation Overview

- About Vermont
- Vermont Agency of Transportation Overview
- Implementation of Design-Build in Vermont
- Evolution of Vermont’s Design-Build Program
About Vermont
About Vermont

- 6 years ago there was no design-build in Vermont
- Small state, innovative thought processes, ability to accelerate changes
- Relating evolution of Vermont’s design-build program to DBIA Design-Build Best Practices
Vermont

9,623 square miles
6th smallest state
626,630 people
2nd least populous state

Texas

268,820 square miles
2nd largest state (28 x VT)
26.45M people
2nd most populous state
(42 x VT)
Vermont vs Texas—Total Road Miles

Vermont
14,266 total road miles
Equal to 0.57 trips around the world

Texas
301,035 total road miles
Equal to 12 trips around the world
Vermont vs Texas–Interstate Miles

Vermont
320.5 interstate miles
Equal to the distance Vermont - New York

Texas
3,234 interstate miles
Equal to the distance Vermont - South Mexico
Vermont vs Texas—Road Bridges

Vermont
3,995 road bridges

Texas
47,768 road bridges
12 times as much as Vermont
About Vermont

- Small state allows access to leadership to build consensus
- Central office promotes communication
- Willingness to try new things
- Significant DB progress in short timeframe
Vermont Agency of Transportation
Organization

Vermont Agency of Transportation

- Department of Motor Vehicles
- Finance and Administration
- Policy Planning and Intermodal Development
- Highway Division
Highway Division Bureaus

- Asset Management & Performance
- Construction & Materials
- Municipal Assistance
- Office of Highway Safety
- Maintenance & Operations
- **Project Delivery**
Project Delivery

- Highway, Safety & Design
- Environmental
- Right-of-Way, Utilities & Survey
- Structures & Hydraulics
Annual Transportation Budget

- $126M Structures
- $200M Highway Safety & Design
- $326M Project Delivery Bureau
Small State, Big Results

- Vermont’s budget, infrastructure, and organization is small
- All VTrans divisions in one location
- Allows us to be nimble and flexible
- Supports innovation and growth
VTrans
Design-Build Program
Program Initiation

- Initiated in 2009
- VTrans approached legislature to include language authorizing Design-Build in 2010 State Transportation Bill
- Limited to 4 projects in FY 2010
  Must include project sign notifying the public about Design-Build and project cost

![Design-Build Project Sign](image)
VTrans Design-Build Program

- Early goal
  Get the program off the ground in a timely manner
- Use of ARRA funding was a catalyst for schedule
- Let the program evolve and mature through future procurements
Brattleboro AC IM 091-1(50)

- Procured in 2010
- Replacement of 4 interstate bridges
- 2 step procurement
- $12.5M contract
- Completed in 2012
Richmond STP RS 0274(11)

- Procured in 2010
- Widening of 350-ft long historic truss bridge
- 2 step procurement
- $13.9M contract
- Completed in 2012

Engineering Excellence Grand Award (From the Florida Institute of Consulting Engineers, ACEC Florida)
2014 ACEC Honor Award National
2014 ACEC VT Grand Award
2014 Abba Lichtenstein Medal (International Bridge Conference)
2014 Regional Best Projects ENR New England
Windsor IM 091-1(64)

- Procured in 2012
- Replacement of 2 interstate bridges
- 1 step procurement
- $20M contract
- Completed in 2014
Milton IM 089-3(66)

- Procured in 2012
- Replacement of 2 interstate bridges
- 1 step procurement
- $23.1M contract
- Anticipated completion in 2016
Brattleboro IM 091-1(65)

- Procured in 2013
- Replacement of 4 interstate bridges
- 2 step procurement
- $60M contract
- Anticipated completion in 2017
Ryegate STP CULV(10)

- Procured in 2014
- Replacement of deep buried structure under US route 5 and Washington County railroad
- 2 step procurement
- $15.2M contract
- Anticipated completion in 2016
Design-Build Done Right

- DBIA Best Design-Build Practices
- How has VTrans program evolved?
- Has the evolution followed the DBIA Best Design-Build Practices?

Any project type
Any sector
Any size
Design-Build Done Right

Primary Practices

I. Procuring Design-Build Services

II. Contracting for Design-Build Services

III. Executing the Delivery of D-B Projects
I. Procuring Design-Build Services
Procuring Design-Build Services
Best Practices

1. An owner should conduct a proactive and objective assessment of the unique characteristics of its program/project and its organization before deciding to use design-build

2. An owner should implement a procurement plan that enhances collaboration and other benefits of design-build and is in harmony with the reasons that the owner chose the design-build delivery system

3. An owner using a competitive design-build procurement that seeks price and technical proposals should:
   - Establish clear evaluation and selection processes
   - Ensure that the process is fair, open, and transparent
   - Value both technical concepts and price in the selection process
An owner should conduct a proactive and objective assessment of the unique characteristics of its program/project and its organization before deciding to use design-build
Organizational Support

1st Design-Build Project

- 1 person pushing design-build at VTrans
- Limited input from VTrans Contract Administration
- Limited input from VTrans Legal
- Limited input from VTrans Construction Section
Organizational Support

**Design-Build Today**

- Dedicated design-build project managers
- Dedicated personnel in Contract Administration
- Engagement with VTrans Legal
- Constructive input from each VTrans Section
An owner should implement a procurement plan that enhances collaboration and other benefits of design-build and is in harmony with the reasons that the owner chose the design-build delivery system.
Performance Based Requirements

1st Design-Build Project

- Provided design concept
- Blank slate for D-B teams as long as meeting the requirements of the RFP
- Didn’t allow for meaningful interaction
Performance Based Requirements

Design-Build Today

- Base technical concept
- Formal alternative technical concept process
- Allows for meaningful feedback related to technical concepts
- Encourages more collaboration between VTrans and proposers
Technical/Price

1st Design-Build Project
- Best value formula = 30% technical/70% price
- RFP stage practically turned into low bid

2nd-4th Design-Build Projects
- Best value formula = 40% technical/60% price
Technical/Price

Design-Build Today

- Best value formula = 50% technical/50% price
- Significant value for technical proposal
- Still keeps focus on remaining fiscally responsible
Brattleboro IM 091-(65) Design-Build
Bids opened: March 14, 2013

<table>
<thead>
<tr>
<th>DESIGN-BUILD TEAM</th>
<th>TECHNICAL PROPOSAL SCORE (50 point scale)</th>
<th>AS READ COST PROPOSAL</th>
<th>COST PROPOSAL SCORE (50 point scale)</th>
<th>TOTAL SCORE (100 point scale)</th>
<th>RANK</th>
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<td>PCL Civil Constructors, Inc./ Figg Bridge Engineers, Inc.</td>
<td>35.67</td>
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<td>Reed &amp; Reed, Inc./ HDR Engineering, Inc.</td>
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<td>Lane Construction Corporation/ Hardesty &amp; Hanover, LLP</td>
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<td>$82,812,233.00</td>
<td>32.60</td>
<td>63.60</td>
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Apparent Lowest Cost Proposal: $54,000,000.00
Apparent Best Value Score: 81.05
An owner using a competitive design-build procurement that seeks price and technical proposals should:

**Establish** clear evaluation and selection processes

**Ensure** that the process is fair, open, and transparent

**Value** both technical concepts and price in the selection process
Confidential Meetings

1st Design-Build Project

- Confidential proprietary meetings
- Open format with no chance for follow-up
- Meetings were a free-for-all with no focus
Confidential Meetings

Design-Build Today

- ATC process
- One-on-one confidential meetings
- Provides ongoing feedback
- Engages D-B team in focused discussion
- Confidential written feedback
Front End Tasks

1st Design-Build Project

- NEPA documentation
- Design concepts
- Geotechnical site characterization
- Traffic data
- ROW clearance
- Utility clearance
Front End Tasks

Design-Build Today

- In addition to previous efforts
- Base technical concept
- Full project survey
- Risk based environmental reports
- Risk based geotechnical parameters
- Pavement design
II. Contracting for Design-Build Services
Contracting for Design-Build Services

1. Contracts used on design-build projects should be fair, balanced and clear, and should promote the collaborative aspects inherent in the design-build process.

2. The contract between the owner and design-builder should address the unique aspects of the design-build process, including expected standards of care for design services.

3. The contracts between the design-builder and its team members should address the unique aspects of the design-build process.
Contracts used on design-build projects should be fair, balanced and clear, and should promote the collaborative aspects inherent with the design-build process.
Risk Allocation

1st Design-Build Project

- Limited thought into risk allocation
- Limited understanding of project risks
- Only looked at the major items
  - Utilities
  - ROW
  - NEPA
Risk Allocation

Design-Build Today

- Identification of project specific risks
- Understand impact of risk to price and schedule
- Allocate risk appropriately to the entity who can best manage the risk
Encouraging Communication

1st Design-Build Project

- No identification of communication methods
- Left almost entirely up to the design-build team
- Resulted in poor communication amongst the team and with VTrans
Encouraging Communication

Design-Build Today

- Promote both formal and informal communication
- Mandatory project collaboration meetings
- Mandatory weekly reports from key personnel
- Over-the-shoulder review meetings
- Project collaboration site
The contract between the owner and design-builder should address the unique aspects of the design-build process, including expected standards of care for design services.
Defining Project Milestones

1st Design-Build Project

- Limited language or meaning for substantial or final completion
- Ambiguity related to payment provisions
Defining Project Milestones

Design-Build Today

- Defined Substantial Completion defined for Work Packages and overall project
- Defined payment structure based on Work Package initiation and completion
- Schedule of Payments submittal to concur on payments
The contract between the owner and design-builder should address the unique aspects of the design-build process.
Teaming Contracts

1st Design-Build Project

- VTrans viewed the design-builder as a single entity
- Limited thought into team agreements or how they would affect the performance of work
Teaming Contracts

Design-Build Today

- Specific responsibilities defined for key personnel
- Specific communication protocols identified for design-builder, including Design Manager
- Learning curve for design-build teams
III. Executing the Delivery of D-B Projects
Executing the Delivery of D-B Projects

1. All design-build team members should be educated and trained in the design-build process, and be knowledgeable of the differences between design-build and other delivery systems.

2. The project team should establish logistics and infrastructure to support integrated project delivery.

3. The project team, at the outset of the project, should establish processes to facilitate timely and effective communication, collaboration, and issue resolution.

4. The project team should focus on the design management and commissioning/turnover processes and ensure that there is alignment among the team as to how to execute these processes.
All design-build team members should be educated and trained in the design-build process, and be knowledgeable of the differences between design-build and other delivery systems.
Team Collaboration

1st Design-Build Project

- VTrans viewed the design-builder as a single entity
- Limited thought into promoting team collaboration
- Limited consideration for explaining the benefits of design-build
Team Collaboration

Design-Build Today

- Deeper understanding of the design-builder team relationships
- A successful design-build team is key a component to a successful project
- VTrans reinforces a collaborative environment early and often
  - Pre-proposal meeting
  - Project kickoff meeting
  - Environmental regulator meeting
  - Pre-construction meeting
The project team should establish logistics and infrastructure to support integrated project delivery
Administrative Processes

1st Design-Build Project

- Administrative requirements were vague
- No timelines were set
- Nothing was enforceable

Project Kickoff
Administrative Processes

**Design-Build Today**

- Administrative submittals
  - Schedule, WBS, quality plans, TMP, schedule of payments
  - Must be completed prior to design or construction submittals

- Clearly defined submittals and requirements

- Ongoing structure for administrative and management tasks
The project team, at the outset of the project, should establish processes to facilitate timely and effective communication, collaboration, and issue resolution.
Owner Engagement

1st Design-Build Project

- Resident engineer was only continuous contact from VTrans
- Construction handled much like traditional DBB
- Project/construction issues always a fire drill
- Relationship between D-B team, construction, and owner inconsistent
Owner Engagement

Design-Build Today

- Formal collaboration meetings to engage D-B team, VTrans construction, materials, design, and FHWA
- High level “partnering meetings” also used
- VTrans fully engaged in all technical aspects – allows for quick decision making
The project team should focus on the design management and commissioning/turnover processes and ensure that there is alignment among the team as to how to execute these processes.
Submittal Review/Schedule

1st Design-Build Project

- Submittal reviews were defined as needed
- Little planning for impacts on schedule
- Release for construction process was vague
- Again leaned to DBB process
Submittal Review/Schedule

**Design-Build Today**

- Submittal reviews are clearly defined
- Submittal review process is emphasized & explained at up-front meetings
- Expectations for submittals are clearly defined
- Project schedule is compared against anticipated review timelines
Keys to Success

- Communication and education
- Formal ATC process
- Best value selection
- Culture shift
Continuing Evaluation

- Key personnel changes
- Quality assurance and quality acceptance
- Design-Build procedures
Stay connected

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www.vtrans.vermont.gov  

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