



The Value of Accelerated Bridge Construction

A Rural DOT Perspective

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Overview

- Introduction
- Expediting Project Delivery
- Creating a Culture that Values Innovation
- Garnering Political Capital
- Using ABC to Delivery Legacy Projects
- Partnering with Local Communities
- Developing Future Leaders
- Three Years of Proven Performance



Introduction: Common Benefits of ABC

- Minimizes impacts to:
 - Right of Way
 - Utilities
 - Environmental and Cultural Resources Introduction
- Improves safety of motorists and construction workers
- Reduces onsite construction time



Benefits of ABC in Urban Areas

- Minimizes mobility impacts
- Reduces road user cost
- Often results in lower project costs



How to Justify ABC in Rural States?

- Lower Traffic Volumes
- Scarce Roadway Networks





Expediting Project Delivery (EPD)
Setting the Stage for the Accelerated
Bridge Program (ABP)



Common Constraints to Expediting Project Delivery

- Project Impacts =
 - Lengthy and Arduous Right-of-Way (ROW) Process
 - Utility Relocation
 - Impacts to Environmental and Cultural Resources
 - Increases in project costs and delivery time
- Stakeholder Buyin and Support
- Turnover in local governmental officials
- Maintenance of Traffic



Setting the Stage for Expediting Project Delivery

- Aging Bridge Population
- American Recovery and Reinvestment Act (ARRA) – 2009
- Tropical Storm Irene (TSI) – 2011



Expediting Project Delivery

- In 2012, Structures reorganized to streamline project delivery
 - Project Initiation and Innovation Team (PIIT)
 - Accelerated Bridge Program (ABP)
- Programmatic approach to identifying and delivering ABC projects
- 24 month performance goal from project defined to procurement (80%)
- Jump started with TSI – 14 bridge replacement project delivered in 24 months





Creating a Culture that Values Innovation

ABC Improves Efficiency and Effectiveness



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Putting ABP and ABC into Practice

- Making a case for change
- Bottom up approach
- PMs given a great deal of latitude to explore and vet different strategies to EPD
- Emphasis on collaboration and communication
- Standardized plan sets and specifications
- Best practices for public involvement and outreach
- Celebrate successes and build on momentum



Goals for Creating a Sustainable Program

- Expedite the delivery of bridge reconstruction and bridge rehabilitation projects to support performance measures for bridge inventory conditions
- Be a leader for deployment of innovation at VTrans and nationally
- Be transparent to stakeholders and customers





Garnering Political Capitol

Promoting Rapid Bridge Replacements
Statewide

Stowe
Photos.com



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Partnering with the Legislative Branch

- Informational presentations to House and Senate Transportation Committees
 - Advancements
 - Showcase innovative ABC projects
 - Brainstorming





Partnering with the Legislative Branch

- Passed Act 153 in 2012
 - Applies to town highway projects
 - Reduces the town share by 50% if they elect for a short term road closure



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Using ABC to Deliver Legacy Projects

Tapping into Innovation to Remove Impediments



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Legacy Projects – Every DOT is Affected

- Projects at a standstill
 - Public opposition
 - Impacts from conventional construction methods
 - Scope creep
- Lengthy schedule delays
- Increased design costs



Middlebury Sand Hill Bridge, VT 125

- Historic 49' arch structure built in 1924
- Programmed for replacement in 1983
- Narrow bridge width
- Flanked with recreational resources and archeological significant mill sites
- Local businesses depend on travel and tourism



Middlebury Sand Hill Bridge, VT 125

- Used innovation to deliver prefabricated arch like structure during off peak tourism season





Partnering with Local Communities
Use of ABC Increases Public Satisfaction



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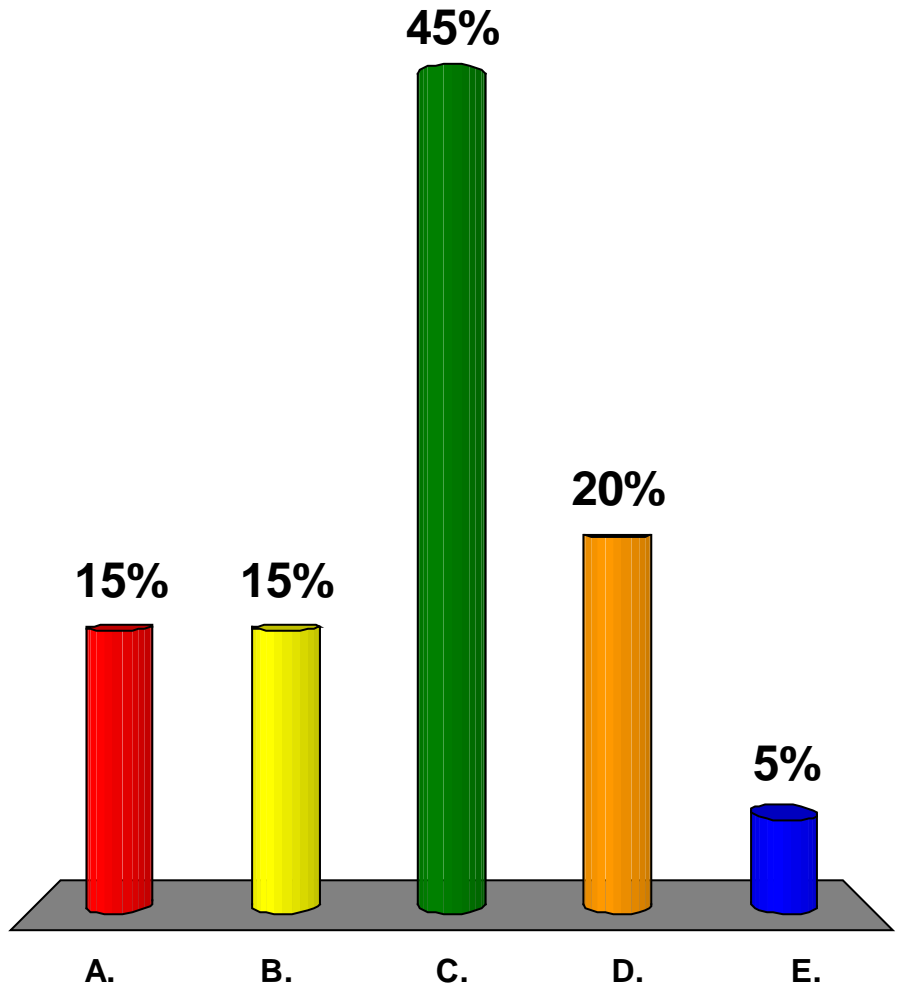
ABC Requires Heightened Public Involvement

- Meaningful public engagement and outreach from project initiation through construction
- Community Questionnaire
- Alternatives and Regional Concerns Public Meetings
 - Audience Response System
 - Allow public to have an impact on the timing and duration of the closure
 - Post Results



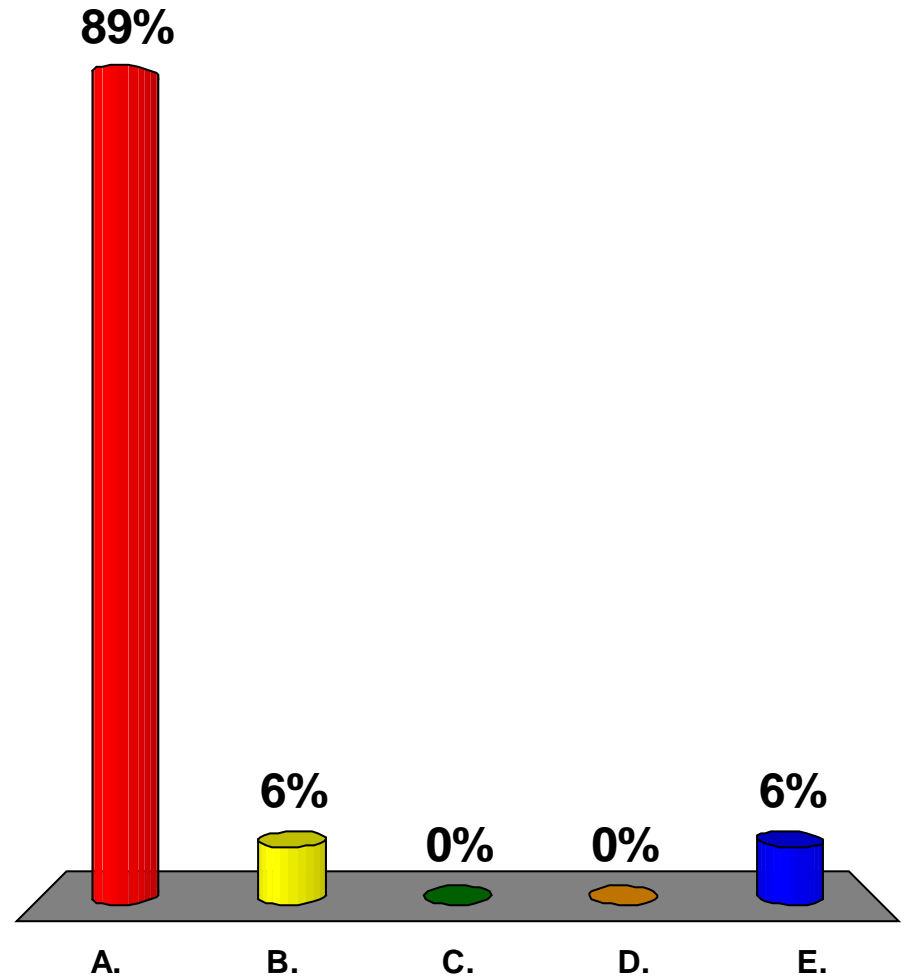
What would be the maximum acceptable length of closure for Bridge #33?

- A. 5 days
- B. 1 week
- C. 10 days
- D. 2 weeks
- E. 4 weeks




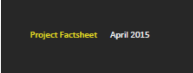
Which time of year would be most acceptable for Bridge #33 to be closed?

- A. June
- B. July
- C. August
- D. September
- E. Other



Project Outreach for ABC Projects


- Project Factsheets
- Project Outreach Coordinators
- Preclosure Public Information Meetings
- Weekly Email Updates
- Customer Satisfaction Surveys




Looking west

Benefits of Accelerated Bridge Construction:

- Reduced design and construction duration
- Reduced road user cost
- Safer for workers and traveling public
- Increased strength and quality of bridge components
- Eliminates need for temporary bridge construction
- Reduced impacts to:
 - Environmental Resources
 - Utilities
 - Right-of-Way



Looking East



Killington

US Route 4 Bridge 33

Killington BF 020-2(42)

Project Location: Town of Killington in Rutland County on US Route 4 over the Ottauquechee River. The bridge is located approximately 1.0 mile west of the intersection of US Route 4 and VT Route 100 in the Town of Bridgewater.

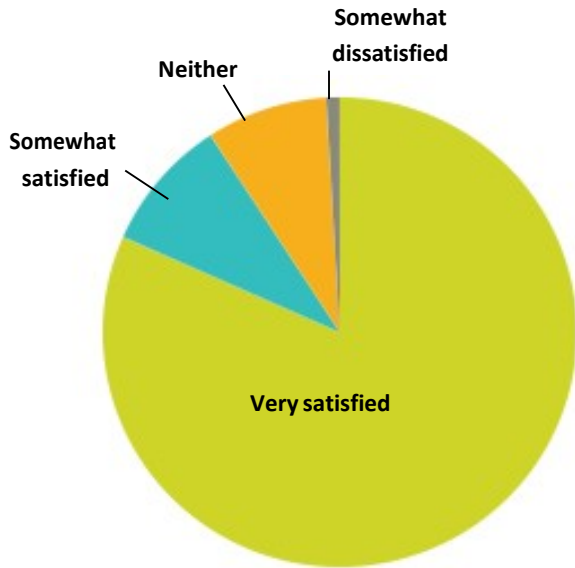
The Killington BF 020-2(42) Bridge 33 project will replace the existing bridge, which has substandard shoulder widths, non-crash-tested approach and bridge railing, and is considered structurally deficient with a new bridge that meets current design standards. The existing bridge structure is a single span cast-in-place deck on rolled beams constructed in 1956. It is approximately 69-feet in length and 29.8-feet wide. The bridge deck is in poor condition. There are concerns with full depth holes occurring in the near future.

VTTrans evaluated alternatives for replacement of Killington US Route 4 Bridge 33 in an engineering study completed in November 2014. The study assessed the proposed design criteria for the bridge and roadway alignment, right-of-way impacts, hydraulics, and biological, historical and archaeological resources. Several alternatives were examined including bridge rehabilitation and replacement along with a number of traffic maintenance options such as a short term bridge closure, phased construction and a temporary bridge. The Scoping Report recommends replacing the entire bridge structure with traffic maintained on an offsite detour during a 10 day short term road closure. This innovative approach will minimize impacts to the adjacent wetlands, essential wildlife habitat, and archeological resources as well as minimize traffic disruptions while increasing the safety of the traveling public and construction workers.

The new bridge will be constructed of prefabricated bridge components to facilitate rapid replacement founded on internal abutments. The new bridge will be 73 feet in length and 40 feet wide including two 12-foot travel lanes and two 8-foot shoulders. The new bridge will feature a 3 rail box beam bridge rail with a box beam approach rails terminating beyond the bridge.

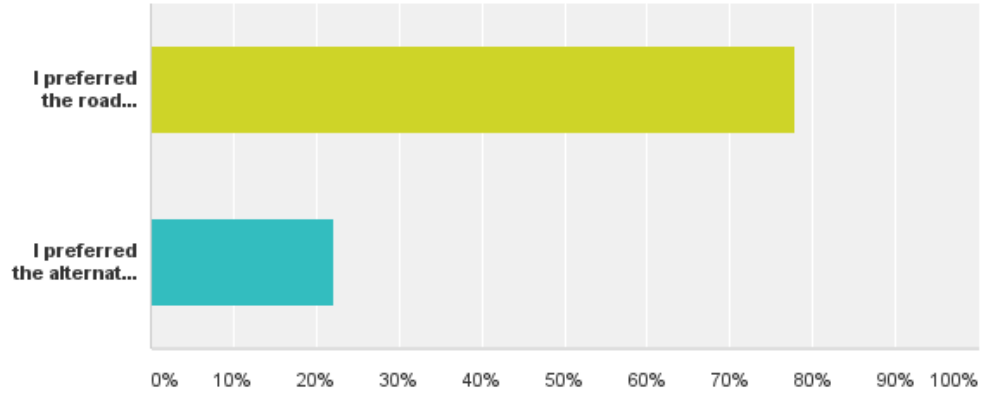
Q8 The Stowe VT 108 Bridge Project used an innovative construction method called Accelerated Bridge Construction, which uses prefabricated bridge elements and road closures to reduce onsite construction time. Conventional construction typically uses temporary bridges and takes one to two years to complete. How satisfied were you with the Accelerated Bridge Construction?

Answered: 109 Skipped: 6



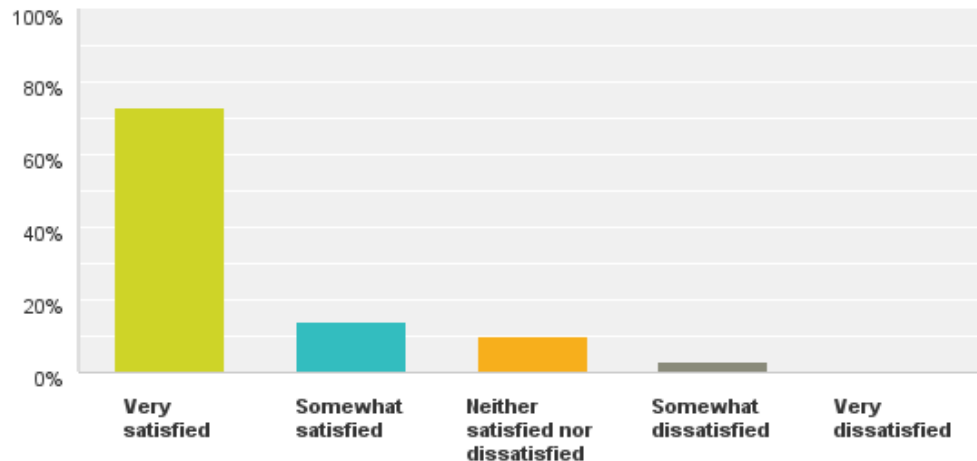
Q9 How would you rate your level of satisfaction with the road closure compared to alternating one-way traffic following the bridge closure period?

Answered: 108 Skipped: 7



Q12 Overall, how satisfied were you with how VTrans delivered this project?

Answered: 108 Skipped: 7





Developing Future Leaders

ABC Cultivates Critical Thinking



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Use of ABC Promotes Innovation Across an Organization

- Future Trends in Transportation
 - Lack of adequate funding
 - Climate change
 - Changing demographics
 - Increasing congestion and movement of goods
 - Technological Advancements





VTrans Accelerated Bridge Program Three Years of Proven Performance



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ABP Putting it Altogether

- Since 2012, the ABP has:
 - Implemented a programmatic approach to ABC
 - Reduced standard design duration from 60 to 24 months
 - Established Act 153
 - Replaced several legacy projects
 - Gained statewide support for ABC
 - Delivered 28 projects totaling \$71.3 M
 - 17 projects currently under development
- To learn more:
<https://www.youtube.com/user/VTransTV>





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