SHRP2 SOLUTIONS
TOOLS FOR THE ROAD AHEAD

Second Strategic Highway Research Program (SHRP2) C19:

Expediting Project Delivery

The Project Initiation and Innovation Team and the Accelerated Bridge Program

U.S. Department of Transportation
Federal Highway Administration

VERMONT
AGENCY OF TRANSPORTATION

Accelerated Bridge Program
VTRANS

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1 Introduction

Leadership at the Vermont Agency of Transportation (VTrans) is dedicated to expediting project delivery and has demonstrated their support by fostering an environment of innovation, collaboration and efficiency. Tropical Strom Irene provided the Agency with an opportunity to undertake a variety of expedited project delivery methods to repair the transportation network and restore mobility to communities completely isolated in the aftermath of the storm. Our dedication and rapid response to restoring the network significantly improved public support. Utilizing this momentum, leadership has continued to focus on successful expedited project delivery methods encouraging staff to incorporate lessons learned into standard practice.

In 2012, the Secretary of Transportation endorsed a re-organization of the Structures Section to create an Accelerated Bridge Program (ABP) to address a number of factors: (1) funding for bridge construction increased by 150 percent in four years; (2) many bridges in the State are aging; and (3) Tropical Storm Irene destroyed over 100 bridges, leading to a critical need to restore the state's bridge infrastructure. VTrans also hoped to become a national leader for deployment of ABP innovation. Currently, about 25 percent of bridges in Vermont are built through the ABP.

The primary goal of the ABP is to streamline project delivery and construction through the implementation and adoption of accelerated bridge construction (ABC) techniques and road closures. This program has been given a great deal of latitude to retool many portions of the project development process and innovate. Examples include vetting and implementing various strategies to improve internal communication, acquiring early and continued public support, standardizing design and plan preparation, and incorporating technologies to complete projects more efficiently. Many of our approaches model lessons learned from the Irene recovery and build on successful and proven methods from other State Departments of Transportation (DOT), such as the Massachusetts DOT and Utah DOT. Our early successes have been derived from being receptive to ideas that strive to achieve expedited project delivery.

All projects in Vermont, including ABP projects, begin with a 12-month scoping process led by the Project Innovation and Initiation Team (PIIT). This scoping process includes all activities that occur before project define (e.g., National Environmental Policy Act (NEPA) review, identifying utilities and right-of-way (ROW) lines, public engagement, and conducting preliminary hydraulics and geotechnical assessments), and is typically done at a high level. After scoping a project, the PIIT develops a report outlining the project scope and recommends whether a bridge project should be implemented through ABP or conventional bridge construction. Although the PIIT makes this recommendation, the Structures Division leadership is ultimately responsible for approving the scope.

If determined to be an ABP project, the team then has 24 months to complete all project development activities (i.e., final hydraulics, geotechnical, ROW, utilities assessments, and final design), up to publishing an advertisement. There are no resource groups dedicated to ABP, so Project Managers must share resources with all other groups at VTrans. Once a Project Manager hands the project off to Construction, they and the resource groups no longer stay involved.

The APB still faces many challenges and several opportunities for improvement remain for the Agency. For example, while we have improved and streamlined the public outreach process, managing public expectations on the urgency of bridge replacements and timing of input has been challenging. Also, while we have leadership support, the APB still struggles to address some process constraints.

In 2012, the second Strategic Highway Research Program (SHRP2) published a report entitled, “Expedited Planning and Environmental Review of Highway Projects” (S2-C19-RR-1). This report describes 16 common constraints on expediting project delivery and 24 useful strategies for achieving expedited delivery. These strategies can be grouped into six expediting themes: (1) improve public involvement and support, (2) improve resource agency involvement and collaboration, (3) demonstrate real commitment to the project, (4) improve internal communication and coordination, (5) streamline decision making, and (6) integrate across all phases of project delivery.

In October 2013, VTrans was selected as a recipient of funding through the SHRP2 Implementation Assistance Program to deploy Expediting Project Delivery (SHRP2 product C19). In accordance with the “Statement of Work”, the funds were used to develop an action plan that identified, described, and evaluated the leading constraints to expediting project

delivery (EPD) in the Accelerated Bridge Program (ABP) as well as strategies to overcome these barriers with a special emphasis on five of the strategies referenced in S2-C19-RR-1:

- Strategy 3 (Context-Sensitive Design and Solutions);
- Strategy 8 (Expedited Internal Review and Decision-Making);
- Strategy 10 (Highly Responsive Public Engagement);
- Strategy 21 (Strategic Oversight and Readiness Assessment); and
- Strategy 22 (Team Co-Location).

2 Background

Current State of ABP Project Delivery at VTrans

VTrans initiated the ABP in 2012 to address a number of factors: (1) funding for bridge construction increased by 150 percent in four years; (2) many bridges in the State are aging; and (3) Tropical Storm Irene destroyed over 100 bridges, leading to a critical need to restore the state's bridge infrastructure. In addition to addressing these factors, the program goals are to be a national leader for deployment of ABP innovation; be transparent to stakeholders and customers; implement best practices on public outreach; partner with internal, governmental, and private sector stakeholders; and be a leader within VTrans in developing and maintaining validated and credible project schedules. Currently, about 25 percent of bridges (9-12 projects per year) in Vermont are replaced or rehabilitated through the ABP.

VTrans has identified many initial benefits of the ABP so far. These benefits include eliminating the need for temporary bridge construction; improving safety for workers and traveling public; reducing impacts to environmental resources, utilities, and right-of-way (ROW); and reducing project costs. There has also been a good team dynamic; openness to innovation; strong relationship with the FHWA Division Office; and effective coordination with resource groups, which has made the program successful. However, there have also been some challenges including coordination with outside entities (e.g., utilities companies, property owners, and

Agency of Natural Resources); staffing demands for the 24-month design schedule and construction; management prioritization of projects; and project hand-off from the Project Innovation and Initiation Team (PIIT) to Project Manager and Project Manager to Construction staff; political influence; and design flexibilities.

The ABP process, which starts out similar to other projects in Vermont, involves a 12-month scoping process led by the PIIT. This scoping process includes all activities that occur before project definition (e.g., National Environmental Policy Act (NEPA) review, identifying utilities and ROW lines, public engagement, and conducting preliminary hydraulics and geotechnical assessments), and is typically done at a high level. After scoping a project, the PIIT develops a report outlining the project scope and recommends whether a bridge project should be developed through the ABP or conventional bridge construction. Although the PIIT makes this recommendation, the Structures Division leadership is ultimately responsible for approving the scope.

If designated as an ABP project, the team then has 24 months to complete all project development activities (i.e., final hydraulics, geotechnical, ROW, utilities assessments, and final design), up to advertisement. There are no resource groups dedicated to ABP, so Project Managers must share resources with all other groups at VTrans.

Desired State of ABP Project Delivery at VTrans

VTrans discussed several current initiatives and future opportunities for improving project delivery in the ABP:

Current Initiatives:

- Incorporate flexibility on in-stream work windows;
- Identify opportunities in the project design schedule to expedite activities;
- Standardize the process to reduce design and construction time;
- Improve project outreach to stakeholders by promoting Accelerated Bridge Construction (ABC) and road closures to communities; and
- Piloting a new procurement program.

Future Opportunities:

- Soften communication style between PIIT, project teams, and resource groups (e.g., more face-to-face meetings);
- Garner support from the resource groups on the selected alternative;
- Place more focus on innovation and flexibility with engineering decisions;
- Give more consideration to the context of the corridor when selecting the preferred alternative;
- Build in more time in the project schedule to hire consultants;
- Hire or identify resident engineers to be dedicated to ABC projects; and
- Expand team co-location to include ROW, Construction, and Contract Administration.

SHRP2 Expediting Project Delivery (C19) Overview

SHRP2 is a focused research program designed to focus on applied research in four areas: safety, renewal, reliability, and capacity. The SHRP2 solution Expediting Project Delivery (C19) falls within the Capacity area, which aims to integrate mobility, economic, environmental, and community needs in the planning and designing of new transportation capacity projects. SHRP2 is conducted under a memorandum of understanding among the American Association of State Highway and Transportation Officials (AASHTO), FHWA, and the Transportation Research Board (TRB).

As part of its program of implementing SHRP2 Solutions, FHWA distributed C19 implementation assistance funding in two categories: Lead Adopter Incentives and User Incentives. VTrans was identified as a Lead Adopter for C19. Implementation assistance funding is designed to incentivize the adoption of SHRP2 solutions. As part of implementation assistance, FHWA provides State DOTs, metropolitan planning organizations (MPOs), resource agencies, and other stakeholders with the resources and technical assistance that they need to successfully implement products such as C19.

The SHRP2 C19 product comprises two components: the SHRP2 Capacity Research Report (**Expedited Planning and Environmental Review of Highway Projects**) and the Expediting Project Delivery Assessment Tool (currently in beta version). FHWA staff introduced the C19 report and demonstrated the Expediting Project Delivery Assessment Tool.

Key Strategies for Expediting Project Delivery

The C19 report identifies 16 common constraints to transportation project delivery and 24 different strategies for expediting project delivery. A full list of these constraints and strategies is available in Appendix A. VTrans noted that the following strategies, organized by objective, were particularly applicable to ABP project delivery in Vermont:

- **Objective 1: Improve internal communication and coordination**
  - » Strategy 21: Strategic Oversight and Readiness Assessment

    VTrans is interested in pursuing this strategy to meet Objective 1 by determining the readiness of various parties to adopt ABP. For example, the utilities companies in Vermont were used to working on a handful of bridge projects each year before ABP. However, with more ABP projects, they have needed to adapt their workload and budgeting.
  - » Strategy 22: Team Co-Location

    VTrans is interested in pursuing this strategy to improve communication and the sense of team in project delivery. VTrans believes that by co-locating and holding in-person meetings with the whole team (i.e., Project Manager, resource groups, consultants), there will be a greater sense of joint achievement when a project is completed.
- **Objective 2: Streamline decision-making**
  - » Strategy 8: Expedited Internal Review and Decision-Making

    With this strategy, VTrans wants to more clearly define who is making decisions and at what point, and then use this process consistently throughout the ABP.

  - » Strategy 21: Strategic Oversight and Readiness Assessment

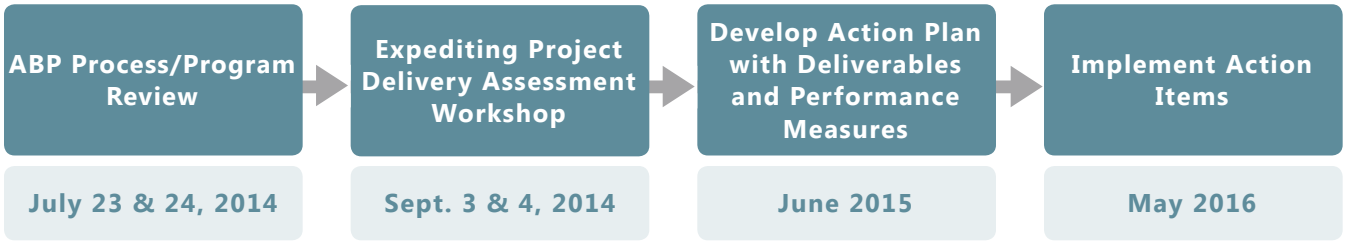
    VTrans is interested in pursuing this strategy to meet Objective 2. Specifically, VTrans wants to get buy-in from high level management for the ABP, so staff will support decisions made regarding the program.

- **Objective 4: Improve public involvement and support**
  - » Strategy 3: Context-Sensitive Design and Solutions

    The VTrans ABP team hopes to combine the efforts to adopt this strategy with the Agency-wide design standard re-evaluation effort.
  - » Strategy 10: Highly Responsive Public Engagement

    VTrans anticipates that this strategy will help address stakeholder controversy, critical media, and the need to start public engagement earlier. They also plan to leverage this strategy to share VTrans success stories with the public.

This final report describes the following timeline of the SHRP2 C19 initiative at VTrans:



3 Program/Process Overview

An ABP Process/Program Review was held on July 23rd and 24th, 2014 to evaluate risks and identify opportunities for expediting project delivery of ABP projects.

Desired Outcomes

FHWA and VTrans identified a set of workshop objectives prior to the Process Review and documented them in the Process Review Action Plan. The desired outcomes included:

- Evaluate risks to timely project development and construction in Vermont.
- Identify opportunities to expediting projects within the VTrans ABP with special emphasis on the strategies described in the *Expediting Project Delivery* report.
- Identify resource demands for the ABP and how these differ from conventional project delivery.
- Analyze the VTrans organizational structure for opportunities for increased efficiencies.
- Identify potential process improvements.
- Build relationship with internal and external partners.
- Produce results that will help the development of the SHRP2 C19 Assessment Workshop for VTrans.

A multidisciplinary Review Panel conducted a series of interviews with over 30 individuals representing VTrans and two Regional Planning Commissions. The Review Panel included representative from the Federal Highway Administration's (FHWA's) Resource Center and Vermont Division, Maine DOT, Massachusetts DOT, Vermont AOT, and consultant design firms. Meeting support was provided by the USDOT Volpe Center and VHB. Broad themes highlighted during the Process/Program Review included: (a) project prioritization; (b) tools to help track projects and provide easy access to data; (c) effective communication with internal and external stakeholders; and (d) building a team atmosphere.

Focus Areas

The Review Panel facilitated interviews focused around the five emphasis strategies identified from S2-C19-RR-1. The following section highlights key themes and concerns raised in these interviews.

Strategy 3: Context-Sensitive Design and Solutions

- **Community Engagement.** Community engagement is essential to designing a project, so that it meets the needs of a community. Interview participants suggested that project development teams should communicate project information to towns in which the project resides as well as surrounding towns that may be affected (e.g. due to commuting or tourism). Furthermore, it is important that project teams share project information with both town officials and the public even though, in some cases, it is hard to engage community members. Although VTrans solicits context information from the public through conversations and a questionnaire, it is not clear whether these conversations happen with the "right people."
- **Corridor Planning.** VTrans does not currently have a five-year corridor planning process, and interview participants suggested that VTrans and the ABP could benefit from such a process. By understanding the long-term vision of a corridor, resource groups and project managers could better envision ABP in the larger picture and understand why certain projects are being pursued and when.
- **Effects of ABP.** Participants agreed that faster delivery of projects is beneficial because closing bridges is especially difficult for towns. However, development and delivery of ABP projects also results in many detours. Project teams need to consider the effects of detours on pedestrians and bicyclists, not just cars.
- **Communication within VTrans.** There is no central mechanism in VTrans to communicate project schedules and locations. Having a central system, such as a State geographic information system (GIS) database, that identifies projects and assets could help groups better coordinate their projects.

Strategy 8: Expediting Internal Review and Decision-Making

- **Project Prioritization.** Project prioritization is happening at the middle to upper management levels within VTrans. However, this information is not always effectively communicated to Project Managers and resource groups, which creates inefficiencies during project development. Many resource groups do not understand why ABP projects move through the system faster than conventional project. For them, it is "just another project in their workload."

- **Coordinating with Multiple Groups.** With ABP projects, coordinating the schedules of all who need to be involved is especially important and can be challenging. Certain decisions are made at times that are not ideal for staff (e.g., projects are advertised in August/September, meaning that the final plan review occurs in May, which is not ideal for Construction staff). Some of these scheduling conflicts could be avoided by including groups such as construction, contracting, and environment at an earlier time.
- **Decision-Making authority.** For most stages of project development, both consultants and resource groups understand who has the decision-making authority. However for construction of ABP projects, decision-making authority is not always clear. Accelerated bridge construction is extremely time-intensive, and there are limits on the number of hours an individual can work. This poses a challenge in the case of the resident engineer who can only be on-site 12 hours a day, six days a week, because it is not always clear who has decision-making authority when they are off site. If there is not a clear delegation of decision-making authority, it can cause delays in construction.

Strategy 10: Highly Responsive Public Engagement

- **Reaching All Affected Groups.** Project teams often do a good job of reaching out to towns where projects are being built. However, it can be more difficult identifying and engaging surrounding towns that may also be affected. It is important to consider tourists, commuters, and businesses when seeking input or sharing information about a project.
- **Communication and Information Sharing.** There is sometimes a lack of communication between project groups during construction. For example, there have been instances when two regions plan a bridge construction for the same time period and use each other's bridges as detours because they did not coordinate. While VTrans and external stakeholders use radio, television, Facebook, and Twitter to communicate project updates, this information is not always up-to-date and project teams and the public do not always check these resources. Cell phone coverage may not exist in many towns so providing alternative sources of information en-route is important. Additionally, with no central system to share data, VTrans staff are often unaware of project priorities, decisions, and schedules.
- **Agency Mission.** It appears that the public does not fully understand VTrans' mission. Furthermore, VTrans does not widely promote their successes, which results in the public not being aware of which projects they have worked on. Building this awareness is essential to building VTrans' political capital.

Strategy 21: Strategic Oversight and Readiness Assessment

- **Resource Strain.** ABP projects put a strain on resources. Contractors in Vermont are not necessarily able to meet the demands of ABP projects, especially as they become more prominent. Furthermore, VTrans is seeing a strain on materials, plant inspectors, geologists, and other resources. For some VTrans work groups (e.g. environmental), ABP projects actually relieve their workload.
- **Central Source of Information.** There seems to be a need for a central system to manage resources and facilitate communication between teams that is easily accessible by all. Although Artemis Schedules (master project schedules used by individual teams)

help individual project teams plan, there is no central way for teams to communicate with each other and view available shared resources. Because ABP projects require many resources in a short period of time, this type of system would be especially helpful.

Strategy 22: Team Co-Location

- **Team Atmosphere.** Most projects (including ABP projects) are viewed as "the Project Manager's project," rather than "the internal Resource Group's projects." Projects could benefit from building a stronger team atmosphere and collective sense of responsibility for projects.
- **Co-Location.** Interview participants unanimously agreed that working in close proximity is very helpful. Since ABP projects have a tight deadline, anything that comes up that could cause a delay to the project is a big problem. Team co-location (applied even more broadly to "team co-organization) can address and improve upon these issues.
- **Designated Resource Group Contacts.** VTrans resource groups do not always designate a single point-of-contact for a project. This can be challenging for the Project Manager, because knowledge and understanding of the project context can be lost.

Findings

At the time of the Process/Program Review, the Agency had recently restructured to create efficiencies in preserving and enhancing Vermont's highway infrastructure. This included creating a Highway Division with six new bureaus to manage Vermont's highway infrastructure more effectively (i.e. Asset Management and Performance Bureau, Project Delivery Bureau, Municipal Assistance Bureau, Construction and Materials Bureau, Maintenance and Operations Bureau and the Office of Highway Safety). From all of the interviews conducted during the Process/Program Review, the Review Panel captured six key observations/findings. Although many of these observations/findings could be considered as opportunities outside of the ABP and support ongoing initiatives within the Agency's reorganization, for the purposes of this grant, the action plan and subsequent implementation first focused on opportunities within the ABP. The six key observations captured are:

Leadership

According to meeting attendees, project prioritization is happening at the middle to upper management levels within the Agency; however, this information does not appear to be broadly disseminated to Project Managers and the Agency's various resource groups, thereby creating inefficiencies during project development. Possible steps for addressing this observation could include: (1) communicating the Agency's strategic goals throughout the organization; (2) aligning the Agency's strategic plan with network level priorities, corridor planning, budgets and available resources; (3) ensuring that the Agency's future asset management plan supports the Agency's long range corridor planning processes; and (4) confirming that the public's goals align with the Agency's goals and objectives. Agency representatives also mentioned a need for a centralized project tracking system to assist with prioritizing projects, planning for current and future resource demands, and keeping the development team informed of project delays. Other possible considerations could include: (1) creating a Traffic Management Team; and (2) integrating Contract Administration into the Highway Division.

Data Management

The Agency currently does not have a centralized location for various data sets which may include (but is not limited to) the location and condition of the Agency's assets, environmental resources, existing utilities, right-of-way (ROW) boundaries, as well as upcoming infrastructure maintenance, rehabilitation or replacement projects. Not having a centralized data system can create inefficiencies that affect the Agency's ability to effectively maintain Vermont's transportation network. Interviewees expressed a desire for an integrated geographic information system (GIS) that can be easily augmented and maintained by Agency staff and accessible to our internal and external stakeholders.

Scoping

In 2012, the Structures Section created a Project Initiation and Innovative Team (PIIT), which is responsible for all aspects of project definition, including purpose and need, project scoping and conceptual design. The Agency's resource groups and members of local Regional Planning Commissions provided positive feedback on the new scoping process, including efficiencies gained by requesting resource identification for a batch of projects and consistency in the Agency's public involvement process through community questionnaires and public information meetings. Future opportunities for improvement could include: (1) active and earlier communication with internal and external stakeholders; (2) more flexibility with design parameters; and (3) reexamining the 12-month performance measure for the scoping process. Additionally, Review Panel members from the other State DOTs emphasized the importance of optimizing the project scope to reduce or eliminate impediments to successful delivery.

Design

Over the past two years, the ABP has been a laboratory for innovation. This includes standardization, development of special provisions, revisiting the standard project development schedule, conducting additional coordination meetings and placing more emphasis on public outreach. During the Process/Program Review, it became clear that members of the ABP need to be able to effectively answer the "why's" behind the program goals and the need to EPD and how this fits into current Agency initiatives. Some Agency interviewees raised concerns about how to maintain quality control with EPD. One of the Panel Members recommended integrating a quality control checklist for each plan submittal prior to internal shared plan reviews to ensure that quality is maintained throughout the design process. Other ideas include: (1) recreating the standard ABP schedule; (2) ensuring greater coordination with Operations so that they can keep local communities informed about upcoming projects; (3) considering ROW strip takings to simplify and start the ROW process earlier; and (4) conducting project closeout meetings with Construction to learn about problems encountered during construction and recommended changes to design details and special provisions.

Resources

Two primary goals of the ABP are to: (1) expedite project delivery and (2) minimize impacts to environmental resources, ROW and utilities through road closures (as opposed to the installation of a temporary bridge structure). Members of the ABP were interested to learn about associated demands on the Agency's resource groups and Construction and Materials Bureau during project development and construction. The Program/Process Review revealed that the demands on the Agency's resource groups vary. Specifically, the Environmental Section noted a 40 percent reduction in staffing demands and the ROW Section commented that with the minimal ROW acquisitions their staffing demands were also lower. However, utilities relocations have been more difficult because utilities companies have less time to relocate, thereby resulting in project delays. The biggest impact appears to be on the Construction and Materials Bureau. Members from Construction noted that they need to redefine how ABC projects are staffed which may include: (1) creating staffing plans and identifying who can make decisions when Resident Engineers (REs) are not onsite; (2) training and developing a number of RE's to become "experts" in ABC; and (3) and identifying the RE during plan development so that they can work with the designers to better understand the site constraints and help to create constructible designs. Other challenges/opportunities noted during the Program/Process Review included: (1) creating a team environment ("co-organization" as opposed to "team co-location); and (2) sharing project successes. This may be overcome by imbedding Resource Specialists into the Design Team. For example, a recent pilot program in which Utilities Specialists were relocated to sit with Roadway Designers has allowed for greater efficiencies and more effective communication. Another idea includes holding kick-off and milestone project meetings with the project development team, and when appropriate, including representatives from the Agency's resource groups.

While not directly associated with the ABP, the Review Panel members also noted the need for additional resources, staffing and training. In addition, rotational assignments and/or cross training were also suggested by the Review Panel to help support sections that may be understaffed, assist with succession planning, improve employee morale and create well rounded staff that have a better understanding of the overall organization.

Public Outreach

Recognizing how traffic impacts vary from a road closure with a detour to a traditional temporary bridge structure, the ABP has reexamined public outreach strategies. Recently, the ABP has implemented several successful outreach tools, including the community questionnaire for early public input, public information meetings, deploying ACT 153 to promote road closures in towns, and retaining two firms specializing in project outreach in order to provide a consistent and clear message from design through construction. Although the Agency has received a lot of positive feedback from these initiatives, remaining challenges/opportunities include: (1) strengthening internal communication to bolster public outreach; (2) addressing inconsistencies in information that is made available to the public; and (3) placing additional emphasis on celebrating the Agency's successes (internally and externally). Suggestions to be considered include: (1) ensuring consistency between the Bridge Closure Map and "511" site; (2) partnering with the State's Tourism Office and Department of Motor Vehicles; (3) surveying the Agency's customers following a road closure; and (4) spreading a positive message to build public and political capital.

Next Steps

The findings and outcomes from the Process/Program Review were used as key inputs into the design of the Expediting Project Delivery Assessment, which was held on September 3rd and 4th, 2014 and convened by an FHWA Workshop Facilitation Team. Approximately 30 workshop participants attended, representing VTrans management and technical leaders associated with the development and delivery of VTrans ABP projects. Workshop participants worked collaboratively to create a list of potential future "action steps," which were key inputs into the subsequent development and implementation of the VTrans Action Plan to expedite the development and delivery of ABP projects.

4 Expediting Project Delivery Assessment Workshop

Preparing for the Assessment Workshop

Following the Process/Program Review, VTrans met internally to review key themes from the Process/Program Review and flesh out the goals and objectives for the C19 Assessment Workshop. In addition, VTrans developed an Executive Summary of the Process/Program Review highlighting these key themes. Moreover, the Volpe Center and VHB note-takers compared and compiled their "raw notes" from the Process/Program Review and shared them with the Review Panel to ensure consistent messaging in any resulting products and efforts.

On September 3rd and 4th, 2014, the FHWA Resource Center organized and facilitated a two-day Expediting Project Delivery Assessment Workshop of the VTrans Accelerated Bridge Program (ABP) at VTrans Headquarters in Montpelier, Vermont. The Agenda for this meeting is in Appendix B. Approximately 30 workshop participants attended, representing VTrans management and technical leaders associated with ABP projects. The findings from the Program/ Process Review were used as key inputs into the design of the Workshop. During the conclusion of the Process/Program Review, the Review Panel discussed the general goals and objectives of the upcoming C19 Assessment Workshop. The group agreed that the Assessment Workshop would focus on how to improve processes moving forward rather than reflect on current processes (the focus of the Process/Program Review).

Objectives and Intended Outcomes

The overall objective of the assessment workshop would be to develop a plan for using the five highlighted C19 strategies to expedite project delivery of the ABP. FHWA and VTrans identified a set of objectives prior to the workshop, which included:

- Describe the intent and elements of the Second Strategic Highway Research Program (SHRP2) product, Expediting Project Delivery;
- Describe the intent and elements of the Expediting Project Delivery Assessment Tool;
- Be able to apply the Expediting Project Delivery Assessment Tool in defining "What Works Well?" and "What Needs Work?;"
- Participate in brainstorming to generate ideas on future action steps;
- Collectively decide upon the framework and components of an action plan; and
- Collectively decide upon next steps for developing and implementing the action plan.

Workshop Logistics

Following some introductory and overview presentations during the morning of "Day 1," the remainder of the Assessment Workshop was devoted to group discussions and break-out group "brainstorming" centered around the five identified C19 strategies, so that Workshop participants could work collaboratively in creating a list of potential future "action steps," which were key inputs into the subsequent development and implementation of the VTrans Action Plan.

Introduction

Assessment Tool Demonstration

FHWA staff demonstrated the Expediting Project Delivery Assessment Tool. The assessment tool is currently available in a beta version on the Transportation for Communities – Advancing Projects through Partnerships (TCAPP) website. In the future, it will be hosted as part of PlanWorks – a new web-based tool that sets a framework for collaborative planning and environmental review of transportation projects.

The purpose of the tool is to help transportation agencies identify anticipated constraints to project delivery and develop corresponding strategies to help overcome these constraints. The assessment tool poses a series of questions divided into categories according to the 16 common constraints identified in the C19 report. Based on users' responses to these questions (from "disagree" to "strongly agree"), the tool assigns an effectiveness score of weak, average, or strong to each of the 16 assessment categories.

Massachusetts Department of Transportation ABP Overview

The Massachusetts Department of Transportation (MassDOT) ABP Program Manager provided an overview of MassDOT's ABP. MassDOT initiated their ABP in 2006 when the Massachusetts Legislature allocated them a large sum of money for bridges that they had to use in eight years. Because of this aggressive timeframe, they looked toward Accelerated Bridge Construction (ABC) techniques to build bridges faster. Initiating the ABP required many

process changes, and MassDOT ended up implementing over 200 new processes including coordinating with utilities earlier; making the public outreach process more robust; and implementing risk assessments.

MassDOT learned many lessons from developing their ABP and shared some key successes with VTrans staff:

- Early Environmental Coordination: Early environmental coordination is very valuable as it helps flesh out the appropriate funding and timeline for design.
- Utilities Reimbursement Initiative: Utilities coordination was slow to respond to designs and did not provide accurate timeframes for completing work. To solve this issue, MassDOT implemented a utilities reimbursement initiative which rewarded utility staff for meeting deadlines by reimbursing them for 50 percent of the cost of work. This improved how utility companies responded to MassDOT.
- Priority Project Meetings: MassDOT wanted to make sure to submit realistic schedules that were not too aggressive that they could not meet the deadline. To ensure this, they instituted priority project meetings that brought the Deputy Chiefs from all disciplines into one room to discuss project statuses and priorities. This has helped make sure that there are enough resources to get priority projects finished on time.
- IT System Improvement: MassDOT has been making improvements to their IT systems. For example, they are now using Microsoft Project for design scheduling.
- Emphasis on Constructability: MassDOT did not want to accelerate the design phase just to face unanticipated delays in construction, so they began to put an emphasis on constructability when developing project schedules and designs.
- Construction Contracting: Construction contracting had become more of a claims avoidance review, so MassDOT started to set targets for delivering advertisements to avoid this.
- Program and Project Controls: The ABP Team captured a lot of data, so they could evaluate what went well and what did not go well in the program.

Brainstorming Ideas for Expediting Project Delivery

To prepare for break-out discussions of key issue areas, VTrans staff discussed the current strengths of project delivery in Vermont and opportunities for improving the project development process.

ABP Project Delivery at VTrans: Strengths

The current strengths of ABP project delivery in Vermont include the following:

- VTrans currently works well with communities to schedule road closures.
- There is strong communication between the ABP group and the resource groups such as geotechnical and ROW.
- VTrans effectively involves utilities staff in the scoping process
- The Agency uses innovation and technology, which the staff appreciates.

- Consultants act as an extension of staff and are very involved in the process. This helps build trust between consultants and VTrans.
- There has recently been improved file sharing between groups in the Agency.
- VTrans staff are excited and pragmatic about implementation of IT technologies.
- The process of batching projects during the scoping process for resource agencies has been very effective and helpful.
- There has been sufficient in-person interaction between staff.
- Customer satisfaction has improved recently.
- The PIIT scoping process has been beneficial.
- Contractors are generally satisfied with the ABP.
- The ABP reduces ROW and environmental impacts compared to conventional bridge construction.

ABP Project Delivery at VTrans: Challenges and Opportunities

The current challenges and opportunities for project delivery in Vermont include the following.

- Resource groups do not have enough resources to staff ABP projects, and they cannot negotiate the amount of time they can allow for ABP (with ABP, every task's timeframe is portrayed as critical).
- The team needs more continuous public involvement and better management of public expectations.
- From the public outreach perspective, the "fuzzy hand-off" loses credibility with the public because the "face" of the project changes.
- ABP projects create a strain and shortage of construction staff.
- VTrans is not transparent with data and performance, which makes it challenging for staff to locate the information they need when they need it.
- Project prioritization is not effectively communicated to VTrans staff, and they often do not understand how ABP fits into the context of their other projects.
- The ABP team could improve communication with utility companies, regulatory agencies, and construction staff.
- The ABP team needs risk identification earlier in project development.
- Currently, the Project Management and Construction staffs receive most of the public recognition for transportation projects. However, they would like to celebrate their successes as a team.
- The ABP team could improve internal communication regarding the purpose and benefit of the ABP and its various internal processes.

Action Planning

After discussing the ABP's strengths and challenges related to project delivery, VTrans

participants divided into groups centered around the five C19 strategies to generate ideas for future action steps. Workshop participants divided themselves into groups according to which topics would be most relevant to their roles and responsibilities. Each break-out group had a different set of workshop participants. The focus questions and results of these breakout discussions can be found in Appendix C and Appendix D respectively.

These break-out groups developed action plans in small groups, and then returned to the larger group to summarize their discussions. The discussion during these breakout sessions focused on the key observations and themes identified in the Program/Process Review, as well as several key successes and issues that VTrans staff identified in the assessment workshop which are listed in the sections above. The following is a list of suggested action items generated from the workshop:

Strategy 3: Context-Sensitive Design and Solutions (Objective: Improve public involvement and support)

- Trial pre-scope and scope process on 4-5 upcoming projects (pre-scope includes identifying constraints and project information; developing a baseline scope; getting public involvement; determining recommended alternatives; and identifying regional concerns and external stakeholders. Scope includes approving the recommended alternative and incorporating final comments).
- Invite district operations staff and design project manager to kick-off meeting in pre-scope.
- Add meeting to the pre-scoping phase to discuss local concurrence.
- Document what the pre-scope/scope process looks like even if it is just a trial.

Strategy 8: Expediting Internal Review and Decision-Making (Objective: Streamline decision-making)

- Understand how all bureaus will be involved in a new process to approve the scope.
- Hold an early meeting with all disciplines at the beginning of each project scoping process, rather than wait until the end of scoping.
- Make ABP project schedules and approval a standard process that is clear to all parties involved.
- Work with contract administration to get them involved earlier in the process.
- Re-evaluate whether having the contract engineer approve the final PS&E is the best method, or whether the Project Delivery Bureau Director should approve this.
- Define what VTrans wants to get out of project team meetings and re-evaluate whether they should meet more frequently.
- Define who can change bid-ad dates.

Strategy 10: Highly Responsive Public Engagement (Objective: Improve public involvement and support)

- Establish guidelines for public involvement (i.e., how much does a project need) and develop guidance. This guidance should consider innovative ways to involve the public such as:
  - » Provide bus tours of project sites for older populations, stuff water bills with project

fact sheets;

  - » Identify and reach out to towns affected by detour routes;
  - » Add a message to the letter that requests comments from towns that invites them to the public meetings;
  - » Send project information (e.g., a fact sheet) to key staff in the district so they can respond to public questions directly;
  - » Schedule presentations during select board and Regional Planning Commission meetings to reach broad audiences that have a regional effect.
- Improve coordination between 511 and other information VTrans disseminates (e.g., bridge closures map; determine who will be the source of 511 information (i.e., PM or Resident Engineer))
- Engage front porch forums (web-based community discussion forums) by getting agreement from communities to allow the Agency to participate.
- Consider using the University of Vermont travel demand model to inform road closures (i.e., figure out where destinations and origins are for those that travel through certain road segments).

Strategy 21: Strategic Oversight and Readiness Assessment (Objective: Improve internal communication and coordination)

- Help utilities companies understand the benefits of the ABP.
- Consider changing utility legislation to incentivize utilities companies to take on ABP projects.
- Consider initiating a task force to facilitate communication with utilities companies.

Strategy 22: Team Co-location (Objective: Improve internal communication and coordination)

- Identify and make clear what is needed by each person at project meetings.
- Hold follow-up meetings with construction and resource groups to get feedback on what went well and what did not go well.
- Document the ABP process and share this information with VTrans staff.

Next Steps for VTrans' C19 Implementation Project

During the conclusion of the workshop, VTrans and FHWA discussed the next steps for VTrans' SHRP2 C19 project overall. VTrans reviewed the goals and deliverables of the project's statement of work (SOW), which specified that the agency would use the findings of the workshop to develop and implement an Action Plan for expediting ABP project delivery.

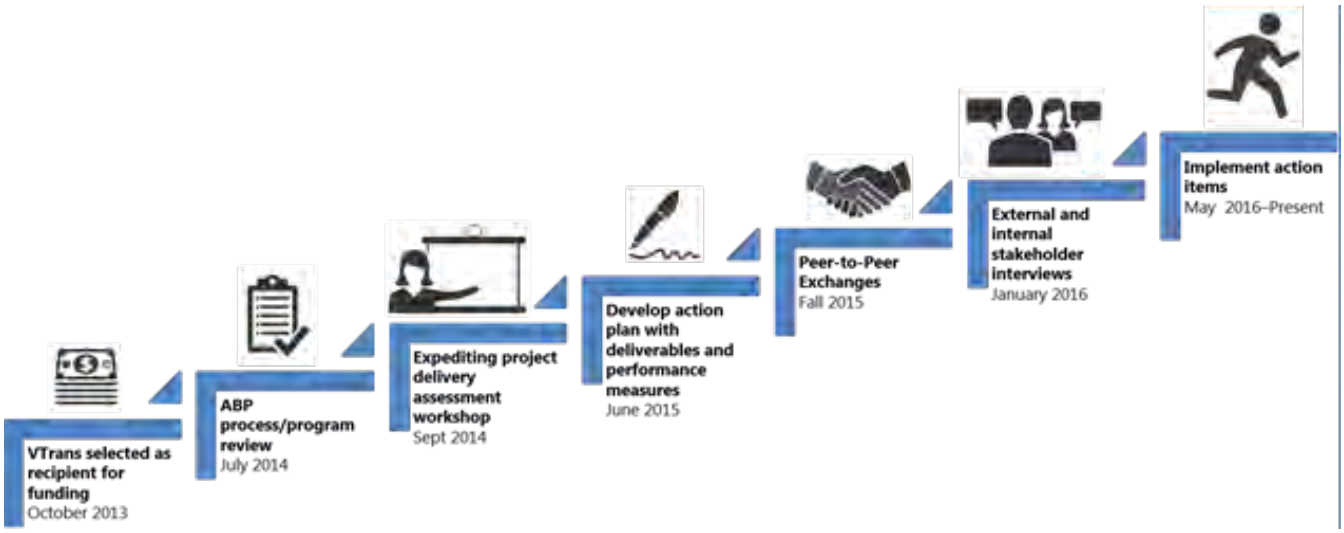
The Action Plan would draw upon strategies from the SHRP2 C19 Report and findings from the workshop to develop measurable actions for each of the five key strategies areas identified above. The actions would be interdisciplinary in nature and will help promote the VTrans ABP both within VTrans and with external stakeholders.

In addition to the proposed action items identified by each of the five break-out groups, VTrans workshop participants identified several immediate next steps for finalizing the Action Plan. These immediate next steps were:

1. Brief upper management on progress (i.e., share awareness of issues that were raised in the context of ABP and receive feedback on action plans).
2. Document the ABP process, including where different groups fit in and whether their responsibilities are any different with ABP projects.
3. Identify roles and responsibilities for implementing Action Plan "next steps."
4. Define the lines of communication between the various groups.
5. Identify which actions can be feasibly implemented and when.

5 Action Plan

Drawing upon strategies from the SHRP 2 C19 report and findings from the Program/Process Review and Expediting Project Delivery Assessment Workshop, five measurable action items were developed for the five key strategies areas. The timeline to implement these action items is shown on the next page.



The following five action items and how they relate to the strategies from the SHRP2 C19 Report were developed:

Action Item 1: Project Initiation Process Improvements (C19 Strategies 3, 8 and 10)

During the Program/Process Review and the Workshop, participants emphasized the importance of selecting the bridge rehabilitation or replacement alternative that meets the needs of the asset, fits the context of the corridor, is cost effective and supported by internal and external stakeholders. As noted in the SHRP 2 report, "developing and designing a project that fails to respond to the surrounding constraints and opportunities can be a substantial factor in project delay." Therefore, one of the primary objectives of the scoping phase must include removing barriers to timely project delivery. Over the next 12 months, the PIIT will vet new processes intended to increase flexibility, collaboration and stakeholder support during the project initiation phase. In addition, the PIIT will reevaluate stakeholder involvement along with best practices for meaningful engagement. This will be accomplished by implementing the following actions:

1. **Develop a questionnaire for the Operations and Maintenance Bureau** similar to the Community Questionnaire seeking input on the current condition of the structure with respect to maintenance (or inability to maintain due to current bridge configuration) and desired features.
2. **Add a collaboration phase.** This includes sending out the Scoping Report for online shared review to all internal stakeholders involved with the project from cradle to grave, including Operations and Maintenance, Planning, Design, Resource Coordination and Construction. Following online shared review, an internal collaboration meeting will be held to discuss existing conditions, project constraints, associated requirements, and vet the preferred alternative.
3. **Heightened external stakeholder coordination.** For higher risk projects, smaller focused meetings will be held with essential external customers prior to presenting the preferred alternative to Agency leadership for approval. Examples of higher risk projects include, but are not limited to, projects that utilize a new technology such as a lateral

slide or SPMT, politically sensitive projects or projects of a high dollar value for Vermont. The intent of these meetings is to present the preferred alternative to key customers in an informal atmosphere, actively engage them about the opportunities and challenges of the project and ultimately seek their support. This should include a brainstorming session about minimizing project and traffic impacts as well as how to proceed with garnering public support.

Performance Measures

Proposed PIIT process improvements will be continuously evaluated throughout the implementation stage through general dialog with internal and external stakeholders. In addition, a survey will be developed at the end of the trial period to seek feedback from the Agency's customers to include questions regarding new opportunities to provide feedback to determine if these forums appear to allow for meaningful engagement, and if stakeholders feel they are being heard and comments are being considered. Finally, the "preferred alternative" will be tracked throughout the scoping process to determine if and how it changed, together with reasons for any changes, based on the online shared review, collaboration meeting, Management Approval of Scope (MOAS) Meeting and public involvement process.

Action Plan Item 2: Documenting the PIIT/ABP Process

Throughout the Program/Process Review and Assessment Workshop, attendees wanted more insight into the Structures project initiation phase and ABP, the need to expedite project delivery and how this fits into the Agency initiatives. Meeting attendees stressed the value of transparency to create a clear, predictable and efficient process for making informed decisions and build trust with internal and external customers. Developing clear, consistent and meaningful performance measures was also recommended to document and convey accomplishments as well as identify opportunities for improvement. In addition, there were mixed opinions about whether expedited project delivery increases or decreases demands on internal and external resource groups. On one hand, by closing a road rather than installing a temporary bridge, impacts to right-of-way, environmental resources and utilities are reduced or, in some cases, eliminated altogether reducing demands on associated resource groups. On the other hand, attendees observed that expedited project schedules do not have much flexibility to push out completion dates and, as a result, may increase demands to meet project milestones on time. To address these questions, the following actions will be performed by a consultant:

1. **Document the PIIT and ABP process.** This will include: a) holding a kickoff meeting with the PIIT and ABP teams, b) collecting existing materials related to the PIIT and ABP processes and procedures, and c) conducting interviews with design teams, internal and external resource groups, RPCs and other stakeholders.
2. **Develop performance measures for the PIIT and ABP.** Performance metrics will be developed working closely with members from the PIIT and ABP. The process will likely include: a) identifying critical work processes and customer expectations, b) identifying desired results and aligning them to the Agency's vision and mission and customer expectations, c) developing measurements for these critical work processes or results, and d) establishing performance measures.

3. **Document resource demands.** Resource demands will be documented by comparing the number of hours each internal resource group dedicated to projects advanced through the ABP versus Conventional and Complex Program over the past three years (2012-2014) including utilities, environmental permitting and ROW. Supplemental data such as project description and location, associated design and construction costs and any reasons a project was delayed will also be collected and analyzed to provide supporting documentation. Statistical analysis will be conducted to determine general trends in resource demands for accelerated versus conventional project delivery.

Performance Measures

The primary performance measure is the completion and acceptance of a final report documenting: 1) the PIIT/ABP process with an emphasis on how these programs differ from similar programs inside VTrans such as Highway Safety Design, 2) performance measures for the PIIT/APB, and 3) resource demands of the ABP versus conventional project delivery. Other performance measures will include the accuracy of the final report to real life conditions, a comprehensive representation of internal stakeholders including members from the PIIT, ABP and resource groups, timeliness of deliverables and responsiveness to the lead Agency representative.

Action Plan Item 3: Scanning Tour

Representatives from the Massachusetts and Maine Departments of Transportation (DOTs) shared innovations from their respective programs during the planning and delivery of the Program/Process Review and associated Workshop. This was instrumental in helping to plan the events, deliver a consistent message and illustrate how DOTs across the country are retooling the way they do business to do more with less (staffing, resources and funding constraints) while maintaining our highway infrastructure and meeting or exceeding customer expectations. Specifically, MassDOT provided an overview during the Assessment Workshop on how they implemented an ABP, thus creating a laboratory of innovation that became ingrained in their organizational culture promoting advancements throughout all phases of project delivery and other business practices. Examples include early environmental coordination, utilities reimbursement initiative and IT Systems improvements. Members of the ABP and other meeting attendees discussed a desire to learn more about these and other innovative practices and technologies utilized by other State DOTs to expedite project delivery. This would enable VTrans to adopt innovations much more efficiently without spending scarce funds to re-create advancements already developed and deployed at other State DOTs.

A scanning tour will be conducted at up to three surrounding State DOTs. Potential candidates include, but are not limited to, Massachusetts, Maine and New York. Each scanning tour will be conducted over a two day period and include up to ten (10) VTrans representatives with members from the ABP, resource groups, construction, mapping and public outreach. One consultant will also attend each scanning tour to document meetings and other highlights. Each scanning tour will focus on sharing innovative practices and technologies used by the respective DOTs to expedite project delivery (design and construction). The tours will include office meetings and site visits to projects under construction using ABC. Special emphasis will be placed on pairing up team members that specialize in the same areas at the respective DOTs to transfer knowledge and establish future working relationships.

Performance Measures

Effectively work with the other State DOTs to plan and execute the scanning tours. Each trip will be documented in a summary report of meeting minutes, site tours and other highlights. The end of the report will include innovative practices and technologies used by the other state DOTs. Finally, a survey will be sent out following each scanning tour to learn more about perceived effectiveness, and assess whether bi-state working relationships were established and opportunities for improvement provided. Any viable opportunities for improvement in scheduling and coordinating future scanning tours will be considered

Action Item 4: Public Outreach

As noted in S2-C19-RR-1, "Building and maintaining public support can be one of the most crucial yet challenging keys to expediting project delivery. Significant controversy and opposition commonly delay project delivery." Since the inception of the ABP in 2012, the Agency has come to realize that public outreach for short term roads closures is even more critical than conventional methods to maintain traffic during construction because of the rippling traffic impacts not only on the through route but the detour route as well. In addition, the public has natural propensity to oppose change and often doubt the Agency's ability to deliver expedited projects and complete ABC project within a short timeframe. Even with the support of local politicians and legislation to help promote ABC, the Agency often faces some amount of public hesitation. During the "Highly Responsive Public Engagement" breakout session, Agency personnel also noted that while the ABP does a great job outreaching to the affected town, more outreach is needed to outlying towns, including towns along the detour route. All too often outlying towns are surprised about an impending closure, elevating public concerns to the executive level. To alleviate public concerns and cast a wider net, the following actions will be implemented:

1. Public Involvement Plan. VTrans is developing a guide to promote consistent, early and continuous public involvement for the life cycle of our transportation infrastructure, including project delivery. The life cycle refers to design, construction and maintenance until the cycle starts over again. A portion of funding for the C19 grant will be dedicated towards this plan to develop a section on outreach for innovative construction and short term road closures.
2. Website Development. To help convey a consistent message to our internal and external customers including Agency personnel, consultants, contractors and the public, a website will be developed for the PIIT and ABP. This will provide a centralized location for information pertaining to both the program and projects including program goals, benefits of ABC and Every Day Counts (EDC) and highlights. The website will also be used to house information on projects in design and construction as well as showcase success stories, testimonials and videos. Finally, the website will relay information on technical resources such as standard design details and specifications for ABC.
3. Early Coordination with Stakeholders. The PIIT and ABP will investigate various strategies for effective outreach to outlying towns, including towns along proposed detour routes, during the project initiation, design and construction phases of project delivery. This may include, but is not limited to, the use of local community forums (like the Front Porch Forum), and sending meeting announcements and other project information to town officials, including town clerks and chair of selectboards. Other methods could include

posting announcements at town centers, using social media and direct mailings.

4. Outreach Products. A brand for the ABP was created in 2014 under a separate federal grant. To launch the brand and help promote the program statewide, two banners and stickers will be purchased. The banners will be used on high profile innovative ABP projects for public viewing. The stickers will be distributed to internal and external stakeholders and customers.
5. Tools to Engage the Public. A clicker audience response system will be purchased to enable participants to provide meaningful feedback during public meetings while offering instant results for Agency personnel. These will be used throughout all phases of design with an emphasis on local and regional concerns meetings during the project initiation phase.

Performance Measures

Several performance measures will be used, to include deliverables such as the Public Involvement Plan, ABP/PIIT website, keeping a record of outreach strategies and number of meeting attendees, receipt of the banners, stickers and voting clickers. The public will also be polled during public meetings to document if the clickers are an effective tool for meaningful engagement.

Action 5: Data Management

During the Program/Process Review, meeting participants observed that the Agency does not have a centralized location for various data sets which may include (but is not limited to) the location and condition of the Agency's assets, environmental resources, existing utilities, right-of-way (ROW) boundaries, as well as upcoming infrastructure maintenance, rehabilitation or replacement projects creating inefficiencies in our project development process. According to the S2-C19-RR-1, "GIS data and software analysis tools allow DOTs and MPOs to efficiently integrate environmental evaluations into their planning studies. By developing statewide and/or regional data, transportation agencies can quickly evaluate and compare proposed projects and programs, identify potential environmental hurdles, and make better-informed decisions about how to develop future projects." This sentiment can be further expanded to include other resources such as utilities, ROW as well as effectively coordinate the programming and timing of projects to maintain Vermont transportation infrastructure.

Funding will be used to research and document various GIS applications that are available and/or being used by other state DOTs to display information to help expedite project delivery including, but not limited to, site features such as environmental and cultural resources, ROW and existing utilities as well as planned maintenance, rehabilitation or replacement projects.

Performance Measures

A brief document will be prepared that outlines the applications that were explored to help expedite project delivery as well as recommendations on which options are best suited for the Agency.

Schedule and Cost Estimate

The estimated cost to deploy the action plan is as follows:

Deliverable/Activity	Action	Timeframe		Estimated Cost
		Begin	End	
Program Process Review and Workshop		July 2014	September 2014	$14,856.23
Project Initiation Process Improvements	Develop an Operations Questionnaire	March 2015	August 2015	$0.00
	Add Collaboration Phase	March 2015	September 2015	$0.00
	Heightened stakeholder coordination	March 2015	March 2016	$0.00
Documenting the PIIT/ ABP Process	Stakeholder Interviews	January 2016	January 2016	$8,999.61
	Document the PIIT and ABP Process	May 2015	March 2016	$30,000.00
	Develop performance measures for the PIIT and ABP	May 2015	March 2016	$10,000.00
	Document resource demands	May 2015	March 2016	$17,421.00
Scanning Tour	Conduct Scanning Tour	May 2015	December 2015	$38,999.00
Public Outreach	Public Involvement Plan	May 2015	December 2015	$53,000.00
	Website Development	May 2015	March 2016	$28,000.00
	Early Coordination with Stakeholders	March 2015	March 2016	$0.00
	Outreach Products	March 2015	August 2015	$2,688.00
	Tools to Engage the Public	March 2015	March 2015	$3,493.76
Data Management	GIS Application Research	May 2015	February 2016	$152.42
Final Report Preparation		March 2016	May 2016	$25,817.63
			Total:	**$233,427.65**

6 Action Plan Item 1: Project Initiation Process Improvements

During the Program/Process Review and the Workshop, participants emphasized the importance of selecting the bridge rehabilitation or replacement alternative that meets the needs of the asset, fits the context of the corridor, is cost effective and is supported by internal and external stakeholders. As noted in the SHRP2 report, "developing and designing a project that fails to respond to the surrounding constraints and opportunities can be a substantial factor in project delay." Therefore, one of the primary objectives of the scoping phase must include removing barriers to timely project delivery. Over the next 12 months following the workshop, the PIIT vetted new processes intended to increase flexibility, collaboration and stakeholder support during the project initiation phase. In addition, the PIIT reevaluated stakeholder involvement along with best practices for meaningful engagement. This was accomplished by implementing the following three actions:

- Developing an Operations and Maintenance Bureau Questionnaire
- Adding a collaboration phase
- Heightened external stakeholder coordination

Operations and Maintenance Bureau Questionnaire

An Operations and maintenance questionnaire was developed to solicit information in three primary aspects – the history of bridge maintenance, any concerns with maintenance activities along the corridor with specific emphasis on the bridge (like is it too narrow for plowing operations) and any pertinent information on adjacent property owners. The results from the questionnaire have proven invaluable in expediting project delivery, as maintenance considerations can be taken into account when developing the scope, resulting in fewer scope changes later on in the process. A sample Operations and Maintenance Bureau Questionnaire can be found in Appendix E.

Collaboration Phase

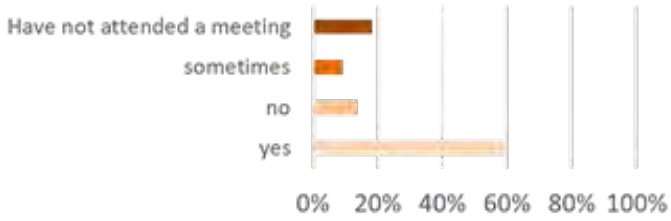
At the beginning of the scoping phase, each of the internal stakeholders are involved in identifying the resources and potential issues in their respective expertise areas. Once a draft scoping report is complete, it is sent out for online shared review to all internal stakeholders involved with the project from cradle to grave, including Operations and Maintenance, Planning, Design, Resource Coordination and Construction. The online shared review is then followed by an internal face-to-face meeting to discuss existing conditions, project constraints, associated requirements, risks, and vet the preferred alternative. From November 2014 through November 2016, 22 bridge and culvert rehabilitation and rehabilitation projects have been through the Collaboration Phase.

On June 22nd, 2016 a survey was sent out to all stakeholders that have participated in or have been invited to an internal collaboration meeting. The intent of the survey was to provide the Structures and Hydraulics Section with meaningful feedback on the effectiveness of the "Collaboration Phase." The questionnaire recipients included the environmental specialists, environmental biologists, archaeologists, historic preservation officers, planning coordinators, Hydraulics, Structures project managers and designers, construction personnel, Operations and Maintenance personnel, Asset Management, River Management Engineers, Traffic Operations, and the Bicycle and Pedestrian Program Manager.

Some of the survey results are shown on the next page. The results represent 22 stakeholders that participated in the collaboration phase survey:

- Do you feel like your concerns are heard and considerations are made to address these concerns?

- Do you feel like your input at the collaboration meeting has an impact on the chosen preferred alternative?



"One improvement could be to extend the process throughout the agency"

"Collaborating is a concept that has been embraced. By virtue of it's meaning it brings people together to produce the best engineering solution."

"Kudos for reaching out and trying to improve this most important phase of our definition and design process!"

Overall, the participants all found tremendous value in the Collaboration Phase and realized the benefit of being involved early on in the project process. The Agency's customers found the collaboration meeting provided new opportunities to provide feedback and input into a project. Most survey participants felt like they are heard at these meetings and that their comments are being considered. The survey can be found in Appendix F. The following takeaways were noted from the survey responses:

Takeaways

- There are meeting invitees that would like to attend the Collaboration Meetings, but cannot due to scheduling conflicts. In particular, the Planning Coordinators and Environmental Specialists would attend more Collaborations Meetings if there were no scheduling conflicts.
- The Agency of Natural Resources would like to be more involved in the process early on to avoid situations where a project is slowed down during the design phase due to natural resource issues that should have been identified and mitigated during the scoping phase.
- Some suggestions for improvement to the Collaboration Meetings:
  - » Send out meeting minutes and action items to all attendees after the meeting – if input from the meeting is disregarded, provide reasoning as to why;
  - » Develop a rough construction schedule prior to the meeting and review at the meeting to back up closure duration times;
  - » More in-depth discussion about substructure type at each meeting, as this can change the scope of work significantly;
  - » Consider holding collaboration meetings on-site;

- Sending out the meeting request sooner, so that more can attend, and;
- Include lifecycle costs so that a more informed decision can be made.

Heightened external stakeholder coordination

For higher risk projects, smaller focused meetings are held with essential external customers prior to presenting the preferred alternative to Agency leadership for approval. Examples of higher risk projects include, but are not limited to, projects that utilize a new technology such as a lateral slide or SPMT, politically sensitive projects or projects of a high dollar value for Vermont. The intent of these meetings is to present the preferred alternative to key customers in an informal atmosphere, actively engage them about the opportunities and challenges of the project and ultimately seek their support. This includes a brainstorming session about minimizing project and traffic impacts as well as how to proceed with garnering public support.

The heightened external stakeholder coordination process has been utilized for three projects to date:

Killington BF 020-2(42) 13b260

The Killington BF 020-2(42) project is a full bridge replacement utilizing a 10-day road closure on US Route 4 in Killington. This project required heightened external stakeholder coordination due to recommending a closure with an extensive detour along a high tourist route. On November 20th, 2015, a scope collaboration meeting was held, on January 1st, 2015 and February 23rd, 2015, Management Approval of Scope (MAOS) meetings were held, and on March 6th, 2015 a heightened external stakeholder meeting was held, followed by the Regional Concerns meeting on May 5th, 2015.

A Project Factsheet for the Killington BF 020-2(42) project can be found in Appendix G.

Putney STP DECK(38) 15b105

The Putney STP DECK(38) project is a superstructure replacement utilizing a 10-day closure on US Route 5 in Putney. The bridge is located in downtown Putney surrounded by numerous businesses that are anticipated to have negative business impacts during the closure. On February 19th, 2016 a heightened external stakeholder meeting was held with the town officials and local business owners prior to the regional concerns meeting which was held on February 24th, 2016.

A Project Factsheet for the Putney STP DECK(38) project can be found in Appendix G.

Newfane BF 0106(6) 13j306

The Newfane BF 0106(6) project is a historic arch replacement utilizing a 5-month bridge closure on FAS Route 106. A heightened external stakeholder meeting was required to discuss several design issues, including the typical section of the new bridge (one-lane or two-lane bridge) and historic requirements. On August 27th, 2014 a heightened external stakeholder meeting with town officials was held prior to the scoping process to discuss historic

requirements. On January 13th, 2015, a scope collaboration meeting was held, on February 23rd, 2015, a MAOS meeting was held, and on May 18th, 2015 the alternatives presentation meeting was held. Due to a mix of opinions on the new typical section of the bridge, a heightened external stakeholder meeting was held on site on June 29th, 2015.

A Project Factsheet for the Newfane BF 0106(6) project can be found in Appendix G.

Preferred Alternative Tracking

The "preferred alternative" for each of the scoping projects that have been involved with the new process has been tracked throughout the scoping process to determine if and how the scope changed, together with reasons for any changes, based on the online shared review, Collaboration Meeting, Management Approval of Scope (MOAS) Meeting and public involvement process. By tracking changes on a project to project basis, a more informed selection of a "preferred alternative" can be made in the future.

Out of 21 projects tracked, 6 projects had a scope change during the process. Two changed following the Collaboration meeting, 3 changed following the Management Approval of Scope meeting, and 1 changed following the Preferred Alternatives Meeting. The reasons for scope changes at each of the milestones are as follows:

Collaboration Phase

- Changed because project could not be permitted (ANR) and also a desire to bundle with another project.
- Change triggered by an innovative traffic maintenance idea from Collaboration Meeting to avoid landowner.

Management Approval of Scope

- Change based on hydraulics review.
- Change based on results from concrete field testing.
- Change due to budget concerns.

Public Meeting

- Change due to bridge deteriorating faster than expected.

Project Name	Project Number	Recommended Alternative and Reason for Scope Change (if applicable)				
		Draft Scoping Document	Online Shared Review	Collaboration Meeting	MAOS	Public Meeting
Bristol	BF 021-1(33)	Deck Replacement with Phased Traffic	Deck Replacement with Phased Traffic	Deck Replacement with Phased Traffic	Deck Replacement with Phased Traffic	Deck Replacement with Phased Traffic
Searsburg	BF 010-1(50)	Culvert Replacement with Offsite Detour	Culvert Replacement with Offsite Detour	Culvert Replacement with Offsite Detour	Culver Liner with Temporary Lane Closures (Changed based on Hydraulics review)	Culver Liner with Temporary Lane Closures
Cavendish	BO 1442(38)	Full Bridge Replacement On-Alignment with Offsite Detour	Full Bridge Replacement On-Alignment with Offsite Detour	Full Bridge Replacement On-Alignment with Offsite Detour	Full Bridge Replacement On-Alignment with Offsite Detour	Full Bridge Replacement On-Alignment with Offsite Detour
Waterford	BF 0225(5)	Culvert Liner with Temporary Lane Closures	Culvert Liner with Temporary Lane Closures	Culvert Replacement with Offsite Detour (Changed because Liner could not be permitted for AOP, bundle with Waterford(4) project)	Culvert Replacement with Offsite Detour	Culvert Replacement with Offsite Detour
Newfane	BF 0106(6)	Full Bridge Replacement On-Alignment with offsite detour	Full Bridge Replacement On-Alignment with offsite detour	Full Bridge Replacement On-Alignment with offsite detour	Full Bridge Replacement On-Alignment with offsite detour	Full Bridge Replacement On-Alignment with offsite detour
Pittsford	BF 019-3(59)	Full Bridge Replacement On-Alignment with Temporary Bridge	Full Bridge Replacement On-Alignment with Temporary Bridge	Full Bridge Replacement On-Alignment with Phased Traffic (Change triggered by Innovative traffic maintenance idea to avoid tricky landowner)	Full Bridge Replacement On-Alignment with Phased Traffic	Full Bridge Replacement On-Alignment with Phased Traffic
Poultney	BF 0138(12)	Full Bridge Replacement On-Alignment with Offsite Detour	Full Bridge Replacement On-Alignment with Offsite Detour	Full Bridge Replacement On-Alignment with Offsite Detour	Full Bridge Replacement On-Alignment with Offsite Detour	Full Bridge Replacement On-Alignment with Offsite Detour

Project Name	Project Number	Recommended Alternative and Reason for Scope Change (if applicable)				
		Draft Scoping Document	Online Shared Review	Collaboration Meeting	MAOS	Public Meeting
Danby	BF 0130(3)	Full Bridge Replacement Off-Alignment with Offsite Detour	Full Bridge Replacement Off-Alignment with Offsite Detour	Full Bridge Replacement Off-Alignment with Offsite Detour	Full Bridge Replacement Off-Alignment with Offsite Detour	Full Bridge Replacement Off-Alignment with Offsite Detour
Killington	BF 020-2(42)	Complete Bridge Replacement on alignment with off-site detour 10 day closure	Complete Bridge Replacement on alignment with off-site detour 10 day closure	Complete Bridge Replacement on alignment with off-site detour 10 day closure	Complete Bridge Replacement on alignment with off-site detour 10 day closure	Complete Bridge Replacement on alignment with off-site detour 10 day closure
Londonderry	BF 016-1(33)	Culvert replacement with off-site detour	Culvert replacement with off-site detour	Culvert replacement with off-site detour	Culvert replacement with off-site detour	Culvert replacement with off-site detour
Colchester	IM 089-3(71)	Culvert rehab by liner	Culvert rehab by liner	Culvert rehab by liner	Culvert rehab by liner	Culvert rehab by liner
Weathersfield	STP 0146(16)	Culvert Rehab by liner	Culvert Rehab by liner	Culvert Rehab by liner	Culvert Rehab by liner	Culvert Rehab by liner
Weathersfield	IM091-1(69)	Bridge rehab	Bridge rehab	Bridge rehab	Deck Replacement (Changed based on field test results)	
Woodford	BF 010-1(52)	Culvert Replacement in phases	Culvert Replacement in phases	Culvert Replacement in phases	Culvert rehab by liner (Changed based on budget considerations)	
Weybridge-New Haven	BF 032-1(19)	Complete Bridge Replacement on alignment with temporary bridge	Complete Bridge Replacement on alignment with temporary bridge	Complete Bridge Replacement on alignment with temporary bridge	Complete Bridge Replacement on alignment with temporary bridge	Complete Bridge Replacement on alignment with closure (Changed due to rapid deterioration)
North Hero	BF 028-1(30)	Deck and Super replacement in phases	Deck and Super replacement in phases	Deck and Super replacement in phases	Deck and Super replacement in phases	Deck and Super replacement in phases
Bolton	IM 089-2(45)	Full Bridge Replacement, maintain two lanes of traffic	Full bridge Replacement maintain two lanes of traffic	Culvert Rehabilitation, patching, temporary closure	Culvert Rehabilitation, patching, temporary closure	

Project Name	Project Number	Recommended Alternative and Reason for Scope Change (if applicable)				
		Draft Scoping Document	Online Shared Review	Collaboration Meeting	MAOS	Public Meeting
Hartland	IM 091-1(68)	Bridge Replacement with off alignment buried structures	Bridge Rehabilitation (deck replacement/ sub repair) offsite detour			
Putney	STP DECK(38)	Deck Replacement 10 day closure			Superstructure Replacement 10 day closure	
Berlin	IM DECK(42-45)	Deck Replacement with traffic maintained using a cross over, temp bridge, and temp onramp			Deck Replacement with traffic maintained using a cross over, temp bridge, and temp onramp	
Berlin	BF 026-1(43)	Deck replacement 72 hour closure				

7 Action Plan Item 2: Documenting the PIIT/ABP Process

Throughout the Program/Process Review and Assessment Workshop, attendees wanted more insight into the Structures project initiation phase and the ABP, the need to expedite project delivery and how this fits into the Agency initiatives. Meeting attendees stressed the value of transparency to create a clear, predictable and efficient process for making informed decisions and build trust with internal and external customers. Developing clear, consistent and meaningful performance measures was also recommended to document and convey accomplishments as well as identify opportunities for improvement. In addition, there were mixed opinions about whether expedited project delivery increases or decreases demands on internal and external resource groups. On one hand, by closing a road rather than installing a temporary bridge, impacts to right-of-way, environmental resources and utilities are reduced or, in some cases, eliminated altogether reducing demands on associated resource groups. On the other hand, attendees observed that expedited project schedules do not have much flexibility to push out completion dates and, as a result, may increase demands to meet project milestones on time.

As proposed, a private consultant, Vanasse Hangen Brustlin, Inc (VHB), was brought onboard to complete this portion of to complete this portion of the Action Plan.

Document the PIIT and ABP process

a) Holding a kickoff meeting with the PIIT and ABP teams

A kickoff meeting was organized by VHB on August 20th, 2015, and was attended by VHB staff, FHWA, PIIT and ABP Project Managers, the Environmental Specialists, Asset Management and Performance Personnel, and the Structures Program Manager. The meeting started with introductions and project roles followed by a review history of the PIIT and ABP Programs, a review history of the VTrans SHRP2 C19 effort to date, and the PIIT/ABP process intent and work plan. Meeting notes from the kickoff meeting can be found in Appendix H.

b) Collecting existing materials related to the PIIT and ABP processes and procedures

Following the kickoff meeting, VHB proceeded to collect all existing documentation and process documents relating to the PIIT and the ABP to begin compiling information to develop the documentation manual.

c) Conducting interviews with design teams, internal and external resource groups, RPCs, construction, and other stakeholders.

Per the SHRP2 C19 Expediting Project Delivery Action Plan, internal and external customer and stakeholder interviews were held over a two-day period on Wednesday, January 20 and Thursday, January 21, 3016. All meetings were conducted at the VTrans headquarters in Montpellier, VT with remote participation options upon request. Interviewees encompassed external customers such as Town Officials and Regional Planning Commissions, internal resource groups such as Right-of-Way, and Environmental as well as VTrans leadership including the Secretary and Deputy Secretary of Transportation as well as the Chief Engineer of the Highway Division. For additional information of the interview schedule and meeting attendees, please see Appendix I. These interviews provided a unique opportunity to seek a variety of perspectives on perceived effectiveness of the PIIT and APB, brainstorm other potential program improvements to expedite project delivery, collaborate and coordinate more effectively and gain other valuable insight. While the meetings specifically centered on the PIIT and ABP, meeting facilitators encouraged free flowing dialog and participation from all meeting attendees. The list below contains potential action items for implementation centered on 5 of the 24 strategies identified in the SHRP2 C19 report.

Strategy 3 (Context-Sensitive Design and Solutions)

Strategy 8 (Expedited Internal Review and Decision-Making)

- Construction Closeout Series: Plan and schedule a series of construction closeout meetings during winter months to exchange lessons learned with participants from the Construction and Materials Bureau, in-house and consultant designers, and contractors. Potential topics include proposed design detail and specification revisions, the best method to pay for contract items (lump sum, quantity), and explore additional opportunities to increase collaboration, coordination, and plan and project quality.
- Increase the effectiveness of the project delivery coordination meetings such as the

Collaboration, Constructability and Specification Review Meetings. Send out meeting requests earlier, create an agenda that also references higher risk items, and ensure all of the affected and key internal and external stakeholders are invited to attend.

  - » Make sure to include alternative contracting personnel for any coordination meetings for proposed or planned projects using alternative contracting method.

- Show detour routes on VTransparency.
- Add fields into VPins for closures, closure periods and detour routes
- Create Artemis schedule templates for alternative delivery projects such as CMGC and D-B. Include activities for alternative contracting personnel.
- Work collaboratively with ANR to create a mechanism to expedite floodplain permitting such as a general or non-reporting permit (as opposed to individual permits).

Strategy 10 (Highly Responsive Public Engagement)

- Add drive time for the detour route (in addition to the detour length) on the project factsheet.
- Develop factsheets for FAQs on local bypass agreements, road closures, ROW F&A Agreements, and other policies that affect public stakeholder and customers, town officials, emergency services, regional planning commissions, etc.

Strategy 21 (Strategic Oversight and Readiness Assessment)

- For a single construction season, research and analyze the location, timing, and duration of the closure period along with the detour routes as well as other planned project under construction within the affected area. Ensure that there are no conflicts.
- To aid with allocation and leveling of construction staffing resources, examine the timing and duration of closure periods and spread them out over the construction season as much as feasible (as opposed to stacked on top of each other).
- Assign designers to perform construction oversight to aid with construction staffing for ABC projects.
- For 28-day road closures, assume 16 working hours during a 24-hour period when developing the design construction schedule.
- Develop a PS&E Customer Satisfaction Survey to seek positive and constructive feedback from the contract bidders to identity areas of improvement regarding plan clarity and quality.
- When utility companies plan to relocate several 1000 feet of line, the affected utility companies and VTrans should work together to identify other planned project along the corridor to see if the relocation should be extended ultimately increasing efficiency and reducing overall long term relocation costs.

Strategy 22 (Team Co-Location)

- Embed construction staff during winter months with design staff
- Conduct early coordination meetings with the Geotechnical Engineering Unit after requesting and prior to extracting borings for culvert and bridge rehabilitation and replacement projects. Provide an overview of the proposed approach to the construction projects such as construction methods (accelerated or conventional, likely crane location), traffic maintenance methods (detour, temporary bridge or phase construction), structure

type (prefabrication, cast-in-place), and any other pertinent information. Encourage coordination between these two groups during boring collection.

Utilizing existing documents as well as feedback from interviews and project managers and designers in the PIIT and ABP, VHB developed a document that explores the methods that the ABP uses to delivery projects at an accelerated rate and compare these to conventional delivery methods. It describes the goals and objective of Vermont's ABP program, identifies seven elements that are critical to the program's success and provides a detailed discussion of the delivery process, describing those aspects that differ from the conventional delivery approach. The ABP/PIIT Documentation is provided in Appendix J.

Develop performance measures for the PIIT and ABP

Performance metrics were developed working closely with members from the PIIT and ABP. Brainstorming meetings were organized by VHB on November 4th, 2016 and December 1st, 2016 and were attended by VHB staff, PIIT and ABP Project Managers, Asset Management and Performance Personnel, and the Structures Program Manager.

The meeting participants brainstormed performance measures that would be both meaningful and measurable to the whole agency, external performance measures tied to the strategic plan, and internal program-level performance measures that would be beneficial to the structures unit to encourage process improvements.

Performance metrics were developed working closely with members from the PIIT and ABP. The process included:

- Identifying critical work processes and customer expectations
- Identifying desired results and aligning them to the Agency's vision and mission and customer expectations
- Developing measurements for these critical work processes or results
- Establishing performance measures.

The developed performance measures were chosen to support the following three goals:

Goal 1: Expedite the delivery of bridge reconstruction and bridge rehabilitation projects required to support the performance measures for bridge inventory conditions:

- Minimize project development and construction costs.
- Expedite project delivery.
- Utilize ABC technologies.
- Standardize project plans.
- Utilize alternative contracting methods.

Goal 2: Be a leader for deployment of innovation at VTrans and nationally:

- Maximize use of technology.
- Maximize flexibility for project delivery.
- Create a culture that values new ideas.

- Document successful innovations.
- Be an early adopter of research.

Goal 3: Be transparent to stakeholders and customers:

- Develop a website with real time information on performance.
- Implement best practices on public outreach.
- Leader among VTrans in developing and maintaining validated and credible project schedules.
- Partner with internal stakeholders and other governmental stakeholders.
- Partner with contractors and fabricators to deliver the best value to the traveling public.

External Performance Measures

- The number of bridges that went into each of the programs: Accelerated Bridge Program, Alternative Contracting, and Conventional Bridge Program
- The use of innovative ideas and technologies for each year should be tracked in order to promote those technologies and the success of those technologies. By demonstrating the success of these technologies, they will be promoted for future use.
  - » What are the current innovations that we want to track?, and how many projects used that innovation?
- Transparency to stakeholders
  - » The percentage or number of projects that had a public information officer should be tracked. Additionally, the public satisfaction of projects with a public information officer versus projects without a public information officer should be measured. This could be achieved through public surveys, such as the customer satisfaction survey that is sent out after a project is complete. Potential questions to measure stakeholder transparency include: Did you know that the project was coming? If not, what is the best way to reach you?, and where are you from?
  - » How much money did we spend on project communications.
- Number and percentage of bridges that used precast elements.
- A comparison of average project development and construction costs between the ABP and conventional project delivery

Program-Level Performance Measures

The following internal performance measures were developed and are intended to support process improvements within the program:

- How does the estimate and schedule change over the life of the project? Do changes in cost or schedule indicate changes in scope?
  - » To develop schedules that are more credible at the scoping phase, the schedules at the scoping phase will be compared to the long-term schedule averages for each of the type of projects, to determine which project type may need more time in project delivery, and which types of projects may need less time in project delivery. The long-term costs will also be evaluated for each of the different project types to develop costs that are more accurate; this should also include an evaluation of which

types of projects have the greatest cost variabilities. The cost changes should be compared at the scoping stage, conceptual plans stage, final plans stage, and contract plans phase to determine where the largest increment shifts in cost are happening.

  - The project delivery time for each project type should be compared across the different structures programs as well. How often a resource group meets their due dates and how this has an impact on project schedules should also be tracked in order to get a bigger picture.

- The bridge closure durations will be tracked
  - The expected closure duration and actual closure duration for each of the different project types will be tracked in order to improve the closure duration estimates. These durations should also be compared to the estimated closure durations at the scoping phase in order to estimate more accurate closure duration early on in the projects life.
  - How many bridge closures were longer than expected?, How many bridge closures were shorter than expected?, and was there a correlation based on the bridge/project type?
- There are utilities and hydraulics resource groups currently embedded into the structures program. Is there a way to effectively measure the efficiencies in embedding these resource groups into the structures program.
- Transparency to stakeholders
  - How are we reaching out to our customers? There is a lot of communication at the beginning of a project and at the end of project, but not holistic approach over the life of a project. The percentage of projects that customer surveys are sent out should be tracked and questions about the steps along the life of the project should be added to these surveys to get a clearer picture of customer transparency.
- How many website hits are we getting?

The performance measures brainstorming worksheet created by VHB can be found in Appendix K.

Document resource demands

Resource demands were documented by comparing the number of hours each internal resource group dedicated to projects advanced through the ABP versus the Conventional and Complex Program over the past three years (2012-2014) including utilities, environmental permitting and ROW. Supplemental data such as project description and location, associated design and construction costs and any reasons a project was delayed were also collected and analyzed to provide supporting evidence. Statistical analysis was conducted to determine general trends in resource demands for accelerated versus conventional project delivery.

VTrans analyzed data from 46 completed bridge projects (32 accelerated and 14 conventional) to compare the costs of accelerated projects with those of conventional projects. VTrans grouped the project costs into categories, including Engineering, ROW, Survey, Utilities, Environmental, Geotechnical, Administrative, and Construction. Although the sample size is limited, the results show that in the Engineering, ROW, Utilities, Environmental, and

Construction categories, the average total project cost and average cost per square foot of structure were lower for accelerated projects compared to conventional. VTrans will continue to supplement the data as more projects are completed. A detailed breakdown of the cost comparisons can be found in Appendix L.

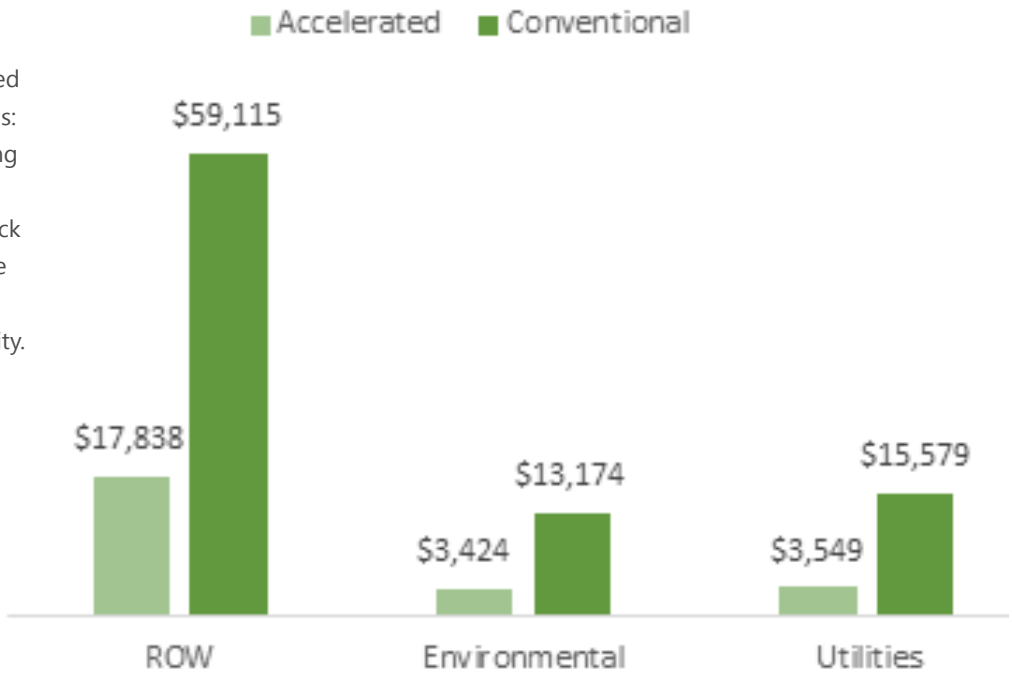
The initial results of the cost comparison indicate that the ABP is successfully delivering cost and time savings while minimizing the impact on the environment and the traveling public. The three primary goals of the ABP—expediting delivery, leading innovation, and demonstrating transparency—are reflected in every step of the program. VTrans' focus on these guiding goals and objectives is key to continuing the success of the program.

Expediting Project Delivery – Effect on Resource Demands

The comparison between Accelerated and Conventional projects found that Accelerated projects had a positive effect on Resources. Comparing the Right-of-Way, Environmental, and Utilities costs found that there was a 70-75% savings in resource demands for projects in the ABP.

These savings can be attributed to a number of factors, such as:

- Less Impacts to Surrounding Resources.
- Minor Alterations and "Block Out Approach" to minimize demands on Right-of-Way.
- Environmental Responsibility.
- Team Co-Organization.



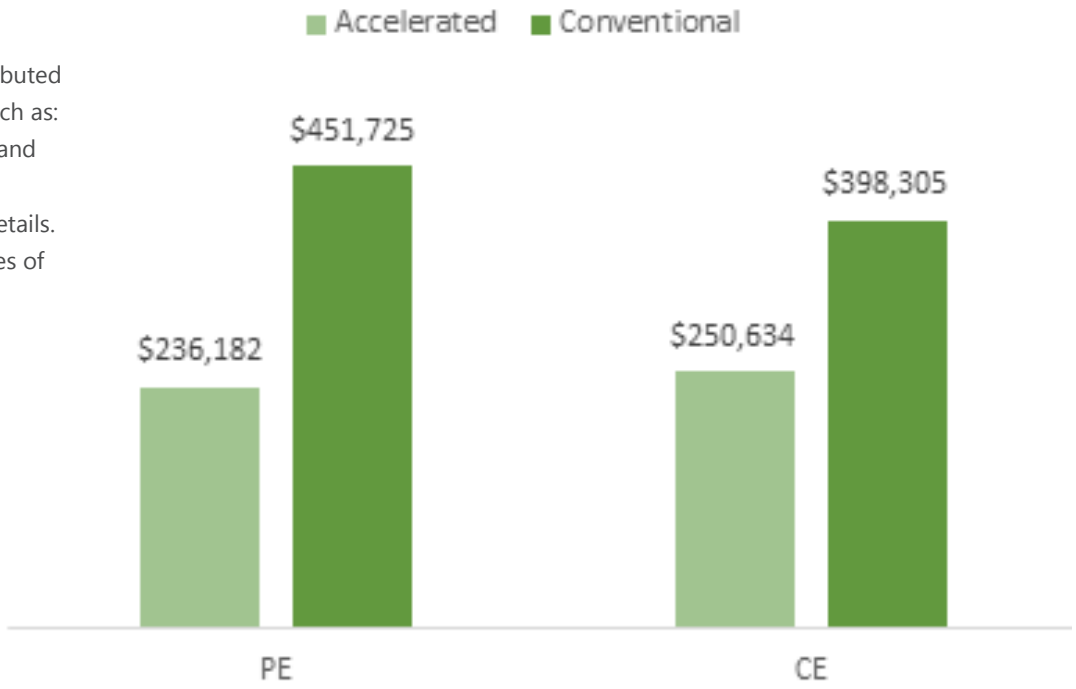
Expediting ROW Acquisition and minimizing the overall demand on the Right of Way section, beyond minimizing impacts outside the existing Right of Way, has been achieved through the following approaches:

- Modifying the project schedule to meet with property owners during preliminary plan development.
- Using the "Block Out Approach" and begin "Plans and Titles" during preliminary plan development.

By starting these important processes earlier on in the life of the project, the Right-of-Way acquisition time has been reduced by months.

Expediting Project Delivery – Effect of Engineering Costs

The comparisons between Accelerated and Conventional projects frond that Accelerated projects had a positive effect on Preliminary Engineering and Construction Engineering Costs. It was found that there was a 40% savings in preliminary and construction engineering for projects in the ABP.



These savings can be attributed to a number of factors, such as:

- Standardized drawing and specifications.
- Standardized design details.
- Building upon successes of past projects.

8 Action Plan Item 3: Peer Exchanges

As part of the SHRP2 C19 Expediting Project Delivery Action Plan, three peer to peer exchanges were held with representatives from three surrounding State DOTs during the fall of 2015. Several candidates were identified as possible host states and ultimately Massachusetts, Maine and New York were chosen to host. Each peer exchange was conducted over a two-day period and included up to ten (10) VTrans representatives with members from the ABP, resource groups, construction, mapping and public outreach. One consultant also attended each peer exchange to document meetings and other highlights. Each peer exchange focused on sharing innovative practices and technologies used by the respective DOTs to expedite project delivery (design and construction). The tours included both office meetings and site visits to projects under construction using ABC. Special emphasis was placed on pairing up team members that specialize in the same areas at the respective DOTs to transfer knowledge and establish future working relationships.

The peer exchange with MassDOT occurred on September 14th and 15th, 2015 at the main office in Boston, MA. The peer exchange with NYSDOT occurred on September 22nd and 23rd, 2015 at the Capitol District regional office in Albany, NY. The peer exchange with MaineDOT occurred on October 5th and 6th, 2015 at the Midcoast regional office in Augusta, ME. The agendas for the Peer Exchanges can be found in Appendix M.

Peer Exchange Emphasis Areas

Emphasis areas were established to guide the conversations at the peer exchanges and are as follows:

Table 8.1: Peer Exchange Emphasis Areas

Emphasis Area	Focus Questions
Data Management	Do you have a centralized database for existing site features (including existing utilities, environmental and cultural resources and ROW)?
Collaboration during the scoping phase	How is collaboration achieved during the scoping process?
Handoff from scoping to design	How are projects handed off from scoping into design?
	Do you require credible schedules and spending profiles?
Project schedule development	Critical path, concurrent activities, etc.
Project prioritization and collaborating with resource groups	How are projects prioritized within the resource groups (utilities, environmental and ROW)?
	How do you work with the resource groups to focus on expediting project delivery?
	Do you have any strategies to EPD with the resource groups?
	Have you used any recent innovations to help advance projects through the resource groups?
Maintaining plan quality while expediting project delivery	How is plan quality maintained during expedited project delivery (what is the expectation for designers - in and out of house, what is the role of the PM, how are plans QC'd, how do you maintain consistency is plan development while making improvements to plan details)?
Ensuring constructability during the design phase	How do you involve construction during plan development and examine constructability?
Project Outreach	Do you have any effective project outreach strategies?
	How do you outreach to communities along the detour route both during the scoping and design phases?
Performance Measures	What performance measures do you use in scoping and design?
Political Capital	How do you celebrate successes with the entire project team and build political capital for your ABP program?
Alternative Contracting	How do you use alternative contracting to expedite? (Maine – detail build) (NY – RFP projects)
DOT organization	Any lessons learned on how you are organized such as co-location or innovative consultant usage?
	How does it help with expedited decision making?

Representatives from the Massachusetts and Maine Departments of Transportation (DOTs) shared innovations from their respective programs during the planning and delivery of the Program/Process Review and associated Workshop. This was instrumental in helping to plan the events, deliver a consistent message and illustrate how DOTs across the country are retooling the way they do business to do more with less (staffing, resources and funding constraints) while maintaining our highway infrastructure and meeting or exceeding customer expectations. Specifically, MassDOT provided an overview during the Assessment Workshop on how they implemented an ABP, thus creating a laboratory of innovation that became ingrained in their organizational culture promoting advancements throughout all phases of project delivery and other business practices. Examples include early environmental coordination, utilities reimbursement initiative and IT Systems improvements. Members of the ABP and other meeting attendees discussed a desire to learn more about these and other innovative practices and technologies utilized by other State DOTs to expedite project delivery. This would enable VTrans to adopt innovations much more efficiently without spending scarce funds to re-create advancements already developed and deployed at other State DOTs.

MassDOT Peer to Peer Exchange Group

NYS Peer to Peer Exchange Group

SHRP2 C19 Peer to Peer Exchange Takeaways

These two-day exchanges provided an opportunity to share programmatic and project related initiatives to aid in expediting project delivery. The list below contains potential action items for implementation centered on 5 of the 24 strategies identified in the SHRP2 C19 report. This list includes potential action items for the Structures Section as well as other resource groups such as Environmental, Utilities, Contract Administration and Construction.

Strategy 3 (Context-Sensitive Design and Solutions)

- Explore GIS MaPPs Tool (automated analysis to compare project area with over 30 links, DOT partners can login)
- Explore Platform Architecture (ESRI and MassDOT)

Strategy 8 (Expedited Internal Review and Decision-Making)

- Plan Quality Certification (design checklist must be signed by principle of the consultant firm); PMs also perform a cursory plan review prior to OLSR
- Alternative Contracting Methods (Best Value, Proposal only and Detail-Build)
- Identify RE during design phase (Maine identifies RE at 85% plans)
- Consider taking deck cores during scoping phase to determine the integrity of the concrete (especially when considering Preventative Maintenance Projects)
- For Northern Long-eared Bat:

  - » Batch submittal of projects with number of trees to be cut
  - » Programmatic agreement with FHWA Division Office
- Construction endorses every schedule before it goes to final PS&E package
- Closeout meetings with REs to document lessons learned
- Explore the five dimensional project management tool
- Develop truncated scoping report for preventative maintenance projects
- Consider pairing new consultants with seasoned designers

Strategy 10 (Highly Responsive Public Engagement)

- Forever Bridges (bridges expected to last 100 year), have a maintenance plan to ensure the bridge is properly preserved
- Post cards and posters developed for public meetings (in lieu of a formal letter)
- Consider social media (Periscope)
- Consider Local Advisory Committees for projects with significant public interest

Strategy 21 (Strategic Oversight and Readiness Assessment)

- Weekly Project Prioritization Meetings with Upper Level Management (aids in resource allocation and leveling)
- Greater transparency of project prioritization for resource allocation (should Artemis be the driving factor?)
- 3-year utility coordination work plan (Maine DOT)

Strategy 22 (Team Co-Location)

- Construction staff embedded in the Structures Program
- Environmental and ROW staff dedicated to the Structures Program

Miscellaneous

- PM is not allowed to be on the TAC committees for D-B and CMGC projects
- Consider consensus scoring (all committee members must be within XX points of each other for each criteria)
- Consider adding delay claim stipulations to the Utility relocation orders

9 Action Plan Item 4: Public Outreach

As noted in S2-C19-RR-1, "Building and maintaining public support can be one of the most crucial yet challenging keys to expediting project delivery. Significant controversy and opposition commonly delay project delivery." Since the inception of the ABP in 2012, the Agency has come to realize that public outreach for short term roads closures is even more critical than conventional methods to maintain traffic during construction because of the rippling traffic impacts not only on the through route but the detour route as well. In addition, the public often has natural propensity to oppose change and, in some cases, doubt the Agency's ability to deliver expedited projects and complete ABC projects within a short timeframe. Even with the support of local politicians and legislation to help promote ABC, the Agency can face some amount of public hesitation. During the "Highly Responsive Public Engagement" breakout session of the SHRP2 C19 Workshop, Agency personnel also noted that while the ABP does a great job outreaching to the affected town, more outreach is needed to outlying towns, including towns along the detour route. All too often, outlying towns are surprised about an impending closure, elevating public concerns to the executive level. To alleviate public concerns and cast a wider net, the following actions have been implemented and are summarized below:

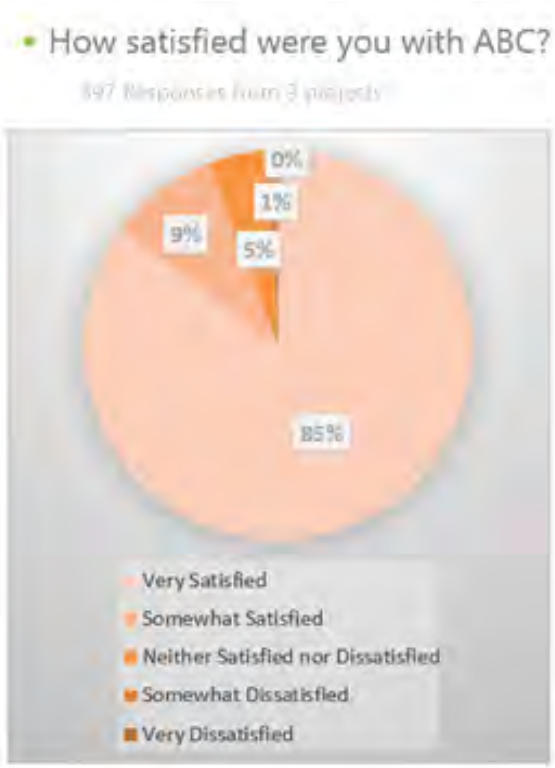
- Customer satisfaction surveys
- Creating a Public Involvement Plan

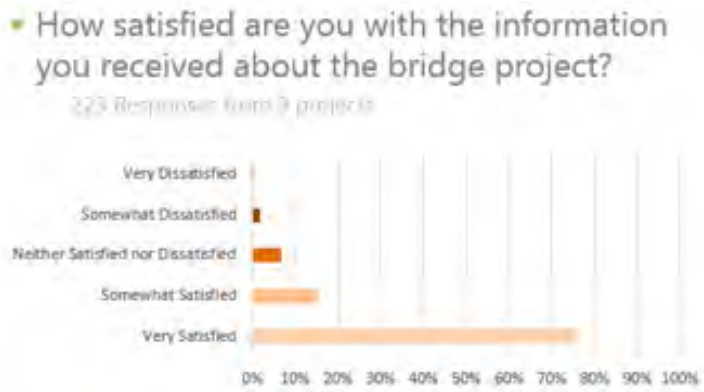
- Website development
- Early coordination with stakeholders
- Use of outreach products, and
- Use of tools to engage the public

Customer Satisfaction Surveys

After construction, customer surveys are sent out to gather information on how the public feels about Accelerated bridge construction in their town, and how satisfied they were with the process. This is done in order to track the effectiveness of the public outreach on a project basis. These surveys consist of about 10 to 15 questions; a typical customer satisfaction survey can be found in Appendix N.

The results from the first projects that have undergone this process are shown below. These results represent nine projects, and over 300 respondents:





- 94 percent of respondents said that they were very or somewhat satisfied with ABC.
- 90 percent said that they were satisfied with the information they received about the bridge project, which tells us the program is doing a good job at public outreach and
- About 95 percent were satisfied with the overall delivery of the project.

Public Involvement Plan

VTrans has developed a guide to promote consistent, early and continuous public involvement for the life cycle of our transportation infrastructure, including project delivery. The life cycle refers to design, construction and maintenance until the cycle starts over again. A portion of funding for the C19 grant was dedicated towards this plan to develop a section on outreach for innovative construction and short term road closures.

The Public Involvement Guide can be found at the following location:
http://vtrans.vermont.gov/docs#outreach

Website Development

To help convey a consistent message to our internal and external customers including Agency personnel, consultants, contractors and the public, a website was developed for the Structures and Hydraulic Section including the PIIT and ABP. The website provides a centralized location for information pertaining to both the program and projects including program goals, benefits of ABC and Every Day Counts (EDC) and highlights. The website is also used to house information on projects in design and construction as well as showcase success stories, testimonials and videos. Finally, the website relays information on technical resources such as standard design details and specifications for ABC.

The website can be found at the following location:
http://vtrans.vermont.gov/highway/structures-hydraulics/accelerated-bridge-program

Early Coordination with Stakeholders

The PIIT and ABP investigated various strategies for effective outreach to outlying towns, including towns along proposed detour routes, during the project initiation, design and construction phases of project delivery. One method is the use of a public SharePoint site throughout the life of the project since its inception during the project definition stage through construction. Key project documents, such as the scoping report and project factsheet, along with milestones plans, presentations, and other important documents are uploaded to the applicable project file on the public SharePoint site. This information is distributed to an email list serve that is developed as the project progresses through each phase of project delivery. The email list serve is comprised of, but not limited to, town officials, local emergency services, local schools, Regional Planning Commissions, state representatives, impacted businesses, and adjacent property owners.

Outreach Products

A brand for the ABP was created in 2014 under a separate federal grant. To launch the brand and help promote the program statewide, two banners (see Figure 9.1 below) and stickers were purchased. The banners have been displayed on high profile innovative ABP projects for public viewing. The stickers are distributed to internal and external stakeholders and customers.

VTrans Accelerated Bridge Program Promotional Banner, Hartford Lateral Side, 2015

Tools to Engage the Public.

In an effort engage participants during public meetings, provide everyone with an equal voice, easily have the public provide feedback on essential elements of a project and document associated findings, a clicker audience response system was purchased in January 2015. This system has enabled participants to provide meaningful feedback during public meetings while offering instant results for Agency personnel. Since the purchase of the clickers, VTrans has been polling the public using the TurningPoint software by Turning Technology along with Turning Technology clickers at all local and regional meetings, during the project initiation phase, in the following topic areas: demographics of the audience, general use of the roadway, optimum closure timing (if applicable), project concerns, and overall endorsement of the scope. Typical questions that are asked using the TurningPoint software, during the local and regional meetings can be found in Appendix O. The clickers are now being used throughout all phases of design, with an emphasis on the local and regional meetings (preferred alternatives meeting and regional concerns meeting).

Project Polling Results

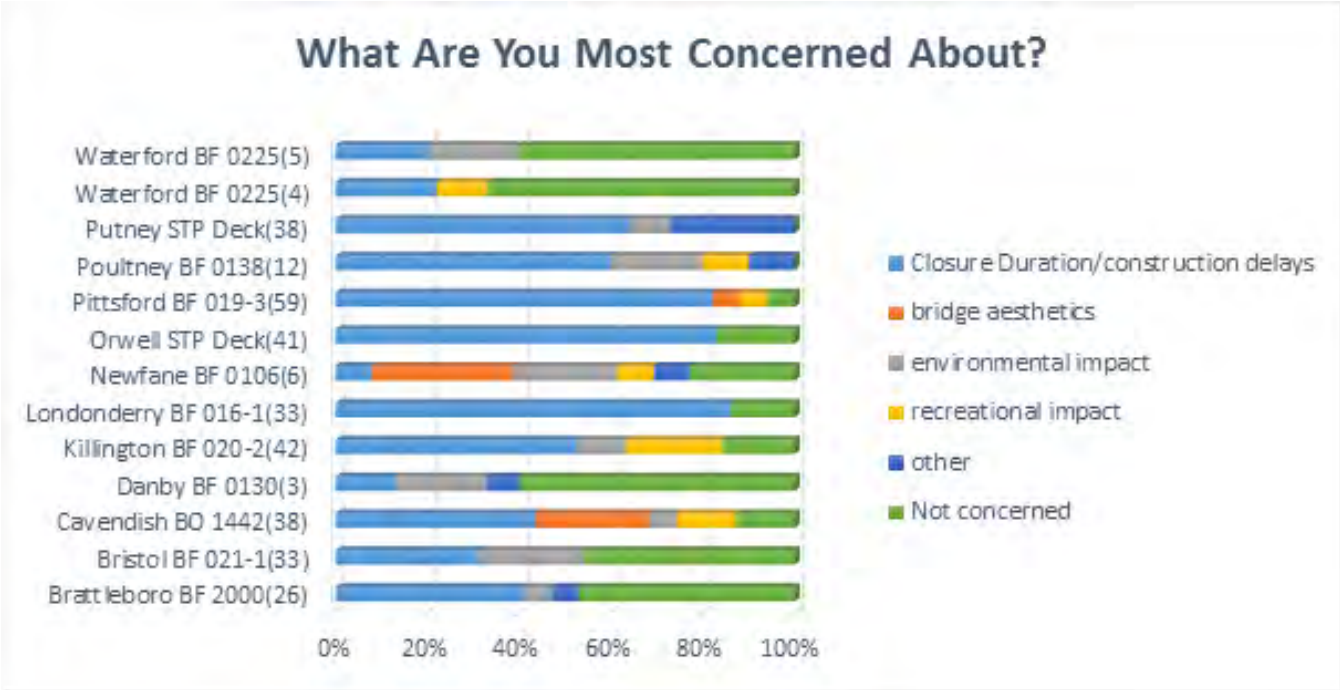
The audience response system manufactured by Turning Technologies was used on 13 local and regional public meetings since January 2015. The results for project concerns, design aspect concerns, and scope satisfaction are summarized below:

Project Concerns:

When polling the public about their greatest project concern, the majority of respondents were concerned about the closure duration and potential construction delays. The following list of concerns are ranked in order from greatest public concern to least public concern:

1. Closure Duration/Construction Delays
2. Not Concerned
3. Environmental Impacts
4. Recreational Impacts
5. Bridge Aesthetics
6. Other

The following chart displays the individual results collected from 13 projects:

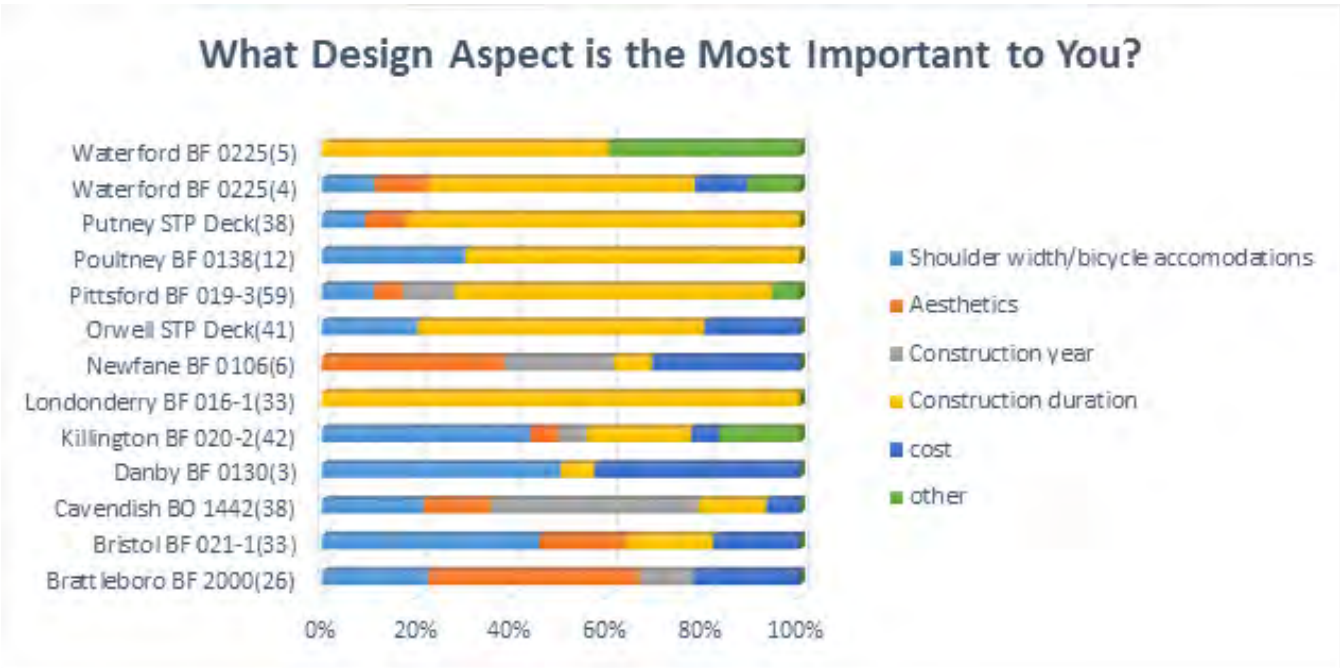


Design Aspect Concerns

The design aspect that the public found to be most important to them was the construction duration followed closely by shoulder width and bicycle accommodations. The following list of design aspects are ranked in order from most important to the public to least important to the public:

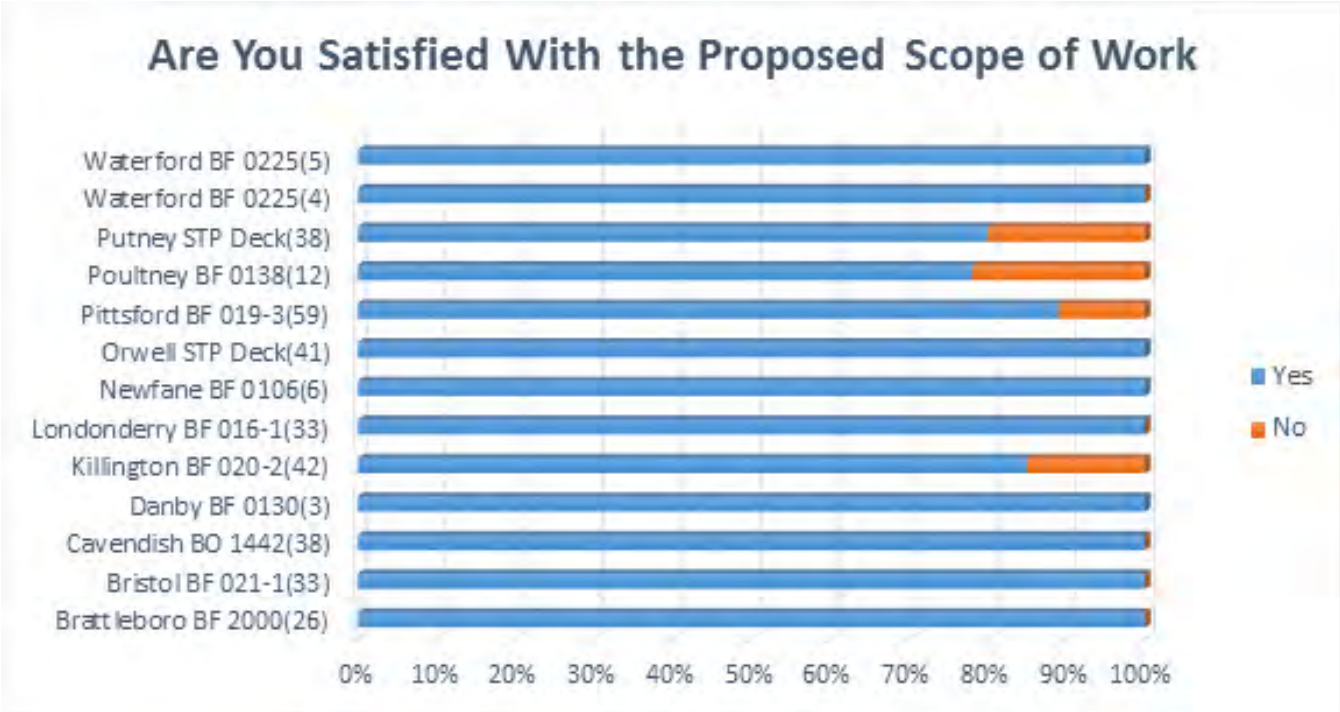
1. Construction Duration
2. Shoulder width/bicycle accommodations
3. Cost
4. Aesthetics
5. Construction Year
6. Other

The following chart displays the individual results collected from the same 13 projects:



Scope Satisfaction

Of the 13 projects tracked, 9 had a 100% satisfaction rating for the chosen scope of work. The individual results for all 13 projects are shown below:



VTrans has received much positive feedback regarding the implementation of the clicker response system. The clickers have served as an ice breaker at public meetings, opening up more discussion about the public's questions and concerns about the projects. It has provided

instant feedback about the optimum timing and duration of short term road closures to minimize impacts to business communities, homeowners and special events. Because of the anonymity of the polling, the public is able to voice their opinions silently without feeling pressured from neighbors. Based on the positive feedback and results of the polling system during the project initiation stage, the agency has started using the clicker response system at all stages of project development.

Feedback on Effectiveness of Polling

A questionnaire on the perceived effectiveness of audience response systems to increase public engagement was distributed in June of 2016. The questionnaire was sent to applicable Town Clerks, Town Managers, Selectboard Chairs, VTrans Planning Coordinators, and Regional Planning Commissions. The questionnaire and individual responses from this survey can be found in Appendix P.

Project Input: Overall, the public feels that they have greater input into the direction of a project using the clickers. It allows every meeting attendee to have an equal say/vote on matters such as closure durations, and timing, specific design aspects, and concerns. It allows them to give an honest opinion without fear of repercussions from their neighbors because of the anonymity of the clicker system.

Polling Techniques: During polling, the polling should continue to show real time answers so the public knows how their opinion compares to the rest of the crowd.

Polling Questions: There are several questions that were suggested in the questionnaire; they are as follows:

- A design element where there are options that are aesthetic.
- How people receive news/info about a project.
- How did you hear about the meeting?
- Are you regularly involved in town meetings and public hearings?'

Later use of polling data: Before construction begins, it would be useful for VTrans to show how the public input obtained during the public meetings influenced the design and project decisions.

10 Action Plan Item 5: Data Management

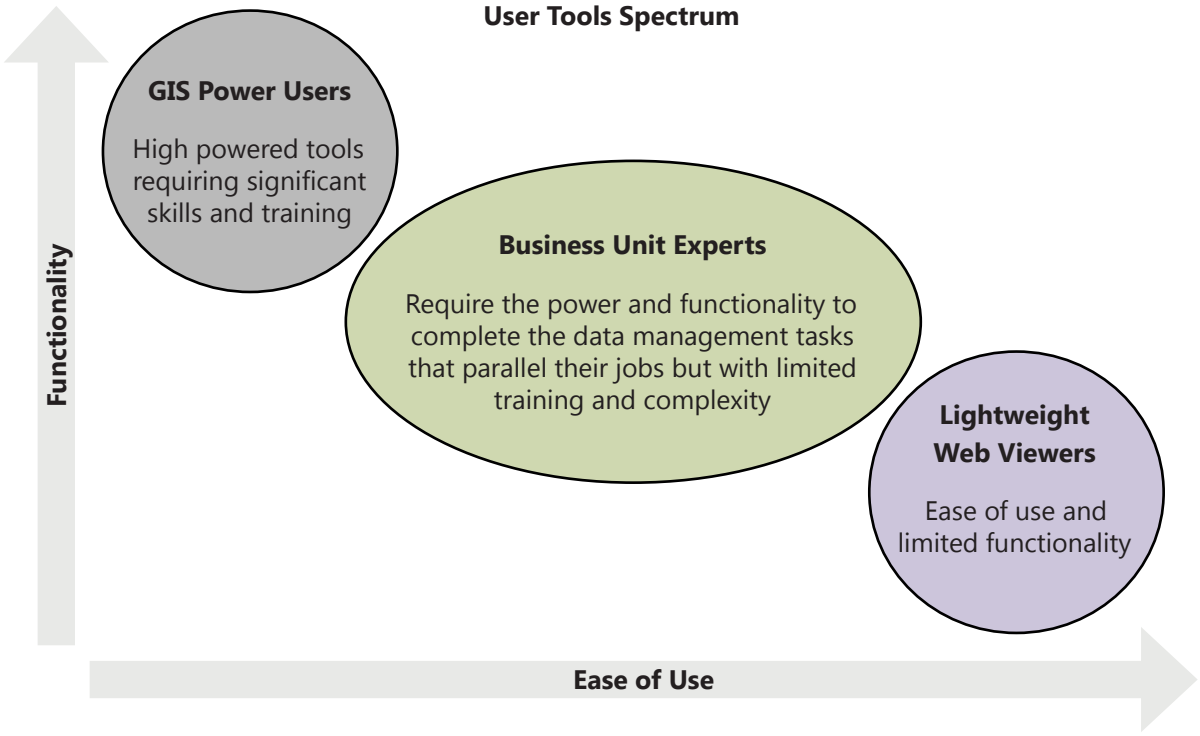
During the Program/Process Review, meeting participants observed that the Agency does not have a centralized location for various data sets which may include (but is not limited to) the location and condition of the Agency's assets, environmental resources, existing utilities, right-of-way (ROW) boundaries, as well as upcoming infrastructure maintenance, rehabilitation or replacement projects creating inefficiencies in our project development process. According to the S2-C19-RR-1, "GIS data and software analysis tools allow DOTs and MPOs to efficiently integrate environmental evaluations into their planning studies. By developing statewide and/or regional data, transportation agencies can quickly evaluate and compare proposed projects and programs, identify potential environmental hurdles, and make better-informed decisions about how to develop future projects." This sentiment can be further expanded to include other resources such as utilities, ROW as well as effectively coordinate the programming and timing of projects to maintain Vermont transportation infrastructure.

Funding was used to research and document various GIS applications that are available and/or being used by other state DOTs to display information to help expedite project delivery including, but not limited to, site features such as environmental and cultural resources, ROW and existing utilities as well as planned maintenance, rehabilitation or replacement projects.

Geocortex™ Application

The Asset Management and Performance Bureau Data Management group (AMP DM) has been in development of a mapping framework that will serve as the window for the integration of various sources and tools at a level that will allow Agency users to easily access and retrieve data in a way that is relevant to their own workflows. The 'SK1' mapping interface – built using the Geocortex™ application platform by Latitude Geographics – is focused on improving the integration of disparate data sources and existing tools into a framework that allows users to find solutions to questions and make decisions by incorporating multiple data and tools into a single mapping interface.

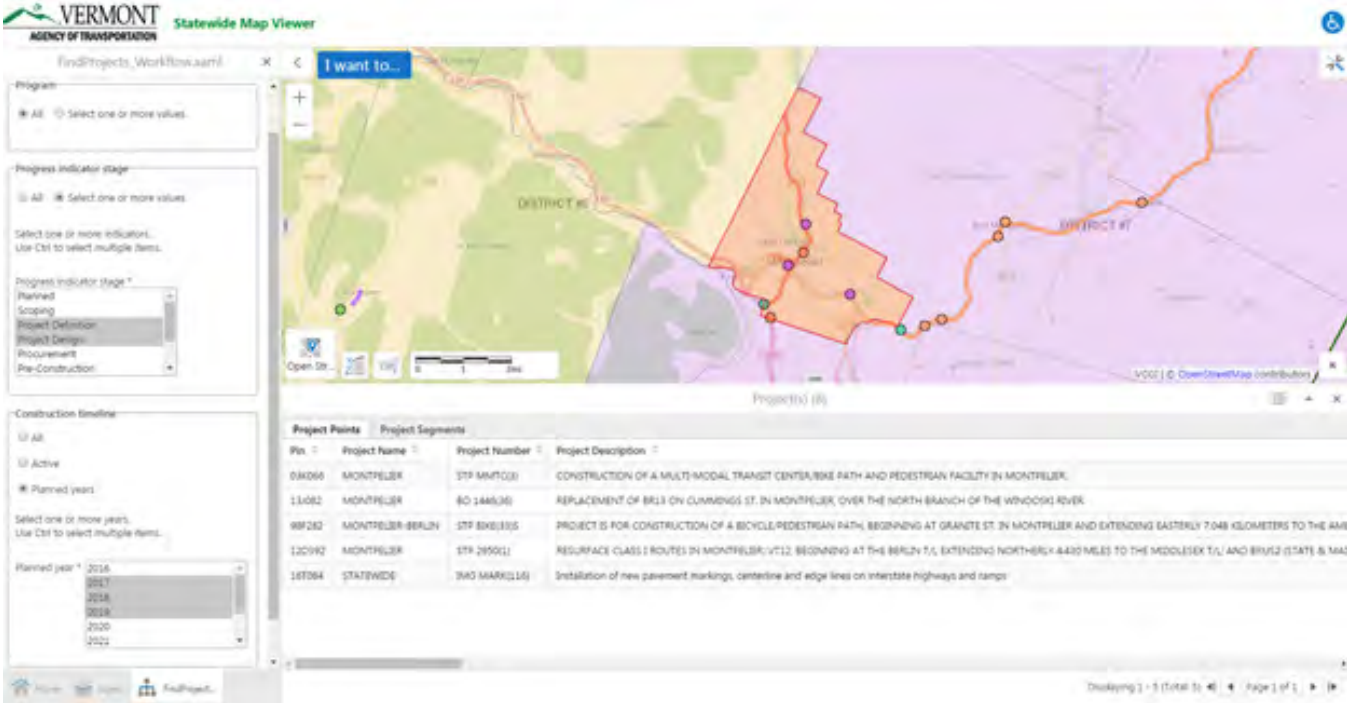
The AMP DM group has been leveraging the ArcGIS software suite and ArcGIS Online mapping tools to present asset, project and various other agency GIS data through web interface applications. The tools have been very useful for simple data presentation, but have lacked the power to spatially integrate various data sets for data-driven decision making.



The SK1 project was initiated to create more powerful mapping tools for business unit experts and resolve the following blind spots in our existing mapping interfaces:

- A centralized tool that incorporates data from many of the Agency's existing systems
- A mapping tool to present complex relationships based on location
- An intuitive interface that is simple but also incorporates intermediate level analysis capability
- Provide non-GIS staff an effective method to run complex analysis routines
- Replace on-demand data preparation with constantly updated and available data
- Centralize and reduce redundant tools and applications in the data management environment

The SK1 project started in August of 2016 and should release the first phase mapping interfaces by March 1st of 2017. The initial maps are designed to support project scoping and programming, and analysis of statewide asset locations and conditions. The AMP DM unit has met with various business units for recommendations and feedback for map enhancements, and will develop staged implementations of enhancements as the project continues.



11 Future Action Items

While the two-year grant period for the SHRP2 C19 effort is coming to a close and all of the initial action items are wrapping up, the Structures and Hydraulics Section is committed to evaluating and pursuing other potential action items to expedite project delivery, increase collaboration and coordination, provide superior customer service, and be better prepared, aligned, and positioned to strategically rehabilitate and replace Vermont's transportation infrastructure in a cost-effective and coordinated manner. Following the C19 grant period, all meeting minutes from the Program/Process Review, C19 Workshop, Peer-to-Peer Exchanges, and Interviews will be summarized into a database grouped by topic areas and/or affected stakeholders and customers. This list will be examined and prioritized for quick wins, perceived short-term and long-term gains, potential financial commitments, and likelihood of support from affected parties and upper management. A subsequent action plan will be developed identifying these additional future action items including a timeline and work plan for implementation. With the support from upper management, collaborative interdisciplinary working groups will be formed to implement the action items.

12 Conclusion

The SHRP2 C19 effort has centered on leveraging several strategies from the "Expedited Planning and Environmental Review of Highway Projects" report and creating a gateway for innovative approaches to expediting projects from programing through construction. C19 has institutionalized a culture that aligns VTrans together as a team to achieve a common goal. This culture promotes innovation, customer service, teamwork, collaboration, coordination, streamlined decision-making, and increased efficiencies. As we are asked to do more with less while increasing the quality of our products and customer satisfaction, initiatives like C19 will be vital to the continued success of VTrans and the ability to maintain our transportation infrastructure to promote Vermont's quality of life and economic wellbeing.

A SHRP2 C19 Constraints and Strategies

The C19 report identifies 16 common constraints to transportation project delivery and 24 different strategies for expediting project delivery. The 16 constraints are below.

- Constraint 1: Avoiding Policy Decisions Through Continual Analysis
- Constraint 2: Conflicting Resource Values
- Constraint 3: Difficulty Agreeing on Impacts and Mitigation
- Constraint 4: Inability to Maintain Agreement
- Constraint 5: Ineffective Internal Communication
- Constraint 6: Inefficient Section 106 Consultation With State Historic Preservation Officer (SHPO)
- Constraint 7: Inordinate Focus on Single Issue
- Constraint 8: Insufficient Public Engagement or Support
- Constraint 9: Issues Arising Late Cause Project Change
- Constraint 10: Lack of Dedicated Staff
- Constraint 11: Lengthy Review and Revision Cycles
- Constraint 12: Negative or Critical Coverage from the Media
- Constraint 13: Relocation Process Delays Construction
- Constraint 14: Slow Decision-Making
- Constraint 15: Stakeholder Controversy and Opposition
- Constraint 16: Unusually Large Scale of and/or Complex Project or Program

The 24 Expediting Project Delivery strategies, organized by objective, are below. Strategies that VTrans is particularly interested in pursuing further are highlighted in bold.

- Objective 1: Improve internal communication and coordination
  - » Strategy 1: Change-Control Practices
  - » Strategy 9: Facilitation to Align Expectations Up Front
  - » Strategy 20: Risk Management
  - » Strategy 21: Strategic Oversight and Readiness Assessment
  - » Strategy 22: Team Co-location
- Objective 2: Streamline decision-making
  - » Strategy 2: Consolidated Decision Council
  - » Strategy 8: Expedited Internal Review and Decision Making
  - » Strategy 21: Strategic Oversight and Readiness Assessment

- Objective 3: Improve resource agency involvement and collaboration
  - » Strategy 4: Coordinated and Responsive Agency Involvement
  - » Strategy 5: Dispute-Resolution Process
  - » Strategy 6: DOT-Funded Resource Agency Liaisons
  - » Strategy 13: Performance Standards
  - » Strategy 16: Programmatic Agreement for Section 106
  - » Strategy 17: Programmatic or Batched Permitting
  - » Strategy 18: Real-Time Collaborative Interagency Reviews
  - » Strategy 19: Regional Environmental Analysis Framework
- Objective 4: Improve public involvement and support
  - » Strategy 3: Context-Sensitive Design and Solutions
  - » Strategy 10: Highly Responsive Public Engagement
  - » Strategy 12: Media Relations Manager
- Objective 5: Demonstrate real commitment to the project
  - » Strategy 7: Early Commitment of Construction Funding
  - » Strategy 11: Incentive Payments to Expedite Relocations
  - » Strategy 24: Up-front Environmental Commitments
- Objective 6: Coordinate work across phases of project delivery
  - » Strategy 14: Planning and Environmental Linkages (PEL)
  - » Strategy 15: Planning-Level Environmental Screening Criteria
  - » Strategy 23: Tiered National Environmental Policy Act (NEPA) Process

B Assessment Workshop on Expediting Project Delivery Agenda

Assessment Workshop on Expediting Project Delivery

Vermont Agency of Transportation

Agenda

September 3-4, 2014

Day One (September 3, 2014)

8:00–8:30 AM	Check-In and Registration
8:30–9:15 AM	Welcome, Introductions, Workshop Overview and Objectives, and Logistics {FHWA Workshop Facilitation Team}
9:15–9:30 AM	Introductory Remarks from VTrans and the FHWA Vermont Division Office {VTrans and FHWA Vermont Division}
9:30–9:40 AM	Overview of the Second Strategic Highway Research Program (SHRP2) {FHWA Workshop Facilitation Team}
9:40–10:00 AM	Overview of the SHRP2 Product Expediting Project Delivery {FHWA Workshop Facilitation Team}
10:00–10:15 AM	Break
10:15–11:00 AM	Overview of the SHRP2 Product Expediting Project Delivery (continued) {FHWA Workshop Facilitation Team}
11:00–11:30 AM	Overview of the Expediting Project Delivery Assessment Tool {FHWA Workshop Facilitation Team}
11:30 AM–12:00 PM	VTrans Overview on the "Current State" and "Desired State" of Project Development and Delivery Processes and Practices for the Accelerated Bridge Program {VTrans}
12:00–1:15 PM	Lunch
1:15–2:00 PM	Overview of the Process/Program Review on the VTrans Accelerated Bridge Program {Larry Anderson, FHWA Resource Center}
2:00–2:30 PM	Overview and Discussion of Action Planning {FHWA Workshop Facilitation Team}
2:30–2:45 PM	Break
2:45–3:30 PM	Overview of MassDOT's Accelerated Bridge Program {Victoria Sheehan - MassDOT (via WebEx)}

3:30–4:30 PM	Setting the Stage for the Rest of the Workshop: Defining Strategies/Themes to be Addressed in Break-Out Group Brainstorming {Everyone - facilitated by FHWA Workshop Facilitation Team}
4:30–4:45 PM	Wrap-Up/Summary of Day 1 and Preparing for Day 2 {FHWA Workshop Facilitation Team}

Day Two (September 4, 2014)

8:30–8:45 AM	Recap of Day 1 and Overview of Day 2 {FHWA Workshop Facilitation Team}
8:45–10:30 AM	Break-Out Group Brainstorming to Generate Ideas on Future "Action Steps" {Everyone - facilitated by FHWA Workshop Facilitation Team}
10:30–10:45 AM	Break
10:45 AM–12:15 PM	Break-Out Group Reports on Suggested Future "Action Steps" {Everyone - facilitated by FHWA Workshop Facilitation Team}
12:15–1:30 PM	Lunch
1:30–2:30 PM	Group Dialogue on the Framework and Components of the Action Plan {Everyone - facilitated by FHWA Workshop Facilitation Team}
2:30–2:45 PM	Break
2:45–3:30 PM	"Next Steps" for Developing and Implementing the Action Plan {Everyone - facilitated by FHWA Workshop Facilitation Team}
3:30–4:00 PM	Wrap-Up, Workshop Evaluations, and Adjourn {FHWA Workshop Facilitation Team}

C Assessment Workshop on Expediting Project Delivery Focus Questions

Strategy 3: Context Sensitive Design/Solutions

Definition:

- A collaborative, interdisciplinary approach that involves all stakeholders to develop a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic, and environmental resources, while maintaining safety and mobility.
- Considers the total context of the corridor.
- Early, continuous, and meaningful involvement of the public and all stakeholders throughout the project development process.

Constraints addressed:

- Stakeholder controversy and opposition; and
- Insufficient public engagement or support.

Questions:

1. How do you identify stakeholders in a context sensitive design?
2. Do you meet personally with affected stakeholders?
3. How do you ensure that stakeholders are engaged from scoping through design?
4. How do you ensure that proper consideration is given to the context of the corridor?
5. What is the most sensitive context for a project (i.e. environmental, business, personal)?

Strategy 8: Expedited Internal Review and Decision-Making

Definition:

- Process for efficiency and timely internal review and decision making;
- Internal divisions should agree to a clear process for considering and making decisions;
- Decision-making assignments should clearly specify who has the authority to make decisions;
- Each division should be accountable to meet or beat internal review and decision-making deadlines.

Constraints Addressed:

- Unusually large scale of and/or complex project or program;
- Slow decision making;
- Lengthy review and revision cycles;

- Ineffective internal communication;
- Avoiding policy decision though continual analysis.

Questions:

1. Do you currently review and approve the scopes of any given project?
2. How do you determine who is responsible for making decisions?
3. At what level do you get involved in decision making?
4. How do you guarantee that the scope will remain the same?
5. Is there agreement on a process for considering and making decisions including expediting and development and/or review for information needed to make decisions? Is there a clearly documented and understood internal process in-place?
6. Is it clear who has the authority to make decisions or provide input on decisions for each business unit? Why or why not?
7. It there a tracking/accountability system in-place? If so, is it efficient and effective? Why or why not?
8. What types of enhancements could be made to the existing process for further expediting internal review and decision-making on ABP projects?

Strategy 10: Highly Responsive Public Engagement

Definition:

- Successfully involve the pubic to garner support and enable expediting delivery
- Anticipate and provide direct ways for participants to contribute to decisions and for them to see the outcome
- Developing a process about how input will be used is necessary for public participating to perceived agencies as credible, effective, and worthy of their time
- Engage the public in ways that influence how a team collects data, describes existing conditions, and evaluates actions (community impact assessment)

Constraints addressed:

- Issues arising late causing project change
- Stakeholder controversy and opposition
- Usually large scale of and/or complex project or program;
- Relocation process delays construction;
- nsufficient public engagement or support;
- Negative or critical coverage from the media;
- Inability to maintain agreement.

Questions:

1. How do you involve the public?
2. How often do you engage the public?
3. How do you disengage the public?
4. What is your process for moving forward when public opposition exists (due you involve

higher management)

5. How is the public involved in long-range planning and programming of ABP projects?
6. Is the public involved in project planning in ways that support and enable expedited delivery?
7. Are there direct ways for participants to contribute to decisions and for them to see the outcome and how it was influenced by their input?

Strategy 21: Strategic Oversight and Readiness Assessment

Definition:

- At the onset of a project, internal commitment and interagency agreement offer mechanisms for identifying all parties' functional and financial responsibilities, and a timeline for these provisions
- Developing these interagency agreements entails assessing the capacity of each agency to provide resources and identify if any additional resources are needed
- Method for installation a system of protocols and establishing a common oversight function
- Project development process can be streamlined

Constraints Addressed:

- Usually large scale of and/or complex project or program;
- Ineffective internal communication;
- Slow decision making;
- Inability to maintain agreement; and
- Lack of dedicated staff.

Questions:

1. How do you allocate resources to complete activities within the accelerated 24 month SBP schedule?
2. How have you adjusted your activity delivery schedule based on the ABP demands?
3. Do you feel adjustments to resource allocation is warranted for the ABP?
4. If you had unlimited resources, how would your staff be allocted to the ABP? Would it change from the current practice?
5. What internal/external decisions/deliverables are needed and from whom?
6. Are there adequate internal/external resources? Why or why not?
7. Are the internal/external protocols understood by the affected staff?

Strategy 22: Team Co-Location

Definition:

- Co-located project teams help expedite internal communication, review, and decision making
- Increase the commitment and focus of team members on the project
- Rapid reviews can product substantial time savings

Constraints addressed:

- Unusually large scale of and/or complex project or program;
- Ineffective internal communication;
- Slow decision making;
- Inability to maintain agreement; and
- Lack of dedicated staff.

Questions:

1. Do you see any benefits from team co-location for the ABP?
2. Without reassigning staff to the ABP, how can we create a team co-location environment?
3. Have you assigned any staff for APB project delivery?
4. From your perspective, what does "co-location" mean (virtual vs. real)?
5. Has team co-location been used in the past on any ABP projects? If so, was that approach effective? Why or why not?
6. Where in the process does it make organizational/business sense to co-locate team members?
7. What infrastructure (physical and/or organizational) needs to be in place to allow for co-location and immediate sharing and review of work products?
8. How would accountability be established and maintained?

D Assessment Workshop on Expediting Project Delivery Break-Out Group Brainstorming Forms

Proposed Action Plan Components

Assessment Workshop on
Expediting Project Delivery
Break-Out Group Brainstorming Form

Expediting Essential Strategy (or Bundle of Strategies) Being Addressed:

Context-Sensitive Design and Solutions (Strategy 3)

Coordination Teams:

Break-Out Group Participants	Members Needed to Implement Strategy
• Ben Beerman • Shawn Corbett • Jesse Devlin • Callie Ewald • Jeff Ramsey • David Williams • Rob Young	• VTrans staff (Jeff Ramsey, Ken Robie, Rob Young, John Narowski, Amy Bell, Chris Williams, Mike Hedges, Kristin Higgins, and Wayne Symonds).

Key Issues and Concerns:

- VTrans does not currently have a formal process to address stakeholder concerns.
- The current process allows for the risks of re-scoping and scope creep (i.e., the pressure is always put on the Project Manager).

Proposed Next Steps and Strategies to Move Forward:

- Trial pre-scope and scope process on 4-5 upcoming projects (pre-scope includes identifying constraints and project information; developing a baseline scope; getting public involvement; determining recommended alternatives; and identifying regional concerns and external stakeholders. Scope includes approving the recommended alternative and incorporating final comments).
- Invite district operations staff and design project manager to kick-off meeting in pre-scope.
- Add meeting to the pre-scoping phase to discuss local concurrence.
- Document what the pre-scope/scope process looks like even if it is just a trial.
- Engage essential stakeholders (i.e., police, EMS, fire, department of public works, etc.) before engaging public.

Assessment Workshop on
Expediting Project Delivery
Break-Out Group Brainstorming Form

Expediting Essential Strategy (or Bundle of Strategies) Being Addressed:

Expedited Internal Review and Decision-Making (Strategy 8)

Coordination Teams:

Break-Out Group Participants	Members Needed to Implement Strategy
• Larry Anderson • Denise Gumpper • Tod Kimball • Ken Robie • Sue Scribner • Victoria Sheehan • Wayne Symonds • Rob White • Emily Futcher	• VTrans ABP Team

Key Issues and Concerns:

- VTrans needs a new process for approving the final project scope.
- The pilot contracting process should be more standardized in ABP projects.
- The Contract Engineer approves the final Plans, Specifications & Estimates (PS&E); however, this may not be appropriate.
- VTrans project teams currently meet, at most, every month; however, it might be beneficial for them to meet more often.
- VTrans does not currently define who can change bid-ad dates.
- VTrans does not currently have a documented process for the ABP.

Proposed Next Steps and Strategies to Move Forward:

- Understand how all bureaus will be involved in a new process to approve the scope.
- Hold an early meeting with all disciplines at the beginning of each project scoping process, rather than wait until the end of scoping.
- Make ABP project schedules and approval a standard process that is clear to all parties involved.
- Work with contract administration to get them involved earlier in the process.
- Re-evaluate whether having the contract engineer approve the final PS&E is the best method, or whether the Chief Engineer should approve this.
- Define what VTrans wants to get out of project team meetings and re-evaluate whether they should meet more frequently.
- Define who can change bid-ad dates.
- Document the ABP process and make this available for all VTrans staff.

Assessment Workshop on *Expediting Project Delivery* Break-Out Group Brainstorming Form

Expediting Essential Strategy (or Bundle of Strategies) Being Addressed:

Highly Responsive Public Engagement (Strategy 10)

Coordination Teams:

Break-Out Group Participants	Members Needed to Implement Strategy
• Amy Bell • Erik Filkorn • Jennifer Fitch • Amy Gamble • James Garland • David Peterson • Rick Scott • Todd Sumner • Karen Williams	• VTrans staff (Amy Bell, Erik Filkorn, Jennifer Fitch, Ann Gamel, Amy Gamble, and Rick Scott).

Key Issues and Concerns:

- Significant public concern is something that may cause major delays or changes to the project.
- There is poor coordination regarding who is responsible for updating 511 and other sources of project information (e.g., during construction both the PM and Resident Engineer update 511), which results in ineffective communication flow.
- There is poor coordination between operations and the public.
- Public meetings are not well-attended.

Proposed Next Steps and Strategies to Move Forward:

- Establish guidelines for public involvement (i.e., how much does a project need) and develop guidance. This guidance should consider innovative ways to involve the public such as:
  - Provide bus tours of project sites for older populations, stuff water bills with project fact sheets;
  - Identify and reach out to towns affected by detour routes;
  - Add a message to the letter that requests comments from towns that invites them to the public meetings;
  - Send project information (e.g., a fact sheet) to key staff in the district so they can respond to public questions directly;
  - Schedule presentations during select board and Regional Planning Commission meetings to reach broad audiences that have a regional effect.

- Improve coordination between 511 and other information VTrans disseminates (e.g., bridge closures map; determine who will be the source of 511 information (i.e., PM or Resident Engineer))
- Engage front porch forums (web-based community discussion forums) by getting agreement from communities to allow the Agency to participate.
- Consider using the University of Vermont travel demand model to inform road closures (i.e., figure out where destinations and origins are for those that travel through certain road segments).

Assessment Workshop on
Expediting Project Delivery
Break-Out Group Brainstorming Form

Expediting Essential Strategy (or Bundle of Strategies) Being Addressed:

Strategic Oversight and Readiness Assessment (Strategy 21)

Coordination Teams:

Break-Out Group Participants	Members Needed to Implement Strategy
• Larry Anderson • Ben Beerman • Shawn Corbett • Amy Gamble • Denise Gumpper • Kristin Higgins • Tod Kimball • John Narowski • Ken Robie • David Peterson • Victoria Sheehan • Todd Sumner • Wayne Symonds	• VTrans staff (to be determined).

Key Issues and Concerns:

- Is VTrans utilizing consultants effectively and to the right amount?
- Should VTrans make sure Agency staff time is managed efficiently, so they are using consultants appropriately?
- Are VTrans staff getting overly involved in design-build projects? Do they know their responsibilities in each project?
- Are resource groups, construction contractors, and other staff ready for the ABP?

Proposed Next Steps and Strategies to Move Forward:

- Help utilities companies understand the benefits of the ABP.
- Consider changing utility legislation to incentivize utilities companies to take on ABP projects.
- Consider initiating a task force to facilitate communication with utilities companies.

Assessment Workshop on
Expediting Project Delivery
Break-Out Group Brainstorming Form

Expediting Essential Strategy (or Bundle of Strategies) Being Addressed:

Team Co-Location (Strategy 22)

Coordination Teams:

Break-Out Group Participants	Members Needed to Implement Strategy
• Amy Bell • Jesse Devlin • Callie Ewald • Erik Filkorn • Jennifer Fitch • James Garland • Jeff Ramsey • David Peterson • Sue Scribner • Rob White • David Williams • Karen Williams • Rob Young • Emily Futcher	• VTrans staff (to be determined).

Key Issues and Concerns:

- There is competition for resources between PMs because projects do not have dedicated resources.
- VTrans currently uses Artemis schedules to set project priority.
- VTrans staff do not hold meetings to discuss what went well and what did not go well after completing projects.
- There is a lack of a clear ABP process, which makes it difficult for many VTrans staff to understand where they fit into the process.

Proposed Next Steps and Strategies to Move Forward:

- Identify and make clear what is needed by each person at project meetings.
- Hold follow-up meetings with construction and resource groups to get feedback on what went well and what did not go well.
- Document the ABP process and share this information with VTrans staff.

E Sample Operations and Maintenance Questionnaire

Bridge Scoping Project
VT Route 18, Waterford BF 0225(5), 15b051
Maintenance and Operations Input Questionnaire

The Structures Section has begun the scoping process for Waterford BF 0225(5), Bridge 2, over an unnamed brook. This is Corrugated Galvanized Metal Plate Pipe (CGMPP) constructed in 1981. The Structure Inspection, Inventory, and Appraisal Sheet (attached) rates the culvert as 3 (serious). We are interested in hearing your thoughts regarding the items listed below. Leave it blank if you don't wish to comment on a particular item.

1. Your thoughts on the general condition of this bridge and the general maintenance effort required to keep it in service.
   The invert of this structure is severely compromised. During high flow events, material around the pipe is pulled through the invert and moved downstream which creates sinkholes at the road surface. District 7 has had to fill sinkholes that have developed over the pipe several times.

2. Any comments on the geometry of the bridge (curve, sag, banking, sight distance)?
   District 7 has no issues with the geometry of this structure.

3. Do you feel the posted speed limit is appropriate?
   Yes – this is a rural setting with a good typical and no residences near.

4. Is the width adequate for snow plowing?
   Yes, we have never had an issue there. Ideally, a minimum of 16' from centerline to face of guardrail.

5. Are you aware of any unpermitted driveways within the likely project limits? We frequently encounter driveways that prevent us from meeting railing standards and then discover them to be illegal.
   There are illegal off premise signs that we have been dealing with, but no drives.

6. Are you aware of abutting property owners that are likely to need special attention during the planning and construction phases? These could be people with disabilities, elderly, or simply folks who feel they have been unfairly treated in the past.
   We are not aware of any issues with property owners. The state owns the land at the outlet…..

7. Do you find that extra effort is required to keep the slopes and river banks around the bridge in a stable condition? Is there frequent flood damage that demands repair?
   There is not really a problem with slopes and river banks that we are aware of. The road itself keeps developing sink holes due to the invert condition. Whenever there is high water, our crew has to fill in the roadway where the sink holes developed.

8. Does this bridge seem to pick up an unusual amount of debris from the waterway?
   No

9. Do you think a closure with off-site detour and accelerated construction would be appropriate? What should we consider for a detour route, assuming that we use State route for State projects and any route for Town projects?
   Yes, closure with an off-site detour would be appropriate. The interstate is immediately adjacent and it would not be unreasonable to use I93 as the detour.

10. Please describe any larger projects that you have completed that may not be reflected on the attached Appraisal sheet, such as culvert clearing, deck patches, paving patches, railing replacement with new type, steel coating, etc.
    We have not done anything to this structure other than patching the road surface as sink holes develop.

11. If there is a sidewalk over this structure, how effective are the Town's efforts to keep it snow and ice free?
    No sidewalk to present.

12. Are there any drainage issues that we should address on this project?
    There are no drainage issues at this site other than the structure itself.

13. Are you aware of any complaints that the public has about issues that we can address on this project?
    Not aware of any public issues.

14. Anything else?
    I do know that Fish and Wildlife will take a great interest in this project due to proximity to the CT River.

F Survey Monkey Questionnaire Results: Collaboration Phase

Collaboration Phase Questionnaire:

At the beginning of the scoping phase, each of the internal stakeholders are involved in identifying the resources and potential issues in their area of expertise. Once a draft scoping report is complete, it is sent out for online shared review followed by an internal collaboration meeting to discuss existing conditions, project constraints, associated requirements, and vet the preferred alternative. The following questionnaire was distributed in June of 2016 and was intended to give structures feedback on the meaningfulness of the collaboration phase. The questionnaire was sent to each of the internal stakeholders involved in the collaboration phase including the environmental specialists, environmental biologists, archaeologists, historic preservation officer, planning coordinators, hydraulics, Structures project managers and designers, construction personnel, operations and maintenance personnel, asset management, river management engineer, traffic operations, and the bicycle and pedestrian program manager.

1. Do you feel like your input at the collaboration meeting has an impact on the chosen preferred alternative, and why?

- Yes, As the scoping Engineer my input helps to describe to the different resource groups how their components influence each other and the project as a whole.
- Yes. The costs associated with acquiring easements for the relocation of utilities and the costs and time involved to physically relocate these utilities of is often a major consideration when selecting an alternative.
- Yes. It provides an opportunity for my input to be valued and may lead to changes in the scope.
- At time, folks are not always excited to hear the extent of work a Traffic Control plan may entail and how it may alter a project's scope.
- Yes. I feel that my years of experience gives credit to my opinions.
- Yes, if project contains historic resources we discuss alternatives and requirements for the regulatory review.
- I don't recall that PPAID Planning Coordinators have ever participated in an internal collaboration meeting? But we should be!
- No, have never had a meeting
- I have not been invited to any collaboration meetings.
- Yes, avoidance and minimization of impacts to resources are considered appropriately in

the alternatives analysis.

- Yes, definitely. If you can't permit the alternative, then it isn't a viable option.
- I have not yet attended a collaboration meeting.
- No; because a key project that had long-term impacts on maintenance received a lot of feedback from us that was completely disregarded. And we were told that we'd "make it work" without regard to how or what resources would be needed to accomplish that.
- Yes. It's a chance for others to weigh in and support the concept
- Yes and no. It seems that material provided to put into the scoping report is used, but that is factored in before the meeting.
- Yes. The identification of resources is a good first step, but these meetings are a good venue to give the qualitative assessment of the resources.
- Sometimes. Generally, I think that the preferred alternative is correctly chosen and of proper scale. Sometimes I bring into the discussion the scale of the scope due to customer service level or fiscal constraint.
- Yes
- Yes. Understanding what the right of way impacts are can help expedite the project.
- No. I am not listened to.
- I think (hope) that knowing and providing the resource concerns, as well as the potential permitting ramifications, is useful for avoidance and mitigation considerations during design.
- Yes, each meeting that we have brought up concerns or input, it has been heard and discussed as a group.

2. What aspect of the collaborations meetings do you find to be the most valuable?

- Feedback from resource groups identifying challenges, and giving me a different perspective on the project. Once the challenges have been identified then we can begin working together to address them.
- The ''pluses" and ''minuses" of the various alternatives being considered and the chart which shows the comparative costs, etc. which precedes the recommendation.
- Discussions of pros and cons related to the different alternatives.
- The communication between sections and the needs that each group has and how to compromise to a safe viable solution.
- the simple fact that people come together to discuss details that might be missed if only trying to review the scope alone.
- Hearing about project needs and goals
- N/A
- N/A
- N/A
- Good discussions from multiple disciplines. The scheduled times for the meetings do not always fall during times I can attend.

- Learning what others at VTrans do and what their perspective is on the alternatives. Interdisciplinary.
- Going through alternates and reviewing potential impacts
- Understanding the issues with certain alternatives. Why a liner is a much better choice, etc.
- The meeting are valuable particularly when there are conflicting resource and/or utility concerns that weren't apparent during the resource identification phase of the project. Concerns can often be addressed quickly when all of the interested parties are present.
- That everyone is getting the same presentation and are able to voice their opinions. I like the interactions within the group
- Gives everyone a chance to weigh in on the project early.
- The time spent discussing the project in detail This isn't done on any other projects and it's very useful.
- The hour (or so) long chance to nap.
- Taking a look at the big picture and learning about other concerns and aspects of the project from the rest of the team.
- All stake holders involved, face to face meeting, discussing risks and concerns right away

3. Do you feel like your concerns are heard and considerations are made to address these concerns? Explain.

- Yes, I explain why I chose the selected alternative and generally get agreement with some key points to focus on.
- I believe I'll give the same response I provided for question #1. Yes. The costs associated with acquiring easements for the relocation of utilities and the costs and time involved to physically relocate these utilities of is often a major consideration when selecting an alternative.
- Yes.
- Most of the time yes, still some areas of improvement.
- Yes. As long as I have facts to support my concerns.
- Yes.
- N/A
- N/A
- N/A
- When able to attend the meetings concerns were addressed and follow up with designers occurred.
- Yes, working together is very important.
- I have not yet attended a collaboration meeting.
- NO, I do not. See #1. Often maintenance of a project after completion is NOT considered in the planning phase; and when we bring up concerns we are treated as though we are being "extremists" or that we are uninformed in our opinions or viewpoints. We deal with

these issues every day, but what we do is generally not understood. Some things that add costs to maintenance create long-term liabilities for the Agency and that aspect needs to be considered in the planning phase and taken into account to offset alleged "cost savings" of construction.

- Yes.
- Yes, but only when we are able to make the meeting, that is not always possible.
- Absolutely. Even with the extra resource concerns and regulations, projects move through the system much faster than they did 10+ years ago. Scoping allows everyone to learn about each other's concerns, and as a result, it offers an excellent means to avoid and minimize impacts.
- Yes. I think that the group fairly weighs all concerns.
- Generally yes
- Absolutely.
- No. I am there primarily to determine what changes to the scope need to be made.
- I would like to believe that the design team is interested in creating a project which will be successful in all ways--including protecting and respecting resources.
- Yes. Concerns and risks are discussed. Sometimes additional investigation or work is needed to address the concerns.

4. Which hurdles are still not being overcome though collaborative discussion and what suggestions do you have to overcome these hurdles in the future?

- Attendance/review, it's important to have people review the scoping report before attending the project otherwise they may not be able to offer as much as they could if they had come more prepared.
- I really don't believe there are any hurdles. Usually the presentation and discussions are thorough and clear which leads to rational decision making.
- No suggestions
- Depending on the complexity of traffic control needed for the project and how these desires are communicated to the public can be a sticking point.
- No suggestions or concerns.
- N/A
- N/A
- How does an "internal" collaboration hear and identify external - non-structures - concerns?
- Potential scheduling conflicts of when the meetings are held.
- None come to mind.
- To close or not to close a bridge. There is still division among section on ABC
- None at this time.
- Utility relocations and construction access continues to pose challenges, as the locations, size and type of both are not always apparent. The need to avoid/minimize impacts

during permitting may also conflict with constructability in construction. Providing too little access can result in change orders, project delays, and added costs.

- No comment
- Closure duration is always an issue. When a closure is proposed we should always develop a construction schedule.
- I'd like to see meeting notes and any action items. It's easy to forget what was discussed at the meeting.
- People actually showing up.
- Perhaps closer coordination with some of the consultants via VTrans PMs; many are wonderful and have provided assistance as requested. Perhaps arranging a meeting to include Environmental if the consultants have a planned visit would help us connect early on.
- Sometimes the substructures type is not discussed in detail. Integral vs semi-integral or piles vs. spread footing, which has ended up changing later on during the constructability meeting. Discussing this at the collaboration meeting would be beneficial, and why this substructure is chosen compared to others.

5. Is the time required of you and your staff to review the scoping report and attend the collaboration meeting reasonable for your current workload, and do you find the collaboration process meaningful?

- N/A
- Review of the scoping report and attending the collaboration meeting are not time consuming tasks and everyone has a chance to provide whatever input they feel is appropriate.
- Yes. The collaboration meeting is important for the entire design process.
- Time and staff are always an issue in today's economic agenda, but most of the time 2 weeks is sufficient. I am hopeful that collaboration begins to change the Agency's culture to better communicate, policies, engineering initiatives, standards, specs, etc.
- Yes.
- Yes, it is definitely reasonable and worth my time.
- Not aware that my staff (PPAID Planning Coordinators) receives invitations to collaboration meetings.
- No, have too much work now
- not part of collaboration and not invited to OLSR.
- I do find the scoping process useful and meaningful. This process is needed on projects and should be used by other divisions and sections as well.
- It is definitely meaningful, but we are short staffed. Still able to get the reviews completed.
- I have found the opportunity to review the scoping report and email in comments/ follow up questions very helpful.
- I believe the intent is meaningful, but the actual outcome favors the politics of the day

approach rather than the long-term interests of the Agency and the taxpayer.

- Most of the time there is enough time between the release of the scoping report and the meeting
- Time is a premium, but these reviews and meetings are important.
- In general, yes, but sometimes it is a challenge. A bit more advance notice would help.
- Often I find only time to do a cursory review of the report before the meeting. This would not likely change with more time for review.
- Yes
- Yes it is reasonable. I think collaboration is always meaningful. Communication is key to a projects success.
- Yes, since the scoping report is my current workload. It would help if there was more collaboration between the departments.
- Definitely--I do believe that the collaboration process is one of the most important aspects of pulling a project together--the earlier, the better.
- yes, it is reasonable. Yes, we find it meaningful. The discussions have been beneficial and a learning tool in understanding the bigger picture for a project that helps later on when thinking about design considerations and constructability.

6. What recommendations do you have on improving the scoping collaboration process?

- How about holding the collaboration meetings on site? Sometimes things actually jump out at you when you look at them in the field.
- None.
- Are folks developing Traffic Management Plans at this phase to mitigate issue listed above as required by FHWA
- None.
- When a historic bridge is adversely affected we must write up a Section 4(f) Bridge Programmatic evaluation and discuss project alternatives. I rely on the scoping report for this information and sometimes everything I need is in the report, but sometimes it's not. I would like to provide those writing the scoping reports (both VTrans staff and consultants) with a description of what information we need to have in a scoping report for these projects. (Comment by Judith Ehrlich, VTrans HPO)
- Ensure RPCs have full access to the Online Shared Review platform.
- Do in off season months
- Conduct it more like a value engineering analysis (or a "lite" version thereof) or a constructability review, which is patterned after the VE process.
- One improvement could be to extend the process throughout the agency.
- Not sure.
- Cannot think of anything right now. Everything seems to be heading in a good direction already!

- When input is disregarded, it should be demonstrated that it was considered and the reasons why they were not incorporated should be given. Maintenance costs need to considered; as construction is temporary process but ownership is forever.
- More discussion on closures with construction staff
- Make sure the room is a comfortable size, some meetings have been tight. This is not a huge deal.
- The provision of more advanced notice of the meeting and a summary of potential resource/utility conflicts prior to the meeting would help.
- There may be people who do not speak up at those meetings. Perhaps an anonymous electronic vote would better work.
- Need better estimates including annualized and lifecycle costs.
- Keep doing them.
- None
- I think it's important to make the meetings a standard aspect of our coordination. All projects should get reviewed that way, in my opinion. It's not always easy to schedule them, since we all are busy, but it's worth trying!
- Involved stakeholders more in the substructure decision once more information is available

7. Other thoughts or comments.

- How about serving beer at the collaboration meetings?
- The PITT process in Structures has been a positive change to the development of projects. We should be sure to continue with the collaboration meetings.
- Kudos for reaching out and trying to improve this most important phase of our definition and design process!
- I have not yet attended a collaboration meeting. I believe I have been invited to just one - as RPC planners were only added to the list recently - and I felt I didn't need to attend since the project was smaller scale and the scoping report adequately addressed my concerns.
- Collaborating is a concept that has been embraced. By virtue of it's meaning it brings people together to produce the best engineering solution.
- I appreciate the opportunity to comment.
- Nice to know that these surveys are not anonymous.
- Since our work in Environmental is over when the project moves to Contract Admin, we are unaware of issues which emerge during construction. Although we are supposed to receive close-out notes from the Resident Engineer, I have not seen them much, and often there is very little information or feedback--which is fine, if all went well. I would like to know if we can improve our review and permitting process, and how our work affects project implementation. We can only know that by looking at the other end of the process...

Take-a ways:

- The environmental section would like to remain involved in projects after the contract is awarded (while in construction).
- There are meeting invitees that would like to attend the collaboration meetings, but cannot due to scheduling conflicts. In particular, the planning coordinators and environmental specialists would attend more collaborations meetings if there were no scheduling conflicts.
- The agency of natural resources would like to be more involved in the process early on to avoid situations where a project is slowed down during the design phase due to natural resource issues that should have been mitigated during the scoping phase.
- Some suggestions for improvement to the collaboration meetings:
  - » Send out meeting minutes and action items to all attendees after the meeting – if input from the meeting is disregarded, provide reasoning as to why.
  - » Develop rough construction schedule as part of the meeting to back up closure duration times
  - » More in depth discussion about substructure type at each meeting, as this can change the scope of work significantly
  - » Holding collaboration meetings on-site
  - » Sending out the meeting request sooner, so that more can attend
  - » Include lifecycle costs so that a more informed decision can be made

Collaboration Phase Survey Recipients:

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G Factsheets for Project with Heightened External Stakeholder Coordination

Project Factsheet January 2016

Accelerated Bridge Program
VTRANS

Putney

US Route 5
Bridge 15 over Sacketts Brook

PROJECT MILESTONES

Permitting
Fall 2015
Final Design Complete
Fall 2016
Right-of-Way Complete
Not Applicable
Bid Advertisement
Winter 2017
Contract Award
Spring 2017
Target Construction Schedule
Summer 2017

Looking South Over Bridge

Putney STP DECK (38)

Project Location: Town of Putney in Windham County on US Route 5 over Sacketts Brook. The bridge is located near the intersection of US route 5 and Kimball Hill.

The Putney STP DECK(38) project will replace the existing bridge deck, which has non-crash tested bridge and approach rail, with a new bridge deck that meets current design standards. The existing structure is a single span cast-in-place deck on rolled beams constructed in 1954. It is approximately 54 feet in length and 32 feet wide. It features concrete parapets with a metal handrail along with an adjoining sidewalk. The bridge deck is in 'fair' condition while the superstructure and substructure are in 'good' condition. VTrans bridge inspectors have observed areas of heavy saturation, cracking, and efflorescence in the deck which is evidence of significant concrete deterioration. The bridge is owned and maintained by the State of Vermont.

VTrans evaluated several alternatives to preserve and extend the service life of the Putney US Route 5 Bridge 15 in an engineering study completed in January 2016. The study assessed the proposed design criteria for lane and shoulder widths, safety criteria and historic requirements. Several alternatives were considered including, no action, concrete deck patching and a deck replacement. The study also considered a number of traffic maintenance options such as a short term bridge closure and phased construction. The engineering study recommends replacing the existing bridge deck and bridge approach rails while traffic is maintained on an offsite detour for a 10 day short term road closure. This innovative approach will minimize impacts to right-of-way, utilities and environmental resources as well as minimize traffic disruptions while increasing the safety of the traveling public and construction workers.

The new bridge deck will be constructed using prefabricated bridge components to facilitate rapid replacement. The new bridge deck will be the same width, provide a greater load carrying capacity and feature a historic bridge rail that meets safety criteria and ties into the surrounding environment. By applying this cost-effective treatment at the right time, the useful life of the structure will be extended another 30 to 40 years. This provides the largest benefit for the lowest cost when compared to the other bridge treatment alternatives.

Project Factsheet January 2016

Accelerated Bridge Program
VTRANS

Target Construction Schedule: It is anticipated that this project will take place in 2017. The allowable bridge closure period will be 10 days to be coordinated with the Town of Putney, local businesses and other key stakeholders.

Contractor: TBD

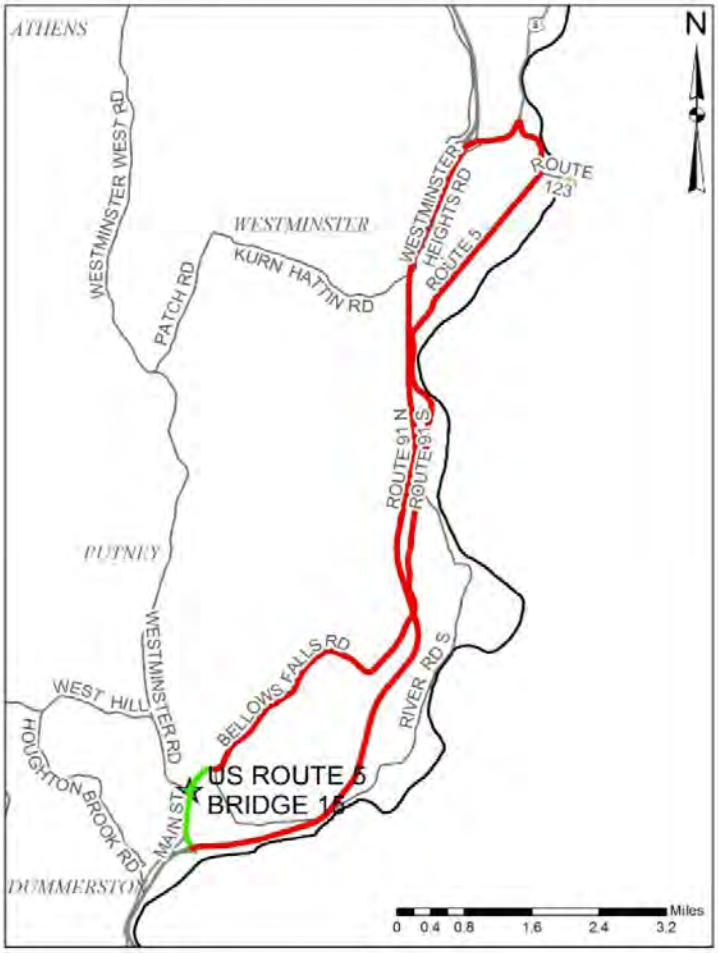
Estimated Total Project Cost: TBD

VTrans Project Manager: Jennifer Fitch, P.E. (Project Initiation); Rob Young, P.E. (Design and Construction)

VTrans Resident Engineer: TBD

Maintenance of Traffic: The bridge will be closed for 10 days, and traffic will be maintained on an offsite detour. The detour for this project location, shown below, has an end-to-end distance of 22.30 miles which is approximately 27 minutes. The State of Vermont will be responsible for signing the detour route.

A potential local bypass will be coordinated with the Town of Putney.



Bridge Location/ Detour Map

Deterioration in Bridge deck 2015

Most significant deterioration

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For more information: Click Here

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Project Factsheet January 2016

Looking west

Accelerated Bridge Program
VTRANS

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.

VTrans evaluated alternatives for replacement of 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, hydraulic capacity, and environmental and cultural resources. Several alternatives were examined including bridge rehabilitation and replacement along with several traffic maintenance options including a short term bridge closure, phased construction and a temporary bridge. The Scoping Report recommended replacing the entire bridge structure with traffic maintained on an offsite detour during a 10 day short term road closure. This innovative approach minimizes impacts to the adjacent wetlands, essential wildlife habitat, and archeological resources as well as minimizes traffic disruptions while increasing the safety of the traveling public and construction workers.

The new bridge will be constructed of prefabricated bridge components founded on internal abutments to facilitate rapid replacement. 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.

PROJECT MILESTONES

Permitting
Fall 2016
Final Design Complete
Winter 2016
Right-of-Way Complete
Not Applicable
Bid Advertisement
Fall 2017
Contract Award
Fall 2017
Target Construction Schedule
Summer 2018

Looking East

Project Factsheet January 2016

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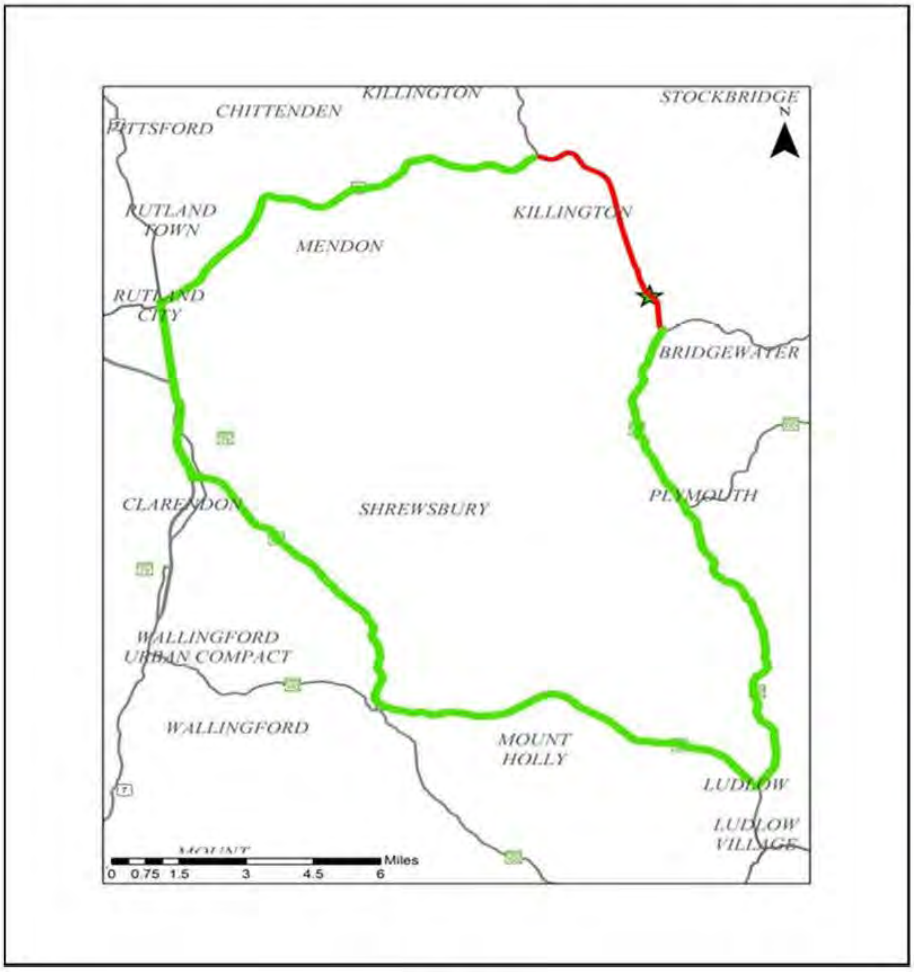
Target Construction Schedule: The bridge will be replaced during the 2018 construction season.

Contractor: TBD

Cost: TBD

VTrans Project Manager: Jennifer Fitch, P.E., Structures Project Manager

Detour Route: Head south on VT 100 from the intersection of VT 100 and US 4. Turn right onto VT 103 in Ludlow. Follow VT 103 west to US 7 in Clarendon. Follow US 7 north and turn right onto US 4 in Rutland. Follow US 4 to VT 100 in Killington. Turn left onto VT 100.



Detour Map

Deck Deterioration

Looking Southwest

Deck Fascia Deterioration

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Project Factsheet | December 2015

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Newfane

FAS Route 106 (Depot Road/TH-2), Bridge 12

Newfane Bridge 12—BF 0106(6)

Project Location: Town of Newfane in Windham County on FAS Route 106 (Depot Road/ TH-2) over the Rock River. The bridge is located approximately 1.9 miles west of the intersection of FAS Route 106 and VT Route 30.

PROJECT MILESTONES

Preliminary Plans
June 2016
Permitting
January 2018
Final Design
May 2018
Right-of-Way Complete
October 2018
Bid Advertisement
November 2018
Contract Award
December 2018
Target Construction Schedule
Summer 2019

Bridge 12, located along Depot Road over the Rock River in the Town of Newfane, is a historic reinforced concrete closed spandrel elliptical arch, constructed in 1908. The bridge is currently a one lane structure 100-feet long and 18-feet wide. In accordance with Vermont State Design Standards, the bridge is considered narrow with shoulder widths of 3.8-ft and a single lane width of 10-ft. The arch is in poor condition, considered structurally deficient and has a substandard vertical alignment and bridge railing. The subject project will replace the existing arch with a new arch meeting historic requirements.

VTrans evaluated alternatives for replacement of Bridge 12 in an engineering study completed in February 2015. The study assessed the proposed design criteria for the bridge and roadway alignment, Right-of-Way impacts, hydraulics and historic and cultural resources. Several alternatives were considered including no action, rehabilitation of the existing historic arch, full replacement with a new reinforced concrete arch, and full replacement with a prefabricated steel beam bridge with a concrete arch façade to mimic the original structure. Given the age of the structure and structural deficiencies, the engineering study recommended full bridge replacement with an offsite detour.

The new structure will be a functioning reinforced concrete arch similar to the original structure, with a major axis length of 76.5-ft and a minor axis length of 31.0-ft, to match the original bridge profile. This clearspan meets the hydraulic standard of passing the Q50 storm event with at least 1.0-foot of freeboard, and meets bank full width requirements. The new arch will continue to perform as a one-lane bridge but will be widened to 28-ft to accommodate any potential future two-lane traffic requirements. The lines and concrete details of the original spandrel walls will be replicated as close as possible. Additionally, all dimensions and proportions of the original arch will be maintained where possible in the new structure.

It is anticipated that the bridge will be constructed during the summer of 2019. There will be an approximate 20 week road closure. The detour for this project location will utilize Grimes Hill Road and VT 30. This detour will add approximately 0.5 miles to the through route, and have an end-to-end distance of 4.5 miles.

Arch Ring Map Cracking

Project Factsheet | December 2015

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Target Construction Schedule: Construction activities will take place during the summer of 2019. There will be an allowable 20 week road closure period during which time traffic will be detoured around the project site.

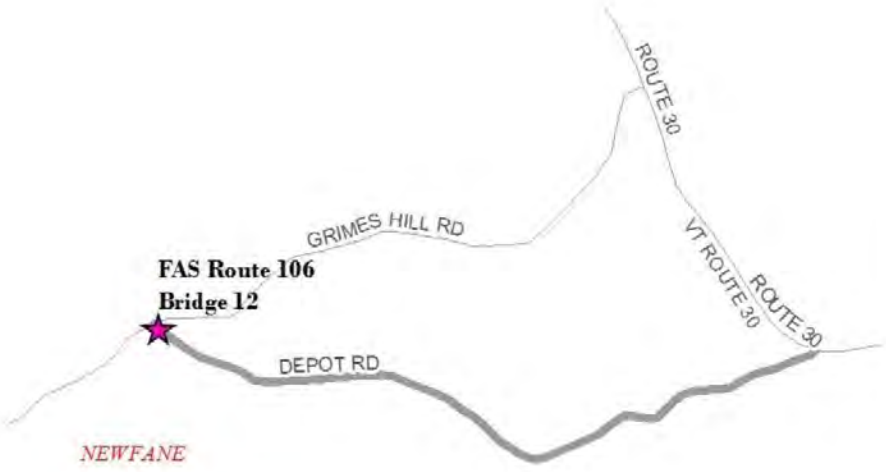
Contractor: TBD

Estimated Total Project Cost: TBD

VTrans Project Manager: Carolyn W. Carlson, P.E.

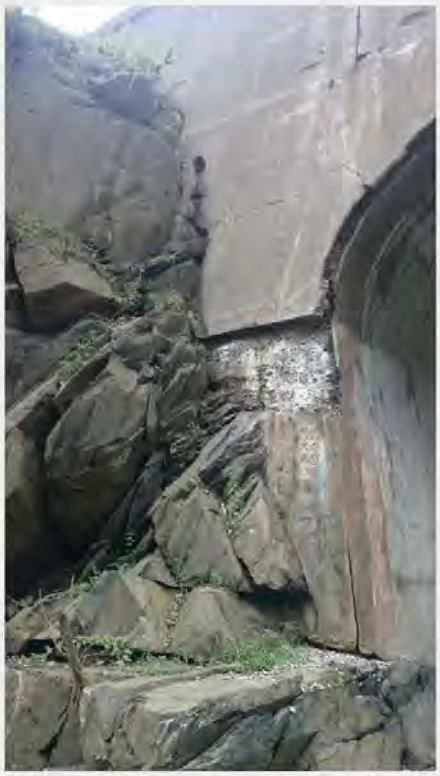
VTrans Resident Engineer: TBD

Detour Route: Traffic will be maintained on an off site detour. Detoured traffic will utilize VT30 and Grimes Hill Road during construction. This route will add roughly .5 miles to the through route, for an end-to-end distance of 4.5 miles. Due to site constraints it is anticipated that the detour may need to be reduced to one lane, alternating traffic at the intersection of Depot Road and Grimes Hill Road/ Dover Road at the project site.



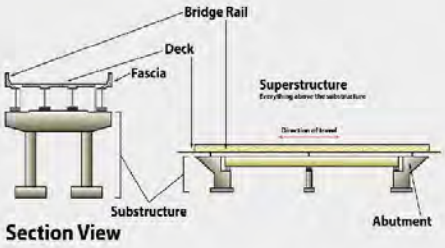
Bridge Location Map

For more details, click here.



Poor Condition of the Arch Wall

Deteriorated Bridge Railing



Generic Bridge Element Description

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H Documenting the PIIT/ABP Process: Kickoff Meeting Notes

I. Introduction/Project Roles

a. Aaron Guyette – VHB Project Manager, technical writer and PM for this project.

b. Scott Burbank – VHB Project Manager will serve as a technical advisor from both the VTrans Project Administrator side as well as the design consultant side.

c. Tom Jackmin - VHB Northeast Regional Transportation Director will serve as a senior technical advisor. He also has experience working with VTrans and other northeast DOTs.

d. Kim Eccles – VHB Safety Practice Leader will be the senior technical writer. SHRP2 is similar to other work that she has performed. Case studies are something she does a lot of.

e. Matt DiGiovanni – FHWA Field Operations Engineer. Is the FHWA representative for the SHRP2 C19 VTrans effort. He will be part of the ongoing process and will be an attendee at the peer exchanges. He is also heading up the new FHWA risk based project delivery evaluation for the VT division.

f. Laura Stone – Asset Management and Performance (AMP) worked in the PIIT previously. She is on the core team and will be an attendee at peer exchanges.

g. Jennifer Fitch – Project Initiation and Innovation Team (PIIT) and Consultant PM. She wrote the C19 proposal and the action plan. She has been an active participant in the previous workshops. She has already started to implement some of the information that came out of the process review and C19 workshop into the PIIT process. She will be the Team leader on this initiative.

h. Wayne Symonds – Structures Program Manager, started the Accelerated Bridge Program (ABP) within the Structures Group, will have an advisory role for this project.

i. Jeff Ramsey – Environmental Specialist, was a part of the program process review and workshop and is on core team.

j. Kristin Higgins and Rob Young are Structures Consultant PMs and are not here today. Kristin heads up the ABP with her internal team, but also has some consultant projects as well. Rob is equivalent to Jennifer and specializes in specifications and is the VTrans lead on working with PCI.

k. In addition to Kristin Higgins and Rob Young, Todd Kimball, FHWA VT Bridge/Structures Engineer was also not present

II. Review History of VTrans Accelerated Bridge Program/PIIT

a. ABP – started to think about how we can move projects more efficiently in 2011.

b. Needed to take programmatic approach, other states vested in ABC

c. Sue Minter (Deputy Secretary) and Brian Searles (Secretary) were interested in how to

spend more money on bridge projects. Sue wanted to get bonds but never happened as they needed to get better at spending the money they had.

d. MassDOT had the Laboratory of Innovation – Wayne brought a similar idea to Brian and Sue. Kicked off the ABP in 2011 on 14 Irene bridge projects.

e. Many project delays seemed to occur in scoping. Someone came up with an idea to form a scoping unit so that there would be consistency throughout the structures program. Chris Williams was passionate about the idea and so the PIIT was born a month or two after APB program. Structures wanted something that is programmatic and sustainable and relies on innovation throughout the project. Jennifer will send goals of the PIIT to everyone.

f. The ABP has completed 34 projects to date which equates to around $71 M.

g. One comment that came up in the previous program process review – what is the need for the ABP? MassDOT will try things and if it works well they will implement it throughout their program. VTrans does not always do this.

III. SHRP 2 – C19 Overview

a. Objective is to arm folks with Tools and Techniques to Expedite Project Delivery

b. 24 Strategies for Addressing or Avoiding 16 Common Constraints

c. Benefits – Save Time, Save Money

d. VTrans successfully applied for and received a grant.

e. Look at C19 SHRP 2 overview it is about the early project process.

f. Every quarter required to fill out form – VTrans did generate project performance measures, which FHWA has approved.

g. Laura and Jennifer will take on action plan tasks that are not assigned to VHB. Goal is to have effort completed by May 2016.

h. FHWA personnel has been somewhat fractured for this C19 effort to date. Todd for Structures and Matt for other aspects. Would like to keep it a one stop shop. Going forward that would be ideal for Matt.

IV. Review History of VTrans SHRP 2 – C19 Efforts to Date

a. Program Process Review – two part process began on July 23 and 24, 2014. Meet with key VTrans personnel, 2 RPCs, MEDOT, MassDOT, and consultants as well. Program process review went real well. Prescribed questions but let it flow as well. Aaron mentioned that he has the document from this process.

b. Expediting Project Delivery Workshop – September 3 and 4, 2014. 30 to 35 – C19 FHWA personnel, VTrans PIIT, documented the process and developed an action plan. See the action plan for items that were emphasized.

c. Program review was awesome – info was outside the scope of the ABP, workshop was less successful, trying to be broader, but there was still value. VTrans is now focused on where they are in the action plan.

d. Action Plan has been developed and approved by FHWA and VTrans can move forward.

V. PIIT Process Documentation Intent

a. Identify PIIT Process – define process, but define sub-processes – why are you doing each task and what outcome should you expect to get out of it. If you were the PM how do you know that if it was successful? Focus on successful outcomes as much as the actual tasks. We will need to determine performance measures for each task. Some performance measures may be evident, but may also come to some tasks where performance measures are obvious. We may find out that there aren't performance measures for some tasks but that one should be developed. It's ok to leave a placeholder. The document doesn't need to be 100% perfect before it is completed.

b. Identify Differences in PIIT vs Conventional Processes.

c. Identify barriers for project delivery and how they are being removed.

d. Why is the PIIT process effective now and how can it be more effective moving forward?

e. Jennifer mentioned that one of her goals was to see how they can involve consultants earlier on in the PIIT process.

VI. PIIT/ABP Process Documentation Work Plan

a. Stakeholder Interviews – individual or group interviews, workshops – consisting of a larger group setting, not a specific interview.

b. Workshops or larger interviews would be good to have multiple discipline as everyone thinks their process is the most important. With multiple disciplines present we can talk about each other's process to work together. An example is that you need Final Plans to complete 4f but cannot go to Final Plans until you have the NEPA document completed.

c. Process Workshops.

d. Kim and Tom involved – two days of interviews and workshops. Jennifer requested to have some questions drafted and a loose agenda, but let the interviewee also lead the discussion.

e. Preliminary interview with ABP core team get insight on their perceived barriers. Then formulate questions for the other interviews and workshops. VHB will pull together thoughts and then schedule a conference call.

f. Wayne offered that it may be helpful to see ABP Artemis schedules as compared to conventional project Artemis schedules. Aaron explained what Artemis was to Tom and Kim. VTrans can provide a list of example projects to review.

g. Wayne talked about how each PM develops the schedule differently and the fact that they have Town and State Artemis schedules.

h. Preparation for interviews and workshops would be to send pre-information or pre-questions so we get people thinking about their process. Environmental as an example – NERD, SharePoint, Jeff mentioned that SharePoint has helped the NEPA process.

i. Information Reduction/Process Documentation – develop draft process documentation. Jennifer wants to be a part of the draft development. Laure and Kim will also be involved with development and review as well.

VII. Stakeholders

a. VTrans Structures – Home of the PIIT.

b. AMP – Identifies projects and works with the PIIT to program/initiate projects.

c. Management Approval of Scope – across the Agency, there is some time lost figuring out how to get approval of project scopes. Prior to the AMP, MAOS process within structures. Still figuring out how VTrans as a whole will approve project scopes moving forward. How will AMP and others be involved? We need to avoid a process that requires months because someone will not sign off on scope. Not something we need to figure out as part of this process. Aaron explained the MAOS process. Wayne and senior PMs provide MAOS within structures.

d. Kim asked how many have been sent back. Per Wayne – approximately 10% get reworked on some level. So far there hasn't been any projects that have been completely rejected by the MAOS.

e. Tom asked if they have a preferred alternative going into the MAOS. Wayne explained that there is a preferred alternative selected and that the intent is to approve the preferred alternative at the MAOS meeting. Sometimes additional input comes back from other outside stakeholders (RPC, municipality, etc) who did not agree with the preferred alternative.

f. The PIIT develops the draft scoping report, draft TMP, Risk Registry, Procurement method. TMP and Risk Registry are new so few examples. A public involvement plan is developed as part of the scope as well.

g. Tom said that Risk Registry is a great document as it passes the knowledge of the risk onto the design PM and into construction.

   » Another reason to have the design PM as part of the scoping phase.

h. FHWA – Discussion of PoDI (Projects of Division Interest) currently full oversight project or State oversight project. Full Oversight FHWA is involved through PS&E and construction.

   » Risk based approach to project review and oversight. Would like to meet quarterly with each group HS&D, Structures, Rail, MAB and review projects and see if they fall under the PoDI category. Right now based on highway system – NHS, and dollar amount. Become a 30 minute to hour meeting and then a VTrans PM and FHWA meeting. Goal is to eliminate projects that they do not see risk and ensure projects with risk are being reviewed. Examples are Brookfield floating bridge and bridge in a back pack – did not meet dollar values but very innovative and therefore should have had FHWA oversight.

i. Jennifer said the AMP and PIIT have overlap, wants to get insight from peer reviews. Wayne said we should document all processes but some may be better suited for the AMP.

j. What does Chad's analysis involve – Wayne says not necessarily Chad's role, but in the future the AMP will get to the point where they will be completing analysis to determine the best way to invest transportation dollars. For example, should they membrane and pave a deck, or replace it? What is the best value at any point in time?

k. VTrans model is not currently based on asset management for developing projects.

l. Performance section of the AMP. Projects leaving the AMP have a general project scope,

ie a project is recommended for a bridge deck replacement. The AMP will be following up with projects to determine if the scope of a project changes during development, or if the original recommendation is carried through.

m. VTrans is under 10% on structurally deficient bridges and on the Interstate the number of structurally deficient bridges is under 5%. Not all structurally deficient bridges are equal. VTrans may make decision to allow bridges to continue to deteriorate depending on the location and traffic – the importance of a bridge plays a role in investment decisions.

n. Fixing the worst problems first is not necessarily always the appropriate decision. Preventive maintenance on other assets may provide better return.

VIII. Data Sources

a. VTrans – Individual Sections (EV, Structures, ROW, Utilities, Hydraulics, Construction)

b. RPCs

c. Jennifer says please start with core team and expand outward to agency and then outside resources. Talk a lot about State and Town highway bridge projects. Do different things depend on if it is a Town verses State. No hard and fast rule but generally based on bridge location and ADT.

d. FHWA

e. Regulators

IX. Project Deliverables

a. Draft and Final Report

b. Process Documentation

c. Performance Measures

d. Resource Demand Trends ABP vs. Conventional

e. Peer exchange Summaries

f. Jennifer requested that VHB Develop a quick easy form to record peer exchange observations. Each peer exchange will have group meetings, and individual breakout sessions. Laura would be paired with her equivalent, Jennifer with hers, etc. Having a form to quickly record observations would be nice, then return the forms to VHB.

X. Project Schedule

a. Documenting PIIT/ABP Process – Present – March 2016

b. Peer exchange – Fall 2015

c. Final Reporting – May 2016

XI. Communication Plan – Points of Contact

a. VTrans – Jennifer Fitch

b. FHWA – Matt DiGiovanni

c. VHB – Aaron Guyette

XII. Action Items

a. Schedule Interviews and Develop Agendas/Questions

b. Schedule Process Workshops and Develop Agendas

I Stakeholder Interviews: Agenda and Notes

Wednesday, January 20, 2016

8:00am – 9:00am – ABP SHRP2 C19 Interview Prep (5th Floor Boardroom)

Invitees: Jennifer Fitch – PIIT Manager/ABP Project Manager
Wayne Symonds – Structures Program Manager
Rob Young – ABP Project Manager
Kristin Higgins – ABP Program Manager/ABP Project Manager
Laura Stone – AMP Programing Engineer

9:00am – 10:00am – ABP SHRP2 C19 Interview with ROW (5th Floor Boardroom)

Invitees: Ryan Cloutier – ROW Plans and Titles Section Chief
Bruce Melvin – ROW Acquisition Chief
Rob White – ROW, Utilities, and Survey Section Manager
Jennifer Fitch – PIIT Manager/ABP Project Manager
Wayne Symonds – Structures Program Manager
Rob Young – ABP Project Manager
Kristin Higgins – ABP Program Manager/ABP Project Manager
Laura Stone – AMP Programing Engineer

Notes:

- ROW kickoff meeting during preliminary plans
- Don't make deals with property owners during PO meetings

10:00am – 11:00am – ABP SHRP2 C19 Interview with Construction (Internal) (5th Floor Boardroom)

Invitees: Mark Mackintosh – SW Regional Construction Engineer
Ann Gammell – SE Regional Construction Engineer
Chris Williams – NW Regional Construction Engineer
David Hoyne – Construction and Materials Bureau Chief
Jeremy Reed – Concrete Materials Manager
Bob Klinefelter – Construction Structures Engineer
Jennifer Fitch – PIIT Manager/ABP Project Manager
Wayne Symonds – Structures Program Manager

Rob Young – ABP Project Manager

Kristin Higgins – ABP Program Manager/ABP Project Manager

Laura Stone – AMP Programing Engineer

Notes:

- Agendas or assistance need to be developed for Constructability Review Meeting – checklist for both
- Geotech – need to know the purpose (goal and objective) of the borings to provide better data for design; scope of the work (may be a good candidate for piles for example)
- Get everyone at the table during the winter months for lessons learned; contractors, designer, consultant designers, materials and construction (4 meetings per year over the winter); develop agenda, spec changes, changes to the contract, how items will be paid,
- Contractor's workshop is coming up
- Augment staffing with Structure's designers
- Spread out closure periods
- Penalty for timing of closure pours (concrete mix)

11:00am – 12:00pm – ABP SHRP2 C19 Interview with TSMO (5th Floor Boardroom)

Invitees: Amy Gamble – Traffic Operations Manager

Nancy Avery – Workzone Traffic Management Engineer

Josh Schultz – TSMO Manager

Jennifer Fitch – PIIT Manager/ABP Project Manager

Wayne Symonds – Structures Program Manager

Rob Young – ABP Project Manager

Kristin Higgins – ABP Program Manager/ABP Project Manager

Laura Stone – AMP Programing Engineer

Notes:

- Closures stacked on top of each other – concern from Construction
- Collaboration Meeting – intent of the meeting; use optional and required; prioritize risks for potential meeting attendees; send out meeting requests earlier
- Consolidate TMP down to one document; impacts that drive response
- How do we make the TMP mean something in Construction?
- How do we know if there are other projects in the area? Who's problem is it to solve?
- Add drive time to the project factsheet
- MAPPS data tool – Mass DOT
- MAB – stormwater projects and Roadway (at the end of scoping)
- Events on this road – bike race (add to Community Questionnaire)

1:00pm – 2:00pm – ABP SHRP2 C19 Interview with Contract Administration (Room 425)

Invitees: Molly Perrigo – Alternative Contracting Specialist/Personal Service Contracting Specialist
Gizachew Tiruneh – Construction Specifications Engineer
Wendy Ellis – Specifications Coordinator
Jennifer Fitch – PIIT Manager/ABP Project Manager
Wayne Symonds – Structures Program Manager
Rob Young – ABP Project Manager
Kristin Higgins – ABP Program Manager/ABP Project Manager
Laura Stone – AMP Programing Engineer

Notes:

- Include Molly in Collaboration Phase for alternative contracting
- Alternative contracting matrix: Design-Build documentation website (prepared by the PIIT)
- Develop a schedule for alternative contracting including dates for Molly
- Wayne and Molly will develop TACs
- Include Contract Administration in the Construction Close-out meetings

2:00pm – 3:00pm – ABP SHRP2 C19 Interview on Data Needs (Room 425)

Invitees: Kevin Viani – AMP Data Management Supervisor
Laurie Bean
Jennifer Fitch – PIIT Manager/ABP Project Manager
Wayne Symonds – Structures Program Manager
Rob Young – ABP Project Manager
Kristin Higgins – ABP Program Manager/ABP Project Manager
Laura Stone – AMP Programing Engineer

Notes:

- Show detour routes with other project (VTransperancy)
- Add fields into VPins for closures, closure periods and detour routes

Thursday, January 21, 2016

8:00am – 9:30am – ABP SHRP2 C19 Interview with EV and ANR (Room 425)

Invitees: Andrea Wright – Environmental Section Manager
Chris Slesar – Environmental Resource Supervisor
Jeff Ramsey – Environmental Specialists Supervisor
Jennifer Fitch – PIIT Manager/ABP Project Manager
Wayne Symonds – Structures Program Manager

Rob Young – ABP Project Manager

Kristin Higgins – ABP Program Manager/ABP Project Manager

Laura Stone – AMP Programing Engineer

Notes:

- Collaboration Meeting – open it up to everyone at ANR;
- Deminimus and 4F; use of the SharePoint Site for FHWA (have one for Title 19 and Floodplains)
- General permit for Floodplain permitting or non-reporting (stuck in individual permits)
- SharePoint Site – in-stream work windows (site dependent) – early collaboration meeting
- Reinstate early coordination meetings with ANR

9:30am – 11:00am – ABP SHRP2 Interview with Contractors (External) (Room 425)

Invitees:

Ann Gammell – SE Regional Construction Engineer

Chris Williams – NW Regional Construction Engineer

Al Campo – Chittenden County Regional Construction Engineer

Brian Emmons – T. Buck Construction

Jim Hollar – Cold River Bridges

Kevin Ture – Schultz Construction

Marc Cote – Blow and Cote Construction

Jennifer Fitch – PIIT Manager/ABP Project Manager

Wayne Symonds – Structures Program Manager

Rob Young – ABP Project Manager

Kristin Higgins – ABP Program Manager/ABP Project Manager

Laura Stone – AMP Programing Engineer

Notes:

- Cranes need to be close to the bridge so consider that during design (Geotech)
- More time to drill piles (put it off of centerline)
- Be more specific on how to drive in rock sockets
- Restrike on bedrock (often waived by Construction)
- Consider adding mob for drilling
- Consider expanding the pre-closure period beyond two weeks depending on the site
- Consider expanding the project limits – if we're going to be in the ROW process; expand to our own ROW
- Assume 16 working hours a day – 28 day closures are preferred
- Look at cure period for rapid set
- More message boards and flaggers should be itemized

11:00am – 12:00pm – ABP SHRP2 Interview with VTrans Leadership (Room 425)

Invitees:

Chris Cole – Secretary of Transportation

Rich Tetreault – Deputy Secretary of Transportation

Kevin Marshia – Chief Engineer

Ken Robie – Project Delivery Bureau Chief

Jennifer Fitch – PIIT Manager/ABP Project Manager

Wayne Symonds – Structures Program Manager

Rob Young – ABP Project Manager

Kristin Higgins – ABP Program Manager/ABP Project Manager

Laura Stone – AMP Programing Engineer

Notes:

- Any concerns appear to be on a project by project basis
- Make sure we don't try to have a prescribed number of ABP projects
- Impacts to contractor's schedules; does it affect bidding behavior?
- Resiliency – consider having the ABP team at the ready for an emergency – know where the emergency declaration and other documents are located
- Incentivized contracts (when is it appropriate to include incentives?) – environmental stewardship; if you get sited, you lose the incentive
- Can we cross train with other neighboring states (Maine) for precast inspection?
- Send Josh outreach guidelines
- Quality of PSE customer survey – time to bid it, time of year, quality of the plans set and specifications

1:00pm – 2:00pm – ABP SHRP2 C19 Interview with Public Outreach (Room 425)

Invitees:

Erik Filkorn – Public Outreach Coordinator

Jill Barrett – Fitzgerald and Halliday, Inc.

Jacquie Dagesse - EIV

Natalie Boyle - GPI

Francine Perkins – FRP Enterprises

Cindy Cook – Adamant Accord

Jennifer Fitch – PIIT Manager/ABP Project Manager

Wayne Symonds – Structures Program Manager

Rob Young – ABP Project Manager

Kristin Higgins – ABP Program Manager/ABP Project Manager

Laura Stone – AMP Programing Engineer

Notes:

- Helpful to bring in early

- Seeing multiple faces during design
- Earlier is better than later
- Advantages of having someone come on early – level and complexity of the project
- Make sure there is a process for a transfer of information by whoever has been on before
- Town Meeting Day; drop project information off at the Town Office
- Stuff water bills
- Green Mountain Bike Club – build a minimum stakeholder list
- Start to compile a grand list of stakeholders
- Towns do their own public outreach – call the town clerk (outreach on their own)
- Thinking beyond town borders – early information
- If you would like to be added to the stakeholder list; add a note to letters
- Reach out to other emergency services along the detour route; who else should I call (not familiar with XX); get them involved early
- Contractor pre-closure meeting – PIOs, emergency services and other key people, put some reasonability on the PIO to invite other to the contractor pre-closure meeting
- Reaching out to businesses; better for a PIO to come out
- Urban projects – bring on the PIO early
- Local bypass – put together general language of who is managing what; develop FAQs for road closures – policy issues;
- Vermont Emergency Management has a system for sending out texts
- Education process in general – what the Agency does and why; an opportunity to engage – fair amount of creativity; projects are interesting – blog on interesting project
- Post pictures up to our SharePoint Site; project folders on our flicker feed and aggregate onto Facebook

2:00pm – 3:00pm – ABP SHRP2 C19 Interview with Planning, RPCs, and Towns (5th Floor Boardroom)

Invitees:

Amy Bell – Planning Coordinator

Kathleen Ramsey – Town of Middlebury

Harry Shepard – Town of Stowe

Phillip Swanson – Town of Woodstock

Jennifer Fitch – PIIT Manager/ABP Project Manager

Wayne Symonds – Structures Program Manager

Rob Young – ABP Project Manager

Kristin Higgins – ABP Program Manager/ABP Project Manager

Laura Stone – AMP Programing Engineer

Notes:

- Add the RPCs to our collaboration phase

- Inconsistent level of involvement; look at questionnaire and make sure it is the most current; intended to be inclusive of both; informative and inclusive;
- Send out local community questionnaire for review by the towns and RPCs; may be helpful to have a more regional questionnaire
- Emergency service coordination – international, state borders and border control
- Distribute announcement for the public meetings through the RPC;
- Detour may cross RPC lines…
- Front porch forum; link to website; continue to engage towns along the detour route;
- Add the number of participants to the PDF
- Interstate – held at a TAC meeting
- Still appropriate to hold at the Selectboard Meeting for state projects; very entity that has the authority and providing municipal input
- TH projects: Media outreach – access to media outlets for public relations
- Include planners and RPCs on project milestones to towns
- Make sure that there is an initial dialog with RPCs with the PIOs prior to construction
- Unexpected costs at the end of the project – make up a factsheet on the programs; ROW F&M Agreements
- Not as nimble at VTrans for ABC; processes, procedures and chains of commands; institutional that would need to be streamlined to be successful; Harry

3:00pm – 4:30pm – ABP SHRP2 C19 Interview with Utility Section and Utility Companies (Room 413)

Invitees: Rob White – ROW, Utilities, and Survey Section Manager

Shaun Corbett – Utility Coordinator

Jennifer Fitch – PIIT Manager/ABP Project Manager

Wayne Symonds – Structures Program Manager

Rob Young – ABP Project Manager

Kristin Higgins – ABP Program Manager/ABP Project Manager

Laura Stone – AMP Programing Engineer

Notes:

- All work goes into engines
- Quarterly meeting with Utilities; planning purposes; schedules go out five years; snapshot at January 1st
- Budget and resources
- If a utility company is moving several 1000 feet of line, utility companies should check to see if a line should be relocated for a future bridge structure
- Could be a win-win for resiliency
- Send out link to public SharePoint site

- Relocation orders may be directed through the contract with the Contractor (and become their responsibility)
- Add fields in VPins for utilities that will be affected

J ABP/PIIT Documentation

The Accelerated Bridge Program

Accelerating Project Delivery through Innovation and Partnerships

JANUARY 2017

PREPARED FOR

VERMONT AGENCY OF TRANSPORTATION

PREPARED BY

vhb

Abstract

The Vermont Agency of Transportation (VTrans) encourages an environment of innovation, collaboration, and efficiency to advance the State's goals for safety, resiliency, preservation, operations, maintenance, work force development, and customer service. Vermont's Accelerated Bridge Program (ABP) helps achieve those goals through expedited project delivery. This document describes the structure of the program, highlights key program strategies, and explores how the ABP program has contributed to innovation at VTrans. The information in this document is provided for organizations interested in expediting project delivery, implementing an accelerated bridge program, or encouraging innovation as a tool to facilitate process improvements. Although the ABP is still evolving, the program has produced successful strategies—described in this document—that can be applied by other agencies and other areas within VTrans. This document highlights each of these improvements and refinements, demonstrating how the program has turned innovative concepts into standard procedures including in-depth scoping, a collaboration phase, constructability review meetings, meaningful public engagement, co-location of staff.

Contents

1 Introduction

Expediting Project Delivery and the Accelerated Bridge Program in Vermont

Leadership at the Vermont Agency of Transportation (VTrans) is dedicated to expediting project delivery and has demonstrated their support by fostering an environment of innovation, collaboration, and efficiency. In 2011, Tropical Storm Irene severely damaged the State's transportation network, destroying bridges and isolating communities. VTrans used accelerated construction methods to implement temporary repairs, quickly restoring mobility to those communities completely isolated in the aftermath of the storm. Then, to replace the temporary repairs with more permanent, resilient structures, VTrans turned to a variety of expedited project delivery methods to restore connectivity in a short-time frame with minimal disruption to the affected communities. VTrans' dedication and rapid response to restoring the network and replacing bridges significantly improved public support for expedited project delivery.

In 2012, VTrans reorganized its Structures Section, creating a Project Initiation and Innovation Team (PIIT) and the Accelerated Bridge Program (ABP). The ABP and PIIT go hand-in-hand to expedite project delivery. Essentially a scoping unit, the PIIT ensures an efficient, consistent, and programmatic approach to identifying the best alternative for rehabilitating and replacing deteriorated bridges and culverts in the State. During the Alternatives Analysis Phase, the PIIT considers the needs of the bridge, maintenance of traffic options, construction practices, and contracting methods, while also placing emphasis on the context of the corridor and community involvement to deliver bridge and culvert projects at an accelerated rate. The PIIT considers Accelerated Bridge Construction (ABC) with road closures as the preferred alternative to expedite project delivery. The PIIT plays a key role in guiding projects through the ABP process.

The primary goal of the ABP is to streamline project delivery and construction. The ABP expedites project delivery by minimizing project impacts; for example, using short-term road closures (rather than temporary bridges) reduces or eliminates the need for ROW and environmental impact studies. In the construction phase, the ABP implements ABC techniques, like using prefabricated elements and systems (PBES), to reduce construction time. The ABP has also retooled many portions of the project development process.

The ABP has reduced the Project Development Phase of its projects from 60 months for conventional construction projects down to just 24 months—a 60 percent reduction. The expedited delivery capability allows VTrans to quickly respond to increases in funding, emergency bridge replacement needs, and more stringent bridge inventory performance measures. The program's benefits include cost savings; time savings; and minimized impacts to the environment, right-of-way (ROW), utilities, and the traveling public.

The program has experienced tremendous success since its creation. This success can be measured by the number of bridges successfully replaced on an accelerated schedule and the response of the traveling public. Just four years into the program, 30 bridges have been replaced as part of the ABP, with 26 of the 30 (88 percent) meeting or exceeding the 24-month accelerated schedule.

The ABP's success is due in part to support from the public, Towns, and decision-makers within VTrans. VTrans Secretary Brian Searles championed the ABP from its initiation and worked with project directors to confirm their support for its establishment. Buy-in from Towns was bolstered by the passing of Act 153, which provides Towns with financial incentives, in addition to the inherent benefits of ABC, to use ABC when replacing bridges on their local roads. Customer satisfaction surveys, distributed to citizens and representatives of organizations such as schools and local businesses in the areas surrounding the project, found that nearly 95 percent of respondents were very satisfied or somewhat satisfied with ABC. This customer satisfaction can be attributed to both the greatly accelerated schedule for the projects and the program's emphasis on communicating project information to involved stakeholders and the traveling public.

Purpose of this Document

This document explores the methods the ABP uses to deliver projects at an accelerated rate and compares these to conventional delivery methods. It describes the goals and objectives of Vermont's ABP program, identifies seven elements that are critical to the program's success, and provides a detailed discussion of the delivery process, describing those aspects that differ from the conventional delivery approach.

This document was developed as part of the Nation's second Strategic Highway Research Program (SHRP2). In 2012, SHRP2 published a report entitled, "Expedited Planning and Environmental Review of Highway Projects" (S2-C19-RR-1). The report describes 16 common constraints on expediting project delivery and 24 useful strategies for achieving expedited delivery. These strategies can be grouped into six expediting themes:

1. Improve public involvement and support.
2. Improve resource agency involvement and collaboration.
3. Demonstrate real commitment to the project.
4. Improve internal communication and coordination.
5. Streamline decision making.
6. Integrate across all phases of project delivery.

In October 2013, VTrans was selected as a recipient of funding through the SHRP2 Implementation Assistance Program to deploy Expediting Project Delivery (SHRP2 product C19). The emphasis of the effort is implementing five of the strategies referenced in S2-C19-RR-1:

- Strategy 3 (Context-Sensitive Design and Solutions)
- Strategy 8 (Expedited Internal Review and Decision-Making)
- Strategy 10 (Highly Responsive Public Engagement)
- Strategy 21 (Strategic Oversight and Readiness Assessment)
- Strategy 22 (Team Co-Location).

VTrans has implemented numerous improvements and refinements to both the PIIT and the ABP to expedite project delivery as a result of the C19 Project. These improvements and refinements are the focus of this document and include a collaboration phase, constructability review meetings, meaningful public engagement, co-location of staff, and in-depth scoping. This document highlights each of these improvements and refinements, highlighting how the program has turned innovative concepts that proved to be effective into standard procedures.

The information in this document is provided for other organizations interested in expediting project delivery, implementing an accelerated bridge program, or encouraging innovation as a tool to facilitate process improvement within their organization. Although the ABP is still evolving, the program has produced successful strategies—described in this document—that can be applied by other agencies and other sections within VTrans.

This document is one in a series of reports as part of the C19 Project. The following documents have also been produced as part of the larger SHRP2 C19 project effort:

- Expediting Project Delivery Process/Program Review of the Accelerated Bridge Program.
- SHRP2 Expediting Project Delivery (C19) Action Plan – Vermont Agency of Transportation.
- SHRP 2 Expediting Project Delivery (C19) Final Report – Vermont Agency of Transportation.

The reports have been published on the Vermont Agency of Transportation Website.

2 Goals and Objectives of the ABP

VTrans' Strategic Plan articulates its mission to provide for the safe and efficient movement of people and goods and the agency's vision for a safe, reliable, multimodal transportation system that promotes Vermont's quality of life and economic well-being. The ABP supports VTrans' Strategic Plan and is guided by three primary goals. These goals and the associated objectives are provided on the following page.

1. Expedite the delivery of bridge reconstruction and bridge rehabilitation projects required to support the performance measures for bridge inventory conditions:

- Minimize project development and construction costs.
- Expedite project delivery.
- Utilize ABC technologies.
- Standardize project plans.
- Utilize alternative contracting methods.

2. Be a leader for deployment of innovation at VTrans and nationally:

- Maximize use of technology.
- Maximize flexibility for project delivery.
- Create a culture that values new ideas.
- Document successful innovations.
- Be an early adopter of research.

3. Be transparent to stakeholders and customers:

- Develop a website with real time information on performance.
- Implement best practices on public outreach.
- Leader among VTrans in developing and maintaining validated and credible project schedules.
- Partner with internal stakeholders and other governmental stakeholders.
- Partner with contractors and fabricators to deliver the best value to the traveling public.

These goals and objectives carry through the entire ABP and align with the larger VTrans Strategic Plan. Focusing on these guiding goals and objectives for the ABP is key to building success for the program.

3 Key Program Strategies

The ABP is led by the goals and objectives of the program and an overall empowerment to be innovative and find ways to expedite project delivery, eventually turning effective concepts into standard procedures. This empowerment came from the highest level with the support of VTrans Secretary Brian Searles. Secretary Searles supported the ABP from the initiation of the program and worked with project directors to confirm their support for the program's establishment. With this high-level backing, VTrans staff were empowered to be creative, innovative, and accept some risk in their approach to expediting project delivery. Some of the strategies that were tried worked and others did not. Ineffective strategies were stopped and other methods were explored; effective strategies were integrated as standard practice.

These key program strategies, which are helping to achieve the program goals and advance innovation in project delivery, are highlighted here. Each strategy is described in further detail in relation to the project development process in the following section.

Proper Selection of Projects

All projects in the Structures Section are initiated by the PIIT, a team dedicated to the Project Definition Phase. At the end of the PIIT process, the alternative is accepted and project defined. The project is then transferred to an individual design project manager on one of several design teams within the Structures Section. During the scoping process, each project is rigorously examined for perceived risks including ROW needs, natural and cultural resources, traffic volumes, potential detour routes, existing utilities, interaction with railroads, and constructability. Typically, projects with risks that can be appropriately managed in a compressed time frame are transferred into the ABP. The VTrans Structures Section has set the following target goals:

- Officially classify 25 percent of all structures projects as part of the ABP.
- Utilize prefabricated bridge elements in 30 percent of all structures projects.

The percentage targets are not used to drive decision making for classifying projects into the ABP or in the type of bridge construction that is specified; they are only used for comparison on a year-by-year basis. The Structures Management Team, including the senior project managers, carefully considers the unique requirements and needs of each project when planning for successful project delivery. The PIIT process culminates with a Management Approval of Scope, where the Structures Management Team formally approves the scope and schedule of the project and its inclusion in the ABP. They also carefully select the project manager best suited to deliver the project within an accelerated schedule. VTrans management reviews and approves the proposed scope, budget, and schedule before a project is assigned to the ABP to begin the Design Phase.

Strong and Effective Project Management/Project Teams

Vermont ABP projects require strong and effective project management to deliver the bridges within the accelerated schedule and to manage the project risks. Since the onset of the program, the project managers within the ABP have been empowered to explore new strategies to expedite project delivery and take calculated risks resulting in process improvement, heightened collaboration and communication with internal resource groups, standardization, and quality customer service. Project managers are also dedicated to forming partnerships with customers as well as effective working relationships with the entire project team to gain and maintain buy-in, support, and ownership for individual projects and the program. ABP project managers' ability to effectively manage communications, expectations, risk, and conflict are key to successful delivery of the projects.

Aggressive but Credible Schedules

When the project is transferred into the Design Phase, the design project manager develops a proposed delivery schedule before the project moves forward. This detailed Critical Path Method schedule considers the sequencing and duration of all activities in the delivery of the project. In conventional bridge delivery, many activities are conducted in sequential order and some tasks may include periods of dormancy. The ABP seeks to shorten the schedule, capitalizing on opportunities to undertake activities simultaneously and compressing the duration of activities wherever possible. Project managers in the ABP ensure a credible schedule by including required turn-around times for activities, such as ROW acquisition and

permitting, and considering the potential risks to the schedule at key points in the process. Project managers work closely with affected resource groups to gain their concurrence on the proposed project schedule.

Partnership

The successful delivery of projects under the ABP is accomplished through a comprehensive partnership. Communication, early collaboration, and effective community engagement are important for establishing and maintaining a successful partnership. The accelerated delivery of bridge and culvert projects includes numerous face-to-face meetings to garner support for the project and approach to project delivery. Early public outreach with community questionnaires and public meetings utilizing audience response systems have increased the level of outreach and fostered an environment for input from all voices. To encourage early involvement and endorsement from affected internal stakeholders, the Recommended Alternative is vetted through the Collaboration Phase. Inspired by the ABP Program/Process Review, the Collaboration Phase includes an online shared review of the scoping report followed by an interactive, face-to-face meeting. The intent of this meeting is to provide an overview of the alternatives analysis and recommended alternative, ensure that all factors have been considered, brainstorm ideas to eliminate obstacles, expedite project delivery, and garner support. Typically, this includes representatives from utilities, environmental, ROW, operations, construction, maintenance, planning, design, contract administration, and local agencies. The internal collaboration continues through design development with constructability review meetings and special provision review meetings.

These partnerships continue throughout the delivery of the project. VTrans uses an electronic file sharing system to increase communication and transparency with the involved partners. This includes a public site that provides updates on the schedule, impacts, and pictures of progress; a design consultant site to facilitate exchange of information; and a contractor site to continue to maintain communication and encourage transparency throughout construction.

Co-location of Staff

ABP projects are delivered through a partnership that is supported by open communication. The ABP program promotes co-location of staff to facilitate communication and advance the team approach. Specifically, staff from the Utilities Section have been assigned to the Structures Section. In addition, the Hydraulics Unit was incorporated in 2015. This presents an opportunity to cross-train staff and advances the team approach for delivery of projects. It also supports early coordination and understanding of constructability. When co-location is not possible, early coordination helps to establish dialogue and create a sense of team ownership for the project.

Consistency in Process

The PIIT has made scoping consistent across all projects. This is done for all structures projects, but is critical to the delivery of ABP projects. Consistency helps promote understanding and familiarity with all partners in the process. It also reduces the potential for errors because it builds on the success of past projects.

Consistency in process is established in the project schedule. Project managers within the ABP have worked together to develop schedule templates that help maintain the aggressive but credible schedule and communicate the information in a manner that is understood by all involved partners.

The ABP has also developed standardized drawings and specifications for accelerated bridge construction. VTrans has established one point of contact to ensure consistency of plan sets and specifications across all projects within the ABP. This ensures that quality is maintained even with the expedited delivery schedule. The additional effort in the design stage is an investment in the future success of the project.

Encouragement of Innovation

As described in the previous strategy, consistency in the process helps keep the program nimble and streamlined. However, innovation is also valued. The consistency in design details and special provisions is for one construction season. At the end of the construction season, designers meet with resident engineers and contractors to learn more about challenges they encountered during construction and ideas for potential contract plan and specifications improvements. In addition, project managers within the ABP meet monthly to discuss new challenges and opportunities, ensure consistency in the approach to project delivery and collaborate on new initiatives for program and process improvements.

The VTrans Structures Section has fostered a climate that promotes innovative thinking and decision making, where all ideas are valued. Some ideas aren't pursued, but they are at least explored and considered. Innovation is holistic in the process and considered at all phases of the program. Repetition and standardization has led to increased efficiency and shorter project schedules, but being innovative in developing the process also has had large rewards related to risk assignment, constructability, program credibility, and ultimately the project schedule. These innovations in the program are possible because there is a willingness and a freedom to try new things and an understanding that not all ideas will work.

Several of innovations from the ABP that have proven successful have been integrated into standard practice in the general bridge program. Examples include broader public outreach, constructability and specification review meetings, traffic management plans, and development of risk registries. VTrans also uses accelerated bridge construction outside of the ABP. This has facilitated the implementation and standard use of PBES across the state of Vermont, ultimately reducing onsite construction time and impacts to the traveling public and surrounding environment.

4 ABP and the Project Development Process

Organizational Structure

The Vermont Agency of Transportation is organized by divisions, bureaus, and sections. Within the Agency there are four distinct divisions, which include the Policy, Planning, and Intermodal Development Division; Department of Motor Vehicles; Highway Division; and the Finance & Administration Division. The engineering, design, construction, and maintenance of Agency assets is the responsibility of the Highway Division. These assets include bridges and culverts. The Highway Division is further divided into bureaus and sections by discipline. As illustrated in Figure 1, the Structures & Hydraulics Section exists within the Project Delivery Bureau.

Within the Structures & Hydraulics Section, there are separate programs for Hydraulics, Alternative Contracting/Consultant Management, Accelerated Bridge Program, Conventional and Complex Bridge Project Delivery, and Maintenance Projects.

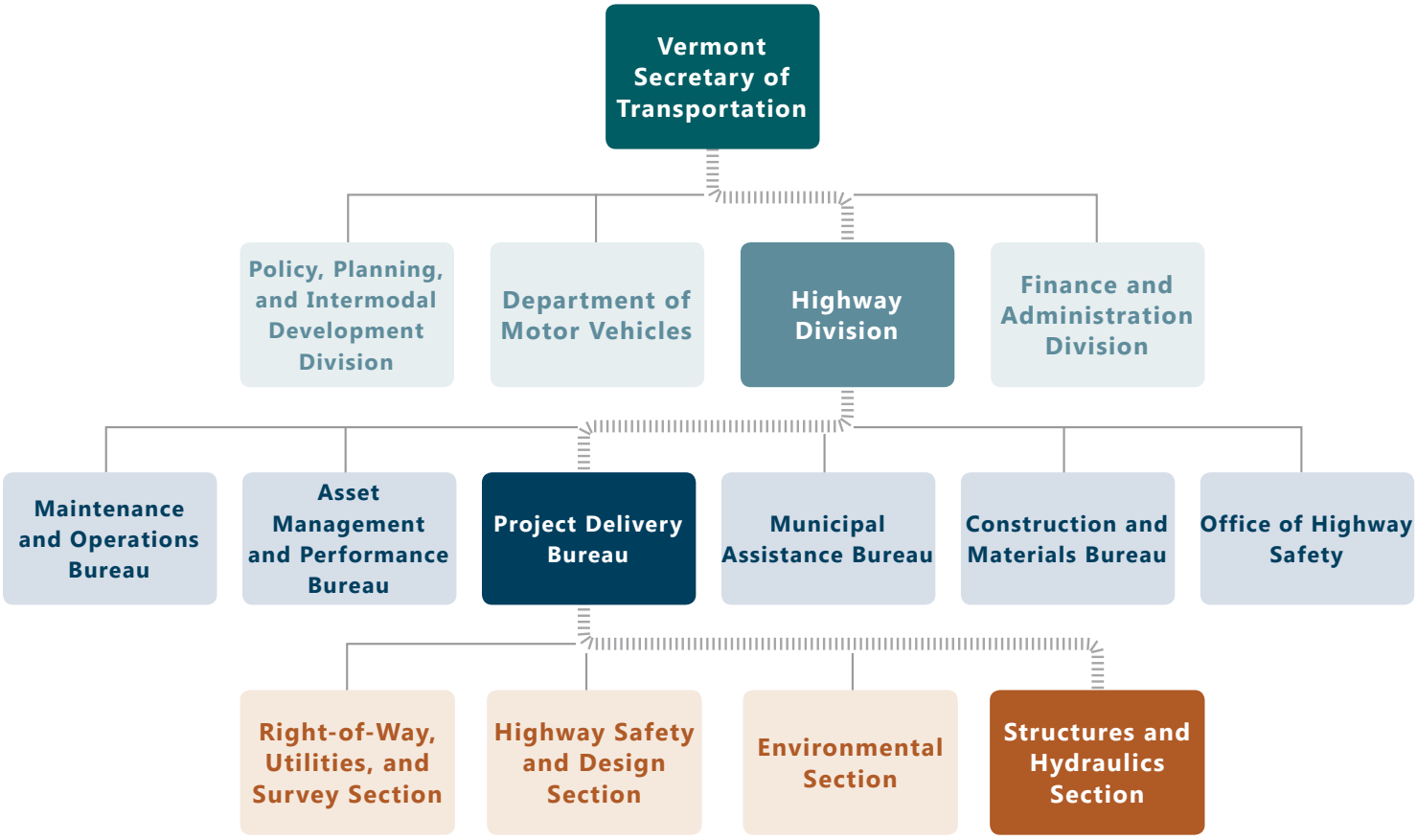
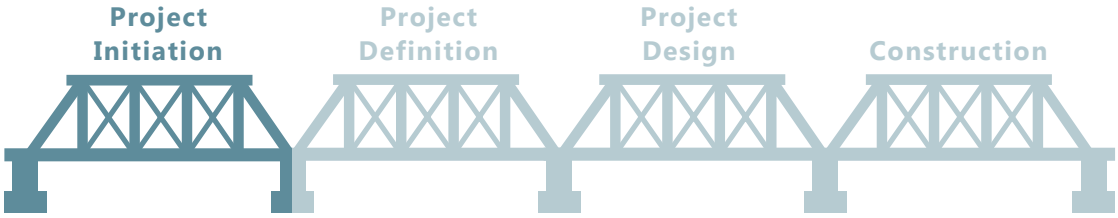


Figure 1: Vermont Agency of Transportation Organizational Structure

The organizational structure depicted in Figure 1 provides the overarching structure for the Highway Division and identifies the responsibilities of each section. Collaboration between staff within the bureaus and sections is common, and is particularly important for the ABP. Although the organizational structures of the VTrans Highway Division are separated mostly by discipline or area of expertise, the ABP has successfully initiated the practice of co-location among team members in two important areas. First, bringing the Hydraulics Section under the Structures Section has helped to increase the communication between the engineers analyzing the hydraulics for each structure. It has also helped to promote cross training of engineers to better understand the principles of design and objectives for both hydraulic and structural engineers. Secondly, the Right-of-Way, Utilities, & Survey Section has assigned dedicated personnel to work within the Structures Section identifying existing utilities, developing relocation plans, and preparing utility agreements with the affected utility companies.

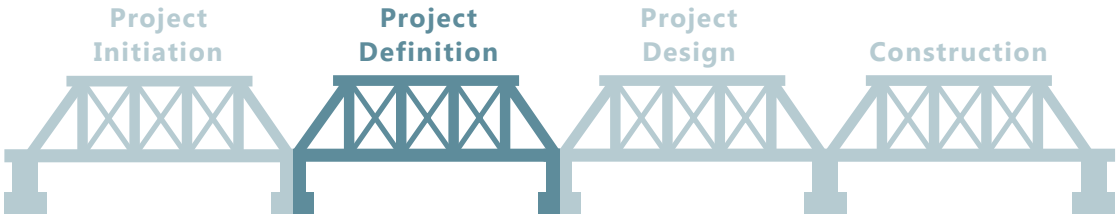
Co-location improves the efficiency of the ABP by bringing different disciplines together with a common goal: to minimize impacts to abutting property owners, rights-of-way, utilities, natural and cultural resources, and the traveling public. Within the Structures Section, the PIIT serves as a dedicated team of experts, standardizing the project approach and scoping reports. Projects are batched through the various resource groups for resource ID, making it easier to schedule and plan for field visits (for example, multiple sites located in proximity to each other can be visited on the same day or trip).

Project Initiation



All projects at VTrans are initiated by the Asset Management and Performance Bureau (AMP). The AMP is comprised of three sections: Performance, Budgeting and Programming, and Data Management. The Budgeting and Programming Section, which houses the National Bridge Inspection Standards (NBIS)/Inspection Unit, is currently working to define its role in the Project Definition Phase of VTrans' project development process. The data and information provided by the bridge inspection teams are used to inform decisions regarding project development and prioritization. Once projects are identified, they are programmed by the AMP and transferred to the appropriate program within VTrans for project definition, design, and construction. Bridges and culverts greater than 6 feet in diameter are transferred to the Structures Section.

Project Definition



After structures projects are initiated in the AMP, they are transferred to the Project Initiation and Innovation Team (PIIT). The PIIT gathers existing project information, such as bridge condition, natural and cultural resources, existing utilities and ROW, and availability of detour routes, and local and regional concerns related to the project. This information is analyzed during the Alternatives Analysis Phase to vet various rehabilitation and replacement strategies along with associated cost and schedule implications. After this information is thoroughly examined, scoping engineers identify a recommended alternative documenting all of their decisions in a project-specific scoping report.

The PIIT combines information gathering, alternatives development, and public engagement into a seamless process for definition of the project scope. While the ABP has a focus on delivering projects in a timely manner, there are no performance measures placed on the duration of time that a project is in the PIIT process and no time limitations to the scoping process. Projects are scoped appropriately so that when they enter the Design Phase, each project is fully-defined and the risks are known. To expedite project delivery, it is essential to remove as many impediments as possible during the Project Definition Phase and garner support from internal and external stakeholders and customers.

Dedicated Scoping Team

The PIIT is the focal point for scoping and defining Structures projects. The PIIT is a dedicated team of engineers and technicians whose purpose is to fully scope and define each project that is assigned to the Structures Section. The use of a dedicated team has led to many efficiencies during this important stage of a project's life. The project is defined by an objective, independent team without bias toward the design effort. This model has been innovative for the Structures Section and has resulted in a team that is highly specialized in developing the most appropriate scope for a project, then communicating that scope to internal stakeholders and interested external parties. Over time, this team has developed institutional knowledge that can be applied from one project to another. If an issue arises with a project, the PIIT discusses the issue and identifies how it can be avoided for future projects.

Final PIIT Documents

The intent of the PIIT is that every project will go through a consistent scoping process and emerge with a set of documents to guide the project through design and construction. Having the documents thoughtfully constructed and thoroughly examined is critical for all structures projects, but is vital for project management on the ABP projects. Prior to leaving the PIIT, every project file contains, but is not limited to, the following documents:

- Management Approval of Scope
- Scoping Report
- Credible Schedule
- Credible Spending Profile
- Risk Register
- Draft Transportation Management Plan
- Draft Public Involvement Plan
- Alternative Delivery Selection Matrix

Examples of the Management Approval of Scope form, Risk Register, Transportation Management Plan, and Alternative Delivery Selection Matrix are provided in **Appendix A**.

Batching Projects

The VTrans PIIT has developed a process for batching projects during select aspects of scoping. Batching projects means that a group of projects is advanced through an aspect of scoping at the same time and therefore realizes efficiency in scale and repetition as well as providing the information early in the process. Resources for all the projects in a batch are identified and allocated together in one streamlined process. Projects are generally batched for the following activities:

- Survey
- Traffic Data
- Existing ROW
- Existing Utilities
- Natural and Cultural Resource Identification
- Geotechnical Assessment
- Preliminary Hydraulics

Timing is especially critical in accelerated projects. Understanding constraints associated with utility relocations or wetland impacts can have a significant effect on the scope of a project as well as the schedule and estimate. Through the batching process, all scheduling activities are undertaken for the entire batch of projects concurrently, so critical inputs are known.

Prior to creation of the PIIT, requests for preliminary information were inconsistent and prioritization between projects was difficult. Requests could arrive in multiple formats, and balancing the requests of multiple project managers affected efficiency and accountability. Project managers had their preferred methods of making requests, and typically felt that their projects should be top priority. As a result, efficiency and accountability in obtaining preliminary information suffered. The PIIT process allows projects to begin with a wealth of information early in the process, so that scoping engineers have all appropriate information when starting their work on the project.

Scoping Questionnaires

The PIIT uses two scoping questionnaires to gather valuable local knowledge to support the scoping process. The traditional VTrans development process includes a local concerns meeting, which is intended to gain local insight into a project so that development team can fully understand what is important from the local and regional perspective. While these meetings serve as a mechanism for collecting local and regional input, they are often not well attended. It can be difficult to get meaningful public involvement, especially when traffic volumes at the project site are low or there are not polarizing issues that unite the public together for a common cause.

In an effort to increase the success rate of early public input and ensure all local and regional aspects are considered, the PIIT reinvented how it interacts with the affected towns and Regional Planning Commissions (RPCs) through the development and dissemination of a "Local and Regional Input Questionnaire." Questionnaire topics include important town events, emergency services, local schools, local businesses, pedestrian and bicycle use, design considerations, and land use and zoning. Once the project has been transferred into the PIIT from the AMP, the Local and Regional Input Questionnaire is sent via email to the Town Manager and/or Selectboard Chair and the affiliated RPC. These parties work together to fill out the questionnaire and then send it back to the PIIT. Local and regional considerations are examined alongside other project documentation during the Alternatives Analysis Phase.

In addition to the Local and Regional Input Questionnaire, the PIIT recently developed an "Operations Input Questionnaire" as an outcome of the ABP's Program/Process Review. During the review, the Operations Division identified an opportunity to contribute local knowledge about sites and characteristics of abutting property owners. For example, the Operations Division prefers to have a minimum lane and shoulder width of 14 feet to accommodate plow trucks during the winter season. Otherwise, the edge of the plow enters into the opposing lane of traffic, which causes an unsafe condition for the traveling public. Working collaboratively with several members of the Operations Division, the PIIT developed a questionnaire to solicit information regarding ongoing maintenance at the site, bridge geometry, preferred bridge railing type, other ongoing projects in the area, and public concerns. The Operations Division's local knowledge provides valuable insight for the scoping process.

These two questionnaires create consistency and promote efficiency in the collection of vital information from affected communities and maintenance districts. The information is invaluable to helping craft the recommended alternative, and helps establish community partnerships early on in the project development process. Copies of the Local and Regional Input Questionnaire and Operations Input Questionnaire are provided in **Appendix B**.

Collaboration Phase

The Collaboration Phase during the Project Definition Phase was a result of the SHRP2 C19 Program/Process Review and Workshop. Internal and external stakeholders felt that they did not have an avenue to review and provide meaningful feedback on the proposed scope, resulting in the perception that the selected alternative was often imposed and caused unnecessary project impacts, risks to the project schedule and cost estimate, and other impediments. The addition of the Collaboration Phase is intended to garner stakeholder

support by providing an avenue for stakeholders to review and offer value feedback on the proposed recommended alternative and working collaboratively to identify risks and remove impediments.

The Collaboration Phase is initiated following the completion of the draft scoping report, which provides an explanation of alternatives that were explored and culminates with a recommended alternative. Along with the scoping report, the PIIT also produces a draft Transportation Management Plan and Risk Register and completes the alternative delivery selection matrix. This information is combined with traffic data, existing utility data, existing ROW data, resource reports, preliminary hydraulics, preliminary geotechnical assessment, and the questionnaire results into a single package for distribution and review. The primary function of the Collaboration Phase is to exchange information with project stakeholders prior to finalizing the scoping report and seeking endorsement from management. The Collaboration Phase includes an online shared review of the draft scoping report, followed by a face-to-face meeting to discuss the proposed scope with all pertinent stakeholders, including:

- Utilities
- Environmental
- Transportation Systems Management & Operations
- ROW
- Construction (Regional Construction Engineer and Construction Structures Engineer)
- Maintenance (Districts)
- Planners (including RPCs)
- Design Project Manager
- Structures Design Engineer

Following the Collaboration Phase, the scoping report is revised based on the comments received.

Management Approval of Scope

In an effort to build consistency in decision making and increase credibility for the definition of projects, the Structures Section has incorporated Management Approval of Scope into the scoping process. Management Approval of Scope includes convening a meeting with Structures leadership including, but not limited to, the following:

- Structures Program Manager
- ABP Senior Project Manager
- PIIT Project Manager
- Conventional and Complex Unit Senior Project Manager
- Alternative Delivery Senior Project Manager
- Hydraulics Engineer
- Bridge Maintenance Senior Project Manager
- Structures Design Engineer
- Design Project Manager

Prior to the meeting, the final scoping documents are distributed to provide an understanding of how the project was defined. During the Management Approval of Scope meeting, the scoping engineer provides a brief overview and then opens up the meeting to comments, questions, and general discussion. At the Management Approval of Scope meeting, any questions are discussed. Further information on project definition can also be requested at this time. When all concerns have been unanimously addressed and consensus on the project's scope has been reached, the scope is approved by the Structures Program Management by signing off on the Management Approval of Scope form.

The Management Approval of Scope brings credibility to the scope by making sure that it receives endorsement from senior leadership within the Structures Section, rather than just the project manager. The Management Approval of Scope signifies that the entire Structures Section has fully vetted the scope of the project and believes that the project is moving forward on the correct path. On high profile, risky, or multi-million-dollar projects, Management Approval of Scope is expanded to include upper level management within the Highway Division.

Approach to Public Engagement

Early and meaningful public engagement is essential for building community partnerships and continuing public support for the project. The PIIT reviews all pertinent information related to the scope of the project to help determine the level of public outreach that is appropriate for each individual project and uses several tools to actively engage public stakeholders during the Project Definition Phase. As described above, scoping questionnaires are distributed to the affected town and RPC at the beginning of data collection and resource identification. Once projects have received endorsement from internal stakeholders and VTrans leadership, the public participation stage begins.

For higher profile or risky projects, focused stakeholder meetings are held with key

constituents including the RPC, town managers and planners, Selectboard chairs, and emergency services to provide an overview of the bridge or culvert rehabilitation or replacement project and discuss any immediate concerns in an intimate, collaborative atmosphere. This allows for open and free-flowing dialog, providing a mechanism to create community partnerships and brainstorm solutions to minimize project impacts to the surrounding region.

In addition, public meetings, called Regional Concerns Meetings for state and interstate projects and Preferred Alternatives Presentations for town highway projects, are held for all projects scoped by the PIIT. To engage the public and give everyone a voice, meeting participants are polled on several questions throughout the presentation using an audience response system. Topics include familiarly with and use of the bridge or culvert, best timing and duration for proposed short term closures, greatest concerns, important design aspects, and endorsement of the scope. Rather than the public stakeholders feeling like a project is being imposed, meeting participants play an active role in refining the scope of the project. These meetings have been highly effective at garnering early public support. For high-profile projects, a specialized Public Information Officer (PIO) may be brought onto the project team to assist with outreach and dissemination of information.

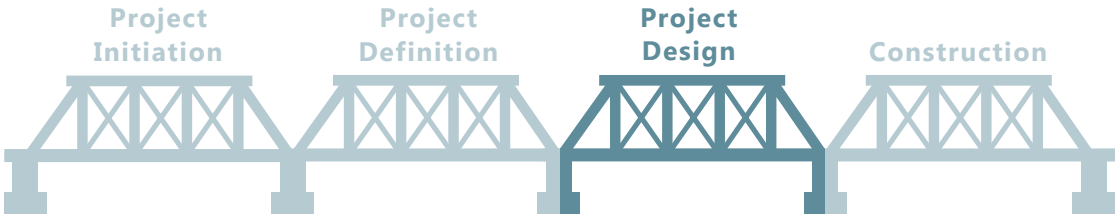
Communications with the public and commitments that are made during this time stay with the project throughout its development life and beyond construction. Developing the appropriate outreach strategy is important, as well as engaging the public appropriately through public presentations and audience response systems. Setting the expectations for public engagement through the PIIT has brought consistency to the information that is delivered to the public and allowed VTrans to build a reputation of delivering an accurate message with credible expectations that can be trusted through the life of the project.

Project Transfer

The PIIT process culminates with a project transfer to the design team, which advances the project forward through design and into construction. This process involves a transition over several steps. It starts with the Design Project Manager becoming familiar with the project, participating in the Collaboration Phase, attending the Management Approval of Scope, and

being included in public engagement. The project transfer allows for the PIIT to continue to advance the development of the project scope while slowly transitioning project responsibility to the Design Project Manager. It allows the Design Project Manager to contribute to the final scoping report, the draft Transportation Management Plan, the Risk Register, the public outreach plan, and the project schedule. Knowledge sharing during the course of the project transfer allows the Design Project Manager to pick up the project and hit the ground running without having to go back and relearn everything that occurred during the previous phases. In addition, members of the PIIT work with the Design Project Manager to develop a credible schedule and spending profile based on risks identified during the Project Definition Phase.

Project Design



The Project Design Phase extends from the end of the Project Definition Phase until a construction contract is executed and encompasses all aspects of preliminary and final design. Project design incorporates NEPA documentation, project permitting, ROW acquisition, project design and plan development, cost estimating, and specifications writing. ABP projects generally follow the traditional VTrans Project Development Process; however, by undertaking activities in parallel and compressing the duration of activities wherever possible, the standard 60-month project development schedule for conventional processes is reduced to 24 months. These efficiencies and strategies are highlighted below.

Risk Register, Transportation Management Plan, and Public Involvement Plan

Development of ABP projects is partly about innovation and thinking outside the box and partly about knowledge transfer and consistency. Transferring ideas and thoughts from design to construction is extremely important to understanding the risk profile of the project.

Risk Register

As project managers and designers develop the plan sets and specifications, they identify risks. Using a Risk Register to document perceived risks, identify ways to mitigate the risks, and assign specific people or groups to handle the risks helps organize and standardize the approach to risk management, and helps maintain a consistent dialogue about risks throughout the project design and construction processes. Risks are mitigated through design or assigned to the party that is best suited to respond to a risk if it is realized. Assignment of risks is reflected in the plans and specifications and communicated internally at VTrans through the Risk Register. When a project enters construction, the decisions regarding each risk in the register should be known and made clear to the entire VTrans team.

VTrans has identified two risk areas that consistently need to be elevated beyond the Risk Register: transportation management and public involvement. Because of the unique and complex nature of these elements, separate plans are developed during the design of the project to fully capture the approach to risk mitigation and assignment of responsibilities throughout project development.

Transportation Management Plan

The Transportation Management Plan for each project is a way to record the vision for temporary traffic control, traffic operations, and public information and outreach. The plan helps to communicate the thought process that was used during the development of the traffic control and puts the field personnel in a better position to understand the overall goals of that aspect of the project and respond to unforeseen conditions that may arise in the field.

Public Involvement Plan

The Public Involvement Plan is developed to guide public communications throughout project development and construction. Public communications are important to document during the design of the project. Feedback throughout design and the risks associated with the Transportation Management Plan, project construction schedule, and impact to the traveling public are used to shape the level of public communication during construction. The plan documents methods and frequencies for communication and identify primary stakeholders. The overall intent for public communication is to create a transparent process so that expectations are clearly identified throughout each project.

Constructability Review Meeting

Following the development of preliminary plans, Structures plan sets are reviewed through an online shared review at VTrans. The review is open to all disciplines and sections at VTrans, but there is a heavy emphasis on constructability. Following the review period, a Constructability Review Meeting is convened with members of the VTrans Construction Section and senior structural engineers to examine constructability concerns. The construction personnel and senior structural engineers critically assess the preliminary plans and ask questions to make sure that constructability concerns have been identified and will be addressed during the final design of the project. The meeting is intended to discuss aspects of the current project, but it is also a knowledge sharing session to discuss the proposed concepts' level of effectiveness during past projects. The Constructability Review Meeting is an example of a development process element that has origins with the ABP and is considered vital to the ABP, but is now used for all Structures projects.

Design-Level Construction Schedule

VTrans develops a design-level construction schedule to determine the duration of the project closure. This is communicated in the contract and sets the parameters for the project. During the construction phase, the contractor is required to develop a more detailed schedule, but the design-level construction schedule outlines the following schedule parameters for the construction period:

- **Duration of bridge closure period**. ABP projects generally employ a 21- to 28-day closure, but this can be shorter or longer depending on the unique needs and complexity of the project. For example, if the project involves a rail line, the closure may be longer.
- **Allowable window for closure period**. Typically, the schedule will identify a two- to three-month window, generally during the summer, that bounds when the closure can occur. Considerations for this window include the construction season, seasonal permit considerations such as those related to stream crossings; impact on school bus routes, local businesses, and local events; and public input.
- **Anticipated activities before and during the closure period**. The schedule identifies which construction activities are expected to occur within the closure period and which can occur before the closure period. For some ABP projects, partial lane closures may be allowed before the full closure period to undertake construction activities that can be accomplished without a full closure, such as pile driving. The schedule identifies activities that can reasonably be accomplished beforehand to shorten the full closure duration.

- **Activities allowed after the closure period**. There are some minor activities that can occur after the road is re-opened to the public. Examples include seeding, mulching, and final stabilization, installation of permanent traffic signs, and removal of temporary construction signs.

A copy of VTrans' Special Provisions template is provided in **Appendix C**.

ROW Efficiencies

One of the biggest risks during the design phase of a project is ROW acquisition. In the past, if ROW was needed on a project, the linear, step-by-step process was anticipated to take 24 months or longer. It was typical for a project to be "put down" during this time period, meaning that design activity stopped during ROW acquisition.

Improving efficiency in the ROW process has resulted in reducing the overall time frame for acquisition as well as for the overall project delivery. While it is desirable to avoid ROW impacts completely when possible, the ABP has used several strategies which have proven effective in accelerating the ROW process:

Concurrent Activities

While the ABP has used concurrent activities in numerous areas to reduce the project development schedule, the results may be most noticeable for the ROW process. The sooner the ROW steps can move forward, the sooner the ROW process will be complete. One method for achieving the non-linear activities is to schedule tasks concurrently. ROW acquisition now starts as soon as the NEPA document has been finalized. It is possible to finalize the limits of disturbance and complete the project final design while advancing the ROW acquisition process. As long as both the final design and the ROW process are completed prior to advertising of the project, this strategy has proven successful.

Block Out Approach

On select projects, VTrans has used a block out approach to ROW acquisition. Blocking out a general area of land acquisition creates some conservatism in the approach rather than acquiring only to the limit of disturbance. It allows for the acquisition to be defined in advance of the final limits of disturbance and allows for the ROW process to move forward earlier in a project schedule and therefore take advantage of more concurrent tasks, rather than waiting for the design to be more refined.

Minor Alterations Process

The projects that are generally selected for the ABP program have little or no ROW needs. For small takings, VTrans has worked with legislators to develop a process called the Minor Alterations Process. It reduces some of the steps that are needed to acquire property and cuts the ROW acquisition schedule down by nearly a year.

Eliminating appraisals can generally save up to three months of schedule on a project. The Minor Alternations Process eliminates the need for full-scale property appraisals and instead uses a wavier evaluation process for property acquisitions valued at $25,000 or less. VTrans must still offer an appraisal to the property owner for values greater than $10,000.

Following the wavier evaluation, an offer is made to the property owner and a period of negotiation begins. If the property owner has not accepted an offer by the end of the negotiation, the process enters a Minor Alteration Condemnation.

Rather than a full scale condemnation process, the Minor Alterations Process allows for a simplified hearing, during which VTrans makes a case as to the need for acquiring the property and provides evidence to support the monetary offer that was made. The property owner is then asked to defend his or her concerns related to the acquisition and monetary offer. A hearing officer will decide the merits of the arguments and make a ruling related to the acquisition and monetary reimbursement. The Minor Alterations Process ultimately eliminates the 502 process, appraisals, and full condemnation, reducing the ROW process by up to 12 months.

Project Special Provisions

VTrans Contract Administration has traditionally developed all special provisions for use on VTrans projects. While this creates consistency between different design sections, the process is long and disconnects the designers from the development of the technical special provisions. For ABP projects, it is especially important to have the specifications and plans aligned; there is little time to discuss interpretations and clarifications of the special provisions during a bridge closure period.

To accelerate the process of developing specifications and to reengage the designers in project special provisions, VTrans developed a pilot process for ABP projects that allows design teams to fully develop project special provision packages. Plans, cost estimates, and special provisions are submitted to Contract Administration for review and comment. The process is successful, and it allows for Contract Administration to focus on compilation of the contract documents and advertisement of the project. The process is now an accepted practice on all Structures projects.

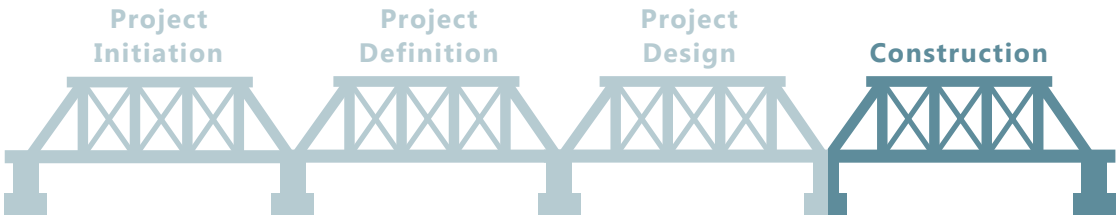
Final Plan Specification Review Meeting

Following the development of final plans and special provisions, the design team meets with personnel from the VTrans Construction Section. The purpose of the meeting is to review the special provision package along with the plans to ensure that both are congruent and expectations are clear. The meeting combines the designer with construction personnel to form a partnership in project delivery and encourages team ownership of the special provisions.

Standardized Design Details

Standardization of design details allows the ABP to function as a streamlined process by saving time during the design and construction phases. Projects that use similar superstructure types, similar substructure types, and similar bridge railing types can benefit from standardized design details, which accelerate design by allowing a designer to select a detail “off the shelf” rather than developing something new for each specific project. Each design detail is depicted consistently in plans and the specification is consistent from project to project. The standardized details also speed up construction, since contractors become familiar with constructing the details to the same specifications.

Construction



Overview of Construction Process

Project construction begins when the construction contract has been executed and ends when the project has been completely closed out and accepted by VTrans. The Construction Section is organized with a Director, five Regional Construction Engineers, Resident Engineers, and Inspectors. Regional Construction Engineers are responsible for projects located within their geographical areas. Leading up to the contract signing, the Regional Construction Engineer formally assigns a Resident Engineer. The Resident Engineer takes on a lead role in the project for VTrans and is responsible for administering the contract through construction.

Following contract execution, each construction project is initiated with a Pre-Construction Meeting. This is a formal meeting with a set agenda. The meeting is attended by appropriate stakeholders including:

- The Regional Construction Engineer
- The Resident Engineer
- The project manager
- The designer
- The contractor
- The consultant (if applicable)
- The district
- The municipality
- Emergency services personnel
- VTrans human rights personnel
- Environmental personnel
- Railroad representatives (if applicable)

ABP projects in construction follow the same general approach as conventional projects, however there are several elements that have been implemented into ABP projects as described below.

Offsite Detours

The ABP program uses offsite detours; traffic is diverted away from the project site for the bridge closure period. For most ABP projects, VTrans strives to use a standard 21-day or 28-day closure period. This helps with the accelerated process. For state routes, VTrans signs an off-site detour. For town routes, the town determines if they want to sign a detour. In most cases, a short closure period—during which a contractor can accelerate bridge construction and then return the structure to its normal function—has been found to be more effective and more desirable to the public than a full season conventional project.

Develop and Update Critical Path Method Schedule

Through the requirements of the special provisions, the contractor is required to develop a Critical Path Method schedule that will guide the construction of the bridge. VTrans provides the schedule requirements to the contractor, including the software that should be used and the level of detail for each activity. Most schedules are detailed by the day; however, super-accelerated projects must be broken down by the hour during the bridge closure period. The schedule submission also requires a narrative, which provides the construction philosophy supporting the approach to the work and describes any limited resources, potential conflicts, or other items that may affect the schedule and potential conflict resolution strategies. The schedule is developed within thirty days of the execution of the contract.

The contractor is also required to update the schedule at periodic intervals throughout the duration of the life of the contract. Generally, the contractor is required to update the schedule at the end of every bi-weekly estimate period. Super-accelerated projects may require updates at shorter intervals. For example, a project with a 28-day closure may require weekly updates to the schedule. An example of a Critical Path Method Schedule is provided in **Appendix D**.

Preclosure Coordination Meeting

A preclosure coordination meeting is held approximately 7 to 14 days in advance of the bridge closure period. The purpose of the meeting is for the involved stakeholders to conduct a detailed review of the logistics of the construction. This includes the Resident Engineer, the project manager, the contractor, fabricators, consultants (if applicable), regional representatives, affected towns, and emergency services. Additionally, if the detour involves a school bus route, representatives from the school's transportation services are also invited. During the meeting, the contractor reviews the schedule in detail with a focus on the fabrication and availability of the materials. The availability of the materials are critically important to meeting the rigorous construction schedule. This provides an opportunity for the involved parties to discuss potential threats to the schedule such as weather and contractor workforce availability.

The meeting also functions as another opportunity for stakeholders to communicate about the extent and duration of the closure. Local representatives are provided the detour plans (if applicable) well in advance of the meeting. The meeting also provides a chance for the local

representatives to talk with the contractor to clarify the process and ask any questions.

Public Outreach during Construction

Effective public outreach during construction is important to the successful delivery of ABP projects, and is part of the customer service focus of the ABP approach. All ABP projects include a Public Information Officer (PIO) who is generally initially engaged during the design stage, but plays a critical role during the construction phase.

The PIO represents VTrans (as opposed to representing the contractor) and can convey VTrans' message. During the design stage, the project manager develops a fact sheet (example shown in Figure 2) for the project that includes information such as the project scope, the bridge closure period, detour routes (if applicable), and VTrans project representatives. The PIO uses this fact sheet and his or her understanding of the involved stakeholders, particularly local agencies and the general public, to develop a public involvement plan. The public involvement plan outlines customized public outreach for the project and the impacted stakeholders.

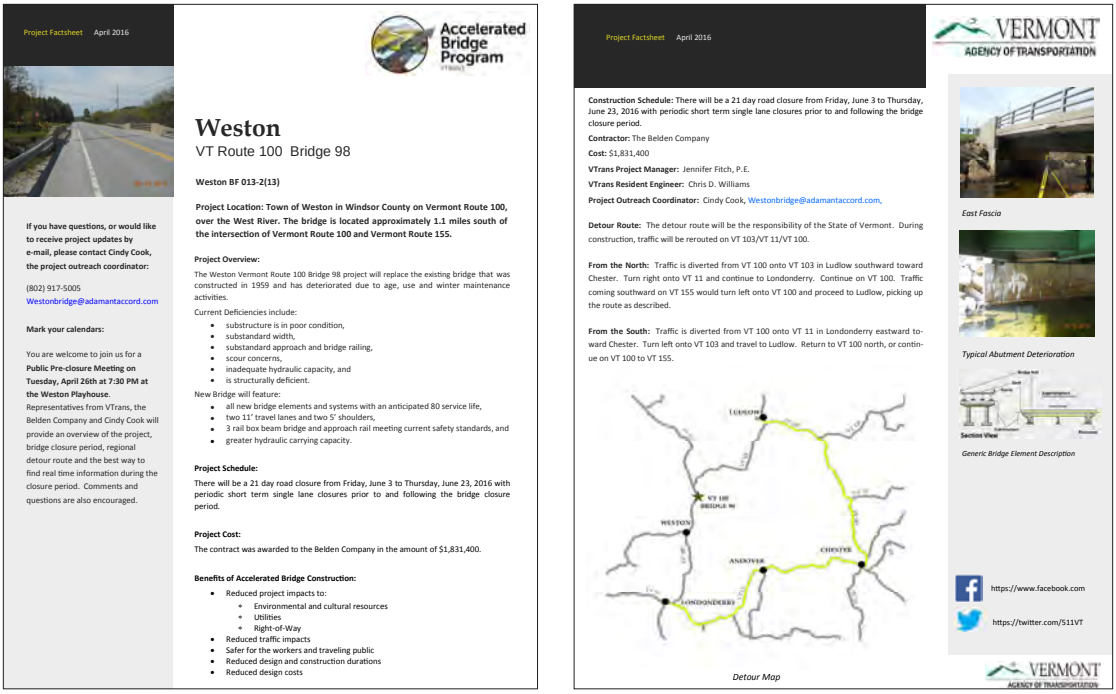


Figure 2: Project fact sheet for the replacement of Bridge 98 in Weston, VT

The PIO follows the public involvement plan to facilitate communication with stakeholders, such as local agencies, and the general public about the construction process and the road closures that are necessary for the project. During the construction phase, the PIO provides weekly updates to stakeholders via email and other outlets.

This dedicated process of public outreach throughout the project delivery started as part of the ABP, but is now implemented in traditional bridge delivery on projects with moderate to high traffic impacts. Effective communication with the public and all involved stakeholders supports the successful delivery of the projects.

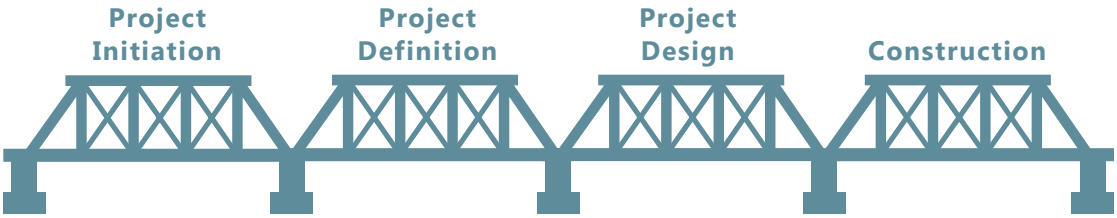
Incentives and Disincentives during Construction Phase

VTrans employs financial incentives during the construction phase for the contractors on the majority of ABP projects. Specifically, the contractor is provided financial incentives to meet or beat the bridge closure period goal. Some projects also use an additional daily incentive payment. Contractors can receive compensation for each day under the targeted bridge closure period that the project is completed. The targeted closure period is typically 21 to 28 days, and the daily incentives are provided for up to seven days. The total incentive is substantial, with a maximum value up to five percent of the total contract value.

Conversely, VTrans also uses disincentives. VTrans reduces the payment to the contractor for each day the work remains uncompleted beyond the targeted bridge closure period for the project. The daily disincentives are comparable to the daily incentives for early completion.

The use of the incentives and disincentives is at the discretion of the VTrans project manager. The amounts are calculated as part of the special provisions in the design phase, and are based on anticipated road user costs for the duration of the project. Their use reflects the importance of meeting schedules to the ABP. Every bridge that is successfully replaced using an accelerated schedule builds faith in the capability of the program.

Activities that Span the Project Development Process



Several ABP activities span the project development process and contribute to the success of the program, including the sharing of information electronically during the life of the project, extensive public outreach, and the use of VTrans' Artemis ProjectView system for project scheduling. The ABP also uses several feedback loops to refine the program and the overall approach. These activities are discussed in the following sections.

Sharing of Information Electronically

The ability to communicate effectively across numerous involved parties is fundamental to the success of ABP. In the past, project files were physically mailed back and forth for review, which could take days; ABP now relies on electronic file sharing to disseminate information quickly.

VTrans uses electronic file sharing sites as enterprise content and document management to store, track, and manage electronic documents. Each project has a site that is used to share files with the consultant, primarily in the design development phase. During this phase, VTrans provides standardized drawings and design details to consultants and receives plan submissions at development milestones. Another site is established with the contractor, and is primarily used during construction for the purpose of electronically submitting fabrication drawings, working drawings, and schedules. There are also sites that help to streamline processes with regulators, including FHWA for environmental documentation and the Agency of Natural Resources for stream and wetland considerations.

Electronic information sharing is also a key part of VTrans' public outreach efforts. A file sharing site designed for the public contains a listing of all ABP projects and has project-specific materials available for viewing and downloading. As a program that values innovation and process improvement, the ABP continues to adapt its file sharing methods to facilitate the seamless transfer of necessary information.

Public Outreach

One of the ABP's goals is to be transparent to stakeholders and customers. The public's confidence in the ABP's ability to replace bridges with a short duration closure and minimal interruption is important to the continued support of the program. At the end of each project, VTrans works with the PIO to conduct customer surveys to gauge if the program is meeting this goal and the public's expectations. The PIO distributes the survey to the project list of interested stakeholders and customers. The distribution list is generally comprised of citizens in the areas surrounding the project, who are the targeted audience for the survey, but many also include organizational representatives such as schools and local businesses. The customer survey results in Figure 3 show a positive reaction to ABP projects.

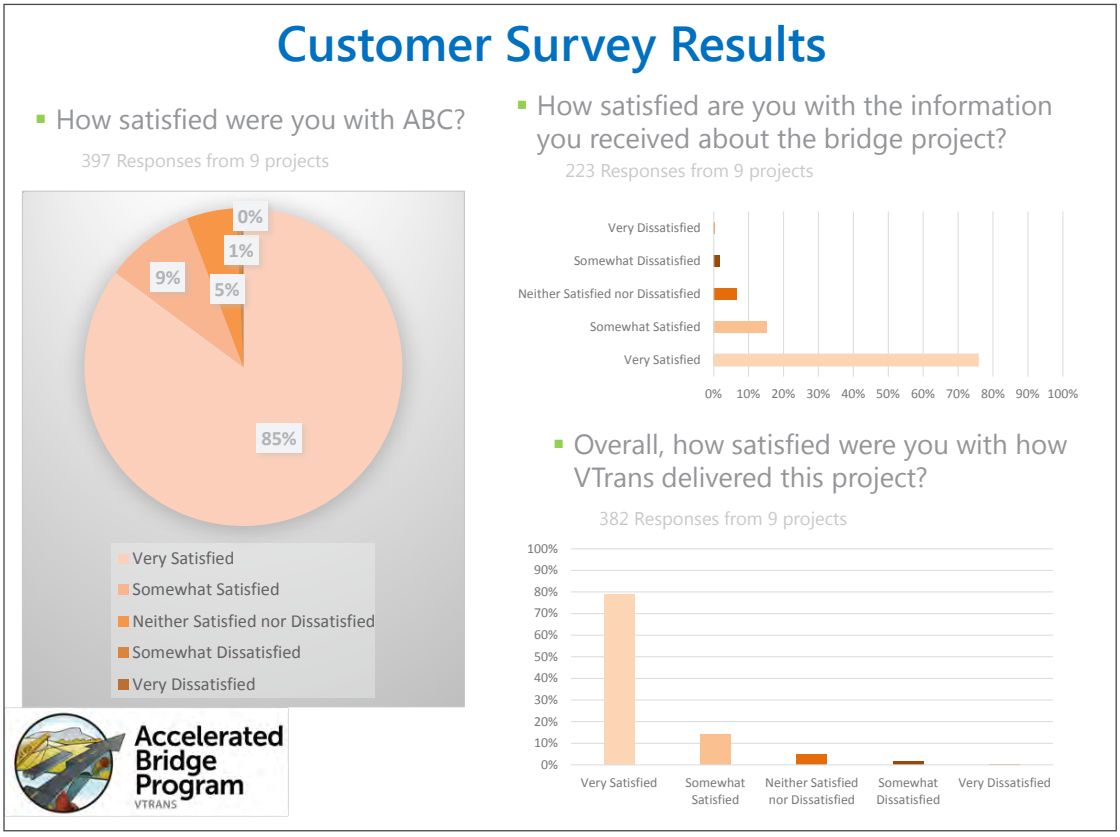


Figure 3. Results from Customer Survey about Nine ABP Projects.

Scheduling

VTrans uses a project scheduling software called Artemis ProjectView System. This tool helps manage resource allocation and workload since all agency projects are entered into the system. ABP project schedules generally start when the preferred alternative is selected and span through the end of project construction. A valid schedule for a project is important because the combined needs of all of the ongoing projects can impact the order in which resources are allocated. The schedule is initially entered in the preferred alternatives phase using a template, then refined in the collaboration phase based on the project's unique needs.

Consensus Feedback Loop

The ABP has benefited from continual refinement of the process since the inception of the program in 2012. Every project provides an opportunity to assess the program and look for opportunities to streamline the process, refine the schedule and estimates, and improve the standardization of design details and special provisions. These refinements are the result of feedback obtained in every step of the process, with project construction as the most critical portion of the process. Specifically, the contractors and VTrans construction staff provide detailed feedback to the design group about the constructability of projects.

5 Summary

Developed in 2015, the VTrans Strategic Plan articulates the Agency's mission to provide for the safety and efficient movement of people and goods. The plan consists of five strategic goals with associated agency-wide objectives. Although the ABP was created before the strategic plan was articulated, the delivery of ABP projects supports the plan's goals.

VTrans Strategic Plan Goals Supported by ABP

Goal 1: *Provide a safe and resilient transportation system that supports the Vermont economy.*

This goal includes the agency-wide objective to increase the resilience of the transportation network to floods and other extreme events. The ABP and use of ABC methods provide the ability to replace critical infrastructure at an accelerated pace. The ABP demonstrated a commitment to this goal when it was deployed to replace the temporary structures built after Tropical Storm Irene, providing more permanent connections for the affected communities. Today, ABP continues to expedite the delivery of bridge and culvert reconstruction and bridge rehabilitation projects that strengthen Vermont's transportation system and support resiliency.

Goal 2: *Preserve, maintain and operate the transportation system in a cost effective and environmentally responsible manner.*

This goal includes the agency-wide objective to maintain structures in a state of good repair and to implement an asset management system that is integrated with planning and programming. Both traditional bridge projects and ABP projects are initiated in the AMP, which uses an asset management approach that considers condition, importance, and life cycle costs. The ABP's ability to expedite delivery can get a bridge back to a state of good repair faster.

Goal 3: *Provide Vermonters energy efficient travel options.*

This goal includes the agency-wide objective to minimize travel delay. During construction, most ABP projects include a full closure of the bridge. Although travelers incur delay during the closure, the impact on travel is shortened, resulting in shorter overall delay during the project. The ABP is focused on getting the bridge back in service faster so that the bridge can be opened to traffic in the shortest possible amount of time.

Goal 4: *Cultivate and continually pursue innovation, excellence, and quality customer service.*

Similar to the strategic plan's fourth goal, two of the primary goals of the ABP are to be a leader for deployment of innovation at VTrans and to be transparent to stakeholders and customers.

Goal 5: *Develop a workforce to meet the strategic needs of the Agency.*

A focus on workforce development is one of the innovations of the ABP. This focus includes a team-based approach to delivery and co-location of staff for cross training.

The alignment between the VTrans Strategic Plan goals and the objectives of the ABP reinforces that the ABP supports VTrans in providing safe and efficient transportation for the traveling public. Every ABP project presents an opportunity to further advance these goals, and every bridge season presents an opportunity to refine the ABP and continue to innovate project delivery in Vermont.

Next Steps

The ABP is successfully delivering cost and time savings while increasing customer satisfaction and minimizing the impact on the environment and the traveling public. The three primary goals of the ABP—expediting delivery, leading innovation, and demonstrating transparency—are reflected in every step of the program. VTrans' focus on these guiding goals and objectives is key to continuing the success of the program.

A Appendix A: Example PIIT Documents

- Management Approval of Scope Form
- Risk Register
- Transportation Management Plan
- Alternative Delivery Selection Matrix

Management Approval of Scope Form

Management Approval Of Scope

February 17, 2016

Project: **Waterford BF 0225(5) VT Route 18, Bridge 2 over Unnamed Brook**

Project Manager: **Jennifer Fitch**

Project Briefing: After evaluating various alternatives for this project, we have concluded that a full replacement with a precast concrete box culvert on the existing alignment using an off-site detour to maintain traffic is appropriate (alternative 2a in the Scoping Report).

Maintenance of Traffic: Traffic will be maintained on an off-site detour for a maximum of 1 week while the new bridge is being constructed.

_____ Structures Management approves the project scope.

_____Structures Management will require more information before making a decision.

_____ Structures management recommends getting higher level approval for the proposed scope.

_____Structures does not recommend the project scope.

_____Structures Management approves the project scope with modifications.

_____
_____
_____
_____

_____ _____

Structures Program Manager Date

MAOS Meeting Notes:

- This project should be grouped with the Bridge 7 project to minimize traffic impacts to the traveling public.
- TransCanada Hydro Northeast can be a difficult to negotiate with. Impacts on both the upstream and downstream end of the culvert should be minimized: possibly steepen the slopes and add the maximum height headwall to bring the inlet and outlet out of their ROW. The outlet of the existing pipe is within TransCanada Hydro's Row, so ROW will be required for removal of the existing pipe. This may hold up the Bridge 7 project.
- This waterway is very important for fish. However, regardless of the alternative chosen, fish cannot make it up the stream. The hope is that with the new culvert, material will distribute into the downstream channel such that fish will be able to make it up the waterway.

Risk Register

RISK REGISTER		Project Name:	Duxbury BF 013-4(47)			Culvert Replacement		Project Manager	Kristin Higgins		
Risk Identification						Risk Rating		Risk Response			
Status	ID #	Type	Category	Title	Risk Statement	Current status/assumptions	Priority Rating	Rationale for Rating	Strategy	Response Actions	Risk Owner	Updated
Active		Threat	Construction	Waterline	Existing Waterline Location may interfere with the proposed structure.	Currently under evaluation	Medium		Mitigate	Determine actual waterline elevation and attempt to place new structure below the existing waterline.	Kristin Higgins	4/18/2016
Active		Threat	ROW	ROW Acquisition	Acquire	In progress	High		Accept	Work with ROW and property owners to facilitate quick ROW aquistion.	Kristin Higgins	4/18/2016
Active		Threat	PM	Utilities	Utilitiy relocation/conflicts	In progress	Low		Accept	Working with Utility companies to move lines	Kristin Higgins	4/18/2016
Active		Threat	Environmental	Wetland permitting	Temporary impacts to Wetland	In progress	High		Accept	Work with the environmental section to get neccesary environmental permits	Kristin Higgins	4/18/2016
Active		Threat	Construction	Cofferdam	Installing a cofferdam and dewatering system that doesn't conflict with the temporary bridge, new structure, old concrete abutments or neighboring properties	Assuming that sheet piling will be requried	High		Mitigate	Locatate potential obstructions as well as possible in order to avoid driving conflicts	Kristin Higgins	4/26/2016
Active		Threat	Construction	Traffic Control	Un-expected/unreasonably long traffic delays when changing the temporary traffic control measures		Low		Mitigate	Place a new temporary bridge off alignment while traffic is maintained on the existing temporary bridge	Kristin Higgins	4/18/2016
Retired		Threat	Construction	Pre-cast	Lead time for pre-cast components		Medium		Avoid	Agency is working with BGS in order to purchase the precast now while the permiting, ROW, and design are underway. This eliminates the lead time for a contractor to order pre-cast	Kristin Higgins	4/18/2016
Active		Threat	Construction	Construction Schedule	Tree plantings/Final pavement in 2017	Assuming that the contract will allow for adequate time in the schedule for this to be accomplished	Low		Mitigate	Construct the contract documents in order to accommodate work that must be done in 2017	Kristin Higgins	4/26/2016
Active		Threat	Construction	Existing single lane	Potential for instability of the existing lane based on continued undermining and loose granular material		Low		Mitigate	Avoid placing live traffic on the existing lane in order to mitigate risk	Kristin Higgins	4/26/2016
Active		Opportunity	Construction	Gravel pit	No clearances required for use of the gravel pit as a staging area		Low		Exploit	Use this location as an advantage for staging construction if allowed by the owner of the gravel pit	Contractor	4/26/2016
Active		Threat	Construction	Maintenance of Stream	Maintaining the flow of water either through or around the project provides substantial risk depending on the alternative chosen	Assuming water will be maintained betweet two sepearate cofferdams	High		Mitigate	Design a cofferdam of adequate height, to prevent overtopping as well as size a foundation seal to prevent uplift. Installation of such a system might provide some risk as well given sight specific conditions such as ledge profile and old concrete abutments	Contractor	4/26/2016
Active		Threat	Construction	Weathered bedrock	Risk for encountering unsuitable bearing material requiring additional excavation of solid rock as well as lowering the footing elevations		High		Accept	Accept the risk and be prepared to remove un-satisfactory material	Contractor	4/26/2016
Active		Threat	Construction	Installation of Type E stone	Timing the installation of the natural stream bottom in the new structure in order to reduce adverse impacts to fish		High		Avoid	Coordinate the installation of the fine material in the natural stream bottom to a time of year where the impacts would be less adverse (not august)	Contractor	4/26/2016
Active		Threat	Construction	Precast Delivery	Fabricator listed September 25 as delivery date. Impacts intermim completion date	Assume earlier delivery if submittal process moves quickly	High		Mitigate	Meeting with Fabricator on 5/17/16 to discuss timeline. Will expedite reviews and allow partial approval (Arch only)	Owner	5/17/2016

Transportation Management Plan

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Traffic Management Plan

FOR

Duxbury BF 013-4(47)

VT 100, Bridge C193 over Crosset Brook

May 9, 2016

Table of Contents

1.0 Project Description

This section provides an overview of the project, which generally includes:

- Work zone limits (if possible, include a map showing the limits of the work)
- The existing structure is a corrugated metal plate pipe arch constructed in 1977 which has begun to fail resulting in safety concerns for the general public. Specifically, the invert of the pipe arch has deteriorated and is leading to extensive loss of fill and roadway subsidence. The proposed project is an emergency declaration and is a large coordinated effort to design and construct a replacement as fast as possible.
- The only roads directly affected by this project will be VT Route 100 at the project location as well as the entrance to Crossett Brook Middle School and Main street across from the entrance to the Middle School.
- Traffic restrictions should be minimal as traffic is currently on alignment over a two lane temporary bridge. During construction of the new structure it is expected that traffic will be shifted off alignment towards the Middle School, and be maintained on alignment with a new two lane temporary bridge and speed reduction. Traffic interruptions should be limited but may include lane reductions or temporary all way stops.
- The structure on Route 100B in Moretown may have an influence on regional traffic as it is currently down to one lane alternating traffic. There is also an interstate project on I-89 in Waterbury however that should have little impact on this project.
- There are three residences in close proximity located on the west side of VT 100 that will be affected by construction.
- Project Schedule.

2.0 TMP Team—Roles and Responsibilities

This section includes contact information and roles and responsibilities of major personnel involved in the project such as:

- TMP Development Managers—Agency/Contractor personnel who have primary responsibility for developing the TMP.
- TMP Implementation/Monitoring Managers—Agency/Contractor personnel who have primary responsibility for implementing and monitoring the TMP.
- TMP Implementation Task Leaders—Responsible for managing, completing, overseeing, or assisting in specific transportation management tasks during the work.
- Construction Engineering—Agency personnel who have primary responsibility for overseeing the construction of the project, including the traffic control plan.
- Emergency Contacts—Public and semi-public agencies, such as hospitals, schools, health clinics, etc., who must be kept informed about the work zone activities, especially in case of a road closure.
- Contractor—Primary Contractor responsible for construction of the project. (to be completed after contract award)

The following tables can be used to list the contact information and roles and responsibilities for major personnel involved in the project. Tables can be modified depending on agency needs.

[Project Name] Traffic Management Plan	
	Project #

TMP Development Managers	
Agency Of Transportation (AOT)	**Consultant**
Name/Title: Kristin Higgins Unit: Structures Phone: 802.828.0053 Email: Kristin.Higgins@vermont.gov	Name/Title: Josh Olund Unit: Bridge Phone: 207.347.4339 Email:joshua.olund@tylin.com
Roles and Responsibilities:	

TMP Implementation/Monitoring Managers	
AOT	**Consultant**
Name/Title: Unit: Phone: Email:	Name/Title: Unit: Phone: Email:
Roles and Responsibilities:	

TMP Implementation Task Leaders	
AOT	**Consultant**
Name/Title: Unit: Phone: Email:	Name/Title: Unit: Phone: Email:
Roles and Responsibilities:	

Construction Engineering	
Resident Engineer	**Regional Construction Engineer**
Name/Title: Unit: Phone: Email:	Name/Title: Unit: Phone: Email:
Roles and Responsibilities:	

Emergency Service Contacts	
Fire and Emergency Medical Services (FEMS)	**Police Department (PD)**
Name/Title: Unit: Phone: Email:	Name/Title: Unit: Phone: Email:
Roles and Responsibilities:	

[Project Name] Traffic Management Plan	
	Project #

Contractor	
Contractor	**Superintendent**
Name/Title: Address: Phone: Email:	Name/Title: Unit: Phone: Email:
Roles and Responsibilities:	
Contractors Competent Person	**Contractors Safety Officer**
Name/Title: Unit: Phone: Email:	Name/Title: Unit: Phone: Email:
Roles and Responsibilities:	

3.0 Preliminary Work Zone Impact Assessment

Traffic will be maintained through the project utilizing a two-way temporary bridge. A regional detour was considered for an accelerated closure however the only viable detour has alternating one-way traffic at another emergency bridge project. Therefor the detour was not considered further.

Maintenance of traffic will require getting additional Right of Way in order to install the temporary bridge. Additionally, utility relocation is required in order to construct this project.

The contractor may restrict the roadway during the time periods listed:

- a.m. non-peak hours, both directions
- p.m. non-peak hours, both directions
- Overnight
- Non-Holiday weekends

The Project will begin construction after the end of the school year however it is expected that the construction duration will extend into the beginning of the next school year. Given the selected maintenance of traffic alterative the impacts will have very little effect on stakeholders other than a reduced speed, and occasional short disruptions for entering/exiting construction vehicles.

It is not anticipated that this project or other nearby projects will have adverse traffic impacts on each other.

4.0 Work Zone Impact Management Strategies

This section provides an overview of various strategies employed to improve the safety and mobility of work zones and reduce the work zone impacts on communities and businesses. The strategies are grouped according to the following categories:

1. Temporary Traffic Control (TTC)
2. Transportation Operations (TO)
3. Public Information and Outreach (PI&O).

Temporary Traffic Control	√	
Control Strategies		
1. Construction phasing/staging	✓√	Pavement Tie-In's
2. Full roadway closures		
3. Lane shifts or closures	✓	Pavement Tie-In's
4. One-lane, two-way controlled operation	✓	Pavement Tie-In's
5. Two-way, one-lane traffic/reversible lanes		
6. Ramp closures/relocation		
7. Freeway-to-freeway interchange closures		
8. Night work	✓	Sound Restrictions
9. Weekend work	✓	Non-Holiday
10. Work hour restrictions for peak travel		
11. Pedestrian/bicycle access improvements		
12. Business access improvements		

[Project Name] Traffic Management Plan	
	Project #

Temporary Traffic Control	√	
13. Off-site detours/use of alternate routes		
Traffic Control Devices		
14. Temporary signs	✓	
15. Arrow boards		
16. Channelizing devices	✓	
17. Temporary pavement markings	✓	
18. Flaggers and uniformed traffic control officers	✓	
19. Temporary traffic signals		
20. Lighting devices	✓	Night Work
Project Coordination Strategies		
21. Other area projects	✓	Moretown lane closure
22. Utilities	✓	
23. Right-of-Way	✓	
24. Other transportation infrastructure		
Innovative Contracting Strategies		
25. Design-Build		
26. A+B Bidding		
27. Incentive/Disincentive clauses	✓	For discussion
28. Lane rental		
29. Performance specifications		
Innovative or Accelerated Construction Techniques		
30. Prefabricated/precast elements	✓	
31. Rapid cure materials		

Transportation Operations	√	
Demand Management Strategies		
1. Transit service improvements		
2. Transit incentives		
3. Shuttle services		
4. Parking supply management		
5. Variable work hours		
6. Telecommuting		
7. Ridesharing/carpooling incentives		
8. Park-and-Ride promotion		

[Project Name] Traffic Management Plan	
	Project #

Transportation Operations	√	
Corridor/Network Management Strategies		
9. Signal timing/coordination improvements		
10. Temporary traffic signals		
11. Street/intersection improvements		
12. Bus turnouts		
13. Turn restrictions		
14. Parking restrictions		
15. Truck/heavy vehicle restrictions		
16. Reversible lanes		
17. Dynamic lane closure system		
18. Ramp closures		
19. Railroad crossing controls		
20. Coordination with adjacent construction site(s)		
Work Zone ITS Strategies		
21. Late lane merge		
22. PCMS with speed display		
23. Travel time estimation system		
24. Advanced speed information system		
25. Advanced congestion warning system		
26. Conflict warning system (e.g., construction vehicles entering roadway)	✓	
27. Travel time monitor system		
28. Freeway queue monitor system		
29. CCTV monitoring		
30. Real-time detour		
Work Zone Safety Management Strategies		
31. Speed limit reduction/variable speed limits	✓	
32. Temporary traffic signals		
33. Temporary traffic barrier	✓	
34. Movable traffic barrier systems		
35. Crash cushions		
36. Temporary rumble strips		
37. Intrusion alarms		
38. Warning lights		
39. Automated flagger assistance devices (AFADs)		

[Project Name] Traffic Management Plan	
	Project #

Transportation Operations	√	
40. Project task force/committee		
41. Construction safety supervisors/inspectors		
42. Road safety audits		
43. TMP monitor/inspection team		
Incident Management and Enforcement Strategies		
44. ITS for traffic monitoring/management		
45. TMC		
46. Surveillance (e.g., CCTV)		
47. Helicopter for aerial surveillance		
48. Traffic Screens		
49. Call boxes		
50. Mile-post markers		
51. Tow/freeway service patrol		
52. Total station units		
53. Photogrammetry		
54. Media coordination		
55. Local detour routes		
56. Contract support for Incident Management		
57. Incident/Emergency management coordination		
58. Incident/Emergency response plan		
59. Dedicated (paid) police enforcement		
60. Cooperative police enforcement		
61. Automated enforcement		
62. Increased penalties for work zone violations		
63. Emergency pull-offs		

Additional information can be acquired from the "Workzone Safety and Mobility Guidelines" and "Appendix A" to said document:

Public Information and Outreach	√	
Public Awareness Strategies		
1. Branding		
2. Press kits		
3. Brochures and mailers		
4. Press releases/media alerts	✓	
5. Mass media (earned and/or paid)		
6. Paid advertisements		

[Project Name] Traffic Management Plan	
	Project #

7. Project Information Center		
Public Information and Outreach	√	
8. Telephone hotline		
9. Planned lane closure website		
10. Project website		
11. Public meetings/hearings, workshops	✓	
12. Community task forces		
13. Coordination with media/schools/business/emergency services	✓	
14. Work zone education and safety campaigns		
15. Work zone safety highway signs		
16. Rideshare promotions		
17. Visual information		
Motorist Information Strategies		
18. Radio traffic news		
19. Changeable message signs		
20. Temporary motorist information signs		
21. Dynamic speed message sign		
22. Highway Advisory Radio (HAR)		
23. Extinguishable Signs		
24. Highway information network (web-based)		
25. Traveler information systems(wireless, handheld)		
26. Transportation Management Center (TMC)		
27. Live traffic camera(s) on a website		
28. Project information hotline		
29. Email alerts		

5.0 Notes

This project is an emergency culvert replacement and as such is moving very quickly. The Agency is committed to ensuring a successful delivery which includes implementation of an effective traffic control operation and traffic management plan.

6.0 TMP Implementation/Monitoring

Agency requirements for TMP implementation and monitoring can be included here. The responsible personnel for TMP implementation and monitoring can be identified in Section 2.0—Roles and Responsibilities.

Monitoring performance of the TMP during the construction phase is important in establishing whether the predicted impacts closely resemble the actual conditions in the field, and whether the TMP strategies are effective in managing the impacts. According to 23 CFR 630 Subpart J -§630.1012(e), the State/Agency and the contractor shall each designate a trained person at the project level who has the primary responsibility and sufficient authority for implementing the TMP and other safety and mobility aspects of the project.

7.0 TMP Review/Approvals

TMPs, and changes to TMPs, must be approved by the DOT before they are implemented. A sample TMP Approval Template is given below which can be modified by agencies according to their practice/needs.

Chief Engineer			Project Engineer		
All approvals must be obtained prior to start of work					
Signature: Name: Date:			Signature: Name: Date:		
Revision#	Initials	Date	Revision#	Initials	Date
1			1		
2			2		

8.0 Appendices

A. Traffic Analysis Reports (if applicable)
B. Temporary Traffic Control Plans
C. Public Information and Outreach Plan (if applicable)
D. Post Project Evaluation Report

Alternative Delivery Selection Matrix

Date Completed: _____
Completed By: _____

DECISION MATRIX

1	2	3	4
Does the project have the appropriate scale to consider alternative delivery?	Will means and methods have a significant influence on cost and schedule?	Is schedule a significant driver of the project?	Are there technical complexities on the job?

	Weight (0-10)	Item	DBB	DB	CMGC
TECHNICAL	**10**	**Overall Project Schedule**	**1**	**3**	**1**
	10	**Overall Construction Cost**	**3**	**3**	**1**
	10	**Permitting Risk**	**3**	**1**	**3**
	10	**Design Innovation Potential**	**1**	**3**	**2**
	10	**Means and Methods (Construction)**	**1**	**3**	**2**
	Weight (0-5)	**Item**	**DBB**	**DB**	**CMGC**
	5	Design Control	3	1	3
	5	Early Construction Work Potential	1	3	2
	5	ROW Risk	3	1	3
	5	Railroad Risk	1	2	3
	5	Utility Risk	1	2	3
	5	Geotechnical Risk	2	1	3
	5	Traffic Management/Mobility Impacts	2	1	3
	Weight (0-10)	**Item**	**DBB**	**DB**	**CMGC**
PROCESS	**10**	**Timing for Contractor Procurement**	**1**	**3**	**1**
	Weight (0-5)	**Item**	**DBB**	**DB**	**CMGC**
	5	VTrans Alternative Contracting Staff Availability	3	2	1
	5	Public Involvement/Outreach	2	2	3
	5	Contractor Qualifications	1	2	3
		TOTAL	**195**	**245**	**235**

DBB: Design Bid Build
DB: Design Build
CMGC: Construction Manager General Contractor

Comments:

Recommended Delivery Method: _____

Management Approval of Scope: _____

See Commentary for instructions and additional information.
Version: 2.0 Last Modified: November 9, 2016

VTRANS ALTERNATIVE CONTRACTING DECISION MATRIX COMMENTARY

Notes/Instructions:

1. The user should answer yes or no to the four questions at the top of the page. If the answer to any of the questions is "Yes", they should complete the matrix in the table. If the answer to all of them is "No", DBB is likely the best procurement method.
2. The user is to weight each Item from 0-10 (or 1-5), where 0 is not applicable and 10 (or 5) is most important to the project. See Commentary below for additional information for each Item.
3. The same weighting can be given to more than one Item. For example, both Construction Cost and ROW Risk can be given a weight factor of 9, if they are both very important to completing the project successfully.
4. The different procurement methods, DBB, DB, and CMGC, are pre-populated with importance factors for each item indicating the procurement method that is best suited, with "3" representing most advantageous and "1" representing least advantageous. The importance factors are not to be modified by the user.
5. Once each Item has been weighted, the procurement method with the highest total score is considered the best suited for the project.

Technical

Overall Project Schedule

DBB	Does not allow for any concurrent design and construction activities.
DB	Generally reduces overall project schedule by allowing early construction elements to be started prior to completion of final design. Allows for more concurrent activities
CMGC	Allows for some concurrency of design and construction activities with early release packages, but includes significant risk to overall schedule due to delays in negotiating final TMP and potential to end the process and go back to DBB.

Overall Construction Cost

DBB	Low bid contractor is typically selected which can motivate contractors to bid aggressively but not having early contractor input can negatively influence overall construction cost, often due to additional work and claims.
DB	Price is still a factor in selection which motivates contractors to bid aggressively and early Contractor input into design can reduce construction cost through innovation
CMGC	Early contractor input can positively impact cost but can be offset by lack of competitive bid environment. The only cost check for the CMGC is the ICE.

Updated: May 21, 2015

Permitting Risk

DBB	Agency can use their standard permitting process and address issues as they arise
DB	DB team has little control over permitting risk Permitting risk can create major schedule impacts
CMGC	Agency can use their standard permitting process and address issues as they arise. CMGC can also advise on means and methods which could help minimize environmental impacts.

Design Innovation Potential

DBB	Design innovation potential is limited to the single designer and does not have the benefit of contractor input which can spur design innovation.
DB	Allows for early contractor input which can spur design innovation. Agency gets the benefit of three shortlisted design teams looking for innovative solutions which can lead to cost and schedule savings.
CMGC	Allows for early contractor input which can spur design innovation. Agency does not get the benefit of multiple design teams.

Means and Methods (Construction)

DBB	Lack of early contractor input does not allow for streamlining the design based on innovative means and methods.
DB	Allows for input from Contractor during procurement phase which can lead to innovative solutions and potential cost or schedule savings. Potential for additional savings having multiple shortlisted contractors competing.
CMGC	Constant input from the CMGC during the process allows for innovative solutions and potential cost or schedule savings.

Design Control

DBB	Agency has full control over design
DB	Agency has less control over design
CMGC	Agency has full control over design

Early Construction Work Potential

DBB	No possibility of construction work prior to design completion
DB	Contractor can begin work in discrete packages as design continues
CMGC	Early work must be in completely severable packages in case a final construction cost cannot be agreed upon and project goes out to bid

ROW Risk

DBB	Agency can use their standard ROW process and address issues as they arise
DB	Given the potential for significant delays in the ROW process, it is generally advised not to procure a DB Contractor prior to obtaining required ROW
CMGC	Agency can use their standard ROW process and address issues as they arise. Also allows input from CMGC on needs for easements to facilitate construction which could help minimize land takings and associated costs.

Railroad Risk

DBB	Railroad negotiation and agreements are already in place with no contractor input
DB	Railroad negotiation and agreements are already in place with no contractor input however the contractor still has ability to renegotiate elements of agreement to fit their design and construction methods.
CMGC	Agency and contractor can work together to develop an agreement with railroad to best suit the project needs

Utility Risk

DBB	Utility negotiations and agreements are already in place with no contractor input
DB	Utility negotiations and agreements are already in place with no contractor input however the contractor still has ability to renegotiate elements of agreement to fit their design and construction methods.
CMGC	Agency can use their standard utility process and address issues as they arise. CMGC can also advise on means and methods which could help minimize utility impacts.

Geotechnical Risk

DBB	Allows for completion of full geotechnical program prior to bidding which minimizes geotechnical risk for the contractor.
DB	Generally pricing is completed prior to completion of the geotechnical program which generally shifts a portion of that risk to the DB Team.
CMGC	Allows for completion of full geotechnical program prior to developing the final TMP which minimizes geotechnical risk for the contractor. CMGC also allows for a discussion of risk and specific assignment of geotechnical risk to either party.

Traffic Management / Mobility Impacts

DBB	Allows for completion of full geotechnical program prior to bidding which minimizes geotechnical risk for the contractor.
DB	Generally pricing is completed prior to completion of the geotechnical program which generally shifts a portion of that risk to the DB Team.
CMGC	Allows for completion of full geotechnical program prior to developing the final TMP which minimizes geotechnical risk for the contractor. CMGC also allows for a discussion of risk and specific assignment of geotechnical risk to either party.

Process

Timing for Contractor Procurement

DBB	This is the longest time from programming the project to procurement of contractor as the schedule is driven by the amount of time needed to complete design. This results in the longest time for obligation of construction funds.
DB	This allows for a faster procurement of contractor than DBB or CMGC which can be a benefit if timing of funding is critical. This is the shortest duration for obligating construction funds.
CMGC	Similar to DBB, the schedule is driven by the amount of time needed to complete design, and has additional time needed to complete cost reconciliation with the Independent Cost Estimator (ICE).

VTrans Alternative Contracting Staff Availability

DBB	Staff hours required to manage the project is standard for the Agency
DB	Staff hours required to manage the project can be slightly more than DBB for TEC process and submittal reviews
CMGC	Staff hours required to manage the project and cost negotiation are much greater than DBB

Public Involvement/Outreach

DBB	Agency has full control over public outreach
DB	Agency can require certain public outreach criteria of the DB team as part of the procurement process
CMGC	Agency and CMGC can work together to develop a public outreach program based on CMGC construction schedule

Contractor Qualifications

DBB	Contractor is procured via Low Bid therefore Agency has little control over the contractor selection
DB	DB team is procured via Best-Value, a combination of qualifications and cost giving the Agency more control over the selected contractor.
CMGC	Agency has full control and can select CMGC via Best-Value or Qualifications only

B Appendix B: Scoping Questionnaires

- Local and Regional Input Questionnaire
- Operations Input Questionnaire

Local Concerns Questionnaire

Local & Regional Input Questionnaire

Community Considerations

1. Are there any scheduled public events in the community that will generate increased traffic (e.g. vehicular, bicycles and/or pedestrians), or may be difficult to stage if the bridge is closed during construction? Examples include bike races, festivals, parades, cultural events, farmers market, concerts, etc. that could be impacted? If yes, please provide date, location and event organizers' contact info.
2. Is there a "slow season" or period of time from May through October where traffic is less?
3. Please describe the location of emergency responders (fire, police, ambulance) and emergency response routes.
4. Are there businesses (including agricultural operations) that would be adversely impacted either by a detour or due to work zone proximity?
5. Are there important public buildings (town hall, community center, senior center, library) or community facilities (recreational fields, town green, etc.) close to the project?
6. What other municipal operations could be adversely affected by a road/bridge closure or detour?
7. Are there any town highways that might be adversely impacted by traffic bypassing the construction on another local road?
8. Is there a local business association, chamber of commerce or other downtown group that we should be working with?

Schools

1. Where are the schools in your community and what are their schedules?
2. Is this project on the specific routes that students use to walk to and from school?
3. Are there recreational fields associated with the schools (other than at the school)?

Pedestrians and Bicyclists

1. What is the current level of bicycle and pedestrian use on the bridge?
2. Are the current lane and shoulder widths adequate for pedestrian and bicycle use?
3. Does the community feel there is a need for a sidewalk on the bridge?
4. Is pedestrian and bicycle traffic heavy enough that it should be accommodated during construction?

Local & Regional Input Questionnaire

5. Does the Town have plans to construct either pedestrian or bicycle facilities leading up to the bridge? Please provide a planning document demonstrating this (scoping study, master plan, corridor study, town plan).

6. In the vicinity of the bridge, is there a land use pattern, existing generators of pedestrian and/or bicycle traffic, or zoning that will support development that is likely to lead to significant levels of walking and bicycling?

Communications

1. Please identify any local communication channels that are available for us to use in communicating with the local population. Include weekly or daily newspapers, blogs, radio, public access TV, Front Porch Forum, etc. Also include any unconventional means such as local low-power FM.

Design Considerations

1. Are there any concerns with the alignment of the existing bridge? For example, if the bridge is located on a curve, has this created any problems that we should be aware of?

2. Are there any concerns with the width of the existing bridge?

3. Are there any special aesthetic considerations we should be aware of?

4. Does the location have a history of flooding? If yes, please explain.

5. Are there any known Hazardous Material Sites near the project site?

6. Are there any known historic, archeological and/or other environmental resource issues near the project site?

7. Are there any other comments that are important for us to consider?

Land Use & Zoning (to be filled out by the municipality or RPC).

1. Please provide a copy of your existing and future land use map or zoning map, if applicable.

2. Is there any existing, pending or planned development proposal that would impact future transportation patterns near the bridge? If so please explain.

3. Is there any planned expansion of public transit service in the project area? If not known please contact your Regional Public Transit Provider.

Operations and Maintenance Questionnaire

Bridge Scoping Project
VT Route 18, Waterford BF 0225(5), 15b051
Operations Input Questionnaire

The Structures Section has begun the scoping process for Waterford BF 0225(5), Bridge 2, over an unnamed brook. This is Corrugated Galvanized Metal Plate Pipe (CGMPP) constructed in 1981. The Structure Inspection, Inventory, and Appraisal Sheet (attached) rates the culvert as 3 (serious). We are interested in hearing your thoughts regarding the items listed below. Leave it blank if you don't wish to comment on a particular item.

1. Your thoughts on the general condition of this bridge and the general maintenance effort required to keep it in service.

2. Any comments on the geometry of the bridge (curve, sag, banking, sight distance)?

3. Do you feel the posted speed limit is appropriate?

4. Is the width adequate for snow plowing?

5. Are you aware of any unpermitted driveways within the likely project limits? We frequently encounter driveways that prevent us from meeting railing standards and then discover them to be illegal.

6. Are you aware of abutting property owners that are likely to need special attention during the planning and construction phases? These could be people with disabilities, elderly, or simply folks who feel they have been unfairly treated in the past.

7. Do you find that extra effort is required to keep the slopes and river banks around the bridge in a stable condition? Is there frequent flood damage that demands repair?

Bridge Scoping Project
VT Route 18, Waterford BF 0225(5), 15b051
Operations Input Questionnaire

8. Does this bridge seem to pick up an unusual amount of debris from the waterway?

9. Do you think a closure with off-site detour and accelerated construction would be appropriate? What should we consider for a detour route, assuming that we use State route for State projects and any route for Town projects?

10. Please describe any larger projects that you have completed that may not be reflected on the attached Appraisal sheet, such as culvert clearing, deck patches, paving patches, railing replacement with new type, steel coating, etc.

11. If there is a sidewalk over this structure, how effective are the Town's efforts to keep it snow and ice free?

12. Are there any drainage issues that we should address on this project?

13. Are you aware of any complaints that the public has about issues that we can address on this project?

14. Anything else?

C Appendix C: Special Provisions Template

State of Vermont Month, Day, Year(Should be the day of advertising)
Agency of Transportation Page 1

Special Provisions for: Project Project Number

**Special Provision #1.

Labor Market Area:

1. LABOR SUPPLY. Available workers for this Contract may be obtained from the Vermont Department of Employment & Training's webpage at the following address: http://www.vtlmi.info/region.cfm and from the VTrans Office of Civil Rights and Labor Compliance's webpage at the following address: http://vtrans.vermont.gov/sites/aot/files/civilrights/documents/edhc/EmploymentResourceList.pdf.

**Special Provision #2. There are three variations as shown. Two variations require provision #3 as shown.

Date Only:

2. CONTRACT COMPLETION DATE. This Contract shall be completed on or before Month, Day, Year.

If Completion Date is set outside of construction season (i.e. after December 1st):

In accordance with this requirement, and with reference to Subsection 108.09(d), work will be allowed during the seasonal closure period from Month (December-April) Day, Year to Month (December-April) Day, Year. Example: December 7, 2016 to February 18, 2017.

Duration Only:

2. CONTRACT COMPLETION DATE. This Contract shall be completed in a Contract time of xxx calendar days or less during the 20xx construction season.

3. NOTICE TO BIDDERS. Upon any Contractor's receipt of the VAOT Contract award letter, the Contractor shall submit to the VAOT Construction Section for review and approval a certified letter which states the Contract BEGIN CONSTRUCTION DATE. This letter shall be received by the Construction

Section a minimum of fourteen (14) calendar days prior to the BEGIN CONSTRUCTION DATE indicated in the letter. The BEGIN CONSTRUCTION DATE shall be determined by the Contractor. Upon receipt of this letter by the Construction Section, a formal Notice to Proceed will be processed and a pre-construction conference scheduled. Accompanying this letter, the Contractor shall submit a progress schedule as specified in Subsection 108.03.

The xxx calendar day duration given to complete the Contract will begin at 12:01 a.m. on the BEGIN CONSTRUCTION DATE submitted in the letter, regardless of whether or not construction activities actually begin on that date, and will expire at 11:59 p.m. on the xxxth calendar day. If the Contractor fails to complete the Contract within the xxx day Contract time, liquidated damages in accordance with the provisions of Subsection 108.12 will be assessed for each calendar day following the xxx day Contract time that the Contract remains unfinished.

Duration and Date:

2. CONTRACT COMPLETION DATE. This Contract shall be completed in a Contract time of xxx calendar days or less during the 20xx construction season, but no later than Month Day, Year.

3. NOTICE TO BIDDERS. Upon any Contractor's receipt of the VAOT Contract award letter, the Contractor shall submit to the VAOT Construction Section for review and approval a certified letter which states the Contract BEGIN CONSTRUCTION DATE. This letter shall be received by the Construction Section a minimum of fourteen (14) calendar days prior to the BEGIN CONSTRUCTION DATE indicated in the letter. The BEGIN CONSTRUCTION DATE shall be determined by the Contractor. Upon receipt of this letter by the Construction Section, a formal Notice to Proceed will be processed and a pre-construction conference scheduled. Accompanying this letter, the Contractor shall submit a progress schedule as specified in Subsection 108.03.

The xxx calendar day duration given to complete the Contract will begin at 12:01 a.m. on the BEGIN CONSTRUCTION DATE submitted in the letter, regardless of whether or not construction activities actually begin on that date, and will expire at 11:59 p.m. on the xxxth calendar day.

If the Contractor fails to complete the Contract within the xxx day Contract time or by Month Day, Year, whichever occurs sooner, liquidated damages in accordance with the provisions of Subsection 108.12 will be assessed for each calendar day following the xxx day Contract time, or for each working day following Month Day, Year, whichever occurs sooner, until the established Substantial Completion Date.

Interim Completion Date:

xx. INTERIM COMPLETION DATE.

The contractor shall list work required on list highway from MM xxx to MM xxx in Town(s) or City(ies) shall be completed on or before Month Day, Year.

Liquidated damages in the amount of xx% (*A calculation is required for documentation purposes. This number is the percentage of the work required of the total estimated project cost)* of the applicable Contract Daily Charge Per Day of Delay in accordance with Subsection 108.12(c) will be

assessed for each working day following October 14, 2016 that the specified work is not completed. These liquidated damages are separate from, and will be imposed in addition to, liquidated damages which may be imposed for failure to complete the Contract on time.

The provisions for substantial completion and for an extension of time will not apply to the requirements listed above on or before October 14, 2016 unless authorized by the Vermont Agency of Transportation.

xx. NOTICE TO BIDDERS - WORK REQUIREMENT(S).

The Contractor is hereby notified xxx (Include any requirement associated with the Interim Completion Date).

Special Provision immediately following Contract Completion Date (and Interim Completion Date, if applicable) special provision(s). There are two variations as shown. Applicability is determined in accordance with FHWA-1273 Section IV PAYMENT OF PREDETERMINED MINIMUM WAGE. From the FHWA " **A Guide To Federal-Aid Programs And Projects - http://www.fhwa.dot.gov/federalaid/projects.pdf", there are two excepts. If any of the listed Funding "program codes" are use, then Davis-Bacon wages are required.

Davis-Bacon applies:

xx. NOTICE TO BIDDERS. U.S. Department of Labor Davis-Bacon wage rates are applicable to this Contract. Copies of the applicable rates are included in this proposal.

In the included wage rates, the requirements of Executive Order 13658 do not apply to this Contract.

Davis-Bacon does not apply:

xx. NOTICE TO BIDDERS. U.S. Department of Labor Davis-Bacon wage rates are not applicable to this Contract.

**Special Provision immediately following Davis-Bacon special provision. The deadline for inquiries is to be set as the Friday prior to the bid opening date.

xx. CONTACT WITH THE AGENCY. From the time of advertising until the actual bid opening for this Contract, all prospective Contractors, subcontractors, and suppliers shall direct all inquiries related to this project solely to the Agency's Office of Contract Administration AOT.ConstructionContractingInquiry@vermont.gov.

The deadline for submitting inquiries related to this project to the Office of Contract Administration is 4:30 p.m. Eastern Standard Time on Month Day, Year (1 week before bid opening). No exceptions will be made to this requirement.

**Placement of the following in the special provision document is dependent on type of project and the inclusion of other project specific Notices to Bidders, etc. When developing draft special provisions, a project of similar type should be referenced to retain consistency in document set-up.

xx. NOTICE TO BIDDERS. The Contractor is hereby notified that in the absence of the Engineer, the Agency's Safety Officer and the Agency's Hazardous Materials and Waste Coordinator shall each have the authority to suspend work when they determine that a serious safety or environmental violation exists on the job site. The period of time work is suspended due to a serious safety or environmental violation will not be justification for an extension of time.

xx. NOTICE TO BIDDERS – ELECTRONIC DOCUMENT MANAGEMENT.

The Contractor is hereby notified that the Contractor, their subcontractors, and suppliers shall use Doc Express for collection and management of electronic documents. Doc Express is a web based document management program which accepts electronic documents and provides security as appropriate for each submittal. All Contract required documents, such as Working Drawings as defined in subsection 105.03 of the 2011 Standard Specifications for Construction, Progress Schedules, Mix Designs, Weld Procedures, Requests for Information and Erosion Control Plans shall be submitted at the following link: https://docexpress.com. The entire submittal and review process shall occur within Doc Express except payroll and material acceptance requirements.

All costs associated with the use of Doc Express will be considered incidental to Item 635.11, Mobilization/Demobilization. The State will manage the Doc Express platform including Contract setup upon Contract execution.

For more information regarding the use of Doc Express see the information at the following link:
https://outside.vermont.gov/agency/vtrans/external/docs/construction/Contracting/DocExpressOverviewforContractors.docx

**The next four special provisions will occur in sequence in the special provision document:

xx. STANDARD SPECIFICATIONS. The provisions of the 2011 STANDARD SPECIFICATIONS FOR CONSTRUCTION, as modified herein, shall apply to this Contract.

xx. SUPPLEMENTAL SPECIFICATIONS AND CONTRACT REQUIREMENTS. The Contractor's attention is directed to the following specifications and contract requirements included in the Proposal form and effective for this Contract:

Required Contract Provisions for Federal-Aid Construction ***(as applicable if project is 100% state funds then these are not included)***
Standard Federal EEO Specifications
VT Agency of Transportation Contractor Workforce Reporting Requirements
Workers' Compensation; State Contracts Compliance Requirement
General Special Provisions dated October 12, 2016
Bulletin 3.5 Attachment C: Standard State Provisions for Contracts and Grants
Vermont Minimum Labor & Truck Rates
Disadvantaged Business Enterprise (DBE) Policy Contract Requirements
U.S. Department of Labor Davis-Bacon Wage Rates(as applicable)
[Supplemental Specifications](as applicable)
[Project Permits](as applicable)
[Other Documents (Category II Work Plans, PIFs, Geotechnical Reports, etc.](as applicable)
Certification for Federal-Aid Contracts ***(as applicable if project is 100% state funds then these are not included)***
Contractor's EEO Certification Form
Debarment & Non-Collusion Affidavit

xx. NOTICE TO BIDDERS – CONTRACT INSURANCE REQUIREMENTS. The Contractor is hereby notified that in the event of a discrepancy between the stated insurance requirements of Bulletin 3.5 Attachment C: Standard State Provisions for Contracts and Grants and those of Subsection 103.04 of the Standard Specifications for Construction, the requirements of Subsection 103.04 of the Standard Specifications for Construction shall govern.

xx. NOTICE TO BIDDERS – ADDITIONAL CONTRACT REQUIREMENT. For construction and transportation projects over $250,000.00, a payroll process by which during every pay period the Contractor collects from the subcontractors or independent contractors a list of all workers who were on the jobsite during the pay period, the work performed by those workers on the jobsite, and a daily census of the jobsite. This information, including confirmation that Contractors, subcontractors, and independent contractors have the appropriate workers' compensation coverage for all workers at the jobsite, and similar information for the subcontractors regarding their subcontractors shall also be provided to the Department of Labor and to the Department of Banking, Insurance, Securities, and Health Care Administration, upon request, and shall be available to the public.

xx. NOTICE TO BIDDERS-CARGO PREFERENCE REQUIREMENT. The contractor is hereby notified that the Contractor and Subcontractor(s) are required to follow the requirements of 46 CFR 381.7 (a)-(b). For guidance on requirements of Part 381 – Cargo Preference – U.S.Flag Vessels please go to the following web link: https://www.fhwa.dot.gov/construction/cqit/cargo.cfm.

xx. NOTICE TO BIDDERS – GEOTECHNICAL DATA REPORT. ***(as applicable)*** The Contractor is hereby notified of the *Geotechnical Data Report* for this project. This report is available from the Contract Administration FTP site and "Advertised Projects" website, and is being provided during the bid solicitation period for this project for information and bidding purposes only.

Special Provisions for: Project Name Project Number Month, Day, Year
Page 6

xx. NOTICE TO BIDDERS – RE-DESIGNATION OF VTRANS OFFICIALS. The Contractor is hereby notified of the following re-designation of VTrans officials as referenced in the Contract Documents:

Where in the Contract Documents it reads:	It shall be read as and shall mean:
Director of Program Development	Chief Engineer
Assistant Director of Program Development	Deputy Chief Engineer
Roadway, Traffic, and Safety Engineer; Roadway Program Manager; Highway Safety & Design Engineer;	Highway Safety and Design Program Manager
Structures Engineer	Structures Program Manager
Chief of Local Transportation Facilities	Director of Municipal Assistance Bureau
Construction Engineer; Materials and Research Engineer	Director of Construction and Materials Bureau
Director of Operations	Director of Maintenance and Operations Bureau

**The next three special provisions will occur in sequence in the special provision document if incentive/disincentive (I/D) is used or night work is required. Please note this language may vary depending on the Contract requirements but this is the most common one used.

xx. NOTICE TO BIDDERS - INCENTIVE/DISINCENTIVE (I/D). The Agency's intent is to have the bridge closure period (BCP) be as short a duration as possible. To encourage the Contractor to provide a maximum effort to complete the Identified Work for I/D within the period as defined below, the Agency is willing to pay an incentive.

(a) Dates. The allowable BCP shall start at x:xx a.m. and end write out number (e.g. twenty-eight (xx) consecutive calendar days later by x:xx a.m. The duration shall be between Month Day, Year and Month Day, Year, inclusive. The write out number (e.g. twenty-eight (xx) consecutive calendar day BCP is herein defined as the I/D period.

During the BCP, the Contractor will be allowed to work on the Bridge for 24 hours per day, 7 days per week, including holiday periods.

Night work will be allowed during the BCP. See Special Provision No. xx NOTICE TO BIDDERS - REQUIREMENTS FOR NIGHTTIME WORK and No.14 NOTICE TO BIDDERS – NIGHTTIME WORK RESTRICTIONS for additional information and requirements.

The Contractor shall submit to the VAOT Construction Section for review and approval a certified letter indicating the BEGIN CONSTRUCTION DATE for the BCP work. This letter shall be received by the Construction Section a minimum of write out number (xx) calendar days prior to the BEGIN CONSTRUCTION DATE indicated in the letter. The BEGIN CONSTRUCTION DATE shall be determined by the Contractor.

The I/D period as established above for this Contract is absolutely fixed and will not be changed for any Act of God, omission, improper action, direction of the Engineer, or any other reason unless done so by the Secretary and only under extreme conditions as determined by the Secretary.

There shall be a pre-closure meeting held on site with the Contractor's Superintendent, Contractor's Project Manager, the Engineer, the Project Manager, the Town of xxx, Town of xxx Fire Department, Vermont State Police, and xxx Regional Commission (xxx) to discuss durations of work, types of night work, work sequencing, etc. The Contractor shall be responsible for setting this meeting up and making appropriate contacts. This meeting shall be held a minimum of xx days prior to the BCP.

There shall be a public information meeting. The Contractor's Superintendent and Contractor's Project Manager shall be available to attend. The Contractor shall be prepared to discuss the construction schedule with the public. The Public Outreach Coordinator shall be responsible for setting this meeting up and making appropriate contacts. This meeting shall be held a minimum of write out number (xx)days prior to the first BCP.

In addition, weekly meetings between the Contractor, Engineer, and other pertinent parties as determined by the Engineer shall be held to discuss the project progress and future construction activities, and current CPM progress schedules and narratives.

All prefabricated concrete elements shall be authorized for shipment prior to the BCP. The bridge shall remain open to traffic until the prefabricated elements are authorized for shipment.

(b) Identified Work. All work required to open the new Bridge to two-way traffic including:

(1) xxx;

(1) xxx; and

(2) xxx

No daily lane closures will be allowed before the xx days prior to the BCP to progress work items outside EPSC and Traffic Control.

In the xx days prior to the BCP the contractor will be allowed to maintain a minimum of one-lane (xx feet wide) alternating traffic for drilling and/or pile driving operations during daytime hours.

No night work will be allowed during this xx day window and two-lane, two-way traffic must be maintained on the existing alignment during nighttime hours.

(c) Pay Schedule. The Contractor will receive a lump sum compensation of write out amount dollars ($xx,xxx) for completing the Identified Work before the end of the I/D period.

In addition, the Contractor will be compensated at a rate of write out amount dollars ($xxx.xx) per hour that the Identified Work is completed prior to the end of the I/D period, up to a maximum total payment as specified herein. Only full hours where the new bridge is opened by 6:00 a.m. will count toward this extra incentive payment.

The maximum amount payable under the incentive clause shall be write out amount dollars ($xx,xxx) (including the lump sum payment).

For each hour after the end of the I/D period that the Identified Work remains uncompleted, the Contractor will be assessed a disincentive at a rate of write out amount dollars ($xxx.xx) per hour. The full hourly disincentive amount will be assessed for each hour that traffic is not allowed on the bridge for any portion of the hour. There shall be no maximum on the disincentive amount.

This assessed disincentive is separate from, and will be imposed in addition to, liquidated damages which may be imposed for failure to complete the Contract on time.

(d) Underruns and Overruns. The proposal indicates an estimated quantity for each Contract pay item. The fact that the actual amounts used in the construction of this project may vary from the estimate will not be a basis or cause for changing any of the conditions for I/D.

The Agency recognizes that additional work beyond the work indicated in the Plans, is always possible in any construction contract. The Agency is willing to pay for necessary additional work in accordance with the terms and requirements of the Contract and the Standard Specifications for Construction, however, the Contractor shall absorb any resulting construction time within the original project and CPM Schedules, and there will be no adjustments or changes to the I/D dates or I/D conditions.

(e) Payment. Payment will be made as specified in Section 900.

xx. NOTICE TO BIDDERS – REQUIREMENTS FOR NIGHTTIME WORK. The Contractor is hereby notified that night work will be allowed during the bridge closure period.

Night work shall be performed in accordance with the National Cooperative Highway Research Program (NCHRP) Report 476 – "Guidelines for Design and Operation of Nighttime Traffic Control for Highway Maintenance and Construction". A copy of this guideline specification may be downloaded from the following website: http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_476.pdf.

Prior to beginning night work, the Contractor shall design a lighting system and present it to the Engineer for approval. The Contractor shall not perform any night work or activities within the project limits until the lighting system has been fully approved and is in place on the project.

The designed lighting system shall be mobile, shall be mounted separately from other construction equipment, shall illuminate the entire work area to daylight intensity with minimal glare, and shall be a surrounding design that minimizes shadows in the work area as much as possible.

All costs associated with the lighting system will be considered incidental to Contract item number and name.

xx. NOTICE TO BIDDERS - NIGHTTIME WORK RESTRICTIONS. The Contractor is hereby notified that during the bridge closure period, no work shall be performed between the hours of x:xx p.m. and x:xx a.m. that creates a noise level exceeding xx decibels. The decibel level shall be measured from the point of activity to the nearest occupied residence.

Construction activities expected to reach this noise threshold include pneumatic hammers, hoe-ram, and similar impact type equipment.

The Contractor shall provide the Engineer, for the duration of the nighttime work, with a sound level meter capable of measuring this noise criteria during the bridge closure period.

Sound level meters shall be Rion NL-20, CESVA SC-160, Extech 407780 or an approved equal capable of meeting IEC60651: 1979 Type 2 and IEC60804: 1985 Type 2 Standards.

The cost for providing this equipment and meeting the specified noise level criteria will not be paid for separately, but will be considered incidental to all other Contract items.

xx. NOTICE TO BIDDERS. All temporary construction signs shall meet the following requirements:

A. Where sign installations are not protected by guardrail or other approved traffic barriers, all sign stands and post installations shall meet National Cooperative Highway Research Program (NCHRP) Report 350 or the AASHTO Manual for Assessing Safety Hardware (MASH). The appropriate resource shall be determined as described in the MASH publication. No sign posts shall extend over the top of the sign installed on said post(s). When anchors are installed, stub shall not be greater than 4 inches above existing ground.

B. As a minimum, roll up sign material shall have ASTM D 4956 Type VI fluorescent orange retroreflective sheeting.

C. All post-mounted signs and solid substrate portable signs shall have ASTM D 4956 Type VII, Type VIII, or Type IX fluorescent orange retroreflective sheeting.

D. All retroreflective sheeting on traffic cones, barricades, and drums shall be at a minimum ASTM D 4956 Type III sheeting.

E. All stationary signs shall be mounted on two 3 lb/ft flanged channel posts or 2 inch square steel inserted in 2 ¼" galvanized square steel anchors. No sign posts shall extend over the top edge of sign installed on said posts.

F. Prior to placing temporary work zone signs on the project, the Contractor must furnish for the Engineer's approval a detail for temporary work zone signs on steel posts showing stubs projecting a maximum of 4 inches above ground level and bolts for sign post.

G. Construction signs shall be installed so as to not interfere with nor obstruct the view of existing traffic control devices, stopping sight distance, and corner sight distance from drives and town highways.

H. Speed zones, if used, should be a maximum of 10 mph below existing posted speeds. Temporary speed limit certificates must be approved by the Chief Engineer.

xx. NOTICE TO BIDDERS. All retroreflective sheeting on permanent signs (signs to remain after the project is completed) shall be at a minimum ASTM D 4956 Type III sheeting, unless otherwise shown on the Plans.

xx. NOTICE TO BIDDERS – CONCURRENT CONSTRUCTION. ***(as applicable)*** The Contractor is made aware of the following VTrans construction project expected to be in progress within the area of this project during its construction.

Project	Contractor	Anticipated Contract Completion Date
Project Name Project Number	TBD if unknown Name if known	TBD if unknown Date if known

The Contractor shall coordinate construction schedules and traffic control with the work required for these projects.

There will be no extra compensation paid to the Contractor for any inconvenience caused by working around these or other projects.

xx. ENVIRONMENTAL. Contract Commitments as written – found on Environmental Commitments Memo.

xx. UTILITIES. Utility Special Provisions as written except do not write out the entire item name and number. Instead state: 'in accordance with Contract item xxx.xx'.

xx. NOTICE TO BIDDERS - SALVAGED MATERIALS. ***(as applicable)*** The Contractor is hereby notified that xxx removed and not re-used on the project shall remain the property of the State.

All costs for loading and delivering these salvaged materials will be incidental to Contract item xxx.xx, item name.

The Contractor shall load xxx of the salvaged materials onto suitable transport and deliver them to the VTrans Name which District – Example: Mendon garage at full address.

The Contractor shall contact Name (Sometimes this is the Garage Supervisor, Maintenance Area Supervisor, or DTA – If you do not know or have a specific person as contact than use their title(s)) [Tel.: (802) xxx-xxxx] a minimum of two (2) weeks prior to beginning delivery to the designated location.

If the location to deliver the salvaged materials is more than 10 miles away you must get approval from FHWA.

**There are three variations of the following provision, dependent on whether the project(s) is/are being constructed on the Interstate, a State (or Town) highway, or both.

x. [INTERSTATE HIGHWAY, HIGHWAY, or INTERSTATE AND HIGHWAY] PARKING RESTRICTIONS. Only such trucks and equipment as are necessary for the construction of this project will be permitted to stop or park on the shoulders or right-of-way of the [Interstate] highway or intersecting highways. All trucks or equipment so stopped or parked shall be at least 4 feet from the edge of the thru traffic lanes. Parking or stopping on the traveled portion of the [roadway] or [roadway or ramps] [roadway or ramps, or at locked gate access locations,] will not be permitted unless authorized by the Engineer to meet field conditions.

Private automobiles of workers will not be permitted to stop or park on the shoulders or right-of-way of the [Interstate] highway or intersecting highways. This restriction shall include all park and ride lots and rest areas within the project limits.

Each of the Contractor's trucks or equipment used for the construction of this project and permitted to park or stop as provided above shall be equipped with flashing light signals on the front and rear and the signals shall be operating at all times when parked or stopped on the [Interstate] highway unless otherwise authorized by the Engineer. Equipment, materials, or vehicles must be parked or placed a minimum of 30 feet from the edge of pavement in all directions or a minimum of 10 feet behind guardrail when not being utilized.

The flashing light signals shall be visibly distinct from and physically separate from the hazard warning system required by Federal and State motor vehicle laws and regulations. At least one of these flashing light signals shall be visible to traffic approaching from any angle at all times.

Qualified traffic control personnel shall be employed whenever the Contractor's vehicles or equipment (including that which belongs to the individual workers) enter or leave the traffic flow. All movement, in or out of the traffic flow, shall be with the flow of traffic.

*For construction on Interstate include the following provision:

x. U-TURNS. The Contractor's attention is directed to the provisions of Subsection 105.17 requiring the maintenance and repair of roadways within the construction limits, which includes U-turns located within the construction area.

SPECIAL CONSTRUCTION REQUIREMENTS. There are multiple variations of this provision grouping (not shown), dependent on the type of project(s) under consideration. When developing draft special provisions, a project of similar type should be referenced to retain consistency in document set-up.

xx. SPECIAL CONSTRUCTION REQUIREMENTS.

A. Unless otherwise permitted in writing by the Engineer, the Contractor shall not work during the holiday periods Memorial Day, July Fourth, Labor Day, Columbus Day, Veterans Day, and Thanksgiving Day. The Engineer shall give a written order designating the time of observance of these holidays and of any additional holidays required by the season, anticipated traffic, and local custom. As specified in Subsection 105.14, construction operations shall not be performed on any Sunday without the specific authorization of the Engineer.

Designated holiday periods shall begin at 12:00 noon on the day before the weekend or holiday, whichever applies, and shall end at 7:00 a.m. on the day after the holiday or the weekend, as appropriate.

B. The Contractor shall maintain a safe access to all ramps and U-turns at all times during the construction of this project.

C. During construction it will be necessary for the Contractor to maintain one-lane traffic for extended periods of time. In no case shall the paved width for this one-lane traffic, including shoulders, be reduced to less than xx feet. This paved width shall remain free of obstructions and obstacles at all times.

D. All paving operations shall be conducted such that, to the extent possible, all travel lanes are covered full width in a single paver pass. Longitudinal construction joints within any travel lane will not be permitted. Screed extension to cover adjacent shoulders concurrent with any travel lane will be permitted considering the requirement for auger extensions.

E. The Contractor shall position Portable Changeable Message Signs at locations determined by the Engineer properly warning motorists of the roadway conditions ahead. As directed by the Engineer, these locations may change during construction as needs arise based on daily work activities. The message to be displayed shall be submitted to the Engineer in advance for approval. The displayed message should accurately reflect what motorists can expect to encounter through the project area. The cost of providing the Portable Changeable Message Signs shall be paid for under Contract item 641.15. The Contractor shall also install and maintain appropriate construction signing warning the traveling public of the expected roadway surface conditions.

F. Unless otherwise directed by the Engineer, the Contractor shall begin and end the wearing course of pavement for the project with a full depth butt joint constructed as directed by the Engineer. The costs of cutting the butt joint will not be paid for directly, but will be considered incidental to the Contract wearing course item.

G. Grass growing adjacent to pavement or through cracks in the pavement which may hamper the placement of new bituminous concrete shall be removed by the Contractor as directed by the Engineer. Payment for this work will not be made directly, but will be considered incidental to the Contract wearing course item.

H. Where possible, a 2 inch space should be maintained between all final pavement markings and parallel joints in bituminous concrete pavement. The Contractor shall conduct paving operations such that the paving joint between the travel lane and adjacent shoulder will be outside of the 6 inch white line.

I. Prior to final acceptance of the project, all drop inlets and bridge joints within the project limits shall be cleaned and all material within the drop inlets and bridge joints shall be removed. All paved areas adjacent to curbs shall be swept and cleaned of all extraneous material. Costs for this work will not be paid for directly, but will be considered incidental to all Contract items.

J. Two-way radios shall be provided by the Contractor when requested by the Engineer for use by traffic control personnel. All costs for furnishing and using two-way radios will not be paid for directly, but will be considered incidental to Contract item xxx.xx, Item name.

K. The Contractor shall have available on the project the current editions of the Manual on Uniform Traffic Control Devices (MUTCD) and the Standard Highway Signs and Markings (SHSM) book.

Information for obtaining these publications may be found at: http://mutcd.fhwa.dot.gov/index.htm.

L. For this project, the Contractor shall have on hand on the project at all times all necessary materials, equipment, and labor to place any and all necessary interim pavement markings, including temporary line striping targets, required by the Plans or as directed by the Engineer. The markings shall be paid for under the appropriate Contract items.

The costs of maintaining marking capability at all times will not be paid for directly, but will be considered incidental to the pavement marking items in the Contract.

M. There are special events throughout the year that may require close communication and coordination between the Contractor and the municipality to reduce conflicts. The municipality will advise the Engineer and Contractor of the specifics of each event and the Engineer will direct the Contractor as to what actions, if any, may be necessary on the Contractor's part to minimize impacts to the event. The event schedule is as follows:

Event	Date
Event Name	Event Date(s)

Contacts to get more information on the above events:

Killington: Amy Morrison
Events & Marketing Coordinator
Towns of Killington
2706 River Road
Amy@Killingtontown.com
802-422-2105

Special events that may conflict with Contractor operations are not limited to that listed above. There will be no extra compensation paid to the Contractor for any inconvenience caused by working around these or other event(s).

ASPHALT PRICE ADJUSTMENT**(as required)**

xx. SUPPLEMENTAL SPECIFICATION – ASPHALT PRICE ADJUSTMENT, dated April 6, 2010, is hereby made a new Subsection of the Specifications, superseding all previous editions and their modifications.

xx. SUPPLEMENTAL SPECIFICATION – ASPHALT PRICE ADJUSTMENT, dated April 6, 2010, GENERAL REQUIREMENTS AND CONDITIONS, part (b) text, is hereby modified by being deleted in its entirety and replaced with text "NOT USED".

The index price for asphalt cement is $xxx.00 per ton. **(Found on Contract Admin website – updated monthly: http://vtrans.vermont.gov/contract-admin/construction)**

In addition to materials produced under Contract pay item(s) as allowed in GENERAL REQUIREMENTS AND CONDITIONS, part (a) of the Supplemental Specification, asphalt cement and emulsified asphalt produced under Contract items number(s) and name(s) will be included for adjustment.

If an emulsified asphaltic liquid is used in the Contract work under any Contract item subject to the Asphalt Price Adjustment provisions and that liquid is not included in the table under subpart (5) of PRICE ADJUSTMENT PROCEDURES of the Supplemental Specification, the ACEA as defined in subpart (5) for that liquid will be that as determined by averaging Contractor certified test results for the project.

SECTION 652 – EROSION PREVENTION & SEDIMENT CONTROL PLAN**(as required)**

xx. SECTION 652 – EROSION PREVENTION & SEDIMENT CONTROL PLAN, is hereby made a new Section of the Specifications as follows:

xx. 652.01 DESCRIPTION. This work shall consist of designing, furnishing, and submitting for acceptance modifications to the Contract Erosion Prevention & Sediment Control Plan (hereinto known as the EPSC Plan), becoming a co-permittee with the Agency of Transportation, State of Vermont on associated permits, monitoring the EPSC Plan using an On-Site Plan Coordinator, and maintaining the erosion prevention and sediment control measures to ensure the effectiveness of the EPSC Plan.

xx. 652.02 MATERIALS. Materials required for the field work maintenance of the EPSC Plan shall meet all requirements of the appropriate Section of the VAOT Standard Specifications for Construction.

Materials including manuals, checklists, forms, and other supporting documentation necessary to meet the requirements of these provisions and maintain compliance with associated permits shall be made available to the Engineer by the Contractor and maintained on site by the Contractor. Supporting documents associated with the requirements of General Permit 3-9020 are available upon request to ANR or from the ANR Stormwater web page. The VTrans Erosion Prevention and Sediment Control Plan Contractor Checklist and Low Risk Site Inspection Form are available from the VTrans Construction Environmental Engineer.

xx. 652.03 QUALIFICATIONS. Modifications to the EPSC Plan shall be prepared and signed by a Licensed Professional Civil Engineer registered in the State of Vermont or a qualified professional in erosion prevention and sediment control, certified by CPESC, Inc. or equivalent, hereinafter called the "Preparer."

xx. 652.04 EROSION PREVENTION & SEDIMENT CONTROL PLAN. The EPSC Plan, developed using a combination of structural, non-structural, and vegetative practices to adequately prevent erosion and control sedimentation, and meeting the requirements of the VTrans Erosion Prevention & Sediment Control Plan Designer Checklist (Non-Jurisdictional and Low Risk) or the Vermont Standards & Specifications for Erosion Prevention & Sediment Control based on area of disturbance and risk, has been included in the Contract Documents.

The Contractor shall use the EPSC Plan included in the Contract and, at the onset of construction as well as throughout the duration of the project, modify it to describe changing conditions and illustrate how the criteria of the determined risk will be upheld. For Non-Jurisdictional and Low Risk projects, the Contractor shall use the VTrans Erosion Prevention and Sediment Control Plan Contractor Checklist. For Moderate Risk projects, the Contractor shall modify the Contract EPSC Plan in accordance with the General Permit 3-9020 Parts 4 through 6. If a modification to the EPSC Plan at a Low or Moderate Risk project alters any criteria of the determined risk, an updated Risk Evaluation shall be prepared.

The Contractor may use the Agency's EPSC Plan sheet(s) as a basis for necessary modifications; however, if necessary to convey the sequential nature and phases of construction activities and associated erosion prevention and sediment control measures, several plan sheets showing successive site conditions are recommended.

All work shown in the EPSC Plan shall be included in the Contractor's CPM Progress Schedule, as required by Subsection 108.03 or 900.620 if Special Provision (CPM Schedule) is included in the Contract).

xx. 652.05 SUBMITTALS. Three sets of the modified EPSC Plan as well as the updated Risk Evaluation, stamped and signed by the Preparer, shall be submitted to the Construction Engineer as Construction Drawings in accordance with Section 105. Submittals shall occur after award of the Contract but not later than the Pre-Construction Conference to allow time for review by the Agency. An Acceptance Memo or comments will be provided to the Contractor within 10 working days.

The Contractor shall respond to comments as soon as possible, but not more than 10 days after the date of VTrans initial correspondence. Agency review time for response to comments will be completed within an additional 10 working days. Modifications or additions to the EPSC Plan will not be considered as an acceptable delay of the work under Subsection 108.11.

All subsequent modifications to the EPSC Plan and updates to the Risk Evaluation will be reviewed and forwarded to the ANR by the Agency as appropriate.

Construction activities for EPSC Plan modifications that do not require authorization from the ANR shall commence only after the EPSC Plan has been accepted by the Agency. Construction activities for EPSC Plan modifications that do require authorization from the ANR shall commence only after that authorization has been granted.

xx. 652.06 MONITORING EROSION PREVENTION & SEDIMENT CONTROL PLAN. The Contractor shall designate a person (On-Site Plan Coordinator) who is directly responsible for the on-site implementation of the EPSC Plan. This person shall generally be on-site on a daily basis during active construction and have the authority to halt construction activities if necessary. The On-Site Plan Coordinator shall have demonstrated experience in construction practices as they relate to erosion prevention and sediment control as well as a general understanding of State and Federal environmental regulations and permits pertaining to the National Pollutant Discharge Elimination System Construction Program. The On-Site Plan Coordinator shall be proficient at reading and interpreting engineering and EPSC plans. Preference will be given to a Licensed Professional Civil Engineer registered in the State of Vermont or a qualified professional in erosion prevention and sediment control, certified by CPESC, Inc. or equivalent. The qualifications of the On-Site Plan Coordinator shall be included in the EPSC Plan. The Engineer, if not satisfied with the performance of this individual, may at any time request a replacement.

During active construction and periods of inactivity, the On-Site Plan Coordinator shall be responsible for inspections and reporting.

(a) Active Construction. Inspections shall occur once every seven calendar days and within 24 hours of the end of a storm event that results in a discharge of stormwater from the site. During the winter construction season (October 15th to April 15th, inclusive), inspections at all sites shall occur daily.

For Non-Jurisdictional and Low Risk projects, inspections shall be conducted using the Agency's EPSC Plan Inspection Report (Non-Jurisdictional and Low Risk Projects).

For Moderate Risk projects, inspections shall be conducted using the General Permit 3-9020 Inspection Report for Moderate Risk Projects referenced in the Permit and available upon award of the Contract.

Immediate action shall be taken to correct the discharges of sediment, including halting or reducing construction activities as necessary, until the discharge and/or the condition is fully corrected. Corrective actions shall be recorded on the monitoring reports and shown on the EPSC Plan. Each report shall be signed by the On-Site Plan Coordinator.

(b) Inactive Construction. Periods such as shutdown during the winter season shall require inspection and reporting of erosion prevention and sediment control measures. The Contractor shall contact the Engineer prior to conducting any inspections. The inspections shall be conducted at least once every 30 days and within 24 hours of any storm or significant snow melt event that may cause stormwater runoff to leave the construction site. The Contractor shall provide, within 24 hours, the necessary personnel, equipment, and materials to repair or correct any deficiencies identified during inspection.

All deficiencies and corrective measures taken shall be documented on the reports.

Copies of all reports shall be submitted to the Engineer within 24 hours of inspection or when corrective measures were taken. Copies of all reports shall be kept on site in the Contractor's project files.

xx. 652.07 MAINTENANCE OF EROSION PREVENTION & SEDIMENT CONTROL PLAN. This work shall consist of providing all labor and equipment necessary for field maintenance of erosion prevention and sediment control items in the Contract, and providing materials and labor necessary for installing, monitoring, maintaining and, where necessary, removing additional measures needed to correct deficiencies that develop during construction that lessen the performance of the EPSC Plan. Erosion prevention and sediment control measures shall be maintained by the Contractor and removed when authorized by the Engineer. The Contractor shall establish vegetation in all areas disturbed during removal of the erosion prevention and sediment control measures.

Any maintenance required due to the failure of the Contractor to follow the EPSC Plan in its accepted form shall be performed at no additional cost to the Agency.

xx. 652.08 METHOD OF MEASUREMENT. The quantity of EPSC Plan to be measured for payment will be on a lump sum basis in the complete and accepted work.

The quantity of Monitoring EPSC Plan will be measured to the nearest 1/4 hour for the actual number of authorized hours spent monitoring, reviewing, and reporting on the construction site(s), including waste, borrow and staging areas or other support activities, as it relates to the EPSC Plan. Travel time and other time not spent at the construction site(s) or time not authorized will not be measured for payment (i.e. travel expenses, clerical staff time, copying, miscellaneous expenses, overhead, etc.).

The quantity of Maintenance of EPSC Plan will be on a lump unit basis for all such field maintenance provided for in the Contract, excluding waste, borrow and staging areas or other support activities.

xx. 652.09 BASIS OF PAYMENT. The accepted quantity of EPSC Plan will be paid for at the Contract lump sum price. Payment will be full compensation for the initial preparation of modifications, submittals, and all incidentals necessary to complete the work. Subsequent modifications to the EPSC Plan during Construction will be considered incidental to Contract item 652.10.

Partial payments will be made as follows:

(a) The first payment of 50 percent of the lump sum price for the EPSC Plan will be paid for upon acceptance of the EPSC Plan for the entire project.

(b) The second payment of 35 percent of the lump sum price for the EPSC Plan will be made on the first estimate following the completion of 50 percent of the project.

(c) The third payment of 15 percent of the lump sum price for the EPSC Plan will be made when the project is substantially complete.

The accepted quantity of Monitoring EPSC Plan will be paid for at the Contract unit price per hour. Payment will be full compensation for performing the work specified. Payment will not be made unless a report for the monitoring is submitted to and accepted by the Engineer.

The accepted quantity of Maintenance of EPSC Plan will be paid for as specified for force account work in Subsection 109.06. Payments will be drawn against the Contract Lump Unit amount. To provide a common proposal for all bidders, the Agency has entered an amount in the proposal to become part of the Contractor's total bid. Maintenance related to material supply and disposal areas shall be performed in accordance with Subsection 105.29.

Payment will be made under:

Pay Item	Pay Unit
652.10 EPSC Plan	Lump Sum
652.20 Monitoring EPSC Plan	Hour
652.30 Maintenance of EPSC Plan (N.A.B.I.)	Lump Unit

There are different versions of this, depending on which special provision items meet the thresholds in the Contract. This is one example.

SECTION 690 – FUEL PRICE ADJUSTMENT **(as required)**

xx. SECTION 690 – FUEL PRICE ADJUSTMENT, is hereby made a new Section of the Specifications as follows:

xx. 690.01 GENERAL REQUIREMENTS AND CONDITIONS

(a) This specification contains price adjustment provisions for fuel used on Vermont Agency of Transportation (Agency) construction projects. This price adjustment clause is being inserted in this Contract to provide for either additional compensation to the Contractor or a payment to the Agency, depending upon an increase or decrease in the average price of diesel fuel or gasoline during the construction of this project.

(b) These provisions apply to this Contract only as specified herein through the fuel usage factors set forth in Table 1. No further fuel price adjustments will be allowed under this Contract.

(c) It is understood by the Contractor that a price adjustment increase may cause the Agency to decrease the quantities of the Contract pay items subject to adjustment under these provisions. Provisions providing for decreased quantities and item cancellation in this paragraph are separate and take precedence, notwithstanding any other provisions of this Contract.

(d) No price adjustment will be paid for work performed after the Contract Completion Date, as modified by Change Order, if applicable.

(e) Price Adjustment, Fuel will be determined for a pay item if each of the following criteria is met:

(1) the pay item is included in the original awarded Contract;

(2) the original awarded Contract bid quantity for the pay item equals or exceeds the quantity threshold indicated in Table 1.

(f) Any increase in the total Contract amount due to fuel price adjustment will not be justification for an extension of time under Subsection 108.11.

In such cases that estimated quantities are used to determine estimated fuel price adjustments throughout the duration of the Contract, reconciliation of those estimated adjustments will be made upon the determination of actual final quantities and final adjustments to the total final quantity made by prorating those estimated adjustments over the applicable fuel price adjustment periods previously paid. Reconciliation of any fuel price adjustment will only be performed in those instances where the actual final quantity differs by more than five percent from the total estimated quantity. Payments owed to either the Contractor or VTrans will not be subject to any applicable interest claims.

xx. 690.02 PRICE ADJUSTMENT PROCEDURES

(a) Prior to advertising for bids, Index Prices for both a gallon of diesel fuel and a gallon of gasoline will be established by the Agency using retail prices reported by the Energy Information Administration (EIA) for the New England Region. The Index Prices will be set monthly using the first EIA posting falling either on or after the 1st calendar day of that month. The Contract Index Prices will be the most recent Index Prices set by the Agency at the time of advertising for bids. These prices are included below and will be the base from which price adjustments are computed.

The index price (retail) for gasoline is $x.xx per gallon. The index price (retail) for diesel fuel is $x.xx per gallon. **(Found on Contract Admin website – updated monthly: http://vtrans.vermont.gov/contract-admin/construction)**

(b) For the duration of the Contract, Posted Prices for both a gallon of diesel fuel and a gallon of gasoline will be established monthly by the Agency. The Posted Prices will be established in the same manner as the Index Prices.

(c) A Price Adjustment will be paid or credited for diesel fuel and/or gasoline only when the Posted Price of diesel fuel and/or gasoline increases or decreases 5 percent or more over its respective Index Price.

(d) Payment for Price Adjustment, Fuel will be based upon the quantity of fuel incorporated in the work as determined by the fuel usage factors in Table 1 of this specification for both diesel fuel and gasoline, multiplied by the algebraic difference between the Posted Price and the Index Price for either diesel fuel or gasoline, respectively.

(e) Payment for Price Adjustment, Fuel shall be computed as follows:

PA = Price Adjustment (LU in $)
IPD = Index Price, Diesel Fuel ($/gallon)
IPG = Index Price, Gasoline ($/gallon)
PPD = Posted Price, Diesel Fuel ($/gallon)
PPG = Posted Price, Gasoline ($/gallon)
FUFD = Fuel Usage Factor, Diesel Fuel (gallon/unit)
FUFG = Fuel Usage Factor, Gasoline (gallon/unit)

For PPD/IPD <= 0.95 or >= 1.05 and PPG/IPG > 0.95 and < 1.05:
PA = FUFD X Pay Item Quantity X (PPD – IPD)

For PPD/IPD > 0.95 and < 1.05 and PPG/IPG <= 0.95 or >= 1.05:
PA = FUFG X Pay Item Quantity X (PPG – IPG)

For PPD/IPD and PPG/IPG <= 0.95 or >= 1.05:
PA = [FUFD X (PPD – IPD) + FUFG X (PPG – IPG)] X Pay Item Quantity

(f) The Contract bid prices for the applicable pay items will be paid under the Contract. The price adjustment, when such adjustment is required as specified in part (c) of this Subsection, will be made subsequent to the month in which the applicable Contract work was performed and will be entered on the next bi-weekly estimate.

(g) Payment for Price Adjustment, Fuel shall be debited or credited against the Contract price (Lump Unit) bid for Price Adjustment, Fuel.

Payment will be made under:

Pay Item	Pay Unit
690.50 Price Adjustment, Fuel N.A.B.I.)	Lump Unit

Table 1
Pay Item Fuel Usage Factors and Quantity Thresholds

Work Category	Pay Item No.	Usage Factor Units	Diesel Fuel (FUFD)	Gasoline (FUFG)	Quantity Threshold
		English	English	English	English
Excavation	203.15	GAL/CY	0.29	0.15	3,000
	203.16	GAL/CY	0.39	0.18	2,500
	204.25	GAL/CY	0.35	0.16	2,500
	208.3	GAL/CY	0.35	0.16	2,000
	208.35	GAL/CY	0.39	0.18	2,000
Borrow	203.3	GAL/CY	0.29	0.15	3,000
	203.31	GAL/CY	0.29	0.15	3,000
	203.32	GAL/CY	0.29	0.15	3,000
Granular Backfill For Structures	204.3	GAL/CY	1	0.16	1,500
Cold Planing, Bituminous Pavement	210.1	GAL/SY	0.12	0	15,000
Subbase	301.25	GAL/CY	0.85	0.56	1,000
	301.35	GAL/CY	0.85	0.56	1,000
Reclaimed Stabilized Base	310.2	GAL/SY	0.04	0	35,000
Pavement	406.25	GAL/TON	3.06	0.86	500
	406.27	GAL/TON	3.06	0.86	500
	490.3	GAL/TON	3.06	0.86	500
Cold Mixed Recycled Bituminous Pavement, Portland Cement	900.675	GAL/SY	0.96	0.75	1
Hand-Placed Bituminous Concrete Material, Drives	900.675	GAL/SY	3.06	0.86	500
Bituminous Concrete Pavement, Small Quantity	900.680	GAL/TON	3.06	0.86	500
Material Transfer Vehicle	900.680	GAL/TON	0.1	0	1
Concrete	501.32	GAL/CY	0.75	0.25	1,000
	501.33	GAL/CY	0.75	0.25	1,000
	501.34	GAL/CY	0.75	0.25	1,000
Stone Fill	613.1	GAL/CY	0.39	0.18	2,000
	613.11	GAL/CY	0.39	0.18	2,000
	613.12	GAL/CY	0.39	0.18	2,000
	613.13	GAL/CY	0.39	0.18	2,000
Guardrail	621.2	GAL/LF	0.18	0.05	5,000
	621.205	GAL/LF	0.18	0.05	5,000
	621.21	GAL/LF	0.18	0.05	5,000
	621.215	GAL/LF	0.18	0.05	5,000

Special Provisions for: Project Name Project Number Month, Day, Year
Page 22

SECTION 900 – SPECIAL PROVISION ITEMS

Add all Special Provision 900 Items, first in numerical then alphabetical order:

900.608 – A through Z
900.620 – A through Z, etc.

D Appendix D: Example Critical Path Method Schedule

Construction Schedule Narrative

John Doe Contracting has been awarded a contract by the State of Vermont to replace Bridge #1 on Bridge Street (TH1) in Somewhere, VT. This project has been designed under VTrans' accelerated bridge program. This project has a very aggressive construction schedule. VTrans has made provisions for a Bridge Closure Period (BCP) not to exceed 28 consecutive calendar days, to occur between the dates of June 20th and August 19th of 2015.

A critical element in the preparation of the attached schedule is the availability and coordination of precast components (Abutments, Wingwalls, Prestressed NEXT Beams). Fabrication of precast components including prestressed NEXT Beams will be provided by, XYZ Fabricator. Other critical elements are crane availability, subcontractor coordination, project access/constraints, and pre-excavation of earth/rock for pile installation.

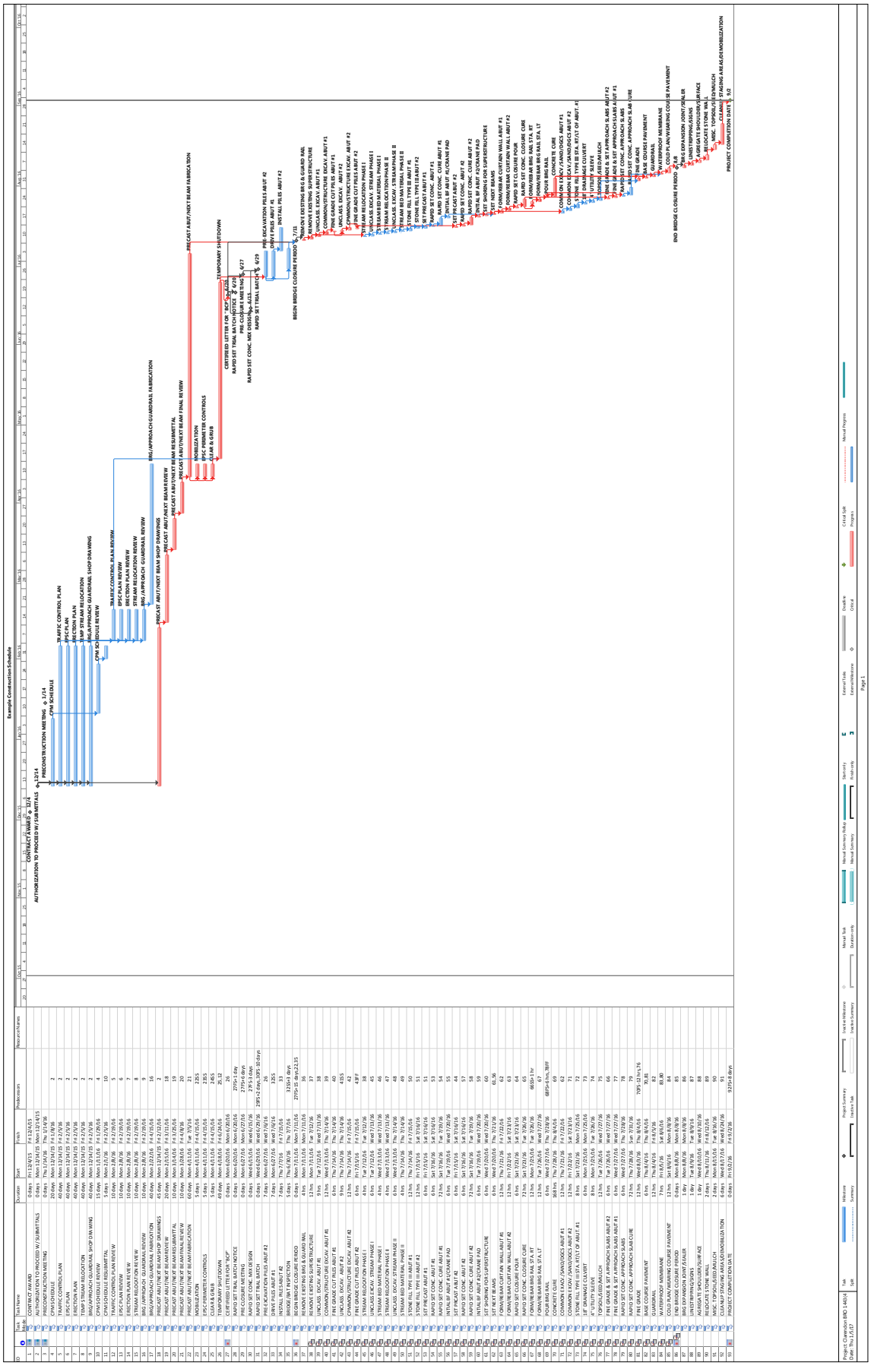
John Doe Contracting has shown in the attached schedule mobilization, perimeter erosion controls and clear/grub operations occurring in early April. Special Provision 16 Environmental, restricts cutting of NLEB habitat trees which have been identified between April 15 through August 31. Following clearing operation (prior to April 15th) a temporary shutdown will precede the allowed BCP. Seven days prior to the BCP and demolition of the existing bridge, the State will do a bat habitat inspection and historical documentation of the existing structure. The implementation of the BCP is dependent upon the fabrication (approved for shipment) of the precast components. The schedule has established a 28 day BCP commencing on July 11th and extending to August 8th.

The two weeks prior to the BCP, John Doe Contracting will pre-excavate and install/drive the abutment piles. Piles at abutment two will be pre-excavated prior to the piles being installed. Casings will be augured/pre-bored to depth specified or to ledge with a 3' minimum drilled embedment, piles installed and backfilled. John Doe Contracting requests that piles at abutment one be driven from existing ground to facilitate maintenance of traffic, and expedite pile driving operations. It is our understanding that this method has been allowed and successful on similar VTrans projects.

The attached schedule is based on a 12-hour work day, six days per week during the BCP. John Doe Contracting does not anticipate "night work" being required. This does not preclude the contractor from working longer days, Sundays and/or "night work" to maintain or accelerate the schedule. In the initial BCP multiple crews are scheduled to excavate, remove existing structure/abutments, complete channel/ streambed reconstruction and stone fills. An 8-man crew is scheduled to set precast components, and form/pour concrete closure pours and combination concrete galv steel bridge rail.

There are contraction activities/"tasks" which exceed the 1 day/12 hour period during the BCP. These tasks (Activity ID #55,59,66 &70) are primarily related to the concrete cure for the Rapid Set and Class A concrete. The begin and end Bridge Closure Period (Activity ID #36 & #86) have been included as constraints to reflect the 28 day BCP. In general, activities have been link finish to start, with some items having lag/lead times.

As noted above, this is a very aggressive schedule with a number of variables and components with long lead times. The next page presents an example schedule.


Example Construction Schedule
CONTRACT AWARD
AUTHORIZATION TO PROCEED W/ SUBMITTALS
PRECONSTRUCTION MEETING
CPM SCHEDULE
TRAFFIC CONTROL PLAN
ERECTION PLAN
TEMP STREAM RELOCATION
BRG APPROACH GUARDRAIL SHOP DRAWING
CPM SCHEDULE RESUBMITTAL
TRAFFIC CONTROL PLAN REVIEW
ERECTION PLAN REVIEW
STREAM RELOCATION REVIEW
BRG APPROACH GUARDRAIL REVIEW
PRECAST ABUT/WKT BEAM SHOP DRAWINGS
PRECAST ABUT/WKT BEAM PRELIM REVIEW
PRECAST ABUT/WKT BEAM FINAL REVIEW
MOBILIZATION
BEGIN BRIDGE CLOSURE PERIOD
REMOVE EXISTING BRG & GUARD RAIL
CLEAR & GRUB
TEMPORARY SHUTDOWN
CERTIFIED LETTER FOR "NOFC"
RAPID SET TRIAL BATCH NOTICE
PRE-CLOSURE MEETING
RAPID SET CONC MIX DESIGN
PRECAST ABUT/WKT BEAM SHOP DRAWINGS
PRECAST ABUT/WKT BEAM FABRICATION
PRE-EXCAVATION PILES ABUT #2
DRIVE PILES ABUT #1
INSTALL PILES ABUT #2
BEGIN BRIDGE CLOSURE PERIOD
REMOVE EXISTING BRG & GUARD RAIL
UNCLASS. EXCAV. ABUT #1
COMMON/STRUCTURE EXCAV. ABUT #1
PRE-EXCAVATION PILES ABUT #1
UNCLASS. EXCAV. ABUT #2
CF&MMG/STRUCTURE EXCAV. ABUT #2
PRE GRADE CUT PILES ABUT #2
DRIVE PILES ABUT #2
UNCLASS. EXCAV. STREAM PHASE I
STREAM BED MATERIAL PHASE I
STREAM RELOCATION PHASE I
UNCLASS. EXCAV. STREAM PHASE II
STREAM BED MATERIAL PHASE II
STONE FILL TYPE III ABUT #1
STONE FILL TYPE III ABUT #2
SET PRECAST ABUT #1
SET PRECAST ABUT #2
RAPID SET CONC. ABUT #1
FORM/REBAR CURTAIN WALL ABUT #1
INITIAL BF ABUT #1/CRANE PAD
RAPID SET CONC. ABUT #2
FORM/REBAR CURTAIN WALL ABUT #2
INITIAL BF ABUT #2/CRANE PAD
SET SHORING FOR SUPERSTRUCTURE
SET WEST BEAMS
FORM/REBAR CURTAIN WALL ABUT #1
FORM/REBAR CURTAIN WALL ABUT #2
RAPID SET CLOSURE POUR
FORM/REBAR BRG RAIL STA. AT
FORM/REBAR BRG RAIL STA. LT
POUR CONCRETE CURB
COMMON EXCAV./SAND/DGCS ABUT #1
COMMON EXCAV./SAND/DGCS ABUT #2
SET PRECAST APPROACH SLABS
4" UTILITY SLEEVE
FINE GRADE & SET APPROACH SLABS ABUT #2
FINE GRADE & SET APPROACH SLABS A/UP #1
RAPID SET CONC APPROACH SLABS
BASE COURSE PAVEMENT
GUARDRAIL
WATERPROOF MEMBRANE
COLD PLAN/WEARING COURSE PAVEMENT
END BRIDGE CLOSURE PERIOD
EXPANSION JOINT/ROLLER
LANDSCAPING
LIMESTONE RIPPING/SIGNS
AGGREGATE SHOULDER/SURFACE
RELOCATE STONE WALL
CLEAN UP STAGING AREAS/DEMOBILIZATION
PROJECT COMPLETION DATE

K Performance Measures Meeting Worksheet

Performance Measures

Goal	Potential Performance Measure	Notes/Questions
1. Expedite the delivery of bridge reconstruction and bridge rehabilitation projects required to support the performance measures for bridge inventory conditions: • Minimize project development and construction costs. • Expedite project delivery. • Utilize ABC technologies. • Standardize project plans. • Utilize alternative contracting methods.	• Number of bridges that use ABC methods • Number of bridges that use AC methods • Average project development and construction costs compared to traditional • Time to delivery (could be compared at several points) • Days of closures per bridge	The number of bridges that use AC methods may be more appropriate in the innovation goal
2. Be a leader for deployment of innovation at VTrans and nationally: • Maximize use of technology. • Maximize flexibility for project delivery. • Create a culture that values new ideas. • Document successful innovations. • Be an early adopter of research.	• Demonstrated use of innovations from ABP that are in the traditional bridge process or other processes at VTrans • Number of individuals • Vtrans acceptance of innovation	Assessing the culture is difficult but could be done through a survey of Vtrans staff
3. Be transparent to stakeholders and customers: • Develop a website with real time information on performance. • Implement best practices on public outreach. • Leader among VTrans in developing and maintaining validated and credible project schedules. • Partner with internal stakeholders and other governmental stakeholders. • Partner with contractors and fabricators to deliver the best value to the traveling public.	• Amount of money spent on communications (leading) • Public survey findings (lagging)	This is one area where both leading and lagging indicators could be useful

L Resource Demand Cost Comparisons

The Accelerated Bridge Program

Resource Comparison

MAY 2017

PREPARED FOR

VERMONT AGENCY OF TRANSPORTATION

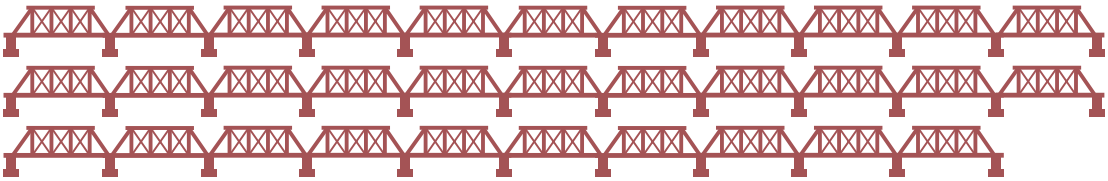
PREPARED BY

vhb

Introduction

The Vermont Agency of Transportation (VTrans) Accelerated Bridge Program (ABP) helps achieve the agency's goals through expedited project delivery. The **Accelerated Bridge Program: Accelerating Project Delivery through Innovation and Partnerships** report explores the methods the ABP uses, such as Accelerated Bridge Construction (ABC), to deliver projects at an accelerated rate and compares these to conventional delivery methods. This document serves as a supplement to the report and focuses specifically on comparing the resource use between ABP/ABC and conventional project delivery methods. This document was developed as part of the Nation's second Strategic Highway Research Program (SHRP2). The information in this document is provided for organizations interested in expediting project delivery, implementing an accelerated bridge program, or encouraging innovation as a tool to facilitate process improvements.

32
Accelerated Bridge Projects



14
Conventional Bridge Projects

VTrans analyzed data from 46 completed bridge projects (32 accelerated and 14 conventional) to compare the costs of accelerated projects with those of conventional projects. VTrans grouped the project costs into categories, including Engineering, ROW, Survey, Utilities, Environmental, Geotechnical, Administrative, and Construction. Although the sample size is limited, the results show that in the Engineering, ROW, Utilities, Environmental, and Construction categories, the average total project cost and average cost per square foot of structure were lower for accelerated projects compared to conventional. VTrans will continue to supplement the data as more projects are completed.

The initial results of the cost comparison indicate that the ABP is successfully delivering cost and time savings while minimizing the impact on the environment and the traveling public. The three primary goals of the ABP—expediting delivery, leading innovation, and demonstrating transparency—are reflected in every step of the program. VTrans' focus on these guiding goals and objectives is key to continuing the success of the program.

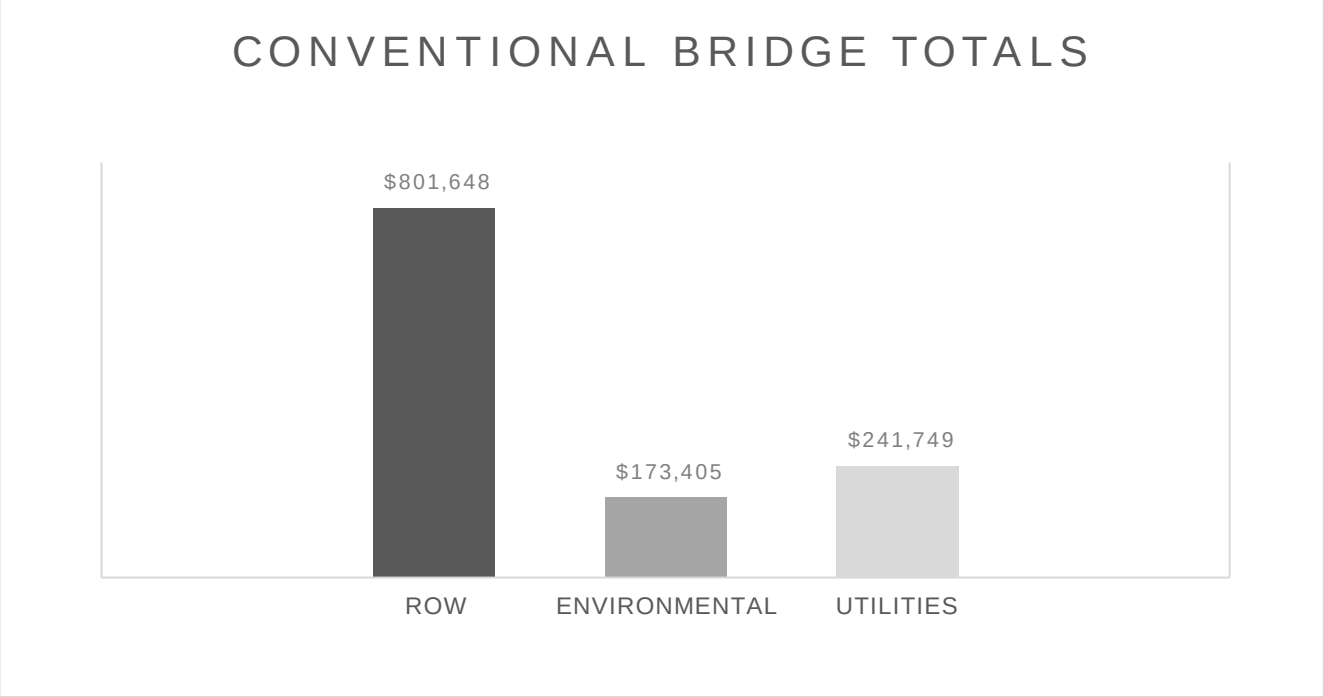


Figure 1. Conventional Bridge Totals.

The total cost of Right-of-Way, Environmental, and Utilities for the 14 Conventional Bridge Program projects evaluated.

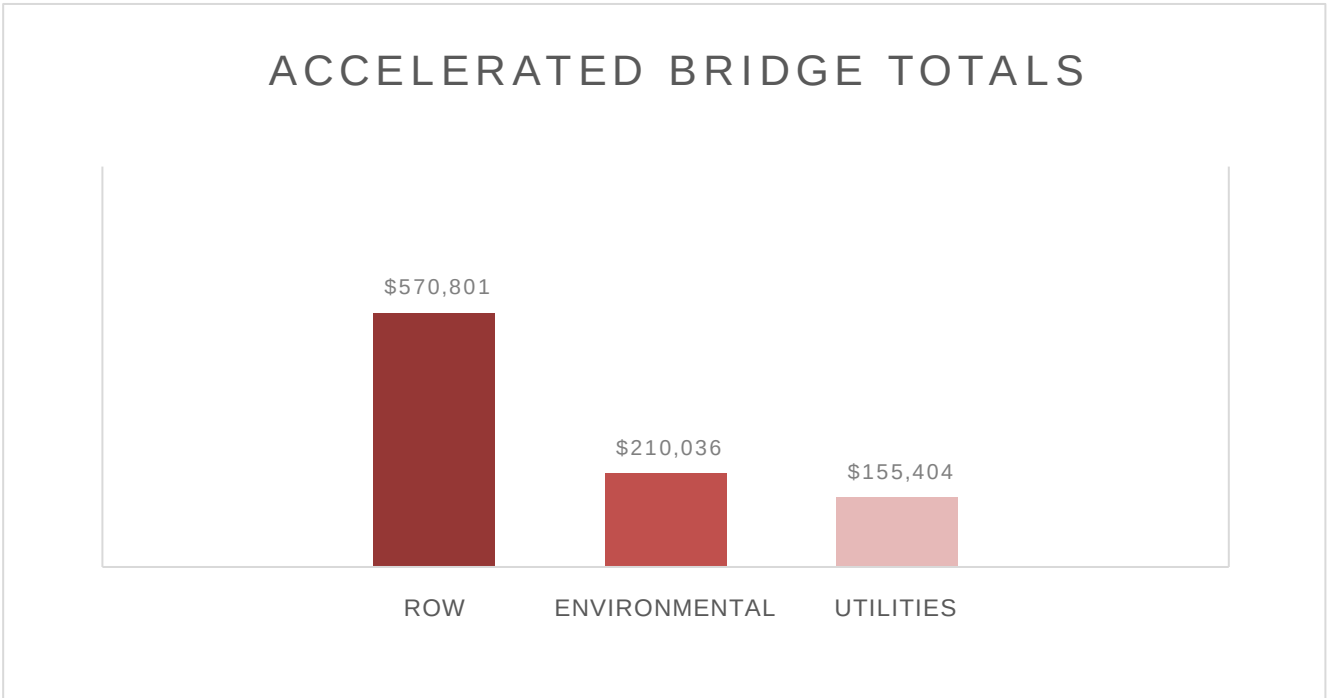


Figure 2. Accelerated Bridge Totals.

The total cost of Right-of-Way, Environmental, and Utilities for the 32 Accelerated Bridge Program projects evaluated.

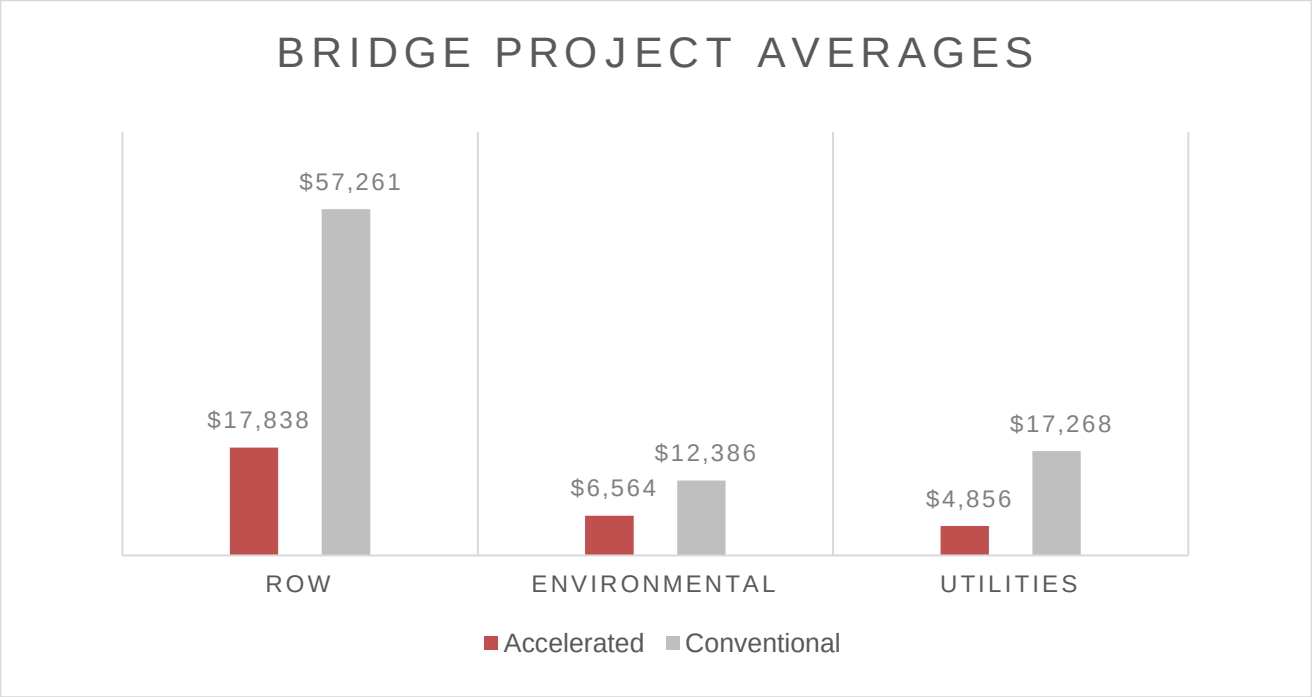


Figure 3. Bridge Project Averages—ROW, Environmental, and Utilities.

The average cost of Right-of-Way, Environmental, and Utilities per project of the 32 Accelerated Bridge Program Projects evaluated compared to the 14 Conventional Bridge Program projects evaluated.

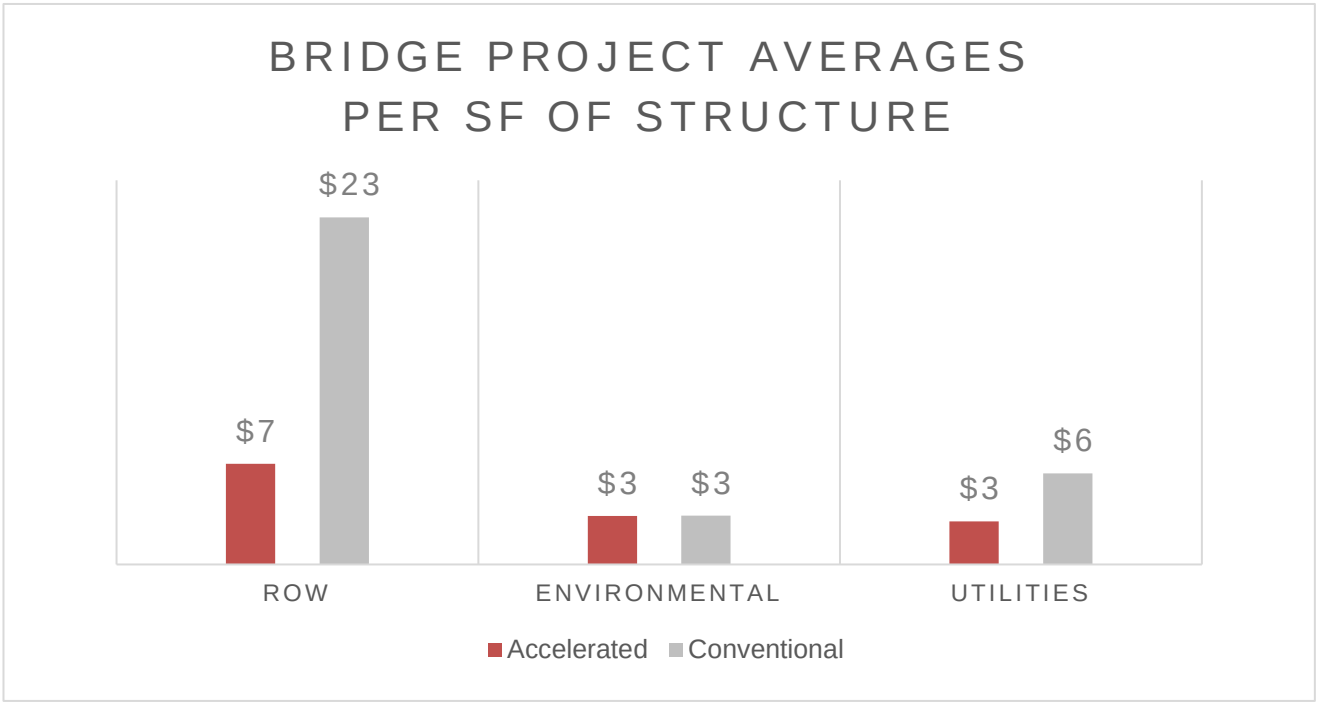


Figure 4. Bridge Project Averages per SF of Structure—ROW, Environmental, and Utilities.

The average cost of Right-of-Way, Environmental, and Utilities per square foot of bridge deck for the 32 Accelerated Bridge Program projects compared to the 14 Conventional Bridge Program projects evaluated.

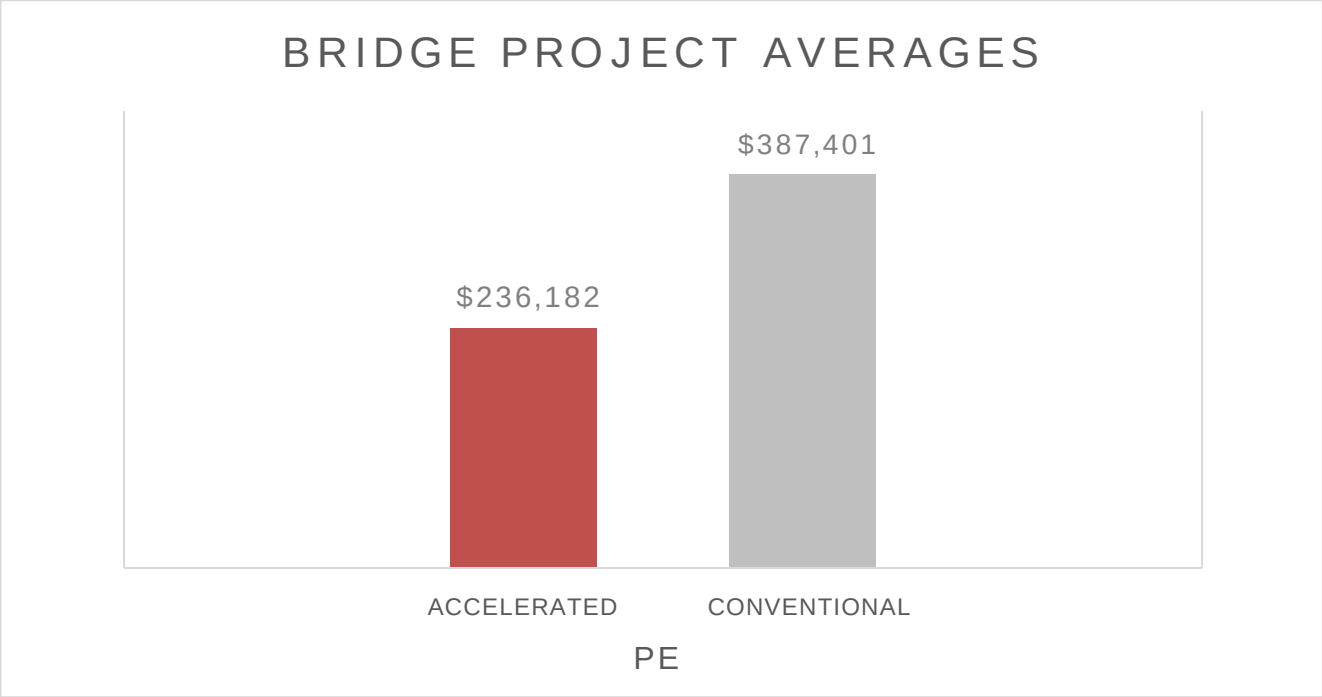


Figure 5. Bridge Project Averages—Preliminary Engineering.

The average cost of Preliminary Engineering for the 32 Accelerated Bridge Program projects compared to the 14 Conventional Bridge Program projects evaluated.

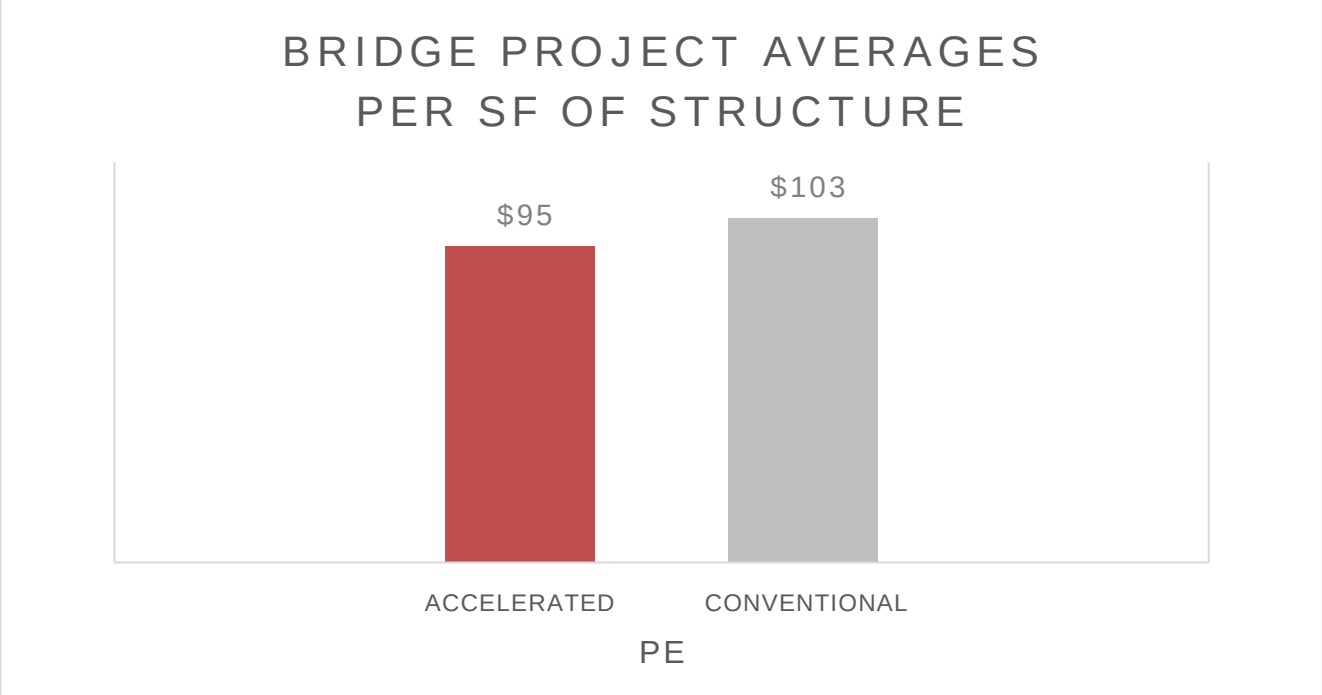


Figure 6. Bridge Project Averages per SF of Structure—Preliminary Engineering.

The average cost of Preliminary Engineering per square foot of bridge deck for the 32 Accelerated Bridge Program projects compared to the 14 Conventional Bridge Program projects evaluated.

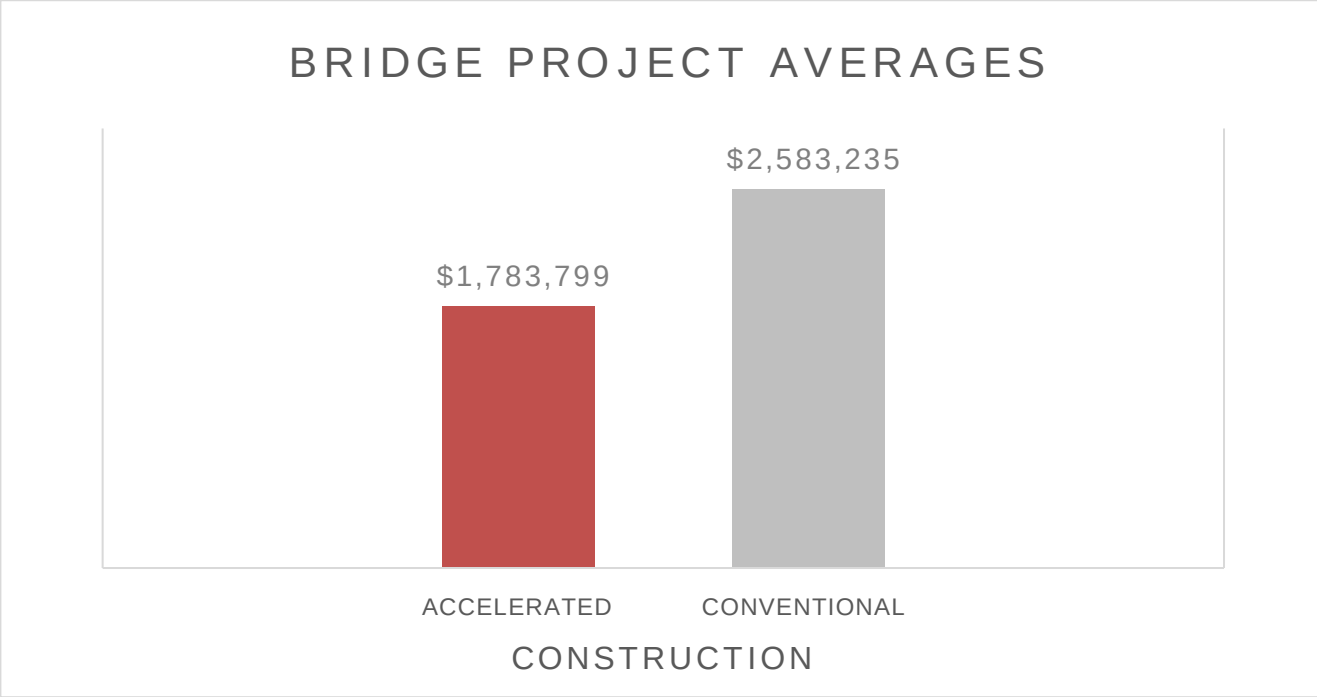


Figure 7. Bridge Project Averages—Construction.

The average cost of construction for the 32 Accelerated Bridge Program projects compared to the 14 Conventional Bridge Program projects evaluated.

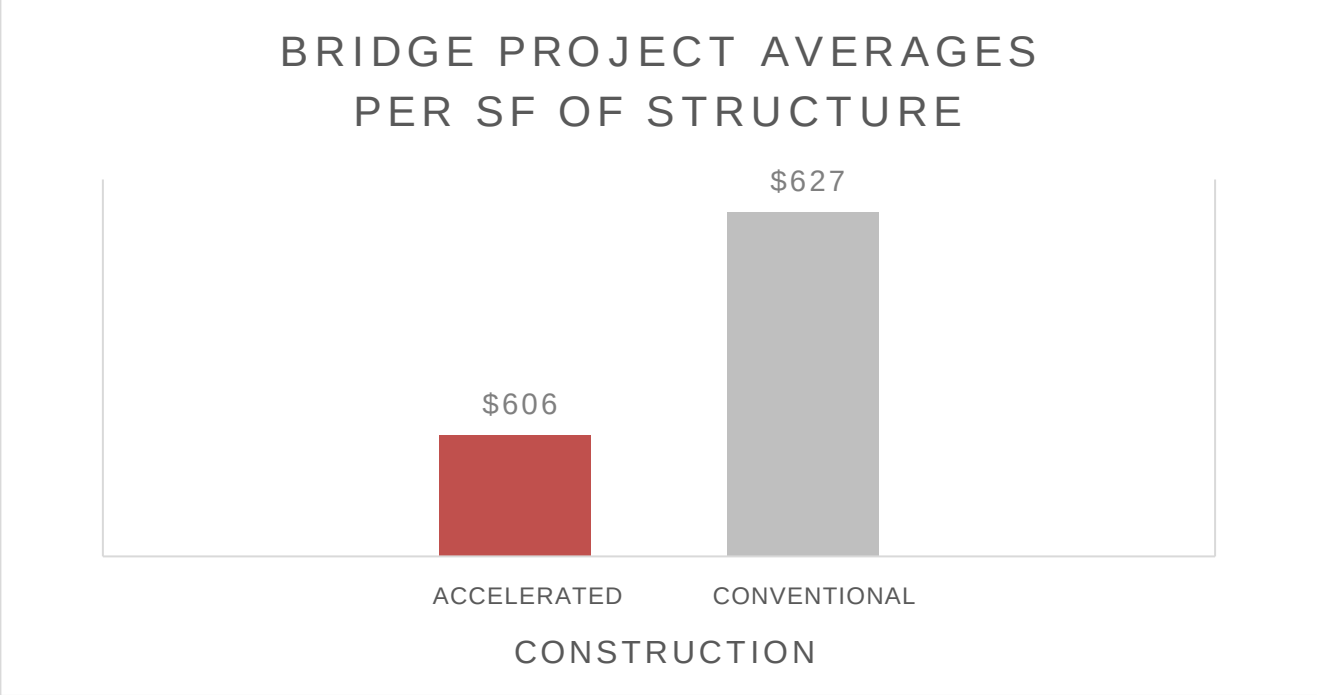


Figure 8. Bridge Project Averages per SF of Structure—Construction.

The average cost of construction per square foot of bridge deck for the 32 Accelerated Bridge Program projects compared to the 14 Conventional Bridge Program projects evaluated.

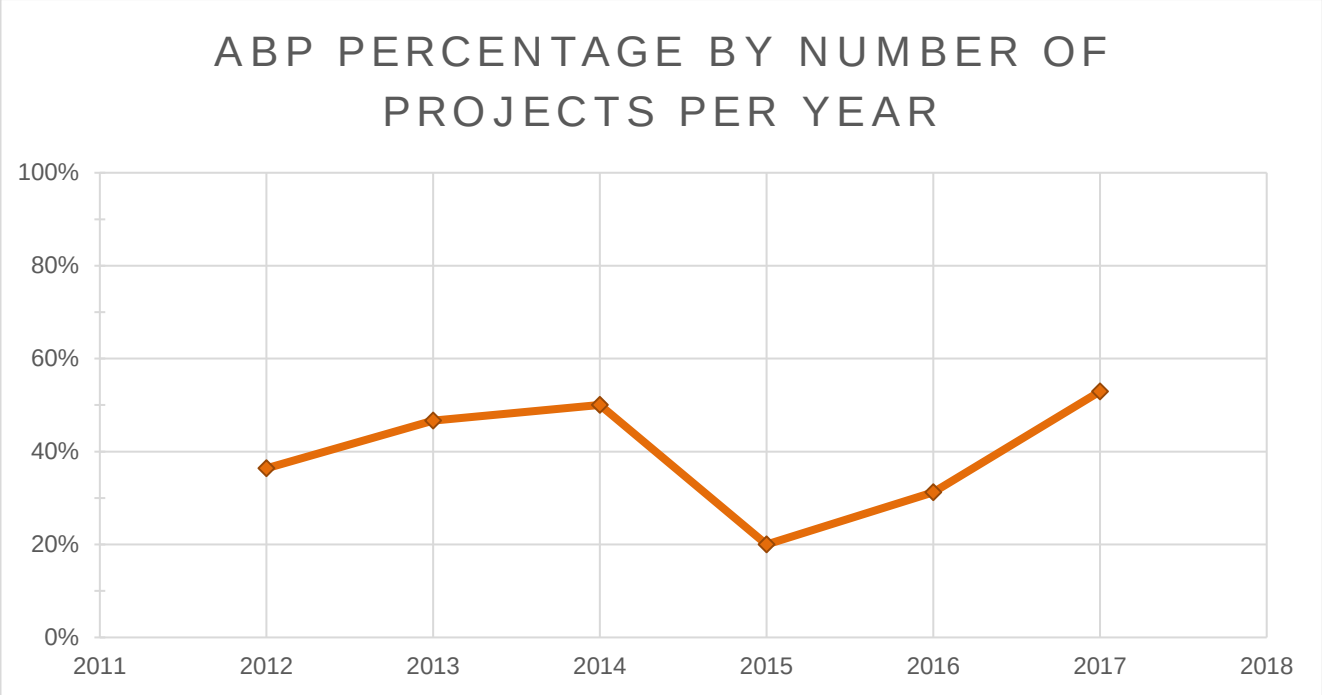


Figure 9. ABP Percentage by Number of Projects per Year.

The percentage of construction projects each year that were delivered via the Accelerated Bridge Program. Note that the total number of bridge projects used to determine the percentage does not include bridge painting or membrane projects.

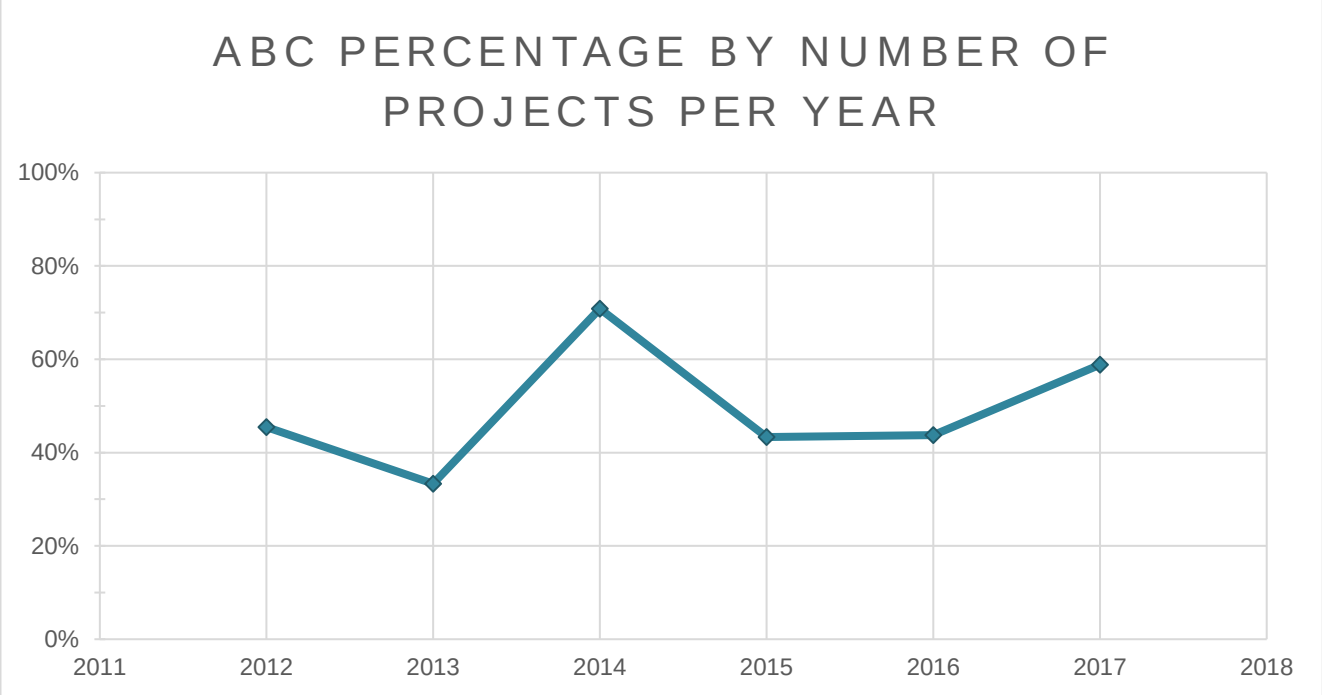


Figure 10. ABC Percentage by Number of Projects per Year.

The percentage of projects each construction year that used precast elements to accelerate construction. Note that the total number of bridge projects used to determine the percentage does not include bridge painting or membrane projects.

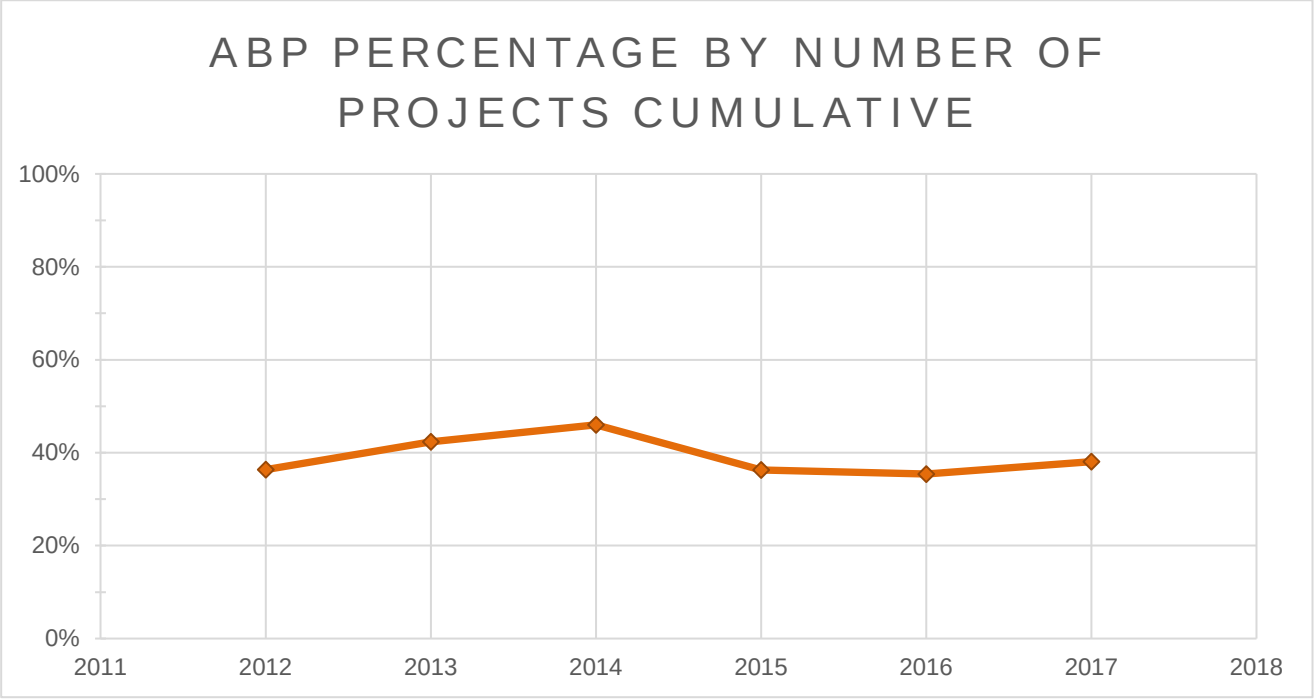


Figure 11. ABP Percentage by Number of Projects Cumulative.

The cumulative percentage of construction projects each year starting in 2012 that were delivered via the Accelerated Bridge Program. Note that the total number of bridge projects used to determine the percentage does not include bridge painting or membrane projects.

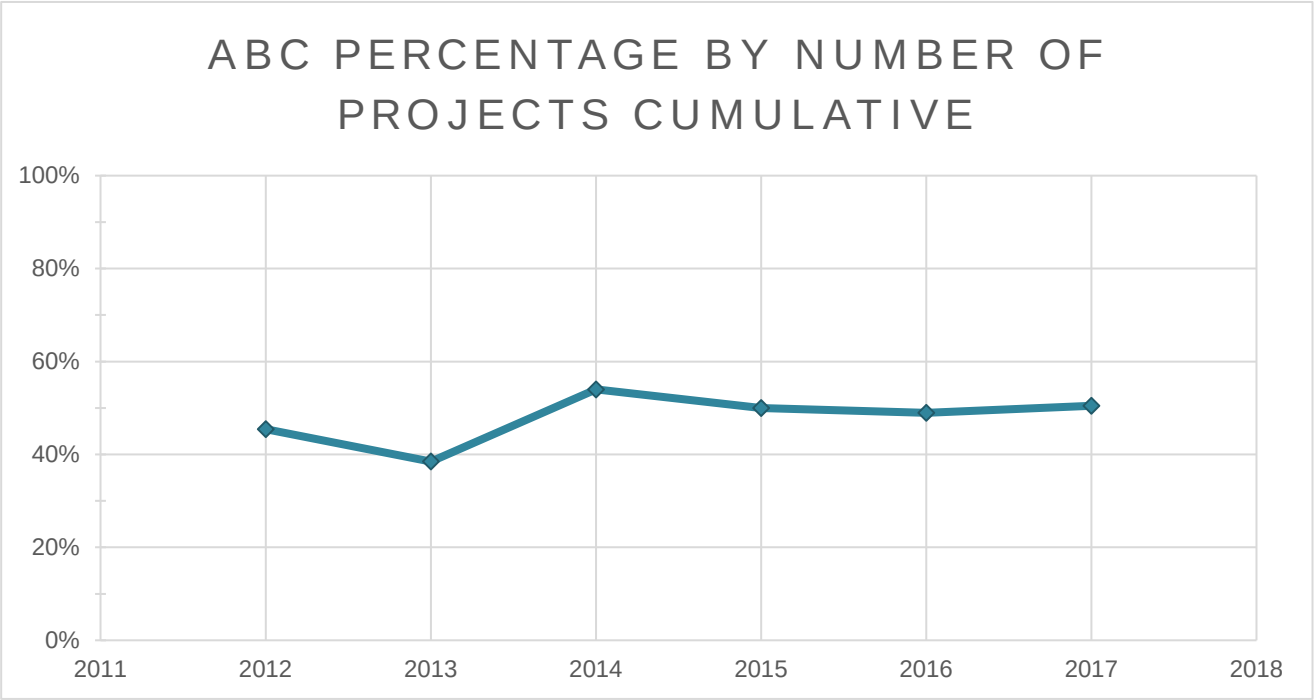


Figure 12. ABC Percentage by Number of Projects Cumulative.

The cumulative percentage of projects each construction year starting in 2012 that used precast elements to accelerate construction. Note that the total number of bridge projects used to determine the percentage does not include bridge painting or membrane projects.

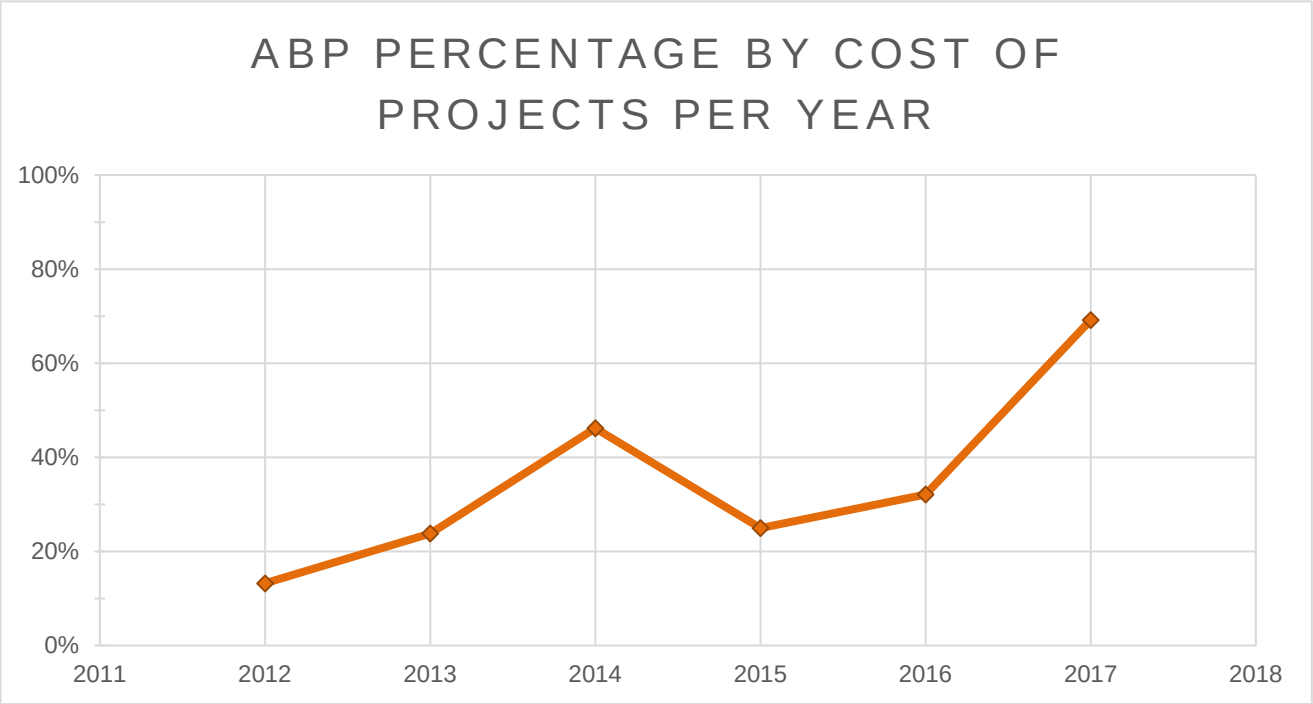


Figure 13. ABP Percentage by Cost of Projects per Year.

The total cost of Accelerated Bridge Program projects each year out of the total cost of all projects. Note that the cost of all projects does not include bridge painting or membrane projects.

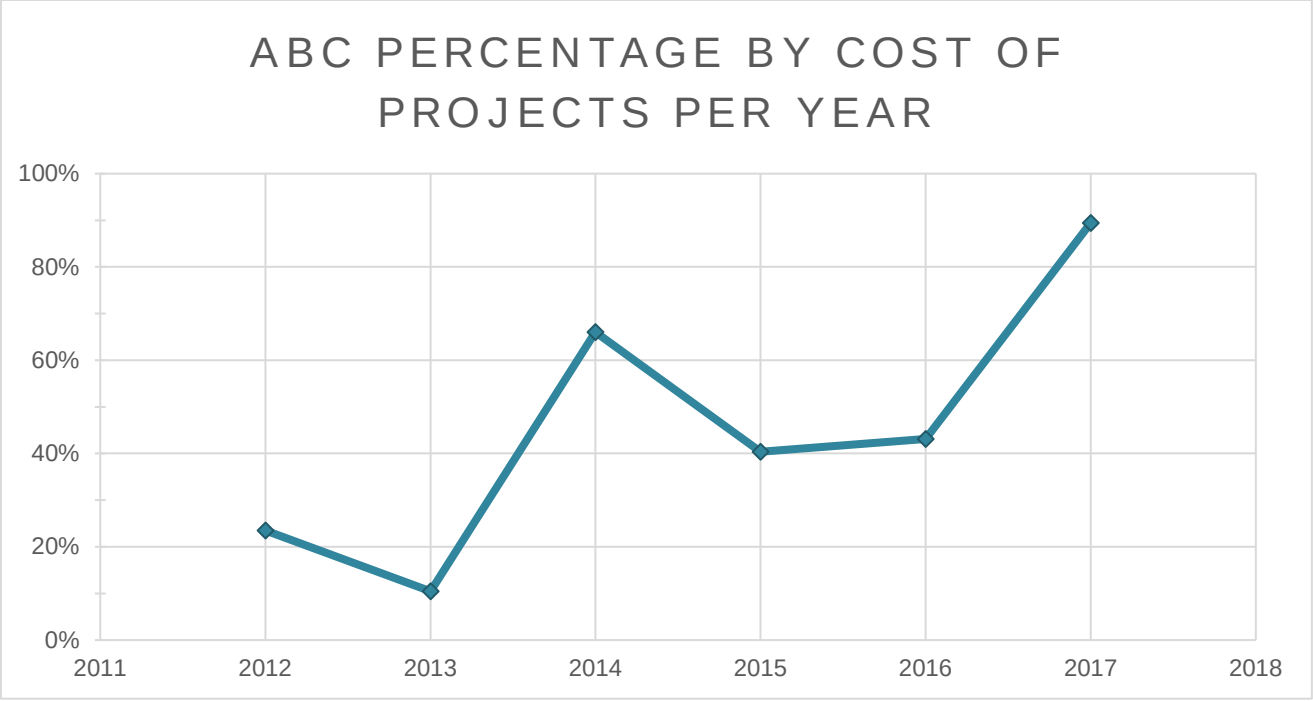


Figure 14. ABC Percentage by Cost of Projects per Year.

The total cost of projects utilizing prefabricated elements each year out of the total cost of all projects. Note that the cost of all projects does not include bridge painting or membrane projects.

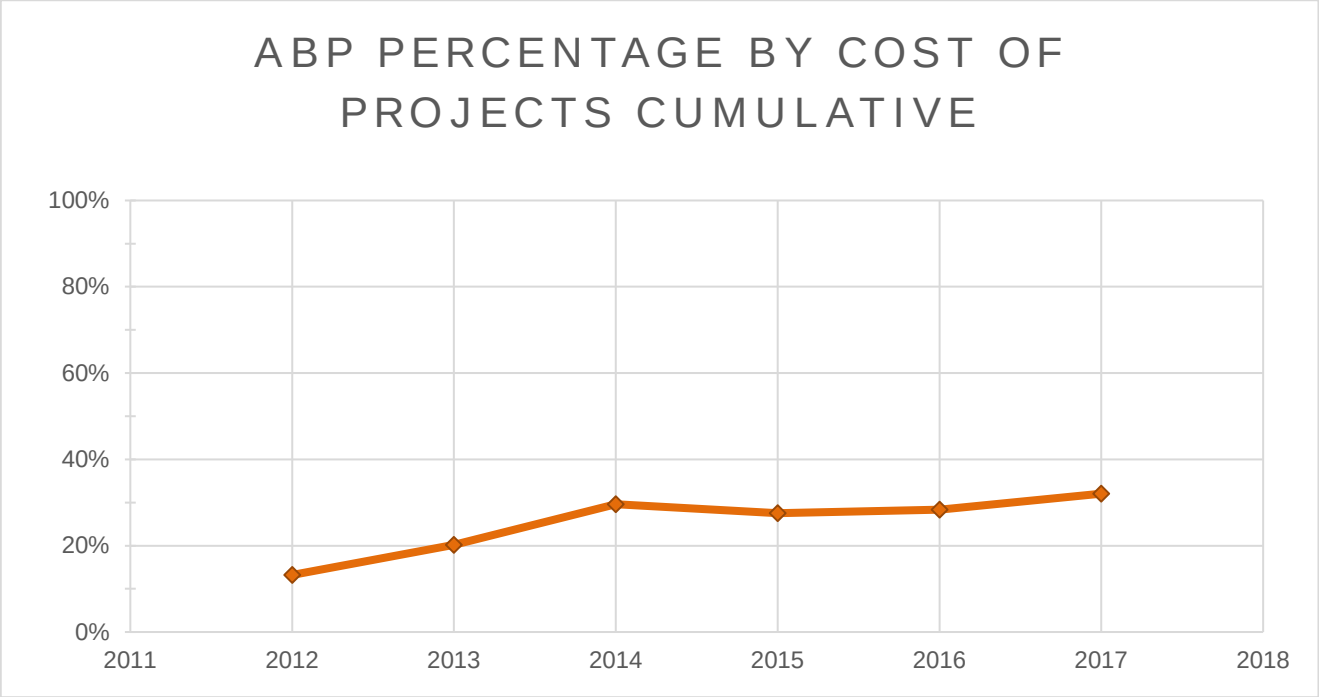


Figure 15. ABP Percentage by Cost of Projects Cumulative.

The cumulative cost of Accelerated Bridge Program projects each year since 2012 out of the total cost of all projects since 2012. Note that the cost of all projects does not include bridge painting or membrane projects.

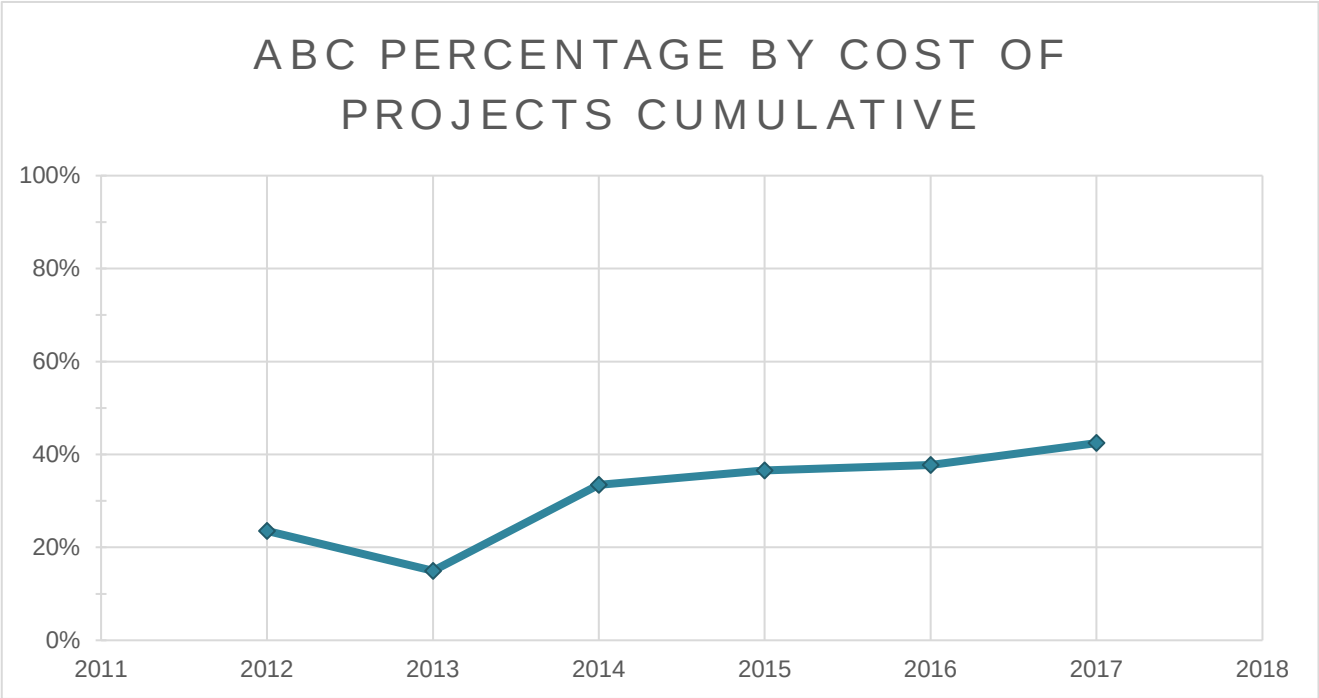


Figure 16. ABC Percentage by Cost of Projects Cumulative.

The cumulative cost of projects utilizing prefabricated elements each year since 2012 out of the total cost of all projects since 2012. Note that the cost of all projects does not include bridge painting or membrane projects.

M Agendas from Peer Exchanges

C19 Expediting Project Delivery Scanning Tour

Peer Exchange Agenda

MaineDOT & VTrans

October 5th & 6th, 2015

MaineDOT MidCoast Region Office

October 5th 12:30 to 4:30

12:30 – 12:40 Introductions

12:40 – 12:50 Background/Propose of the C19 Scanning Tour Jennifer

12:50 – 1:20 Overview of the VTrans Project Initiation and Innovation Team (PIIT) VTrans

1:20 – 1:50 Overview of the VTrans Accelerated Bridge Program (ABP) VTrans

- *ABC bridge techniques that VTrans has had success with (or lessons learned)*
- *How are ABC projects selected - What types of projects are being constructed using ABC*

1:50 – 2:10 MaineDOT Organizational Overview Wayne

- *Overview of the MaineDOT organizational structure and how the Bridge Program interacts with other units*
- *The Bridge Committee*
- *Bridge Program organizational structure & responsibilities*

2:10 – 2:30 MaineDOT Project Development Process Wayne

- *Team structure*
- *Project development process*
- *Communication with other units*

2:30 – 2:45 Break

2:45 – 3:00 MaineDOT Performance Measures Wayne

- *Schedule and Budget measures*
- *Overview of Dashboard*
- *MaineDOT culture*
- *Lessons learned*

3:00 – 3:30 MaineDOT Work Plan Development Process Jim Foster

- *Project selection, scoping and budget*
- *Collaboration between Bridge Program, Bridge Maintenance and Transportation Planning*
- *Enhanced scoping*
- *Project hand off*

3:30 – 4:10 MaineDOT Project Scheduling Andrew Lathe & Mark Parlin

- *Overview of how PMs are using APV and Projex to help manage and deliver multiple projects*

October 6th 8:00 to 12:00

8:00 – 9:30 Project Prioritization and Collaborating with Resource Groups Mike Moreau, Todd Pelletier, Roger Sproul, Kristen Chamberlain

- *How projects are prioritized with the resource groups (utilities, environmental and ROW)? How do you work with the resource groups to focus on expediting project delivery? Do you have any strategies to EPD with the resource groups? Have you used any recent innovations to help advance projects through the resource groups?*

9:30 – 10:15 Plan quality and constructability Jeff Folsom, Eric Shepherd & Devin Anderson

- *How to maintain plan quality during expedited project delivery (what is the expectation for designers (in and out of house, what is the role of the PM, how are plans QC'd, how do you maintain consistency in plan development while making improvements to plan details*
- *How do you involve construction during plan development and examine constructability?*

10:15 – 10:30 Break

10:30 – 11:15 Project Outreach Leanne Timberlake

- *MaineDOT public process*
- *Effective project outreach strategies*
- *Outreach to communities along the detour route both during the scoping and design phases*

11:15 – 12:00 Alternative Contracting Mike Wight, Leanne Timberlake, Jeff Folsom

- *MaineDOT experience with Design-Build, Detail-Build and CMGC to expedite project delivery*

FHWA SHRP2 C-19 Train the Trainer Workshop

MASSDOT

AGENDA

September 14-15, 2015

Boston, Mass.

DAY 1		
Time	**Topic**	**Facilitator**
1:00pm - 1:15pm	Opening Remarks & Introductions	All
1:15pm - 1:45pm	Overview of VTrans ABP & C-19 Initiative	VTrans
1:45pm -2:45pm	MassDOT Project Scoping & Schedule Development	MassDOT
2:45pm – 3:00pm	Break	
3:00pm - 5:00pm	MassDOT Project Development & Resource Group Collaboration	MassDOT
DAY 2		
Time	**Topic**	**Remarks**
8:00am – 9:00am	Public Outreach and Political Capitol	MassDOT
9:00am – 10:00am	Performance Measures	MassDOT
10:00am –10:15am	Break	
10:15am –10:45am	MassDOT C-19 Update	MassDOT
10:45am –11:30am	Alternative Contracting	MassDOT
11:30am –12:00pm	Wrap-up and Closing	All

AGENDA

VTrans Project Delivery Scanning Tour of NYSDOT September 22–23, 2015

Tuesday. September 22. 2015:

12:00 pm	Rich Marchione – Welcome and introductions
12:15 pm	VTrans presentation on Project Initiation and Innovation Team (PITT) and Accelerated Bridge Construction (ABC) in Vermont
1:00 pm	Wahid Albert – intro to NYSDOT, major project highlights
1:30 pm	Brenda Crudele – ABC deck replacement with minimal contract plans
2:15 pm	Mathew Royce – UHPC concrete, link slabs, ICHPC
2:45 pm	Break
3:00 pm	Tim Conway – Design Build in NYSDOT
4:00 pm	Round table and peer to peer exchange with program areas
5:00 pm	Adjourn and meet at restaurant

Wednesday. September 23. 2015:

8:00 am	Wahid Albert – -Statewide Scour Critical Bridge Program (CBOW)
8:30 am	Terry Smith – Re-engineering the process with Environmental reviews
9:00 am	Jim Bridges – Region 1 ABC
9:30 am	Brenda Crudele – intro to the Albany Shaker Road project and ABC concepts utilized
10:00 am	Field trip
12:00 pm	Adjourn

N Sample Customer Satisfaction Survey

1. How satisfied are you with how VTrans conducted the Weston Bridge Replacement Project?
    a) Very satisfied
    b) Somewhat satisfied
    c) Neither satisfied or dissatisfied
    d) Somewhat dissatisfied
    e) Very dissatisfied

2. Which of the following did you use to get information about the project? Please click all that apply:
    a) Weekly email updates
    b) Front Porch Forum
    c) Newspaper
    d) Radio
    e) Television
    f) Electronic signage
    g) Project Fact Sheets
    h) Public meetings
    i) 511
    j) VTrans website
    k) Project-specific website
    l) Facebook
    m) Twitter
    n) Other (please specify)

3. What do you feel are the best methods to inform residents, business owners, and road users about closings and detours? Please click all that apply:
    a) Weekly email updates
    b) Front Porch Forum
    c) Newspaper
    d) Radio
    e) Television
    f) Electronic signage

g) Project Fact Sheets
h) Public meetings
i) 511
j) VTrans website
k) Project-specific website
l) Facebook
m) Twitter
n) Other (please specify)

4. If you participated in meetings regarding project timing, how satisfied were you about how your input was used?
   a) Very satisfied
   b) Somewhat satisfied
   c) Neither satisfied or dissatisfied
   d) Somewhat dissatisfied
   e) Very dissatisfied

   Comments:

5. How helpful was the information you received in preparing you for construction and the associated detour?
   a) Very helpful
   b) Somewhat helpful
   c) Could have been more helpful
   d) Not at all helpful

6. If you contacted VTrans or the project team during construction, how helpful were the responses?
   a) Very helpful
   b) Somewhat helpful
   c) Could have been more helpful
   d) Not at all helpful

   Comments:

7. If you participated in public meetings about the project, how satisfied were you with the information that you received at these meetings?
   a) Very satisfied
   b) Somewhat satisfied
   c) Neither satisfied or dissatisfied

d) Somewhat dissatisfied
e) Very dissatisfied

8. How would you rate the detour signs during construction?
    a) More than adequate
    b) Adequate
    c) Inadequate

    Please offer comments and suggestions re: detour signage here.

9. How satisfied are you with how VTrans worked with the town and local business owners to minimize impacts to businesses during construction?
    a) Very satisfied
    b) Somewhat satisfied
    c) Neither satisfied or dissatisfied
    d) Somewhat dissatisfied
    e) Very dissatisfied

    Please make any comments or suggestions here.

10. How satisfied are you with how bike, pedestrian and equestrian needs were considered during the planning process?
    a) Very satisfied
    b) Somewhat satisfied
    c) Neither satisfied or dissatisfied
    d) Somewhat dissatisfied
    e) Very dissatisfied

    Please make any comments or suggestions here.

11. This 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 process?
    a) Very satisfied
    b) Somewhat satisfied
    c) Neither satisfied or dissatisfied
    d) Somewhat dissatisfied
    e) Very dissatisfied

    Comments:

12. How satisfied are you with the condition of the new bridge as compared to the old one?
    a) Very satisfied
    b) Somewhat satisfied
    c) Neither satisfied or dissatisfied
    d) Somewhat dissatisfied
    e) Very dissatisfied

    Comments:

13. If you have comments about this project or suggestions as to how we can improve our service, please use this space to comment.

O Sample Public Meeting Polling Questions

In order to support strategy 10, Highly Responsive Public Engagement, with the objective of improving public involvement and support, a clicker audience response system was purchased in January of 2015. This system has to enabled participants to provide meaningful feedback during public meetings while offering instant results for agency personnel. At the local and regional concerns meetings during the project initiation phase, VTrans has been polling the public in the following areas: demographics of the audience, general use of the roadway, optimum closure timing (if applicable), project concerns, and scope satisfaction.

The following are typical questions asked relating to demographics and roadway use:

Who are you representing?

A. Municipal Official
B. Resident
C. Emergency Services
D. Local Business
E. Independent Organization
F. Local School
G. Other

How often do you use this segment of the road?

A. Daily
B. Weekly
C. Monthly
D. Rarely
E. Never

How often do you use the waterway for recreation?

A. Daily
B. Weekly
C. Monthly
D. Rarely
E. Never

How often do you walk over the bridge?

A. Daily
B. Weekly
C. Monthly
D. Rarely
E. Never

How often do you bike over the bridge?

A. Daily
B. Weekly
C. Monthly
D. Rarely
E. Never

What is your reason for attending this meeting?

A. Specific concern
B. General Interest
C. Live in close vicinity
D. Other

The following are typical questions asked relating to optimum closure timing:

What would be the maximum acceptable length of closure for the bridge?

A. 2 weeks
B. 4 weeks
C. 8 weeks
D. 12 weeks

Which time of year would be most acceptable for the bridge to be closed?

A. April
B. May
C. June
D. July
E. August
F. September
G. Other

The following are typical questions asked relating to project concerns and scope satisfaction:

Which would you be most concerned about?

A. Closure Duration
B. Bridge Aesthetics
C. Environmental Impacts
D. Recreational Impacts
E. Business Impacts
F. Other
G. Not really concerned

Which design aspect is the most important to you?

A. Shoulder width/bicycle accommodations
B. Aesthetics - Bridge Railing
C. Construction year
D. Construction Duration
E. Cost
F. Other

Did you find this presentation to be?

A. Too technical in nature
B. Too simplified
C. Just about right
D. Not much use at all

How did you hear about this meeting?

A. Local Newspaper
B. Front Porch Forum
C. Town Representative
D. Other

Do you find the recommended scope of work satisfactory?

A. Yes
B. No

P Survey Monkey Questionnaire Results: Local and Regional Meetings – Tools to Engage the Public

Local and Regional Meetings – Tools to Engage the Public:

A clicker audience response system was purchased to enable participants to provide meaningful feedback during public meeting while offering instant results for agency personnel. The clickers are being used throughout all phases of design, with an emphasis on the local and regional meetings (preferred alternatives meeting and regional concerns meeting). Since the purchase of the clickers in March of 2015, VTrans has been polling the public using the TurningPoint software by Turning Technology along with Turning Technology clickers at all local and regional meetings in the following topic areas: demographics of the audience, general use of the roadway, optimum closure timing (if applicable), project concerns, and scope satisfaction. The following questionnaire was distributed in June of 2016 was intended to give the VTrans Structures section feedback on the usefulness of the clickers as an effective tool for meaningful engagement. The questionnaire was sent out to towns and regional representatives that have attended a meeting using the clicker technology as well as Vtrans planning coordinator, and the Regional Planning Commissions.

1. Do you feel like the select board and other meeting attendees have greater input into the direction project via use of the clickers? Explain.
    - » Yes. Gives everyone a chance to be "heard" and allows for anonymity between neighbors. Also good for keeping the meeting moving while also gathering input.
    - » Yes.
    - » yes--all attendees were involved.
    - » not sure
    - » Yes. They feel involved and participating in decisions.
    - » Yes, but only if the input receives informs the project's direction.

2. Do you feel like the public participation and involvement in the meeting is greater due to the use of the clickers? Explain.
    - » Yes. Gives everyone a chance to be "heard".
    - » Yes.
    - » yes--we had the feeling that everyone in the room participated--that does not always happen.
    - » no
    - » Not sure. I think most attendees are surprised by the clickers.
    - » Yes. It's anonymous & it encourages people to record their opinions who otherwise

would not choose to do so.

3. Do you feel like the anonymity of the clickers gives the public a chance to express their opinion without future repercussions from neighbors? Explain.
   - » Yes.
   - » Yes.
   - » yes--many folks have an opinion however are intimidated others, or the TV camera.
   - » maybe
   - » Yes. In small towns past history can create a lot of differences, and some attendees will not speak publically.
   - » Absolutely. But even more important is that the software provides instant feedback to the audience. This enables everyone in attendance to see where their views stand in relation to others. And, people really like to see the results.

4. Do you think the format of the presentation provides an opportunity for meaningful feedback?
   - » Yes. The presentation constrains the scope of public input to what is appropriate - whether a town or state project. This means that the public are invited to providing meaningful input without misunderstanding the level to which they can influence the direction of the project.
   - » Yes.
   - » yes--it draws out opinions that might not come forth otherwise.
   - » not sure
   - » Yes, the presentation format is excellent.
   - » Do not know what you mean by "presentation" so cannot respond

5. Do you find the public polling questions we ask to be meaningful?
   - » Some are, and some are not. But the mix is good.
   - » Yes.
   - » I thought the presentation was excellent
   - » a little
   - » Yes.
   - » I cannot recall what VTrans asks so have no opinion.

6. Are there questions or topics that you would like us to include in our polling for future meetings? If so, which questions or topics?
   - » How did you hear about the meeting? Are you regularly involved in town meetings and public hearings?
   - » No.

- » Our meeting was very comprehensive.
- » No.
- » Besides basic demographic data, we should really try to ask questions about items over which input really makes a difference. e.g. your preferred time for a bridge closure, a design element where there are options that are aesthetic, how people receive news/info - etc.

7. Do you find the preferred alternatives meeting to be effective?
   - » Yes. It is good to get everyone back on the same page again.
   - » Yes.
   - » Yes
   - » what is the preferred alternatives meeting?
   - » Very effective; my preference.
   - » I think so...as long as 1) VTrans staff really listens to public input and 2) the project design changes in response to info learned at the meeting - e.g. timing of a bridge closure, investigation of mitigation strategies. It's important for public input to be considered & VTrans show how public input informed the design when staff returns for the public meeting just before construction begins

Local and Regional Meetings – Tools to Engage the Public Survey Recipients:

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