



# The Accelerated Bridge Program

Accelerating Project Delivery through  
Innovation and Partnerships

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## 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.

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# 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.

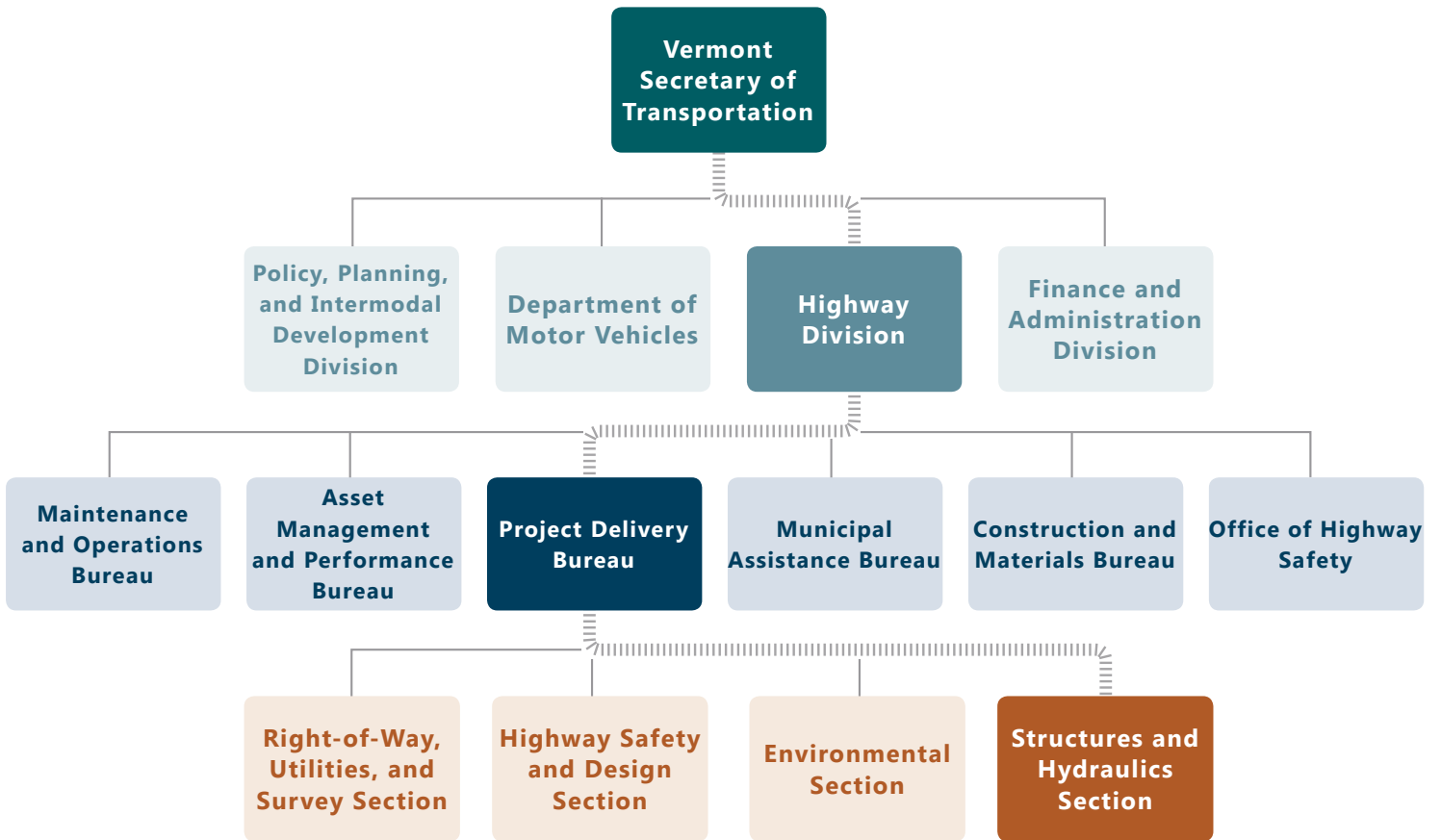


## 4 ABP and the Project Development Process

### 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.

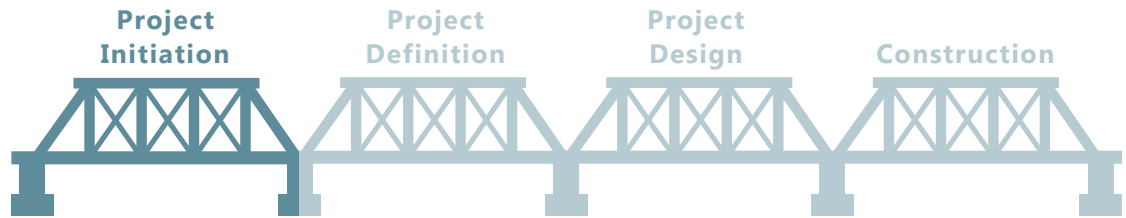


**Figure 1: Vermont Agency of Transportation Organizational Structure**

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).

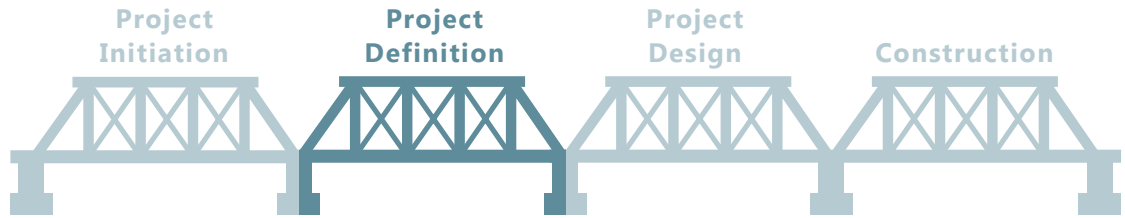
## Project Initiation



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 familiarity 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.

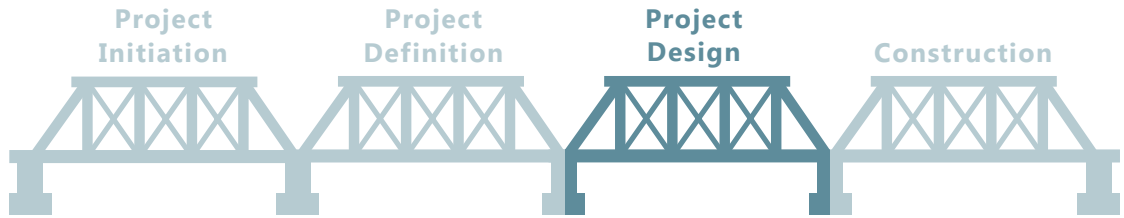


## Project Transfer

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.

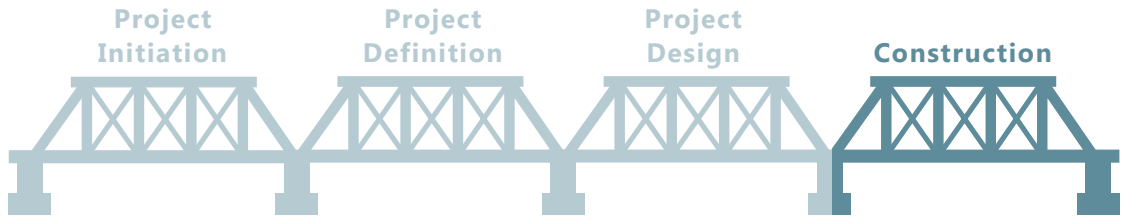
### **Final Plan Specification Review Meeting**

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.

**Project Factsheet April 2016**

**Weston**  
VT Route 100 Bridge 98

**Weston BF 013-2(13)**

**Project Location:** Town of Weston in Windsor County on Vermont Route 100, over the West River. The bridge is located approximately 1.1 miles south of the intersection of Vermont Route 100 and Vermont Route 155.

**Project Overview:**  
The Weston Vermont Route 100 Bridge 98 project will replace the existing bridge that was constructed in 1959 and has deteriorated due to age, use and winter maintenance activities.

**Current Deficiencies include:**

- substructure is in poor condition,
- substandard width,
- substandard approach and bridge railing,
- scour concerns,
- inadequate hydraulic capacity, and
- is structurally deficient.

**New Bridge will feature:**

- all new bridge elements and systems with an anticipated 80 service life,
- two 11' travel lanes and two 5' shoulders,
- 3 rail box beam bridge and approach rail meeting current safety standards, and
- greater hydraulic carrying capacity.

**Project Schedule:**  
There will be a 21 day road closure from Friday, June 3 to Thursday, June 23, 2016 with periodic short term single lane closures prior to and following the bridge closure period.

**Project Cost:**  
The contract was awarded to the Belden Company in the amount of \$1,831,400.

**Benefits of Accelerated Bridge Construction:**

- Reduced project impacts to:
  - Environmental and cultural resources
  - Utilities
  - Right-of-Way
- Reduced traffic impacts
- Safer for the workers and traveling public
- Reduced design and construction durations
- Reduced design costs

**Construction Schedule:** There will be a 21 day road closure from Friday, June 3 to Thursday, June 23, 2016 with periodic short term single lane closures prior to and following the bridge closure period.

**Contractor:** The Belden Company  
**Cost:** \$1,831,400  
**VTrans Project Manager:** Jennifer Fitch, P.E.  
**VTrans Resident Engineer:** Chris D. Williams  
**Project Outreach Coordinator:** Cindy Cook, [Westonbridge@adamantaccord.com](mailto:Westonbridge@adamantaccord.com).

**Detour Route:** The detour route will be the responsibility of the State of Vermont. During construction, traffic will be rerouted on VT 103/VT 11/VT 100.

**From the North:** Traffic is diverted from VT 100 onto VT 103 in Ludlow southward toward Chester. Turn right onto VT 11 and continue to Londonderry. Continue on VT 100. Traffic coming southward on VT 155 would turn left onto VT 100 and proceed to Ludlow, picking up the route as described.

**From the South:** Traffic is diverted from VT 100 onto VT 11 in Londonderry eastward toward Chester. Turn left onto VT 103 and travel to Ludlow. Return to VT 100 north, or continue on VT 100 to VT 155.

**East Fasia**

**Typical Abutment Deterioration**

**Section View**

**Generic Bridge Element Description**

**Detour Map**

**VERMONT AGENCY OF TRANSPORTATION**

<https://www.facebook.com>  
<https://twitter.com/S11VT>

**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

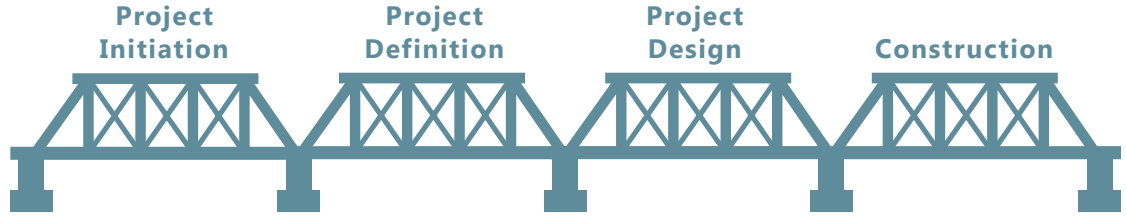
VTrans employs financial incentives during the construction phase for the contractors on the majority of ABP projects. Specifically, the contractor is provided financial incentives to meet or beat the bridge closure period goal. Some projects also use an additional daily incentive payment. Contractors 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.

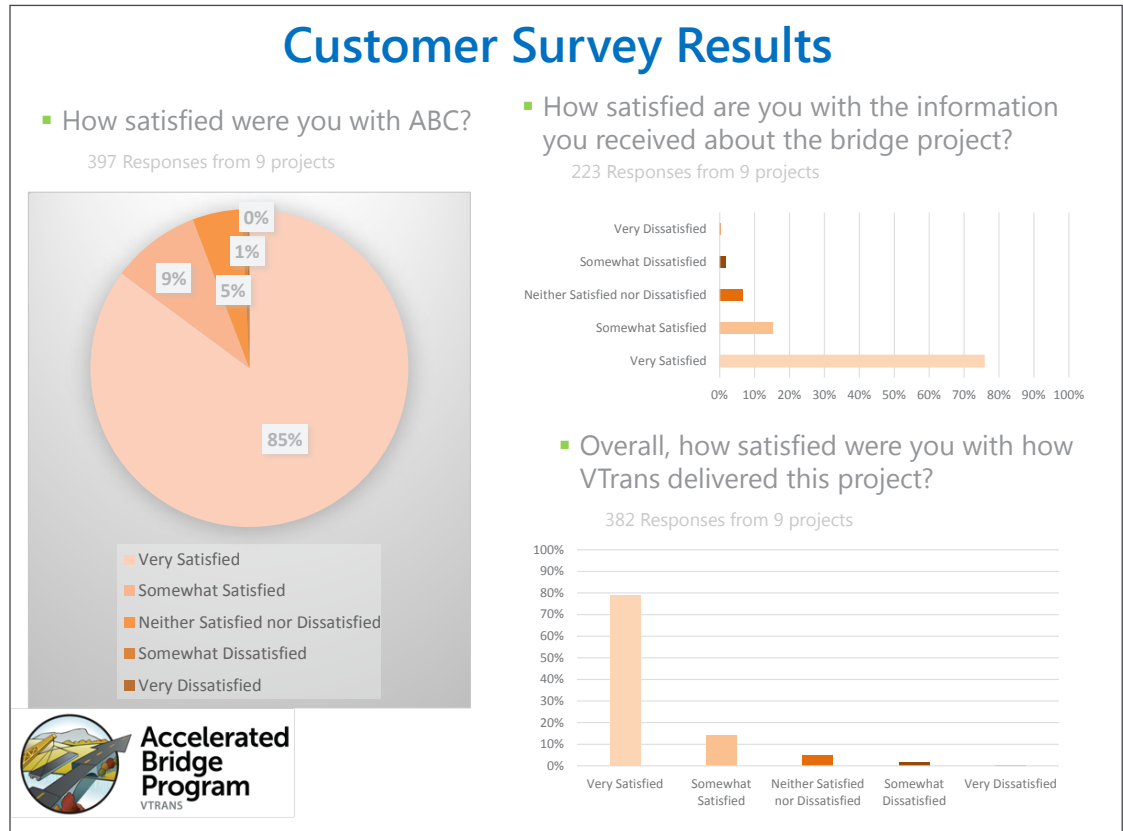
VTrans uses electronic file sharing sites as enterprise content and document management to store, track, and manage electronic documents. Each project has a site that is used to share files with the consultant, primarily in the design development phase. During this phase, VTrans provides standardized 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

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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.

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\_\_\_\_\_  
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		
Status	ID #	Type	Category	Risk Identification				Risk Rating		Risk Response		
				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	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	Accept	Work with ROW and property owners to facilitate quick ROW acquisition.	Kristin Higgins	4/18/2016
Active		Threat	PM	Utilities	Utility relocation/conflicts	In progress	Low	Accept	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	Accept	Work with the environmental section to get necessary 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 required	High	Mitigate	Mitigate	Locate 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	Mitigate	Place a new temporary bridge off alignment while traffic is maintained on the existing temporary bridge	Kristin Higgins	4/18/2016
Reliefed		Threat	Construction	Pre-cast	Lead time for pre-cast components		Medium	Avoid	Avoid	Agency is working with BGS in order to purchase the precast now while the permitting, 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	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	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	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 between two separate cofferdams	High	Mitigate	Mitigate	Design a cofferdam of adequate height, to prevent overtopping as well as size a foundation seal to prevent uplift	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	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	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 interim completion date	Assume earlier delivery if submittal process moves quickly	High	Mitigate	Mitigate	Meeting with Fabricator on 5/17/16 to discuss timeline. Will expedite reviews and allow permit approval (Arch only)	Owner	5/17/2016

## Transportation Management Plan

[Project Name] Traffic Management Plan

Project #

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



**VTrans**

Vermont Agency of Transportation

1



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## 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: <a href="mailto:Kristin.Higgins@vermont.gov">Kristin.Higgins@vermont.gov</a>	Name/Title: Josh Olund Unit: Bridge Phone: 207.347.4339 Email: <a href="mailto:joshua.olund@tylin.com">joshua.olund@tylin.com</a>
<b>Roles and Responsibilities:</b>	

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

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

Construction Engineering	
Resident Engineer	Regional Construction Engineer
Name/Title: Unit: Phone: Email:	Name/Title: Unit: Phone: Email:
<b>Roles and Responsibilities:</b>	

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

[Project Name] Traffic Management Plan	
	Project #

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

### 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. Therefore 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 alternative 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	√	
<b>Control Strategies</b>		
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		
<b>Traffic Control Devices</b>		
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
<b>Project Coordination Strategies</b>		
21. Other area projects	✓	Moretown lane closure
22. Utilities	✓	
23. Right-of-Way	✓	
24. Other transportation infrastructure		
<b>Innovative Contracting Strategies</b>		
25. Design-Build		
26. A+B Bidding		
27. Incentive/Disincentive clauses	✓	For discussion
28. Lane rental		
29. Performance specifications		
<b>Innovative or Accelerated Construction Techniques</b>		
30. Prefabricated/precast elements	✓	
31. Rapid cure materials		

Transportation Operations	√	
<b>Demand Management Strategies</b>		
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	√	
<b>Corridor/Network Management Strategies</b>		
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)		
<b>Work Zone ITS Strategies</b>		
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		
<b>Work Zone Safety Management Strategies</b>		
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		
<b>Incident Management and Enforcement Strategies</b>		
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	√	
<b>Public Awareness Strategies</b>		
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		
<b>Public Information and Outreach</b>	√	
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		
<b>Motorist Information Strategies</b>		
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		
<b>All approvals must be obtained prior to start of work</b>					
Signature:			Signature:		
Name:			Name:		
Date:			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**

Does the project have the appropriate scale to consider alternative delivery?

**2**

Will means and methods have a significant influence on cost and schedule?

**3**

Is schedule a significant driver of the project?

**4**

Are there technical complexities on the job?

		Weight (0-10)	Item	DBB	DB	CMGC
TECHNICAL		<b>10</b>	<b>Overall Project Schedule</b>	<b>1</b>	<b>3</b>	<b>1</b>
		<b>10</b>	<b>Overall Construction Cost</b>	<b>3</b>	<b>3</b>	<b>1</b>
		<b>10</b>	<b>Permitting Risk</b>	<b>3</b>	<b>1</b>	<b>3</b>
		<b>10</b>	<b>Design Innovation Potential</b>	<b>1</b>	<b>3</b>	<b>2</b>
		<b>10</b>	<b>Means and Methods (Construction)</b>	<b>1</b>	<b>3</b>	<b>2</b>
		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	
PROCESS		Weight (0-10)	Item	DBB	DB	CMGC
		<b>10</b>	<b>Timing for Contractor Procurement</b>	<b>1</b>	<b>3</b>	<b>1</b>
		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	
<b>TOTAL</b>				<b>195</b>	<b>245</b>	<b>235</b>

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

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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.

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## 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

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#### **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**

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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**

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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**

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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.vtلمي.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 1<sup>st</sup>):**

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.



Special Provisions for: **Project Name Project Number** **Month, Day, Year**  
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**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 Provisions for: **Project Name Project Number** **Month, Day, Year**  
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**\*\*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](mailto: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.

Special Provisions for: **Project Name Project Number** **Month, Day, Year**  
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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

Special Provisions for: **Project Name Project Number** **Month, Day, Year**  
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- 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**  
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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.

Special Provisions for: **Project Name Project Number** **Month, Day, Year**  
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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.

Special Provisions for: **Project Name Project Number** **Month, Day, Year**  
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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](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.

Special Provisions for: **Project Name Project Number** **Month, Day, Year**  
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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.



Special Provisions for: **Project Name Project Number** **Month, Day, Year**  
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- 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
<b>Project Name</b>	<b>TBD if unknown</b>	<b>TBD if unknown</b>
<b>Project Number</b>	<b>Name if known</b>	<b>Date if known</b>

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.**

Special Provisions for: **Project Name Project Number**

**Month, Day, Year**

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**\*\*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.

Special Provisions for: **Project Name Project Number**

**Month, Day, Year**

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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.

Special Provisions for: **Project Name Project Number** **Month, Day, Year**  
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- 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
<b>Event Name</b>	<b>Event Date(s)</b>

Contacts to get more information on the above events:

**Killington:** Amy Morrison  
 Events & Marketing Coordinator  
 Towns of Killington  
 2706 River Road  
[Amy@Killingtontown.com](mailto:Amy@Killingtontown.com)  
 802-422-2105

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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.

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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.

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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 15<sup>th</sup> to April 15<sup>th</sup>, 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.

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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.



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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:

<u>Pay Item</u>	<u>Pay Unit</u>
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;

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- (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 1<sup>st</sup> 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.

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(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)  
 FUFDD = Fuel Usage Factor, Diesel Fuel (gallon/unit)  
 FUFGG = Fuel Usage Factor, Gasoline (gallon/unit)

For PPD/IPD  $\leq 0.95$  or  $\geq 1.05$  and PPG/IPG  $> 0.95$  and  $< 1.05$ :  
 PA = FUFDD X Pay Item Quantity X (PPD - IPD)

For PPD/IPD  $> 0.95$  and  $< 1.05$  and PPG/IPG  $\leq 0.95$  or  $\geq 1.05$ :  
 PA = FUFGG X Pay Item Quantity X (PPG - IPG)

For PPD/IPD and PPG/IPG  $\leq 0.95$  or  $\geq 1.05$ :  
 PA = [FUFDD X (PPD - IPD) + FUFGG 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:

<u>Pay Item</u>	<u>Pay Unit</u>
690.50 Price Adjustment, Fuel N.A.B.I.)	Lump Unit

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**Table 1**  
**Pay Item Fuel Usage Factors and Quantity Thresholds**

Work Category	Pay Item No.	Usage Factor Units	Diesel Fuel (FUFD)	Gasoline (FUGG)	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 Pavement	310.2	GAL/SY	0.04	0	35,000
	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

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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.

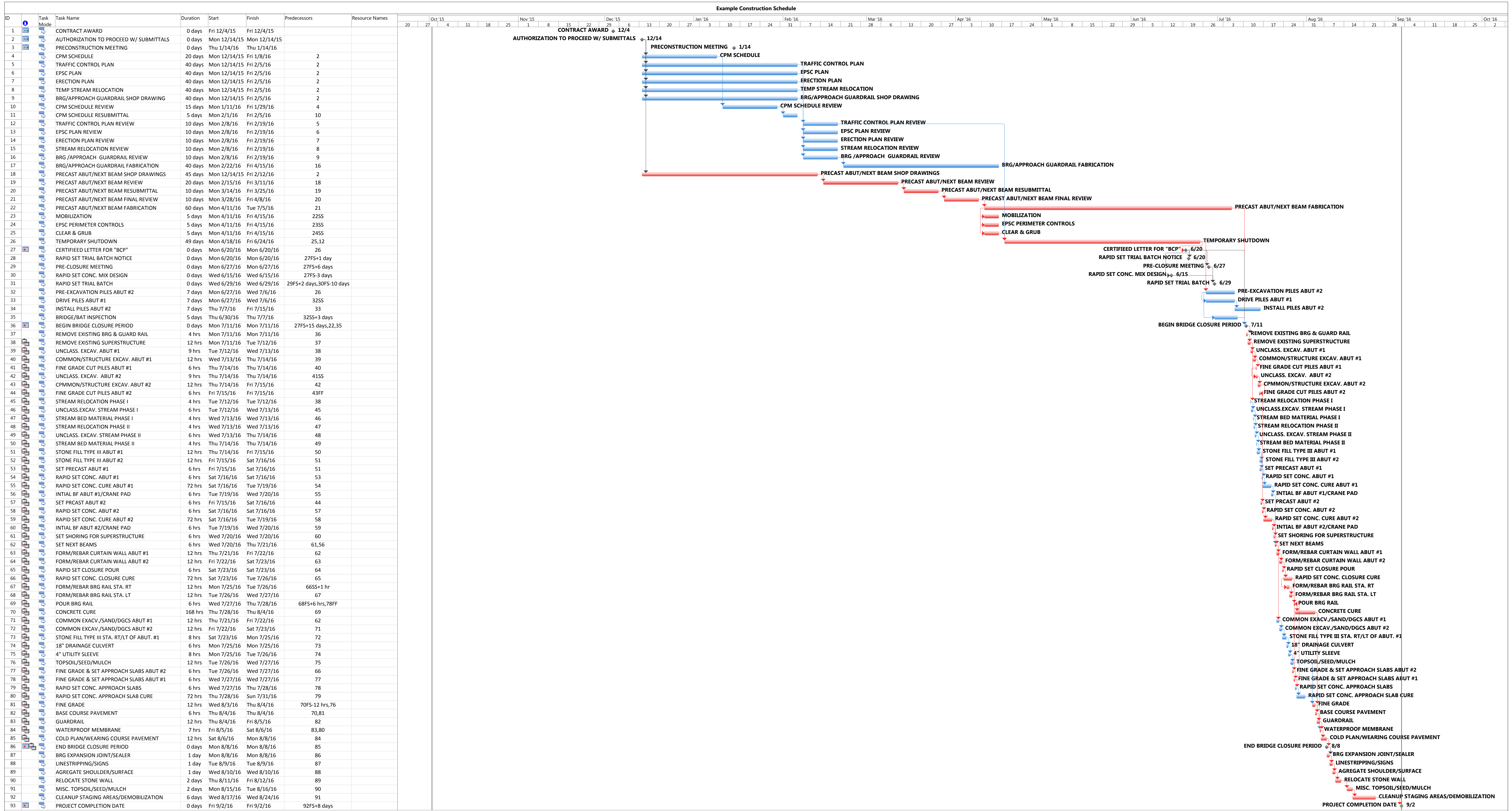
John Doe Contracting has shown in the attached schedule mobilization, perimeter erosion controls and clear/grub operations occurring in early April. Special Provision 16 Environmental, restricts cutting of NLEB habitat trees which have been identified between April 15 through August 31. Following clearing 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.



Project: Clarendon BRO 1443(4) Task Milestone Project Summary Inactive Milestone Manual Task Manual Summary Rollup Start-only External Tasks Deadline Critical Split Manual Progress