

# ***T. Buck Construction, Inc.***

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## **C.P.M. SCHEDULE**

Vermont Agency of Transportation

Bridge Replacement in town of Burke, VT  
BRF 0269(13)

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## **Introduction / Description**

This project is part of VAOT Accelerated Bridge Program and it aims to minimize the impact to the community and traveling public by reducing the road closure time to a minimum. In this case, there are 20 days in which the bridge can be closed to traffic.

The project involves the removal of bridge #13 and portions of its abutments and foundation. Bridge 13 will be replaced with a precast structure, spanning 56 Feet over Dish Mill Brook, on new pile caps along the same alignment. Bridge 13 is located in the town of Burke, on VT Route 114, approximately .47 miles easterly of the Lyndon/Burke Town line. The width of the bridge will be increased to 36 feet – 10 inches.

## **PRECONSTRUCTION ACTIVITIES: Present time – Late March**

This phase will consist of planning, preparing and organizing our resources so to be prepared for the project to run smoothly. Namely, we will be submitting shop drawings, working drawing, and all other project submittals required by the specifications. The preconstruction meeting will happen during this phase which will open discussions with the Agency of Transportation to ensure a partnership will emerge as the construction phase(s) begin.

### Major Suppliers:

- JP CARRARA – Supply Precast concrete
- Carroll Concrete – Supply ReadyMix Concrete
- Caulkins Rock Products – Supply gravel materials
- EJ Prescott – Supply drainage Materials
- Seismic Energy Products – Supply Bearing Pads
- Camp Precast – Supply Drainage Structures

### Major Subcontractors:

- AD ROSSI – install Membrane and Asphaltic Plug Joint
- Whitcomb – install Pavement
- FR Lafayette – install guardrail, bridge rail, and granite curb
- ADA Traffic Control – provide flagging services
- Keeley Crane – Provide crane services
- HB Fleming – Supply and install H-Pile
- Tri-State Drilling & Boring – provide drilling services
- L&D Safety Markings – Install pavement markings
- Continental Placer Inc, - Provide Vibration Monitoring services

## **PRE-CLOSURE ACTIVITIES: Early April – May 22<sup>nd</sup>**

During this phase the project will be setup from an onsite standpoint. T Buck will install field offices, traffic control devices (cover detour signs), project demarcation fencing, and erosion control measures described in the approved EPSC plan.

A pre-closure meeting will be held and public relation outreach will take place to inform all interested parties of the intended sequence of activities and schedule of the said activities. T Buck will be available for any and all public meetings in addition to all progress meetings.

Once the project has been setup, T Buck intends on installing a demolition platform under the bridge and installing a single lane temporary bridge immediately upstream of the bridge which will be used during this phase for vehicular / pedestrian traffic (day time), and throughout the closure period for pedestrian access. While the approaches for the temp bridge are being installed, the invasive species will be removed of in accordance with plans and specs.

During the weeks leading up to the closure, T Buck intends on utilizing the temporary bridge to divert traffic around the bridge so that the pre excavation and be completed as described in the project plans, safely and effectively. T Buck proposes to use short term sporadic lane closures to deliver materials and install the temporary bridge. The lane closures will be short in duration (2-3 hours) and take place during the week of April 30<sup>th</sup>. While the temporary bridge is in place traffic will be able to utilize the temporary bridge by turning right onto it as if it was the existing structure.

During daylight hours beginning May 4<sup>th</sup>, we will pre excavate for the pile on abutment 2 while the pile is being driven on abutment 1. During the week of May 11<sup>th</sup>, (the second week of day time lane closures) HB Fleming installing the H-Pile on abutment 2 in the holes that were pre-excavated during the previous week. After the 4 pile are installed (1, 2, 3, &4) T Buck will move the temporary bridge into its phase 2 location. HB Fleming will then install the remaining 2 pile on abutment 2 (5&6).

Before any pre-excavation or any construction activities that will involve excessive vibration, seismographs, and other instruments will be installed and monitored to establish a baseline for typical vibrations. Then when pile driving operations commence, reports will be generated that indicate the level of increased vibrations due to construction activities.

**Anticipated crew size and working hours:**

The intent is to have a relatively small crew during this phase. In addition to subcontractor work forces, T Buck will have 4-6 people on site and we will aim to work 7 am to 6 pm (depending on daylight). We expect the pre excavation to take approximately one week to complete and the pile installation to take 2 weeks total.

**Concerns / potential issues or conflicts:**

There are several aspects to this phase that will make the completion of the project possible. Currently the bridge is significantly narrower than the proposed structure so the placement of the temporary bridge will be critical so not to interfere with the construction of the new bridge. The proposed location of the temporary bridge will be confined to within the utility easement but may fall outside of the construction limits. The importance of the temporary bridge is twofold.

- 1) It will provide continuous use of VT route 114 during the “pre-closure” period while providing enough room to complete the required pre excavation and pile installation. We will remove all equipment and materials from the roadway and open the existing bridge to two way traffic each night during this phase.
- 2) The temporary bridge will allow pedestrians to access both sides of the bridge during the bridge closure period. It will eliminate the need for a shuttle service as described in the contract documents and also allow for continuous access to local business located on west side of the bridge.

Another potential concern is the initial project layout. The placement of the H-Piles is perhaps the most important thing in this phase as the precast concrete will need to be installed over the piles during the closure period. With the new bridge being longer than the existing structure, the h-piles should be able to be installed before the closure and cut off just below road elevation during this phase. The borings indicate that the soils are conducive for accurate pile installation so with enough care, we should be able to drive the pile in the proper locations.

Finally, a major concern during this phase will be coordination of subcontractors and suppliers. We will intend on taking several deliveries during the weeks leading up to the bridge closure. These deliveries will include all materials necessary during the bridge closure period and we hope to acquire all known materials so they can be installed quickly and effectively during the closure.

## **CONSTRUCTION DURING CLOSURE: May 26<sup>th</sup> – June 15<sup>th</sup>**

This phase will begin by uncovering the signs along the specified detour and closing the road to traffic at 7:00 am.

Once the road is closed, the bridge demolition will begin immediately. We will begin by demolishing the rails, existing guardrail, and removing the pavement within the project limits. A detailed plan on the demolition can be seen in the aptly named DEMOLITION PLAN which will be a separate project submittal.

When the concrete preparation is completed, a large excavator (CAT 345) will remove the existing superstructure and a separate machine will munch the concrete up to remove the reinforcing steel. Then an excavator on each side will begin demolishing each abutment to the specified elevation. The new abutments are approximately 15 feet behind the existing abutments so the excavation for them should be able to be achieved using conventional sloping methods back to elevation 820 on abutment 1 and 822 on abutment 2. If Dewatering is necessary, it will be done so using portable pumps and pumping into a dirt bag or sediment pond as required.

Once the concrete is removed, the demolition platform will be removed and the approaches will be excavated. The rip rap that will be situated between the new abutments and the river will be installed "on the way out" and the pile will be excavated around and cut to the proper elevation. The rip rap under the new bridge will be supported mostly by the existing structure to remain. The abutment 1 footing will be left in place and the rip rap will be keyed in behind it and placed between the existing structure and the new precast concrete. The existing abutment 2 wall remains in place to elevation 825(+/-) and the rip rap will be installed between the existing wall and new abutment. Where the rip rap gets installed upstream of the existing structure, sheet pile or standard sand bag cofferdams will be utilized to isolate the work from the active flowing stream.

After the precast abutments will be installed and post tensioned. Rapid set concrete will be placed in the pile cavities and cured. When the concrete has reached its specified strength a final post tensioning will take place. During the curing process, we will plan to install a stack of crane mats behind each abutment so not to put any additional forces on the abutments when the cranes are utilized to set the NEXT beams (see erection plan).

The four (4) NEXT beams will be set using two cranes and the forming of the curtain walls & closure strips will immediately commence. As soon as the rapid set concrete is placed and cured on the ends of the bridge, it can be considered an integral structure and the crane mats can be removed. Backfilling operations can commence up to the specified approach slab

elevation. The crane will return to set the approach slabs and the approaches will be completed along with all applicable drainage structures and materials.

The spray applied membrane will be installed and the base pavement on the approaches will be installed. Then we plan to set two lines of jersey barriers 22' apart to provide two (2) 11' lanes of traffic. When the barriers are in place, the road will be opened to traffic and the detour signs will be removed.

**Anticipated crew size and working hours:**

We intend on beginning the closure with a crew size of 10 people. Those 10 people will be comprised of operators, and laborers. The during the demolition and excavation process, we will plan to work 24 hours per day.

Once the abutments are set and the rapid set concrete is curing, the crew size will diminish to the extent necessary to stay ahead of the carpenter crew who will set the NEXT beams and form and place the curtain walls. We will be prepared to carry 10 people 24 hours per day throughout the closure period but we anticipate getting to a point where the 10 people are working about 14-16 hours per day after the demolition and precast abutments are placed.

**Concerns / potential issues or conflicts:**

The demolition of the existing bridge is the first hurdle to clear. The first 48 hours of the closure will be critical as the demolition begins. The removal of the existing concrete debris will be completed as soon as practicable but may not happen immediately. The idea will be to remove the concrete from its current location so the construction can begin as soon as possible.

Next, the excavation around the pre-installed H-piles will be important. Care will be take to not damage the pile(s) while cutting the earth down to the specified elevation for the precast pile caps.

The deliveries of the precast concrete is paramount during this phase. The potential of traveling during the night or on weekends is a real possibility. We will need to work closely with JP Carrara to ensure timely delivery of each piece.

Perhaps the single most time consuming activity may be the forming the curtain walls after the NEXT beams are set. We will make every attempt to have the forms prebuilt but some adjustments will certainly be necessary as the shape between the stems and the bond out for the approach slab seat will have to be carefully installed.

## **POST CLOSURE ACTIVITIES: June 2<sup>nd</sup> – August 22<sup>nd</sup>**

When the road is opened to traffic, there will be a 22' wide corridor for the traffic to use. Since the Texas Rail will not be formed and placed yet, Jersey Barriers will be used to delineate the lanes.

When the Bridge Closure Period is over, we will begin work on forming / placing the sidewalk on the north side of the bridge. Additionally, the excavation for the retaining wall to hold the driveway located near station 26+25 LT will be completed. The cast in place footing and wall will be placed after the excavation is completed and then the wall will be backfilled to create the new driveway.

All remaining rip rap will be installed on abutment 1 downstream slope to armor the slope above the demolished concrete retaining wall.

Once the sidewalk is completed, the Texas rail will be formed and placed behind the barriers on the bridge. When the Texas rail is placed, and cured, the forms will be stripped and the barriers can be removed.

When the bridge is wide opened and protected by the Texas Rail, the barriers may still be necessary at the 4 corners until the guardrail and approach rail sections are installed.

We will move forward with the street-scaping at this point, the sidewalks, curbing, seeding and mulching will take place. We will plan to install surface pavement as soon as everything is completed.

### **Anticipated crew size and working hours:**

Once the BCP is over, we plan to move back to a relatively standard work week and crew. We anticipate 6 people working between 40-50 hours per week for the 2 months following the BCP.

### **Concerns / potential issues or conflicts:**

There is a contractual milestone which mandates the driveway be completed before July 10<sup>th</sup>. Since we plan to open the road on June 15<sup>th</sup>, there should be sufficient time to excavate and place the footing and wall in that time frame. We will discuss additional vibration monitoring during backfill operations.

At this stage, we will be looking to "tie" everything together so the cooperation of the project resident is essential. The RE will be involved in all daily activities and they will be informed of all plans at every work location.