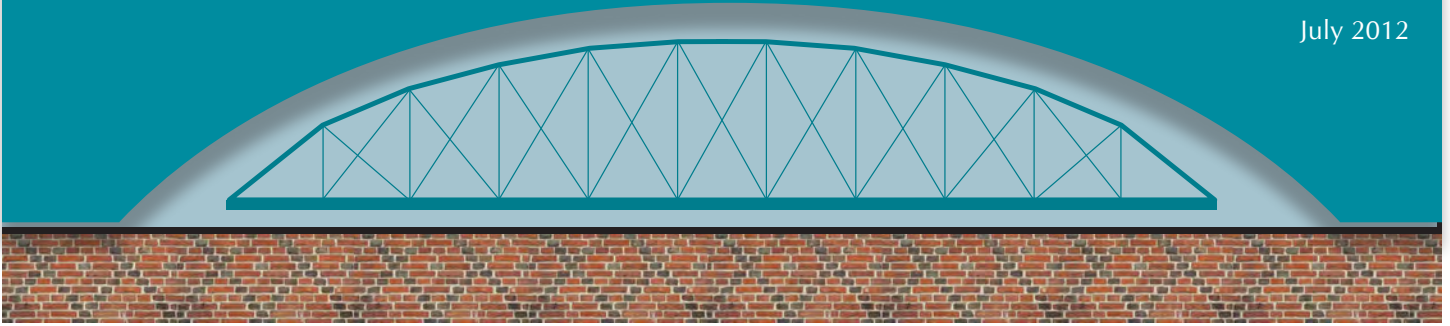


CHECKERED HOUSE BRIDGE

July 2012



Under blue skies, bridge truss is successfully moved

On a warm, sunny day in June a team of engineers and construction workers moved a 200,000-pound Checkered House Bridge truss that had been bolted in place for nearly 85 years.

About 40 people associated with the project were on site. No matter how many calculations were made in advance and how thorough the preparations, nobody could be certain how the bridge would behave when its north truss was pushed away from the rest of the bridge. Moving a truss bridge is unusual to say the least – in fact, this may be the first time it's ever been done.

held for eight and a half decades. It didn't. The truss moved quietly, though at one point the move was held up because one connection had rusted over so severely it needed to be cut away with blow torches.

Before beginning, a crew of at least 25 workers had to be briefed on their duties, safety instructions given, radio communications up and running and hydraulic equipment tested and in place.

As expected, the first two inches of the move were the most difficult. By the end of the day, the truss had been moved 2.5 feet. The remaining 10 feet of the move went quickly and was completed by early afternoon the next day.

Months of preparation

In the months leading up to the move, travelers passing by could see new steel beams and temporary piers in the river, erected to provide additional support for the separation and move.

While this work was being done, less visible but essential tasks were underway. Specially fitted rollers and Teflon plates that would help the bridge glide when pushed by hydraulic jacks were milled and cut. Rivets that had held the steel together for so long were replaced with bolts that could be quickly removed when it was time to move the bridge. And the north truss itself was completely severed and left secured in place.

By mid-June, all that was needed was a forecast for several days of good weather.



Crew gets final instructions before taking positions on the bridge to move the truss.

Some team members thought the steel would make a noisy protest as it was nudged from the position it had

see "Making the Move", page 2



Making the move

The bridge move was a carefully orchestrated piece of work, with Harrison & Burrowes' Project Superintendent Russ Insogna conducting. The north truss would need to be gently rolled 12.5 feet, with the aid of hydraulic jacks.

With support from Finley Engineering Group, Inc., CHA and more than two dozen construction workers positioned at points on the bridge, Russ controlled the hydraulic pressure on ten jacks positioned at strategic points at each bridge end and on four beams at intervals on the bridge. Workers monitored movement at these ten locations, reporting via radios back to the central control point operated by Russ. Constant communication about progress or lack of movement was essential because each part of the truss had to be moved at an even pace.



Rollers specially made to fit under the truss allowed the truss to glide when pushed.

Hydraulic jacks were placed on the deck level of the bridge as well as where the beam connected to the top chord. Hydraulic pressure was counter-balanced, i.e., while the bridge was pushed out at each end of the bridge, the other eight jacks, positioned in the opposite direction, pulled so the truss's vertical beams would remain upright throughout the move.

See more move photos on
www.checkeredhousebridge.com

Simple tools

Even for a job of such complexity, simple tools found in most households had a key role in ensuring safety and success. Ten teams of construction workers holding handheld measuring tapes measured bridge movement and reported regularly to the Superintendent at the controls. Levels were attached to the beams to monitor their position so the crew could quickly note any leaning, should it occur. In between moving operations, wrenches tightened and untightened bolts used to stabilize the tension rods that secured the bridge.



photo by Jared Katz

And, when rust initially kept the truss from moving, it was cut away using a blow torch, a hand-held sledgehammer and some "elbow grease."

The day after

As soon as the north truss was successfully moved 12.5 feet, new beams were installed to reconnect it in its new position to the remainder of the 1928 bridge. The new pieces are now gray but will blend into the existing bridge once the entire bridge gets a fresh coat of green paint.

With the successful widening done, most of the rest of the work is a bit more routine! By early July, workers began laying new floor beams for the expanded bridge. A brand new deck will eventually be installed for the entire bridge.

The Checkerred House Bridge is on schedule to re-open in late spring 2013.

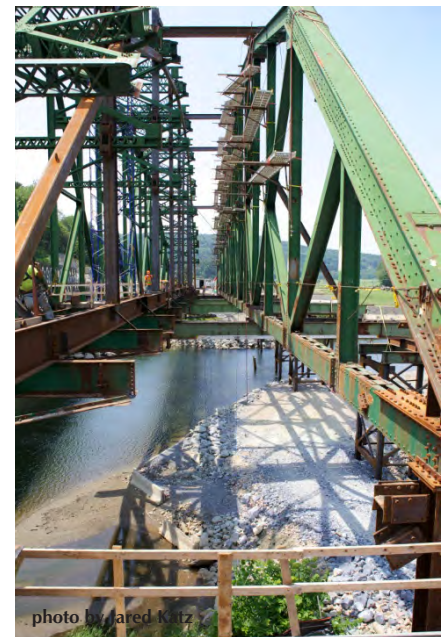


photo by Jared Katz



photo by Jared Katz

Project Superintendent Russ Insogna places a flag on top of the north truss before the move.



photo by Jared Katz

photo by Jared Katz

On the move: the first two inches were the most time-consuming.



photo by Jared Katz

The day after: truss has been moved and the bridge is now 12.5 feet wider.



Truss roller

photo by Jared Katz



Focus on the Project Manager

Carolyn Carlson is not only VTrans' project manager for the widening of the Checkered House Bridge, she is also an area resident and frequent traveler across the bridge. So, in just about every conceivable way, Carolyn has a great interest in the successful outcome of this project.

Carolyn has been a civil engineer with VTrans since 1985. Since graduating in Civil Engineering from the University of Vermont, she has made her career in the Structures Section of the Vermont Agency of Transportation.

Carolyn was assigned to the Checkered House Bridge project in 1990, but had to wait a long time before the project was able to move ahead. "This was such an interesting and complex project" says Carolyn. "The Checkered House Bridge is very significant historically so the engineering solution needed to comply with historic preservation requirements."

The selected course of action—widening this historic bridge—is a bold solution that allows the bridge to function safely and effectively, while preserving as much as possible of a style of bridge that is fast disappearing and which adds to the ambience and quality of life of rural Vermont.



Carolyn inspects activity at the bridge prior to the mid-June widening.

Carolyn notes: "It's kind of exciting to manage a project that is a 'first of its kind'. Harrison & Burrowes and CHA have been great to work with. So far, everything has gone very smoothly. We look forward to completing this project on schedule".

Carolyn lives in Williston with husband Jeff Carlson. She has a son Ian Meunier (23) recently graduated from Castleton State College and two daughters, Lauren Meunier (19) and Morganne Meunier (15).

Breaking New Ground???

The week of June 18, Harrison & Burrowes Bridge Constructors, Inc., separated the north truss of the historic Checkered House Bridge from the well-braced remainder of the bridge and literally rolled it out an additional 12 feet 6 inches to the north (see lead article of this newsletter). How did they do that??? Well, very carefully, of course! ☺

Is this the first time an historic truss bridge has been widened in this manner? While we can't say for absolute sure, no one has been able to find a precedent for doing this type of widening in all the literature searches. The engineering design was done by CHA and Finley Engineering Group, Inc. in response to VTrans' decision to widen this historic structure. CHA Vice President Dale Gozalkowski stated, "The resolve and professionalism in which Harrison & Burrowes workers approached this difficult task was impressive. The precision with which they completed this work was commendable."

Do you remember reading in our previous newsletter that the bracing on the widened section will not look exactly the same as the bracing on the original bridge? Can you see that difference begin to emerge in this photo? In our next newsletter, we will say more about historic preservation requirements that led to this widening plan.



photo by Jared Katz

The new gray-colored section, in keeping with historic guidelines, will be green when the entire bridge gets a fresh coat of green paint.