

The Holes Creek Bridge Replacement By Bradley McClelland

Each time there is a heavy rainstorm, the folks along Sheffield Road in the Dayton, Ohio suburb of West Carrollton have cause to be concerned. Holes Creek, a tributary of the Great Miami River that drains the town's land that sits east of I-75, may spill out of its banks.



This aerial view of West Carrollton, Ohio during one of the many floods of Holes Creek. This view is looking southwest; the railroad right-of-way is located in the top left-hand corner. Unknown photographer



In this image you can see why the railroad bridge needs to be replaced. Logs and other debris became wedged against the bridge supports, which caused this flood. Photo taken in April 1961 by W.Allen McClelland

The flooding problem has been getting worse in recent years. Construction of new homes and retail centers in the area altered drainage patterns and increased the water flow in the creek. This exacerbated a design problem in the Holes Creek Railroad Bridge. The bridge, built in 1906 by the Cleveland, Chicago, Cincinnati & St. Louis Railway---the Big Four---did a wonderful job of supporting the rails at MP 213 of what is now Norfolk Southern's Dayton District. However, it had an unfortunate tendency to catch logs, downed trees and other debris during high water thanks to the three concrete supports in the creek bed. Too, the railroad right-of-way was built on a fill, which served to keep the tracks above floodwaters, but deepened the difficulty for the rest of the neighborhood.

By early 1999 help was on the way.

The Holes Creek Flood Control Project was formed from efforts by the Army Corps of Engineers, Miami Conservancy District, City of West Carrollton and Norfolk Southern. The project included replacing the railroad bridge and improving the creek's channel



Conrail Local YSMO-23 heads west over the Holes Creek Bridge in the late afternoon. We are looking upstream to the east on April 29, 1999. Large trees were removed along the creek bank by April, making this once closed in photo now open.

Photo by Bradley McClelland

Now, how do you replace a bridge without hindering train traffic? In this case, two problems exist. First the railroad crosses the creek on a sweeping curve. Secondly, homes and a large warehouse were built close to the tracks and creek bed; so there was no room to build a detour track around the old bridge. Room could be made to fabricate a new, steel bridge to the west of the existing structure and then move it into place. Electric power lines that paralleled the tracks had to be relocated and trees and vegetation had to be removed to gain easy access to the site.

The next step was to build the new steel bridge, which would be a through-girder type to maximize the bridge's height above the water. Just to the west of the Big Four bridge, pile drivers drove steel I-beams into the creek bed atop which crews laid horizontal I-beams, like a pair of

giant sawhorses, structures which would serve as the steel bridge's construction platform. In addition, "wheels" were built under the steel structure and a series of rails leading from the fabrication site to the tracks was added, so that, when the time came, the new bridge could be rolled close to its intended destination.



In this photo we are looking north towards Dayton, Ohio on Norfolk Southern's Dayton District near MP 213. Image captured in November 1999. Photo by Bradley McClelland



This is a good view of how the through girder bridge was built above the stream bed. The double steel I beam on the ground to the left will be added to the rest of horizontal I beams, The new bridge will roll on top of horizontal I beam to the tracks. We are looking south in the picture. Photo by Bradley McClelland

As all the work was proceeding, trains on the Cincinnati Line---they used Conrail's nomenclature until June 2002---were passing by at 10 mph. An NS flagman was always on duty while

crews worked at the site, as all trains had to receive verbal permission from the flagman before passing the work zone.



In this view we are looking east from the creek bed. This is a good view on how the bridge was supported above the stream during construction. There were no problems with high water during this project, they were lucky, it was a dry late fall and early winter. Photo by Bradley McClelland



Looking south in photo, we can see how close the warehouse is to the creek and railroad. This was a deciding factor in why a detour track wasn't built around the old concrete bridge. Photo by Bradley McClelland

While one group of workers were building the new bridge, others were pouring concrete abutments for the new bridge, under the still-extant Big Four bridge. The new abutments' height above the water was to be lower than those for the old one (though the overall bridge was to sit

higher thanks to the way the steel bridge would be pinned to the concrete), which made that construction possible. Other laborers drilled long holes deep into the Big Four bridge's concrete, into which would be placed a PVC pipe lining and, later, dynamite. The last step was to cover the sides of the old concrete bridge with a steel mesh that looked like chain link fence, which would serve to contain the piece of concrete during the demolition of the old bridge.



Photographing the new bridge from the creek bed shows the new bridge completed. The last of the horizontal I beams was installed closest to the old bridge. A layer of track blast was placed on the deck of the new steel bridge. By the middle of December, the new bridge was less than two weeks away from being installed.
Photo by Bradley McClelland



Looking north at the bridge project, here is a good view of the PVC pipe on the old bridge. Workers drilled deep holes in the deck and supports of the old concrete bridge, and then PVC pipe was inserted into the drilled holes. This will guide the dynamite in side the old bridge.

Photo by Bradley McClelland

The new steel bridge weighed in at 500 tons upon its completion in late November 1999, and with a layer of ballast on the deck, it was ready to be placed into service. The old Big Four Bridge that carried trains over Holes Creek since 1906 would not see the new Millennium. The date for demolition was set for December 30, 1999.

On the evening of Wednesday, December 29, workers arrived at the site. For the next 48 hours they worked on getting the new steel bridge to its new home. Train #27J crept over the old bridge at 10:30 PM. This was the last time the old concrete bridge held the weight of a passing freight. By 10:50 PM the NS track foreman informed the NS Dispatcher that the line was out of service until further notice. At this point, crews began to remove the rail and ballast over the old concrete bridge. Dynamite was packed into the PVC-lined holes in the old bridge in preparation for its demolition. In the early morning of December 30, a blast reduced the Big Four bridge to a pile of broken concrete blocks lying in Holes Creek.



This is a photo of the southeast section of the bridge, which shows a good view of the rollers or steel wheels under each corner of the bridge. The rollers will ride on top of a steel rail, which rest on top of the I-beams. A large nut and bolt runs vertical through each roller, which acts as a flange and guides the roller and the new bridge to old bridge. Also in this image you can see the cables attached to the rollers. This prevents any movement during the building of the new bridge. Photo by Bradley McClelland

After machinery cleared the debris, the new bridge was winched eastward to a point where two large cranes lifted its ends and set it in place. It was then bolted down to the concrete abutment. New ties and rail were put in place. Track equipment rushed to the scene to tamp and straighten the track over the new bridge. In the early morning of Friday, December 31, 1999, the first train went over the new bridge. It was a lowly work train, powered by two ex-Conrail GP38-2s, dumping ballast on the new span. Track equipment came next to tamp the track. Just before the new Millennium rang in, the new, steel Holes Creek Bridge was ready for its first freight train.



In this view we can see that the old concrete bridge was removed. Two large yellow cranes spotted on the tracks will lift the new steel bridge to its final home. The one crane on the south bank has its cables connected to the new bridge. In the creek bed where the old bridge used to be, a backhoe with air hammers blast away at the remaining concrete supports. Too the far left, a stack of new track is waiting to be placed on the steel bridge.

Photo taken on December 30, 2000 by Steve Fuchs

Crews worked on small details around the new bridge for a week before suspending efforts for the winter. At that point, the speed limit was raised to 25MPH in and around the work site. On Wednesday, January 26, 2000 all speed restriction was removed and train speed went back to the original 45 MPH speed limit.



Local Lo-13 speeds westward across Holes Creek on a beautiful June afternoon. This local switches the two large paper mills that are located in West Carrollton, Ohio. Lo-13 operates out of Moraine Yard and runs second shift Monday through Friday. Photo taken on June 22, 2000 by Bradley McClelland

Beginning in March, more concrete was poured around the abutments. The electric power lines and poles were restored and earth around the work site was graded. The creek bed was improved for a direct follow of water under the bridge. Rock was shipped in and placed along the banks of Holes Creek to help reduce erosion during high water. Finally in the early September 2000, the endeavor was complete!



Norfolk Southern train # XON (second section of 40N) with two former Conrail units travel east across the new Holes Creek Bridge. The bridge project was near finish; more rock needed to be placed along the creek bank. The last step was to plant grass and trees to help prevent erosion. Photo taken on July 20, 2000 by Bradley McClelland

Now I have to get more photos of the new bridge before the weeds grow back and even worse before the graffiti hits the new bridge.

As I was finishing this story, thunderstorms pounded this area and heavy rains have promoted a flash flood watch. I'm betting the folks who live along Holes Creek are breathing a sigh of relief.

I would like to thank Bob Esthen for his assistance