

Item No. 3-0200.00 was the third ranked project in the 2011 District Transportation Plan and all four phases were funded in the 2012 Highway Plan. The District 3 Department of Planning identified the purpose and need of the project as follows:

US 31W (Louisville Road) is an Urban Minor Arterial which carries over 20,000 vehicles a day through the existing offset intersections at Moorman Lane and Bristow Road. US 31W serves as the linkage between the central business district of Bowling Green and the employment activity center at the Kentucky Transpark Industrial Complex & the emerging residential development in this part of the county. This roadway also serves as the primary connection to Warren East Middle and High Schools as well as Bristow Elementary School.

The close proximity of these two intersections, the lack of turning movement storage, and the high volume of traffic create congestion and safety concerns for motorists. These intersections have been identified as sites with a high number of crashes and have Critical Rate Factors above 1.0. A Critical Rate Factor greater than one suggests that crashes might not be occurring randomly, with a 99.5% certainty.

The purpose of this project is to improve safety and mobility for motorists along US 31W through the intersections with Bristow Road and with Moorman Lane.

The project is located in Warren County and is located approximately 1 mile northwest of Plum Springs at US 31-W mile marker 18.82. The accident data on US 31-W for this location shows 42 accidents for the five year span of 2007-2012. There were four main contributors to the poor function and high accident rate at this intersection: the current geometric configuration is an un-signalized offset intersection with commercial access points opposite of each roadway, high traffic volume on US 31-W (20,196 2013 ADT, 7.8% trucks), increased traffic on Moorman Lane due to continued residential development and the entrance/exit traffic from the adjacent Jr. Food Store.

The project consisted of a total of $\frac{1}{4}$ of a mile of roadway realignment on both Moorman Lane and Bristow Road in order to eliminate the offset intersection and create a new signalized intersection. Also, as part of this project the KYTC took the opportunity to construct left turn lanes with positive offsets for north and southbound traffic on US 31-W and a full right turn lane was also constructed for US 31-W northbound traffic onto Bristow Road. A raised concrete median was constructed as an access management device to eliminate left turns into the Jr. Food Store.

The design of this project began in September 2012 with the PL&G scheduled for April 2013 which was just a few months after the Every Day Counts initiative rolled out. District 3 took this opportunity to implement this strategy with this project. We had 100% participation from the local utility companies at the PL&G and were able to identify the major conflicts and in some instances we were able to adjust the design to avoid them altogether. This was the case with the AT&T conduit along US 31-W and the electrical transmission line that runs through the project limits.

Right of Way funds were requested immediately after PL&G based on a draft set of Right of Way plans which advanced the Right of Way phase ahead of the Joint Inspection. The project consisted of seven parcels that were bought by the District 3 Right of Way staff with two of these parcels going to condemnation. Another aspect that came into play during the design and Right of Way phases was the fact that Houchens Industries, who leases property from one the key landowners, have intentions of building a new Cross Roads IGA on the property. The design was coordinated closely with Houchens Industries to ensure that our design did not have adverse impacts to their future development plans. Also, during negotiations with Houchens Industries the Cabinet was able to negotiate the closing of their main entrance on US 31-W in exchange of the addition of a new entrance off of the realigned Bristow Road.

The Department of Planning also had the task of coordinating with both the City of Bowling Green and Warren County since Moorman Lane is a county road and Bristow Road is a city street and Right of Way transfers were required.

The project was let on October 24, 2014. Construction began in April 2015 and was completed in July 2015. The contract was awarded to Scotty's Contracting and Stone for \$1,020,390.94. There were 3 change orders on this project for a total of \$69,439.56.

This intersection realignment has greatly improved the function and safety of this segment of Louisville Road.

Item Number: 5-4000.00 KY 1494 (Beech Grove Road) @ Long Lick Creek Bullitt Co.
Project Team: KYTC D5 Design (Timothy Shown) Project Manager, KYTC CO Structures & Consultant Entran (Tony Hunley) Bridge Design, KYTC CO Geotech (Bart Asher) Tie-Back Wall Design and Garrison Construction Co. Inc.

The project is located on KY 1494 (Beech Grove Road), a state maintained state road with an existing bridge over Long Lick Creek. The existing bridge is located approximately 2.5 miles southwest of the intersection of KY 61 and KY 1494 just south of Shepherdsville in Bullitt County. The purpose of this project is to address the deteriorating conditions of the existing bridge and approaches on KY 1494 (Beech Grove Road). The existing bridge is a 3 Span (40'- 40'- 40') side by side pre-stressed box beam (21"x 36") @ 20° skew right with a clear width of 22.5' and an overall width of 24'. The north end bent has severe scouring with exposed pilings and has sunk 1' to 2' causing a steep dip in the roadway entering the bridge from the north. Due to the north end bent's condition the first pier is tilting towards the north end bent causing the box beams to separate. The channel has embankment erosion and scour under the bridge and around both piers. The bottom of the deck is approximately 26.0' above the creek bed. Recent rainfalls and along with the backwaters of Salt River has caused the existing bridge to be submerged. The receding waters have accelerated the scouring conditions occurring under the bridge. Due to the above conditions of the substructure the bridge had been posted for a weight limit of 15 tons. If no corrective measures were taken within the next 12 months the bridge would most likely be closed to traffic. Considering the above conditions worsening each day the project team accelerated the design process and elected to close the road during the construction of the bridge and detour the small amount of traffic (ADT 600) along a detour consisting of state routes.

The project team elected to replace the existing bridge with a side by side box beam 3 Span (48'-48'-48') bridge design with Level 1 for drainage analysis at the same location. However due to the extreme scour conditions and the proposed structure laying within a FEMA Flood Insurance Study on Long Lick Creek a Level 2 analysis was performed. The new bridge is constructed in the same location as the existing, on the same horizontal alignment and vertical alignment with minimal improvement. There was minimal utility involvement with this project as an 8" water line located parallel to and along the northeast right-of-way needed to be relocated to accommodate the proposed tie back wall. The old existing 8" water line had a history of leaking water behind the existing north end bent which also added to the deteriorating condition and failure of the north end bent. Three adjacent parcels were affected by the proposed bridge replacement. Additional right of way was acquired to allow for construction and easier access for maintenance of the new structure along with temporary construction easements.

An in depth Geotechnical Report was performed by KYTC CO Geotechnical Branch to address the instability of the soils at the existing north end bent. A total of seven holes were drilled at this location consisting of sample and core holes along with rock line soundings. Slope inclinometers were installed to monitor the unstable slope on the north end bent side. After the analysis of all the collected data several options were evaluated to mitigate the existing landslide. Some options involved removal and replacement of the failed surface with granular backfill, flattening the slope to allow for a longer bridge or the combination of the two. However a tieback wall was determined to be the most feasible option to obtain the desired results and stay within the parameters of our purpose and need statement. KYTC CO

Geotechnical Branch designed a tieback wall to be used on this project to stabilize soils at the north end of the proposed bridge structure.

KYTC CO Structures elected to use the consulting engineering services from Entran to develop the proposed structures plans. Tony Hunley was lead engineer with Entran on this project and was instrumental in incorporating all of the above elements of design into the final structure plans and delivering final plans to deliver the total PS&E package in a timely matter.

The bridge replacement project was let for construction in August 2009 and awarded to Garrison Construction Co. Inc. After all detour signing was in place, KY 1494 was closed to traffic and demolition of the existing bridge began. During the bridge demolition when removing a section of box beams bats were encountered. Demolition was halted and KYTC D5 Environmental Coordinator, Jeff Schaefer was called to the project site to determine the bat species. Clear evidence of bats living within the cracks between the box beams was observed. After moving the beams slightly a small brown bat was discovered between the beams and removed. It was determined that no endangered bat species was impacted and bridge demolition then continued.

Overall construction of this bridge project was accomplished without too many incidents to keep the construction off schedule. During the rainy season the bridge project was shut down for a few weeks due to rising waters in Long Lick Creek which topped the proposed end bent pilings before the end bents were constructed. After the waters receded construction continued and north and south end bents were constructed along with the southern pier number two. Construction on the tieback wall was then started. The only problem encountered when constructing the tieback wall was the discovery of marble like stones in the soil which was problematic in locking in the anchors to the tieback wall in a few locations but the contractor was able to drill past the stones to lock in the anchors. Survey points and slope inclinometers were installed on the new wall to monitor performance of the wall during and after construction. Once the tieback wall was in place, pier one was constructed then box beams were placed on the new substructure. A concrete slab 5" in depth was constructed on top of the box beams, and then final approach work on both end of the structure was completed along with new guardrails. The project was complete and KY 1494 (Beech Grove Road) was opened to traffic in August of 2010.

On October 15th 2010 family, friends and co-workers gathered on at a sign unveiling naming the new bridge on KY 1494 in Bullitt County in David Arnold's memory. He was Superintendent II of our Bullitt County Unit when he passed away on Thanksgiving morning 2009 at the age of 33. He had been employed by the Transportation Cabinet since August of 2002. Vehicles lined the roadway as employees from across the district joined with David's family to dedicate the bridge on Beech Grove Road in remembrance of his hard work and dedication.

Post construction monitoring of the tieback wall shows the wall to be performing as designed to mitigate the unstable soils. Additional cyclopean stone placed on the slopes under the bridge are adequately protecting the slopes from scour during high level flooding events which frequent this bridge location. The improved sight distance and transitions to the bridge make travel across the new structure much improved. All conditions of the purpose and need statement have been met by the new bridge construction and within the allowed budget.

Project Excellence Award 2015 Nomination

10-295 / KY 52/ Lee County

KYTC / District 10 / Project Development Branch

During the weekend of March 6, 2015, a terrible storm and flooding event rolled through Lee County in southeastern Kentucky. While the central part of the state dealt with snow depths approaching two feet in some places, eastern Kentucky had major flash-flooding problems. Much destruction ensued, with the major damage to highway infrastructure in District 10 occurring near the St. Helens community in Lee County. A large WPA-era box culvert under KY 52 collapsed, leaving this major thoroughfare inoperable. KY 52 is a Major Collector route, connecting the cities of Jackson (Breathitt County) to Beattyville (Lee County) and eventually running to Irvine (Estill County). It is a well-traveled commuter route, with an average vehicle per day count of around 2,200. It is also on a school bus route and is the route used by ambulances in Lee County transporting emergency patients to the Kentucky River Medical Center hospital in Jackson. The official detour route was KY 11 and KY 30 through Booneville in Owsley County. This route added 10 miles and approximately 20 minutes to the drive. So when this route was closed due to a major drainage structure failure, it was known by all parties that a proper and correct, yet expedited replacement structure needed to be installed to reopen this major route for commuters, commercial and emergency traffic.

On the morning of Monday, March 9, District 10 Chief District Engineer Corbett Caudill rallied the District troops together in order to try to develop a game plan on how to reopen KY 52 at St. Helens. It was decided immediately that the District field crew needed to survey the area in order to save time while a proper decision for replacement was being made. Throughout the day Project Development and Project Delivery & Preservation team members conferred with the Chief in order to determine what avenues could be taken to reopen the facility and/or replace the structure. It was determined after much discussion that a bridge needed to be constructed to adequately handle the flow and back water complications that had caused the existing structure to collapse. The Chief conferred with Central Office Program Management Leadership, explaining to them the situation, securing their support, and obtaining the appropriate funds needed. Contact with FHWA was then made shortly thereafter in order to gain their support and understanding.

As soon as the survey was complete the District 10 team began on the roadway design plans, and making the appropriate phone calls to Central Office Geotech, Central Office Structural Design, and Central Office Environmental Analysis. As soon as Central Office heard of the situation and the need for quick action, everyone immediately joined the team. On March 16th the in-house CO Geotech drill crew was at the project site and took all the necessary core samples. Additionally, conversations were held with DEA SME's concerning all the necessary avenues that needed to be cleared for the project so as to meet all the necessary criteria for federal funds to be used. After numerous calls between the District and DEA, all areas were under review and were going well. The only true environmental hiccup that had to be avoided was that some trees had to be removed prior to April 1 so as to avoid complications due to roosting habitat for endangered bats. The District PD&P section office was contacted and the Lee County Maintenance crew removed the trees so as not to harass the species during the appropriate time period. During this same instant, the District 10 Right of Way and Utilities Sections were tapped for

Project Excellence Award 2015 Nomination

10-295 / KY 52/ Lee County

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their expertise and assistance with their respective phases. Within the next two weeks, all the property owners were contacted, AT&T was contacted, the right of way was purchased, and the relocation plan for AT&T was developed.

Also during this same time period, Central Office Structures was conferencing with Geotech and the District in order to try to nail down the specifics of the structure to be designed. It was determined that a PCI structure was the appropriate product desired. By April 8 the Geotech report was formally submitted. On April 9 the Right of Way certification was written and signed. All four owners willingly signed for their MAR offer. Also on April 9, the Final Roadway plans were completed and sent in to Central Office for review. By April 20, the Categorical Exclusion document was completed. While all this was occurring the Division of Construction Procurement was being briefed on the events getting ready to unfold, and agreement was given by FHWA to let the project with an abbreviated advertisement schedule. A strict timetable was also established for the completion of the bridge. The contractor faced stiff financial penalties if the road was closed more than seven weeks, or if the project was not completed by July 31.

On April 24, the project was let by the Division of Construction Procurement and was awarded to Frederick & May Construction Co. from West Liberty for the low-bid contract amount of \$1,182,898.21.

On April 27, AT&T relocated their facilities.

It is truly amazing what can be accomplished when everyone pulls together as a team. It took a wonderfully collaborative effort from everyone joining forces in order for this monumental Project Development task to be accomplished in such a short period of time – a mere seven weeks from survey to construction letting. Without all of the Divisions of Central Office pulling together with the various disciplines found in the District Office, this project could not have happened in the abbreviated project timeline as outlined here. Everyone should feel extremely proud of their accomplishments. More so, everyone should take note of their accomplishments in the context of the deep gratitude that the citizens and travelers of KY 52 through St. Helens have for their fine, expedited work.

A Bridge Project from a Bridge's Point of View

12-1085
Floyd Co.
Bridge

In many ways, I was just another bridge project. If you read the description in the highway plan, there wasn't much that would make me stand out from all the other structurally deficient or functionally obsolete bridges. There was just a simple, basic listing that said Floyd Co. 12-1085. I had an extremely low sufficiency rating, but other than that I probably appeared to be one of many bridges that needed improvement.

But that wasn't the whole story. I had some characteristics that made me more than just a little different. I was built in 1944, so that makes me older than a lot of other highway structures. I am also a truss bridge, one of only a handful that remains in Eastern Kentucky. And I was a nice pale blue color, though I've seen a few different colors over my lifetime.

Since I'm so old, I've also seen a lot of the changes that have taken place in my home county of Floyd County and my hometown of Garrett. In the early days, Garrett was a thriving coal town on the banks of the Right Fork of Beaver Creek. There were many camp houses in the area along with stores, churches, and a theater that help make a town livable. There was also Garrett High School, home of the Black Devils. It was located on the west side of the creek and just a few feet from where I cross the creek. Since I was the primary way of crossing the creek to get to the school, I was a focal point of the community.

But, as they say, "time waits for no man", or in my case, "no bridge". Years ago there was talk of a new road coming through the area. It would be a major east-west connector road between Hazard and Prestonsburg. It would be like nothing I'd ever seen before: a four-lane highway. It would carry much more traffic than roads like KY 7 and KY 550. It would allow people to get to where they were going much more safely and quickly. It had many positive attributes, but it also meant that much of the focus would be taken off of me.

The road that was talked about eventually came through. It was built in the late 1970's and brought with it much of what was expected, both good and not-so-good. The traveling public felt the benefits of such a high quality roadway. But the new highway ran just downstream of where I am located and bypassed straight across the Garrett area. There was a new kid in town for drivers, and I became a vestige from a by-gone era.

Don't get me wrong. I still had my purpose. The high school was still open, so I continued to provide access for people from town to get across the creek. And when you are part of the area near a school, you feel like a real part of the community. But, as I said before, things change. After a few years the school closed and was demolished. The new school, Allen Central High School, was built a few miles away just off of the new highway. All that was left was a large vacant property along the banks of a once-bustling community.

That sounds like a very sad ending to the story, but that wasn't the end. The vacant property became a park, with a walking track, baseball field, and picnic shelters. Sure, it wasn't a school, but it was still something important to the community. And even though I watched most cars and trucks whizz by on new KY 80, I still had a few hundred cars a day come across my little one-lane roadway. I still felt like I contributed to the good of the area. But as time passed by, my condition was getting worse and worse.

When I heard that KYTC wanted to improve my crossing, I wasn't sure what to expect. Other old bridges in the area had recently been replaced. Bridges like Baptist Bottom, Midas Bridge, even a truss bridge at Bosco, all

were replaced with concrete structures. I'm sure these were all great new bridges and serve their communities very well, but they lack some of the character of us older structures.

So it was with some hesitation that I watched what happened through the Project Development process. There was talk early on that I wasn't even needed. Some people said that the new KY 80 bridge was all that was needed. Why spend money on an old truss bridge when you have a newer, better four-lane bridge right there? But the people made it clear, especially through something called Facebook, that they wanted to keep me. They saw value in having a crossing right where I was.

Since engineers have to look at all options-as a way of being prudent with their funds and thinking about the long term good of the area-there was talk of a total bridge replacement. Why not just build a new bridge that would last for many years to come? I could see their point, but I sure hoped that wouldn't be the outcome.

During some of the early meetings for the project, the thought of repairing the structure was discussed. Two big issues came to light: one was flooding potential of the area. To replace the existing bridge with a concrete structure capable of spanning Beaver Creek could potentially cause additional flooding concerns to an area that was already plagued with this problem. The second was the greater emphasis on saving us old, run-down truss bridges. Many had been lost over the years so there were only a few of us left, some of which probably couldn't be saved. Cost was another issue that had to be given due consideration.

Through input from Central Office and District engineers, the final conclusion was that I was in good enough condition to repair. Sure, I had some steel that needed to be replaced, a deck to repair, sidewalk and railing issues, and a need for new paint. But with input from people like Phil Logsdon, David Steele, Tim Pyles and Kevin Sandefur from Central Office, and the Project Team of District 12, it looked like I was going to get a facelift.

It wasn't easy to get the project to a letting. Coordination with Central Office Structure Design helped to work out the details of structure improvements. Discussions with Central Office Highway Design helped to talk through sidewalk issues on each end of the bridge. More meetings of the project team helped to hammer out the rest of the details. There was right of way to purchase and utility relocations to address, each with its own complications. And further discussions with the public and more Facebook input helped lead to the proper new color: orange! My response was, "What is this, Tennessee?" But that's what they wanted, since it was the school color of Garrett High. I'm just here to serve.

When the project finally went to construction in December 2013, the cost came in at \$568,050.82. I hear that was well under the over \$1 million estimate for a total replacement. The Floyd County Section Office and the contractor, Bush and Burchett, did a great job and I ended up looking better than I had in years. And the funny thing is that I didn't end up being orange. It turned out that the contractor couldn't obtain the color that was specified in the contract. So the decision was made to go with another color: blue! I have to admit, I'm more than just a little partial to the color I've had for so many years. So the finished product gave me a new coat of brighter blue, a repaired sidewalk, a new concrete deck, and hopefully many more years of service. I guess the best way to sum it up is to say that the public is happy with their new old bridge and so am I.

5-4000 Bullitt Co., KY 1494 Log Lick Creek Bridge

Bridge Replacement

Severe scouring & exposed pilings, sunk 1-2'

Tilted Pier, beams separated

Submerged Bridge. Receding waters accelerate scouring

Accelerated design

FEWA flood plan

Tie back wall ad. constructed with slope inclinometers

Bats encountered during demolition

Waters dried over top end bent piles

Bridge named in David Arnold's memory who was superintendent of Bullitt Co unit and had passed away at age 33

10-295 5 KY 52 ~~Bridge Replacement~~ St. Helens, Lee Co. ^{Bridge Replacement}

WPA culvert under KY-52 washed out

Expedited replacement

Backwater issues

Remove trees for bats

PCT structure

Seven weeks from survey to construction

Added 20 min. when closed

3-200 US 31W ^{Louisville Rd} Realignment, Warren Co.

CRF > 1.0

Intersection

Unsignalized offset to signalized realigned

Lt talans & raised conc. median

Every Day Counts used

- Authorized R #

- Coordinated new IGA development

Began Sept. 2012 let Oct. 2014

12-1085

Bridge perspective narrative - EXCELLENT

1944 Truss Bridge

Bypassed with KY-80

Still used by high school until it was closed & demolished

Vacant lot made into park with walking trail, baseball field & picnic shelter

Debate if needed. Public via Facebook & other means said yes

R.L. name in stone. Want to do with R.L.

new paint
repaired sidewalk
concrete deck.
cheapest alt.

one lane

