

The Messerall Truss bridge is an exceptional truss bridge, it is extremely important for the state of Pennsylvania and for historic truss bridges Nationwide.

In 2022 the historic Messerall Truss Bridge was placed in its new home along the newly expanded multi-use trail connecting Pymatuning State Park to the community of Linesville. It was the final stop in its long journey of preservation that included partnerships with state agencies, private businesses, county government, and history buffs.

The partners involved all had the same vision of saving this bridge for this trail.

The metal bowstring truss that would later be called the Messerall Truss Bridge was built in 1876 in Oil Creek Township located just outside the city of Titusville in Crawford County Pennsylvania. Also known as the East Titusville Bridge and the Pine Creek Bridge it was the first official crossing in that area for the lumber and oil industry which previously had to forward the small waterway. Located just half a mile from Colonel Drake famously struck oil the area's boom days were starting to wane and the bridge industry was going through a transition to find a way of meeting the needs of the fast-paced creation and dismantling of small cities during this time.

A new made-to-order bridge from Wrought Iron Bridge Company of Canton Ohio was the answer. Parts to construct an iron bridge could be shipped by train in as little as 8 to 15 days and assembled on location in about a month. Bridge designs were moving away from arches and towards trusses and in the middle of this transition was the pre-fabricated Messerall road bowstring arched through truss bridge built to carry horse and buggy.

There are not a lot of these bridges left, they were fairly common shortly after the Civil War but few of them survived today.

The bridge was owned by Crawford County, who maintained the structure until 1987. By that time traffic was predominantly using a more modern structure on the nearby Route 27. The county decided to close Messerall and remove the wooden deck. There it sat inspected but unusable for decades.

The first time I saw this bridge I was actually in the bridge unit and it was probably about uh 10 years ago so. I saw it in the field it was completely rusted there were weeds growing up through it and the bridge engineer at the time told me about the historic significance of it. But to see it out there it was just like a dinosaur like a relic.

The bridge remained in that state for several more years historic but unused and to many unknown.

I came to PennDOT District 1 in 2017 I reviewed our inventory of surviving historic trust bridges in District 1 and uh quickly focused on this particular truss as a high-priority preservation target.

As it turns out a project perfect for the bridge was already in the works and conveniently located just across the county at Pymatuning State Park. The Pennsylvania Department of Conservation and natural resources was working to put into action a 2009 study that included expanding the trail system into Linesville. That meant going over Linesville Creek. As the project made its way through PennDOT's Transportation Alternatives Set-aside Funding Process word got around there was a need for a bridge. The Messerall Truss Bridge became a suggested alternative to building a new structure.

I think it takes a special kind of eye and mind to even see it as something that has that kind of potential.

When you're trying to reuse a historic truss like Messerall there's a lot of factors you have to consider. First thing you have to do is determine who owns the structure which can be a challenge in some cases. A second step is that the structure must be inspected to determine if moving it is even feasible. Based on its current condition these older abandoned and decommissioned bridges can be in bad shape so it requires a thorough inspection. The other challenge is to make sure the project has appropriate funding for expected and unexpected or incidental costs. And with all bridges and PennDOT projects, there is a required environmental process that must be followed in the case of Messerall Truss that includes historic restoration and preservation efforts that are in compliance. So there are a lot of moving pieces.

With all these factors addressed and the bridge approved for relocation the attention turned to how to safely move a structure that had been in place for nearly 150 years.

The bridge's sat there since 1876 to put that into perspective historically that was the year that of Custer's Last Stand, Grant was President, it was a long time ago that this that this bridge was put there and it's it's been sitting there all of these years and now we are going to lift it off of its foundation for the first time. And you do all the calculations and you hope that the lift plan goes according to plan but you don't know until you lift it.

On the morning of Tuesday, August 10, 2021, everyone held their breath to see if the plan would work.

What always surprises me when we lift these historic trusses is how quiet it is. Like there might be 50 people on site but everyone just like stops exactly where they are and you just feel like you can't move until it's back on the ground again. And uh the trusses are always very quiet like there's you know 40 Kips or 40 000 pounds of steel flying through the air but it's just dead silent as it comes over and gets set down.

The moment that it came off of the abutments was frightening but also a moment of elation to see that it came off the abutments intact and that it was ready to go, it was going to sustain this move.

With the bridge safely removed from its location over Pine Creek the crew began to deconstruct it in a methodical manner that included labeling each part and creating a diagram of how the individual pieces fit together. Next it was shipped to a painter to be blast cleaned and then it was off to Lockhart Ironworks in Logan Ohio to be further inspected and to determine what was reusable and what would need to be replaced. Meanwhile across the county work was underway to construct a new trail that runs along Hartstown Road by the Pennsylvania Fish and Boat Commission Hatchery and behind the Conneaut Area Senior High School. Near where the bridge would be located. This was completed as bridge parts were restored and replacements were fabricated in Ohio.

In our rehabilitation of this bridge we really tried to preserve as much of the original structure and the original materials as we can.

In the case of the Messerall Truss, about 75 percent of the original bridge was reused. It was blasted clean for a second time, painted and then reassembled. The reassembly followed much of the same process used in 1876 including the bridge being shipped to the site in pieces to be assembled on location.

There was pallets strung along the trail over here out through the layout area over there it was really hard to believe that that was an entire bridge laying on the ground there.

Every part had to go back in the same exact place that it came from when they disassembled the bridge. Nothing was interchangeable. Pretty soon the piles are gone and you got a bridge sitting there. The biggest interest I think for me and a lot of the other folks was the hot riveting most of us have never got to see that before.

The Messerall Truss bridge is held together by approximately 6,000 rivets. 2,500 of them were replaced during the restoration process, including about 150 that were done in the field while putting the bridge back together. Each one was heated to between 1800 and 1850 degrees Fahrenheit.

Essentially you take the hot rivet you know put it through the actual hole that you're trying to you know make a connection at while someone backs the side that you passed it through someone on the other end actually uses a pneumatic hammer to flatten out the other side. Those those rivets held the bridge for the 150 years the new ones now hold for another 150 years.

If you want to do a really quality restoration a lot of times it's not even about the aesthetics it's about the fact that there's just places a rivet can go that a bolt cannot go you can't get a wrench in the tighten it but you can get a rivet in there and hit it with a hammer.

Only eight days after the bridge parts showed up on site the hot riveting was complete and the bridge was ready to be placed above Linesville Creek where a railroad bridge once stood. In place of the horse and buggy the bridge would now carry cyclists and pedestrians traveling along Pymatuning State Park's expanded trail system.

That's one of the number one requested facilities that we have in our park is hiking trails and biking trails.

The bridge length of 103 feet perfectly spanned the creek and its new abutments and would once again be fitted with a wooden deck and two plaques to replicate what formally hung at the top of the arches at both ends.

It was a great collaboration between PennDOT and DCNR. It was sitting in the woods behind Northwest Hardwoods and so without PennDOT knowing that the bridge was there I don't think you know DCNR would have even realized it was an opportunity to be able to use that bridge for something like this.

So it shows a value of like state agencies again collaborating with private public partnerships working together with community members to show what can be done, cause you know we basically repurposed a bridge that you know was no longer in use and saved a piece of history of Pennsylvania history related to the oil region in this area so you know we wouldn't be able to do it otherwise without the partnerships we established.

This project was so unique that I would be surprised to ever see another one like it but I was surprised to see this one initially so it just turned out to be such a great experience that we will definitely look for opportunities to do this kind of thing again.

It's going to be a great piece of history for everyone to enjoy whether you're walking or biking. It fits I don't think there's a better way to say it