

August 6, 2019

Carefully now...

The entire point of a bridge is to help you, your car, your horse, whatever, across something that would otherwise be an obstacle to your progress. Could be a highway, a river, a railroad track... In the case of County Highway 51 in Adams County, Illinois, the bridge crosses the Fall Creek Gorge, which, as its name implies, is not something you want to try to ford in your minivan.

The Fall Creek bridge was originally built in 1948. Its riveted steel plate girders span 106 feet, about 50 feet above the creek bed. The deep gorge, with its vertical rocky walls, combined with the strict environmental regulations that have been put in place since the bridge was originally built means you can't exactly stand under it to do repairs.



The 70-year-old bridge was suffering serious degradation, to the point where a complete replacement was considered. But the challenging terrain made that extremely difficult and the County asked WHKS engineers to explore the idea of a rehab. The first step was to see if it was even possible to bring the old structure up to current specifications.

Hanging off the side of the bridge in a 'snooper' is nerve-wracking experience. Inspectors ride in a truck-mounted bucket that goes over the side and then under the bridge, leaving the occupants hanging in mid-air. But this vantage point allowed the NBIS certified engineers to conduct a detailed inspection of every girder and plate in the bridge.



The inspection concluded that a bridge rehab was, indeed, possible and less expensive than a total replacement. But it would require adding new steel plating to the existing girders, splicing of new steel where the original was too corroded, reinforcing of the stiffening braces and a new composite concrete deck.

Not surprisingly, once the work was underway and contractors were removing and uncovering more structural elements, they discovered even more areas of deterioration. The engineers were on call and developed the repair details on the fly as the contractor incorporated them into the work. This kind of cooperation and responsiveness between Adams County, the contractor and the engineering team was crucial to getting this tricky job done on time.



The challenges didn't stop there. The old bridge had numerous coatings of lead-based paint that had to be removed. Since we can't just let lead dust fly all over the river valley, the engineering team provided specifications to contain the dust and flakes as the old paint was removed. Safety is always a top priority and workers also had to comply with strict fall protection high above the gorge.

Because the bridge couldn't be temporarily supported from below during the repairs, contractors had to remove and replace one rusty bolt at a time to ensure the girders retained their structural integrity.

Despite the tremendously challenging site conditions and the slow, picky nature of the repairs, the entire project was completed in less than a year and the County is happy they were able to salvage the old bridge.

