

## REPAIRING OLD BRIDGES

A. J. Rader,  
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A road is no better than its weakest bridge, and a load limit sign of 2, 3, or 5 tons does not strengthen the structure or lessen the hazard.

On assuming the office of supervisor three years ago, I was soon aware of a startling weakness in many of the 150 pony-type steel bridges in our county. A partial failure of a 50-foot span made action imperative. This failure involved the breaking of the bottom chord at the base of an end post, allowing the floor to settle.

We jacked the floor to its proper level, placed twin sets of piling on each end of the three swing beams, and opened the road to traffic. Then we made a close examination of the steel structure and found the base of each of the four end parts and the four adjoining bottom chords badly rusted.

Our county engineer recommended electric welding of new metal to replace the oxidized portions. The end posts and connecting chords were removed from the bridge, trucked to a bridge plant, rebuilt, and returned the same day. While this was being done, the bridge was wire brushed and painted with a paint spray. On the third day the bridge was reassembled, several corroded I-beams were removed from the deck and replaced, and a new treated-timber plank floor was laid.

We now had a bridge practically as good as the original at a cost of \$400. The bridge company charged us \$80, three new 50-foot I-beams cost \$75, 2,400 feet of treated plank cost \$170, labor amounted to \$70, and paint cost \$5.

We then hired an able bridge foreman and picked a crew from WPA workers. It was so arranged that the foreman had a 6-man gang on each of our working days and extra help when needed. With this organization we have rebuilt 15 bridges in the manner just described and repaired 27 others.

Before repainting and reflooring a bridge, we replace the badly corroded sections with new steel. Since this usually affects only the end posts, bottom chords, and part of the I-beams in the floor, the cost is small in comparison to the cost resulting from a possible total failure of the structure.

We have good equipment for bridge repair, including pumps, concrete mixer, acetelyne torches, steel sheet piling, steel forms for concrete floors, a paint spray machine, and necessary small tools.

Porter County has a total of 375 bridges of all types. Each bridge in each township is numbered and located on a county bridge map. A card index file gives data on each bridge, and all repair work we do is recorded as supplementary to this original data.

Our bridge gang is a vital part of our road maintenance, and to date we have kept the moving wheels of traffic on a solid bridge floor. This is all done with gas tax funds only, and at the end of the year we wonder how we accomplished so much with so little money.

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Earl R. Smith,  
Gibson County Road Supervisor,  
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A large portion of the water that falls on Indiana, east-central Illinois, and northwest Ohio eventually reaches Gibson County. One branch of the Wabash River has its source in Lake Celina in Ohio. This lake has an area of approximately 17,000 acres, and its spillway discharges into the Wabash River. The other branch originates near Fort Recovery, Ohio. Most of the Indiana rivers empty into the Wabash River, which has a watershed of approximately 28,435 square miles, according to the Wabash Levee survey.

In the northern part of Gibson County we have White River and Patoka River running parallel across the county, both emptying into the Wabash River near Mt. Carmel, Illinois, within about a mile of each other.

So, while you men in the northern part of the state have your troubles battling snowdrifts, a little later on Gibson County is faced with the runoff from these melting snows, along with additional heavy rainfalls, causing overflows on a vast area of bottom lands.

Gibson County covers 493 square miles. In January, 1937, our county surveyor and I estimated that about 132 square miles of our county were under water. This naturally resulted in extensive damage to our roads and bridges. This was one of the largest floods in our history, with the possible exception of the 1913 flood. White and Patoka Rivers were higher than in 1913 and did more damage.

We also have numerous dredge ditches in the western part of our county, a network that eventually drains into the Wabash River below the mouth of the Patoka River, requiring numerous bridges with the resulting upkeep. In January, 1937, three large bridges on this network washed out because of insufficient waterways which caused destructive whirlpools. It is necessary that these bridges be of ample length to span the ditches to give ample room for flood water.

At one bridge, 45 feet long, situated just below a railroad trestle, a whirlpool developed that washed out a hole 17 feet deep and 34 feet across at one abutment. The abutment was left standing on three, 26-foot, steel H-beam piling. We hauled rubbish from a large dumping ground and mixed in earth to