

## **Norman R. Sack**

Engineer of Bridges

1928 - 1942



Born in St. Joseph in 1895, Sack attended the University of Missouri and worked in railroad and county highway construction before enlisting with the U.S. Engineering Corps during World War I.

He joined the Missouri State Highway Department in 1920, becoming the Assistant Division Engineer for Division No. 1 in St. Joseph in 1921, and its Division Engineer from 1922 to May 1928 when he was named Engineer of Bridges. He would remain in that capacity until 1942.

The Bureau of Bridges under Norman Sack designed over 500 new bridges during 1929 and 1930. These included several large, steel through truss and concrete arch bridges. One major design was the Weldon Spring (Daniel Boone) Bridge over the Missouri River, planned as part of a traffic relief route for Route 40. It featured a cantilever through truss with deck truss approach spans, although its construction still lay several years ahead.

The bridge bureau designed another large cantilever truss for the Niangua River Arm of the Lake of the Ozarks. The Meramec River Bridge on Route 30 in Franklin County was one of the longer, multiple-span open spandrel concrete arch bridges designed and constructed during this period. As it turned toward the development of the supplementary system, the bureau devised a new set of standard bridge designs because of the reduced load limits on these routes.

Existing bridges were refurbished when practical, while new bridge designs on the supplemental routes focused on economy. These structures would span only the stream channels rather than the entire floodplains, and used creosoted timber pile bents or light concrete bents. The first standard designs included steel beam spans and timber beam spans with both concrete and timber floors, and concrete beam and slab spans.

The bridges planned for the traffic relief routes also required special designs. Many involved grade separation structures at railroad crossings and highway intersections, and featured greater roadway widths. The bureau gave special consideration to the aesthetic appearance of these structures in the metropolitan areas, using the structure types, "which give the more pleasing effect." Some even included stone facings to enhance their appearance.