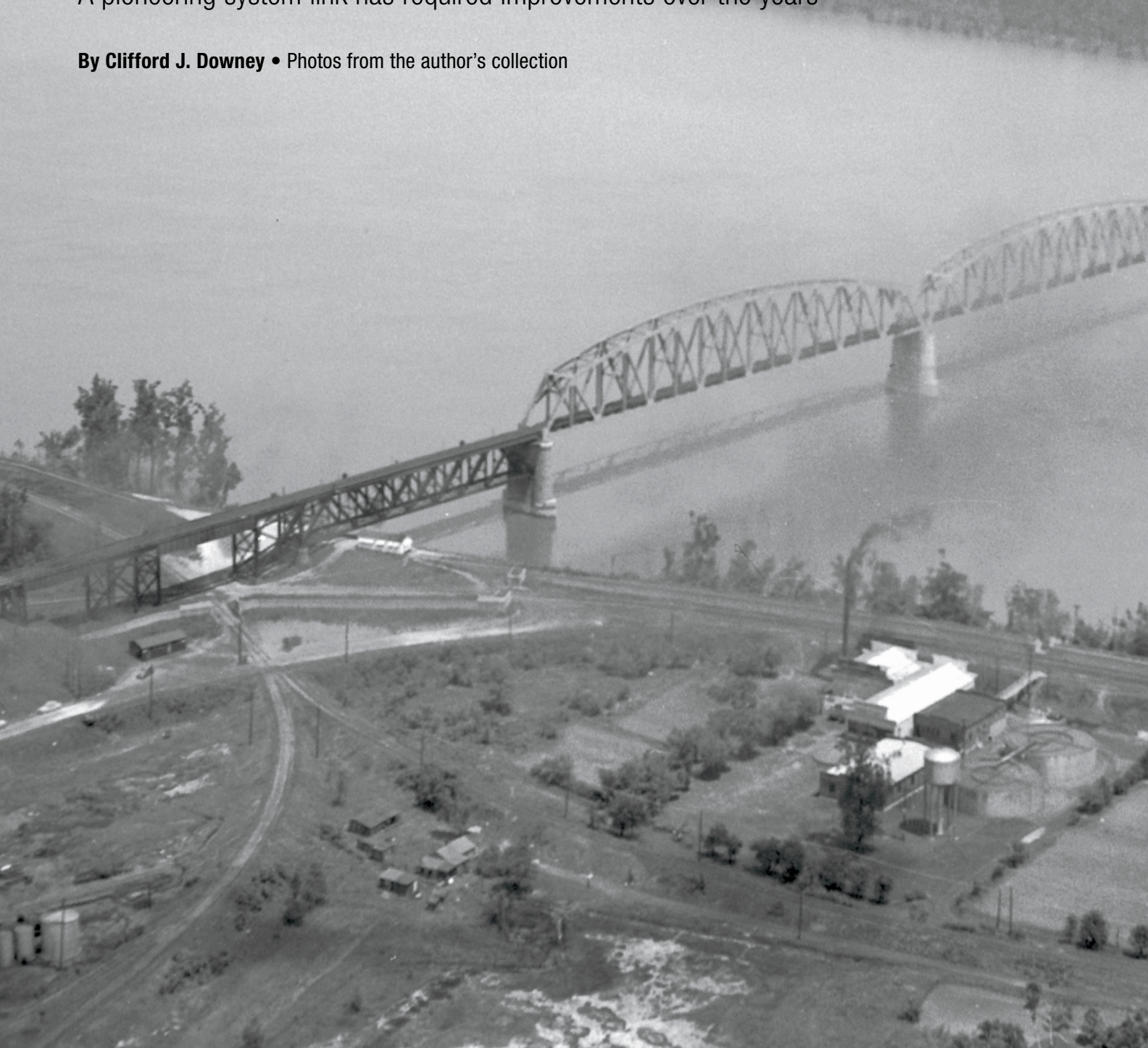


IC's Cairo

A troublesome but valuable asset

A pioneering system link has required improvements over the years

By Clifford J. Downey • Photos from the author's collection



Bridge

Every railroad, regardless of size, power, or wealth, has at least one trouble spot that causes sleepless nights for maintenance-of-way foremen and other officials. Southern Pacific had Donner Pass, Southern Railway had Saluda Hill, and Illinois Central had its Ohio River bridge at Cairo, Ill. Donner now is UP's problem, Saluda has been mothballed by NS, and CN has the Cairo (pronounced KAY-ro) bridge.

Despite the bridge's frequent appear-

ance in IC advertising campaigns, it was a major choke point that hindered train movements on the system's busiest segment. IC began experiencing problems with it almost immediately after it was completed in 1889. Major modifications were made in 1903, 1914-15, and 1934-35, but still the bridge was saddled with numerous restrictions that affected train operations. IC finally "attacked" in the early 1950s with a multi-year, \$6.5 million reconstruction of the structure.

By 1880 the Illinois Central had extended south all the way to New Orleans. The market in the South was lucrative, but there were problems. Tracks north of the Ohio River were standard gauge, but IC trackage south of it was of the 5-foot gauge commonly found in the South. IC resolved this issue on July 29, 1881, when an army of 5,000 workers converted all 548 miles of IC broad-gauge track to standard.

Another problem was the need to



This Illinois Central aerial photo (above) of its recently rebuilt Cairo bridge looks generally northeast toward Kentucky on May 1, 1952. The two 200-foot deck trusses closest to the Bluegrass State's riverbank still need to be painted silver, but otherwise the massive two-year project is complete. Visible at the lower left in Cairo is the Big Four (New York Central System) wye. The spindly construction of the original bridge, even after modifications in 1903 and 1914-15, is evident in the ICRR photo at left, taken circa 1930 from a northbound train.



How's this scene of men and machines on the high steel for a scary Halloween treat? On October 31, 1934, Illinois Central 2-8-2 1795 carefully pushes steam derrick X15, carrying a deck girder section, toward placement on the new Kentucky-side approach trestle.

ferry trains across the Ohio between Cairo, Ill., and East Cairo, Ky. IC's primary ferry was the 1873 *H. S. McComb*, which could carry 6 passenger cars or 12 freight cars. The *McComb* was supplemented by the slightly smaller *W. H. Osborn*. By the early 1880s these ferries were stretched to their limits. According to a company report, throughout 1880 and into mid-1881 the ferries hauled about 140 freight cars each day, plus cars from two passenger trains in each direction.

Management was acutely aware of the need for a bridge, and in 1881 engineers began taking borings of the riverbed at Cairo to find the best site. This was complicated by the fact that the Kentucky-Illinois border runs along the north bank of the river, rather than down the middle, as with many river borders. Most of the bridge thus would be in Kentucky, and politicians there put intense pressure on IC to build the bridge upstream at Paducah. However, after a heated battle, in 1886 the Kentucky legislature gave approval, allowing IC to build a bridge either at Cairo, within the city limits of Paducah, or 3 miles on either side of Paducah. Naturally, IC selected Cairo. To help prevent future legal hassles, most construction contracts were signed in the name of the Chicago, St. Louis & New Orleans Railroad, an IC subsidiary that was the legal owner of most IC trackage south of the Ohio River.

(A 6,424-foot-long, \$4 million railroad bridge indeed would be built just west of Paducah, but by the Burlington Route, beginning in 1914. Completed in 1918, this bridge was owned jointly by CB&Q's Paducah & Illinois Railroad and the Nashville, Chattanooga & St. Louis. The IC became a one-third owner of P&I in 1922, and successor Canadian Nation-



The great Ohio River flood of early 1937, caused by big rainfalls and which inundated the city of Paducah, Ky., also closed the Cairo bridge from January 23 to February 15 because of high water over the rails in both Illinois and Kentucky. Two days after it re-opened, on the 17th, a northbound passenger train curves around the approach trestle on the Kentucky side.

Three photos, ICRR

al today is the major user of the structure, whose 708-foot center span remains the world's longest pin-connected simple through-truss span. CB&Q successor BNSF Railway is a one-third owner of the P&I along with CN and Paducah & Louisville. NC&StL successor Louisville & Nashville left Paducah in 1982, and CSX later sold its third of P&I to P&L.)

Traffic growth spurred

Construction at Cairo began in mid-1887 under the supervision of famed bridge builder George S. Morison. From the air, the bridge resembled a giant "S" and could be divided into five major segments. Headed north from Kentucky, a train first traversed a 4,594-foot wooden trestle and then a curving 3,256-foot steel viaduct. Next was the main bridge superstructure, with a 249-foot deck span, seven 400-foot through trusses, two 518-foot spans over the main river channel, and finally two 249-foot deck spans. On the north side of the bridge was a curving 2,656-foot steel trestle and finally a 5,307-foot wooden trestle. Total length, including the timber approach trestles: 3.875 miles.

Most of the superstructure was built of steel. This was noteworthy, because previously, most bridges had been of wrought iron. The bridge would carry a single track, for management did not believe traffic would ever justify a second one. In just a few years, though, this decision would come to haunt the IC.

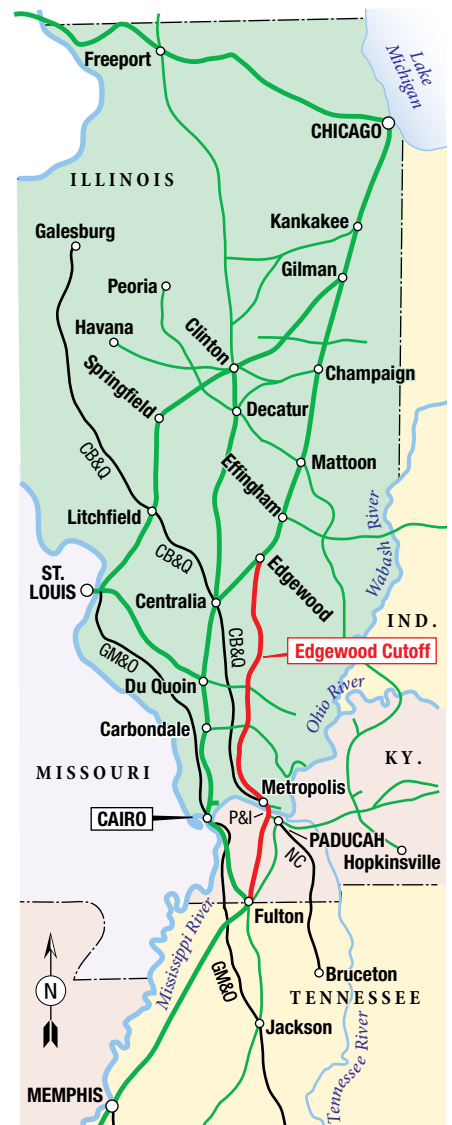
Construction progressed rapidly, and the bridge formally opened on October

29, 1889. The final cost was \$2,675,457.92, approximately \$240,000 over budget. Few IC officials grumbled about the cost overrun, for almost immediately the railroad experienced a tremendous traffic boom. In 1890, IC hauled 6.3 million tons of freight, but by 1900 that figure had skyrocketed to 18.1 million tons and by 1910 was up to 32.9 million. Most of the traffic surge can be attributed to IC's adding new routes to Louisville, St. Louis, Indianapolis, and Omaha, but thanks to the Cairo bridge, IC had the fastest route from the Midwest to the South, and this was helping it win new business. By 1896, the road was drafting plans to double-track the main line all the way from Chicago to New Orleans.

All this new business spelled headaches for train dispatchers and crews as they tried to sandwich all the trains across the single-track bridge. The congestion grew worse after the Mobile & Ohio was granted trackage rights across the bridge on January 2, 1899. In an effort to ease congestion, the wooden and steel approach trestles on the Illinois side of the river were filled in 1903. The double-track main line was extended right up to the bridge and a train-order office called "Illinois" was established at the end of the two main tracks. Operators at Illinois cabin stayed busy, for during the early 1900s it was not uncommon for 100 trains to cross the bridge daily.

Freight traffic continued to grow, and in 1911 IC began buying new 2-8-2 locomotives. The Mikados weighed 450,000 pounds fully loaded, far above the Cairo

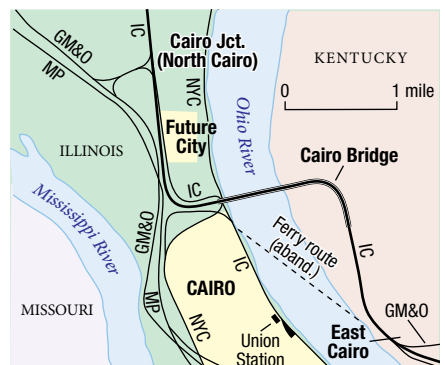
Choke point Cairo: Illinois Central in 1950

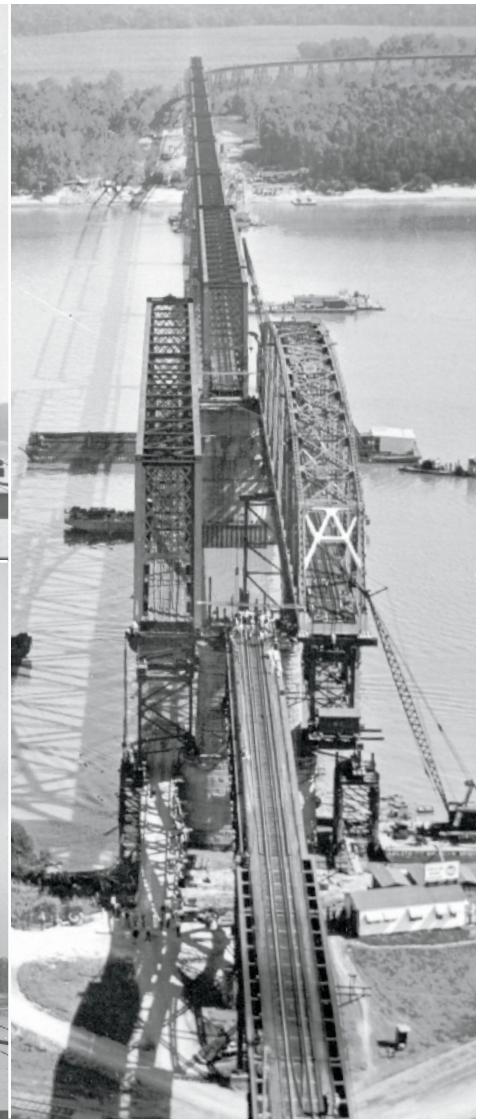


0 50 100 miles

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Not all lines shown

- CB&Q Chicago, Burlington & Quincy
- GM&O Gulf, Mobile & Ohio
- MP Missouri Pacific
- NC Nashville, Chattanooga & St. Louis
- NYC New York Central
- P&I Paducah & Illinois





Bridge workers, IC brass, and even a dog were on hand as the first new span was moved into position on October 16, 1950. In this sequence, movement began at 9:30 a.m. (top), and by 10:08 the old span had been moved onto a temporary platform. The aerial view was taken in late morning. By 4:55 p.m. (above), the new span is almost in place, which occurred at 5:30. The bridge reopened to traffic soon after midnight.

Three photos, ICRR

bridge's safe limit, and initially were banned from it. Beginning in October 1914, bridge gangs began adding additional bracing. Once that \$100,000 project was complete in early 1915, the 2-8-2s were finally allowed across the bridge.

Double track? No

Even grander plans were on the drawing board. In June 1914, IC petitioned the War Department (which at the time had jurisdiction over bridges crossing navigable rivers) for permission to rebuild the Cairo bridge as a double-track structure. Barge operators wanted the 518-foot spans over the main river channel lengthened to 700 feet. IC was unwilling to meet this demand, though, and its petition was denied. The road filed another petition in May 1921, and

this was approved the following November despite more protests from barge operators. Along with widening the bridge, the IC also planned to add a third main track from Carbondale, Ill., through Cairo and onward to Fulton, Ky.

Within a few months, though, IC abruptly shelved these plans and shifted its attention to building a bypass around Cairo, using the new Paducah & Illinois bridge across the Ohio from Metropolis, Ill. Dubbed the Edgewood Cutoff for the hamlet south of Effingham where it diverged from the IC main line, the new 169-mile, single-track route, which included three tunnels in the remote southern Illinois forests, rejoined the Cairo main at Fulton, Ky. The P&I bridge was built to accommodate two tracks, but only one was ever installed, and it

could easily handle any IC locomotive. The Cairo bridge could accommodate an IC 2400-class 4-8-2, the road's heaviest passenger power, but a 2-8-2 was the heaviest freight hog allowed on it.

The Edgewood Cutoff would supplement the old line through Cairo, not replace it. Passenger trains and some freights would continue to run through Cairo, but heavy coal trains from western Kentucky would use the cutoff. For IC's St. Louis traffic to or from the South, the Cairo route was shorter. The cutoff would shave 22 miles off the Chicago-Cairo-New Orleans route, have a maximum 0.3 percent grade, versus 1.2 percent on the old line, and have a lot fewer curves (one 63-mile stretch would be perfectly straight). Construction of the new line was estimated to cost \$17 mil-

lion, versus \$24 million for reconstruction of the Cairo line.

IC announced its plans for the Edgewood Cutoff on Christmas Day 1922. Communities along the Cairo line filed several legal challenges, but their efforts were in vain. The Kentucky segment of the cutoff opened in 1927 and the Illinois segment the following year. Within a few years the Edgewood Cutoff was handling more tonnage than the Cairo line thanks to its gentle curves and grades, plus strategically located passing sidings. IC never scheduled a regular passenger train via the cutoff.

Problems remain

The Edgewood Cutoff took a lot of pressure off the Cairo bridge, but problems remained. Engineers were particularly concerned about the steel approach trestle on the Kentucky side, which was rapidly rusting. Much of the corrosion could be attributed to brine dripping from the thousands of ice-cooled refrigerator cars carrying bananas, meat, and produce that crossed the bridge each year [“Banana Trains of Mid-America,” CLASSIC TRAINS Special Edition FAST TRAINS, 2009]. Reconstruction of the Kentucky trestle began May 1, 1934; the new steel structure was 3,170 feet long, consisting of 53 deck girders ranging in length from 30 to 80 feet.

Crews also replaced all three 249-foot spans of the superstructure, one on the Kentucky side and two on the Illinois shore. Replacement of the Illinois spans was complicated because train traffic could not be halted for long periods. The new spans were intricately stitched together within the framework of the old spans, and afterward, the old spans were just as carefully cut apart. Replacement of the Illinois spans was completed during November 1934, and the new approach trestle in Kentucky was put into service February 14, 1935.

This left as the only segments of the original bridge the two 518-foot spans and seven 400-foot spans of the superstructure. Further reinforcing of these spans was not possible, so the bridge remained off-limits to IC’s heaviest locomotives, which included 2-8-4s, 2-10-2s, 2500- and 2600-class 4-8-2s, and the 2100-class 2-8-2s. Also, all trains were limited to 15 mph across the bridge. These restrictions were a major challenge to IC’s operating department, but the road was still struggling to recover from the Depression and no money was available to replace the superstructure.

Ker-splash! The third span falls into the river on August 21, 1951, much to the delight of spectators on the riverbank. It had been stripped to the bare frame after the new span was installed two weeks previously, and later was cut up for salvage.

ICRR





Mikado 1538 leads a northbound off the Cairo side of the bridge June 20, 1950. All of the steel trestlework between the through truss spans and the embankment to the right were replaced in 1934. By the time of this photo, crews were replacing the nine spans of the superstructure.

Samuel Thompson

More than just a bridge

Over the years the Cairo bridge did more than just carry trains over the Ohio River. During the great Ohio River valley flood of early 1937, the bridge was closed from January 23 to February 15. (Paducah, at the confluence of the Tennessee and Ohio rivers, saw 18 inches of rain in 16 days and the river crest at 60.8 feet, forcing the evacuation of 27,000 residents.) A large group of refugees, mostly African-American residents of Future City, just north of Cairo, were forced to take shelter on the earthen embankment on the Illinois side of the river. To help survive the miserably cold weather, the refugees, who lived in tents and makeshift shacks, emptied a 40-ton coal hopper of its contents. Afterward, the American Red Cross paid for the coal and the railroad wrote off the shipping charge.

Also during the flood, several passenger cars, heated by a steam locomotive, were parked at IC's North Cairo depot to provide shelter. Additionally, several families moved into boxcars at Ballard Junction, on the Kentucky side of the bridge. Local social customs, however, restricted the railcar accommodations to white flood refugees only.

The bridge also served as a symbolic beacon of liberty for African-American train passengers. During the late 1800s, Kentucky, Tennessee, Mississippi, and Louisiana all passed "Jim Crow" laws requiring separate passenger-car accommodations (and frequently, station waiting rooms) for black and white passengers. Black passengers on a northbound

train would rejoice when they spotted the Cairo bridge, for once the train was across it, they would be free to sit anywhere on the train. On November 25, 1955, the Interstate Commerce Commission ordered an end to segregation aboard interstate trains and buses.

As it was across the land, the steep decline in rail traffic during the Depression was followed by the more dramatic traffic surge during World War II. Freight traffic doubled and passenger traffic tripled. As with all IC's trackage and equipment, the Cairo bridge was battered, literally and figuratively, but the crush of wartime traffic prevented the railroad from making major repairs to the bridge.

The great 1950–51 rebuilding

After the war ended, the Cairo bridge became a high priority with IC management. The road hired the prestigious Modjeski & Masters engineering firm to oversee the project. This company was founded in 1893 by Ralph Modjeski, who once had been employed by George S. Morison, the engineer in charge of construction of the first Cairo bridge, and Modjeski himself spent nearly 10 months in Cairo in 1888 working on the project. The American Bridge Company was contracted to do the construction work.

Modjeski recommended that the bridge be rebuilt atop the original piers. This would give the railroad a bridge that was virtually new, but at a fraction of the cost of an all-new bridge. It was not possible to shut down the bridge for

extended periods, so a novel solution was drafted that had not yet been attempted on such a large scale. Each new span would be built on a platform anchored next to the bridge. The old span would then be rolled out of the way, and the new span would be rolled into position. The only time the bridge had to be closed was during a 24- to 48-hour period when each new span was being moved into position. During this time, trains would detour over the Edgewood Cutoff.

The nine spans of the old superstructure were to be replaced with 12 new ones. The two 518-foot spans over the main river channel (the spans closest to the Illinois riverbank), plus four 400-foot spans in the middle of the river, would be replaced with new spans of the same length. Meanwhile, the three 400-foot through trusses closest to the Kentucky riverbank would be replaced by six deck trusses, each measuring 200 feet.

The U.S. Army Corps of Engineers, successor to the War Department in such matters, approved the plans in July 1948. IC's board of directors on March 25, 1949, approved spending up to \$6.3 million on the project. Approximately \$750,000 would be paid by the Gulf, Mobile & Ohio, the 1940 successor to the M&O, which helped pay for the bridge's maintenance based on its usage. The reconstruction project got going in late 1949 with repairs to the bridge piers. The second, fourth, and sixth piers (as counted from the Illinois side) had developed large cracks over the years. After the cracks were filled, these piers were encased in a two-foot-thick concrete jacket. Three new concrete piers were also built on the Kentucky side to support the new 200-foot deck girders that would replace the old 400-foot through trusses.

The first two spans actually constructed were the two 200-foot deck girders that would be installed closest to the Kentucky shore. These two spans were assembled on barges, then lashed together to serve as a construction platform for the two 518-foot spans and the four 400-foot spans. The platform was anchored on the downstream side of the bridge, so if it broke loose, the platform and the new span would float away from the bridge, not into it. The four 200-foot deck girders farthest from the shore on the Kentucky side were built atop piling driven next to the existing spans.

The 518-foot span closest to the Illinois shore was to be replaced first, and then crews would work their way across the river. During summer 1950, the new

span weighing 1,760 tons gradually rose like a giant Erector set. In addition to the basic steel structure, the span was outfitted with ties, rails, spikes, and wiring for signals, telegraph, and the company phone lines. Thus when it was moved into position, the new span would immediately be ready for use.

The new span was rolled into place on October 16, 1950. At 9 a.m., diesel-powered winches, mounted on a river barge, began pulling the old span out of the way and onto a platform next to the bridge. By 9:55 the old span was out of the way. The cables and rollers were repositioned, and crews began moving the new span. At 5:30 p.m. the new span reached its proper position, and workers immediately began bolting the rails together and making the electrical connections. The bridge reopened to traffic in the early morning hours of October 17, less than 20 hours after it closed. Afterward, the old span was stripped down to a bare frame. On November 8, a large crowd watched as the old span was dropped into the river, sending a massive water plume high into the sky. The hulk was then cut apart with torches and hauled away for scrap.

The second 518-foot span was moved into position on June 5, 1951. Crews then began working on the four 400-foot spans. The first of these was installed on August 7, and afterward a new span was placed roughly every 30 days until the last was installed on December 5, 1951. Each old span was dropped into the river roughly 14 days after it was replaced. Afterward, the two 200-foot deck girder spans used as the construction platform were moved into position on February 11, 1952. By that date, the four other 200-foot deck girder spans had already been completed and moved into position. The year 1951 happened to be IC's centennial, and reconstruction of the bridge was featured prominently in several advertisements and publicity materials distributed by the railroad.

Once all the spans were replaced, the locomotive restrictions were lifted, and the formerly banned classes of 2-8-2s, 2-8-4s, 2-10-2s, and 4-8-2s were allowed across the bridge. These locomotives could haul longer, heavier trains than the smaller 2-8-2s, allowing IC to compete more effectively against other railroads and trucks. Steam pulled all freights across the bridge until new GP9's arrived on the Centralia District in early 1955.

Few major modifications have been made to the Cairo bridge since the early



Under gray skies on December 2, 1951 (top), an E7 leads a southbound passenger train onto the bridge from the Illinois side. Bridge reconstruction was almost complete by this time, with only one 400-foot span on the Kentucky bank left to be replaced, by two 200-foot spans, finished on February 11, 1952. On June 26, 1959 (above), a dining-car cook looks out as the southbound *City of New Orleans* descends the 1935 Kentucky approach trestle.

Top, Samuel Thompson; above, ICRR

1950s, but train movements have changed considerably. Amtrak's inception in 1971 cut back the bridge's passenger-train count to one each day in each direction. For years, these Amtrak trains have crossed the Cairo bridge in the dark of night. The following year, IC merged with GM&O to form the Illinois Central Gulf, and within a decade, all GM&O track within 50 miles of Cairo had been abandoned. ICG reverted to the historic Illinois Central name in 1988, and almost immediately installed Centralized Traffic Control on the Chicago–New Or-

leans main line, allowing the removal in most places of one main track.

Canadian National bought the IC in 1999 and gradually made several operating changes. Southbound trains generally run over the Edgewood Cutoff, while northbounds generally use the Cairo bridge route. Far fewer trains cross the Cairo bridge than in the past, but thanks to its numerous modifications in the early- and mid-20th century, the bridge should remain a vital link on the former Illinois Central's main line for decades to come. ■