
Prize Bridges/1980

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Steel bridges selected in the national competition conducted by the American Institute of Steel Construction as the most beautiful bridges opened to traffic in 1978/1979.

AWARD CATEGORIES

LONG SPAN
Bridges having one or more spans over 400 ft. in length.

MEDIUM SPAN, HIGH CLEARANCE
Bridges with vertical clearances of 35 ft. or more, having the longest span (as measured by the bridge supports) not more than 400 ft. nor less than 125 ft. in length.

MEDIUM SPAN, LOW CLEARANCE
Bridges having vertical clearances of less than 35 ft., having the longest span (as measured by the bridge supports) not more than 400 ft. nor less than 125 ft. in length.

SHORT SPAN
Bridges having no single span 125 ft. or more in length.

GRADE SEPARATION
Bridges whose basic purpose is grade separation as contrasted to the above categories.

ELEVATED HIGHWAYS OR VIADUCTS
Bridges having more than five spans, which cross over one or more established traffic lanes, and which may afford access for pedestrian travel and for parking.

MOVABLE SPAN
Bridges having a movable span.

SPECIAL PURPOSE
Includes pedestrian bridges, pipeline bridges, airplane bridges, and other special purpose bridges not identifiable to one of the above categories.

RAILROAD
Bridges (non-movable) which are primarily for the purpose of carrying a railroad, but which may also be a combination railroad-highway bridge.

RECONSTRUCTED
Bridges which have undergone major rebuilding and/or reconstruction using steel framing to upgrade them to present day traffic requirements.

AMERICAN INSTITUTE OF STEEL CONSTRUCTION
WRIGLEY BUILDING, 400 NORTH MICHIGAN AVENUE, CHICAGO, ILLINOIS 60611


HIGH

JURY OF AWARDS

Jurors who selected the winning bridges are, from left to right:

JACK FREIDENRICH, M.ASCE
Director of Engineering and Operations,
State of New Jersey Department of Transportation,
Trenton, New Jersey

MYRON GOLDSMITH, FAIA, M.ASCE
Partner, Skidmore, Owings & Merrill,
Chicago, Illinois

IRVAN F. MENDENHALL, F.ASCE
President-elect, ASCE; Chairman of the Board,
Daniel, Mann, Johnson & Mendenhall,
Los Angeles, California

JAMES A. CAYWOOD, F.ASCE
President, DeLeuw, Cather & Company,
Washington, D.C.

WILLIAM H. MUNSE, F.ASCE
Professor of Civil Engineering,
University of Illinois, Urbana, Illinois

The enduring beauty of steel bridges is eloquent tribute to the vision and skill of the men who plan, design, and build them. The bridge designer of today is both artist and engineer. He understands the potential for strength and beauty which is inherent in steel structures, and he knows that aesthetic appearance can be achieved at no sacrifice of efficiency or economy. The simple grace of a highway overpass, no less than the majestic sweep of a river crossing, reflects a creative integration of structure, function and form, skillfully executed in beautiful bridges of steel.

To promote a more widespread appreciation of the aesthetics of steel bridges and to honor the architectural excellence of modern bridge design, the American Institute of Steel Construction sponsors a Prize Bridge Competition. A distinguished Jury of Awards, composed of leading educators, architects, and engineers, selects the steel bridges which it judges to be the most beautiful of those opened to traffic in the United States during the previous two years.

To establish an equitable basis for competition, awards are made in each of several contest classifications. Size and function determine the class in which each entry is eligible to compete. The prize winning bridges are marked with a stainless steel plaque, and the designers, owners, general contractors, steel fabricators, and steel erectors are awarded engraved certificates in recognition of their contribution and achievement.

The American Institute of Steel Construction sponsors this competition and awards the prizes in the belief that it is helping to render a public service by stimulating a lasting interest in improved bridge design.

Mississippi Highway No. 25 over Tennessee-Tombigbee Waterway

PRIZE BRIDGE 1980/LONG SPAN

Designer
Mississippi State Highway Department, Bridge Division, Jackson, Mississippi

Owner
Mississippi State Highway Commission, Jackson, Mississippi

General Contractor
Bowyer-Johnson-Kimes, Inc., Jackson, Tennessee

Fabricators
Main Span: Allied Structural Steel Co., Chicago Heights, Illinois
Approach Spans: Gamble's Inc., Subsidiary of Trinity Industries, Inc., Montgomery, Alabama

Erector
Bristol Steel & Iron Works, Inc., Bristol, Virginia

The slender superstructure and powerful piers of this 2,000' long plate girder bridge were designed to blend with the surrounding rural terrain of sand, gravel and tall native grasses.

The 1,000' center unit is framed with three continuous 3-span (300'—400'—300') welded plate girders, cross-frames, and rolled beam stringers. The approach spans are composed of two continuous units, each having five welded plate girders: 400' (4 spans at 100') and 600' (4 spans at 150').

The 400' main span overpasses the 300' Tennessee-Tombigbee Waterway, providing 52' of vertical underclearance and requiring no protection for the reinforced concrete substructures. Roadway width is 40.5' gutter to gutter, with reinforced concrete deck and handrails.

"The spacing of the piers is well suited to the environment, with the larger spacings naturally coming into play over the river channel. A fine application of steel plate girder construction using weathering steel for strength, low maintenance, and balance with the natural surroundings."
—Jurors' Comments

Near Iuka, Mississippi

Judge John Loughran Bridge

PRIZE BRIDGE 1980/MEDIUM SPAN, HIGH CLEARANCE

Designer
McFarland-Johnson Engineers, Inc., Binghamton, New York

Owner
State of New York, Department of Transportation, Albany, New York

General Contractor
Slattery Associates, Inc., Maspeth, New York

Fabricator
Standard Erecting Co., Inc., Newington, Connecticut

Erector
Cornell & Company, Inc., Woodbury, New Jersey

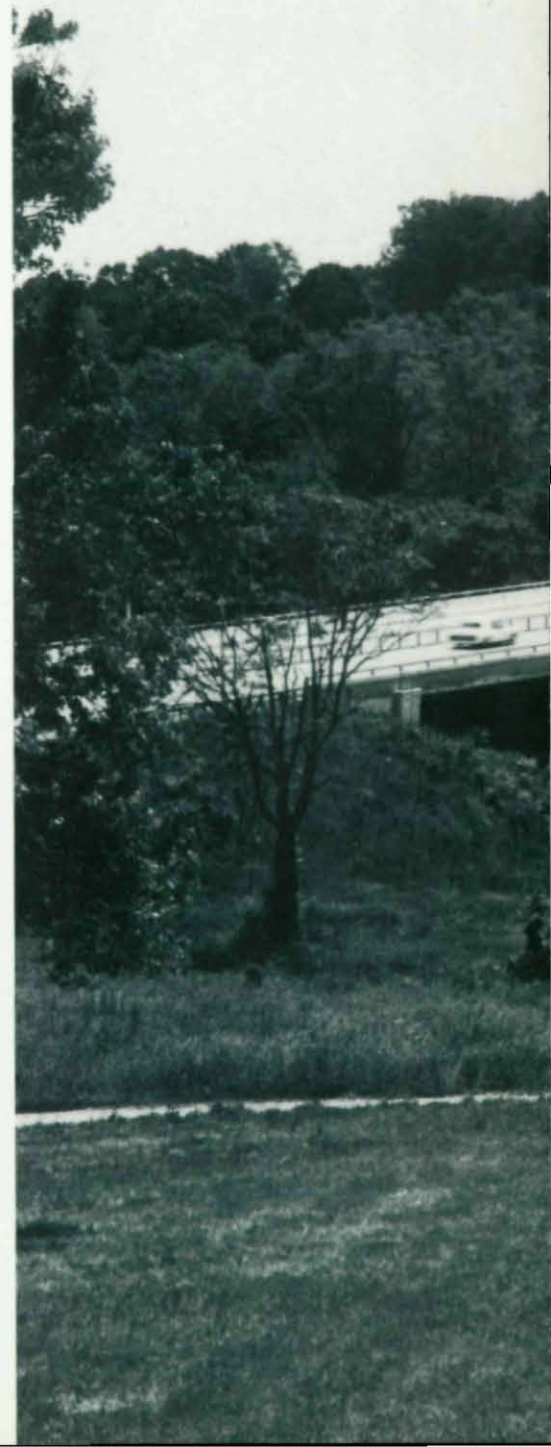
Without visual intrusion into a very fine landscape, this plate girder bridge carries Kingston arterial traffic over the 100' wide channel of Roundout Creek. Girder depth is 10.2' at the abutments and the haunches are 14.7' deep at the piers.

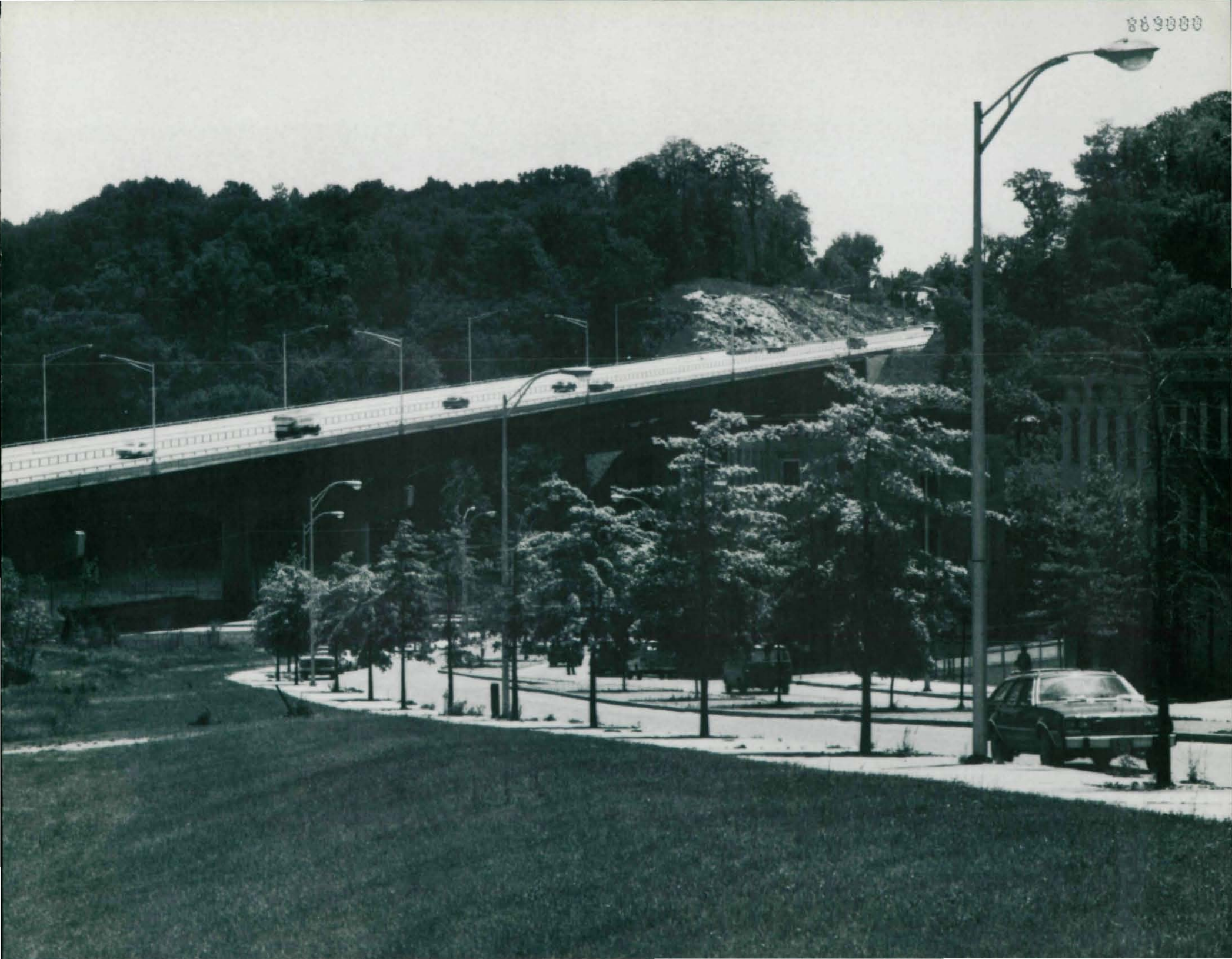
The bridge carries four 12' wide roadways, two on each side of a 12' wide median. A 12' wide shoulder with parapet and railing is located on each side, allowing safe pedestrian and bicycle traffic, and the space under one approach span is used by area residents for recreation.

Span lengths are 245'—355'—245'.

"The plate girders of weathering steel create an aesthetically pleasing structure requiring minimal maintenance. This is an excellent example of contemporary technology that is responsive to man's needs without imposing on his environment."
—Jurors' Comments

Kingston, New York





Muskingum River Bridge

PRIZE BRIDGE 1980/MEDIUM SPAN, LOW CLEARANCE

Designer/Owner
Ohio Department of Transportation, Columbus, Ohio

General Contractor
Shelly & Sands Inc., Zanesville, Ohio

Fabricator
Fort Pitt Bridge, Division of Spang Industries, Inc., Canonsburg, Pennsylvania

Erector
The Vogt & Conant Company, Cleveland, Ohio

The new bridge over the Muskingum River replaces a high truss structure built in 1914. The original bridge had four spans, including two swing spans for navigational purposes. The engineers' task was designing a bridge to keep pace with modern transportation needs, while addressing multifaceted economic and aesthetic questions.

Preliminary studies indicated that 3-span continuous welded haunched steel girders using A588 steel met all criteria. The web depth varies from 6.3' to 11.7', with parabolic curves in the vicinity of the piers. Eight lines of girders were used.

Span lengths are 157'—225'—157'. The roadway width is 68'.

Zanesville, Ohio

"The bridge blends well into the wooded, scenic countryside. From a distance, the entire structure appears as a slender ribbon between the shores, bolstered only by two simple supports. The proportions, the gentle curve of the underside of the welded plate girders, and the treatment of the abutments contribute to a clean, aesthetically beautiful design."
—Jurors' Comments

Kingwood, West Virginia

Caddell Bridge over Cheat River

PRIZE BRIDGE 1980/ELEVATED HIGHWAYS OR VIADUCTS

Designer
Yule, Jordan & Associates, Philadelphia, Pennsylvania

Owner
West Virginia Department of Highways, Charleston, West Virginia

General Contractor
W.P. Dickerson & Son, Inc., Youngwood, Pennsylvania

Fabricator
Fort Pitt Bridge, Division of Spang Industries, Inc., Canonsburg, Pennsylvania

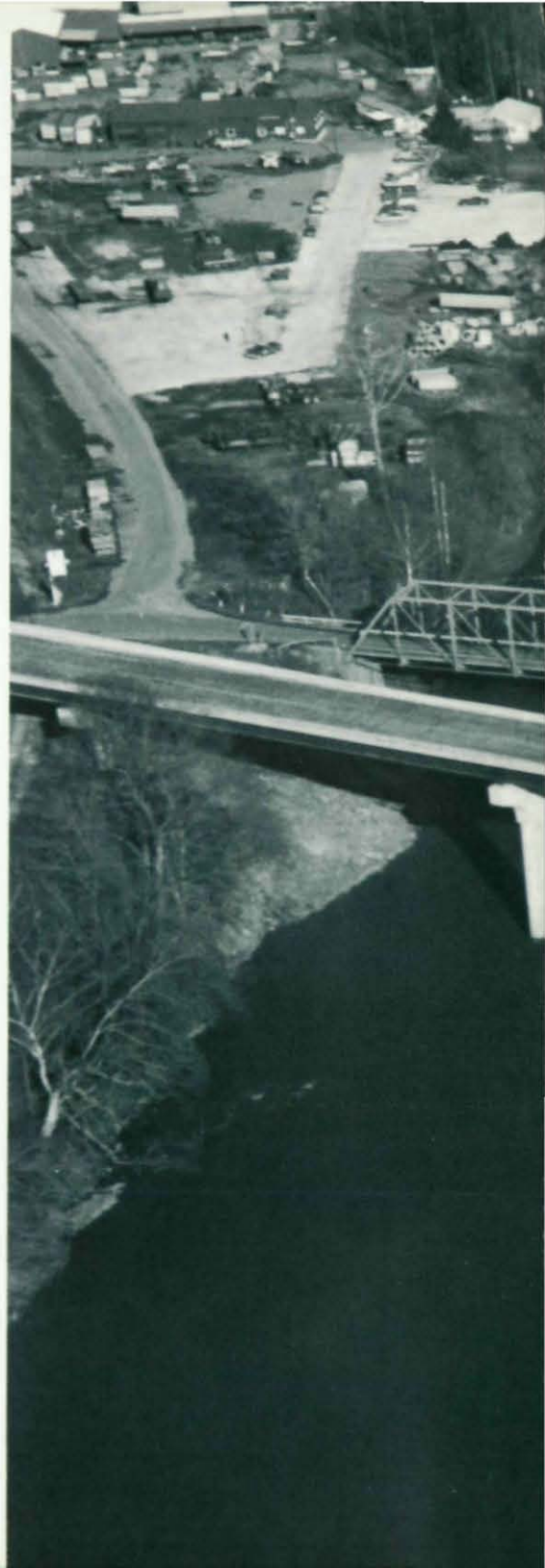
Erector
Middle States Steel Construction Co., Eighty Four, Pennsylvania

This bridge replaces a 4-span truss structure, 15' wide and 618' long, constructed in 1906 as a railroad bridge to facilitate hauling logs from cuttings on the south side of the river to a sawmill and rail head on the north side. Subsequently, the bridge was converted to carry one lane of highway traffic, resulting in a substandard traffic flow by today's standards. Three roads intersected at the south abutment, while at the north end a bad "S" curve and an at-grade railroad crossing curve existed. Approach grades on both sides of the river were from 6 to 9% for several miles.

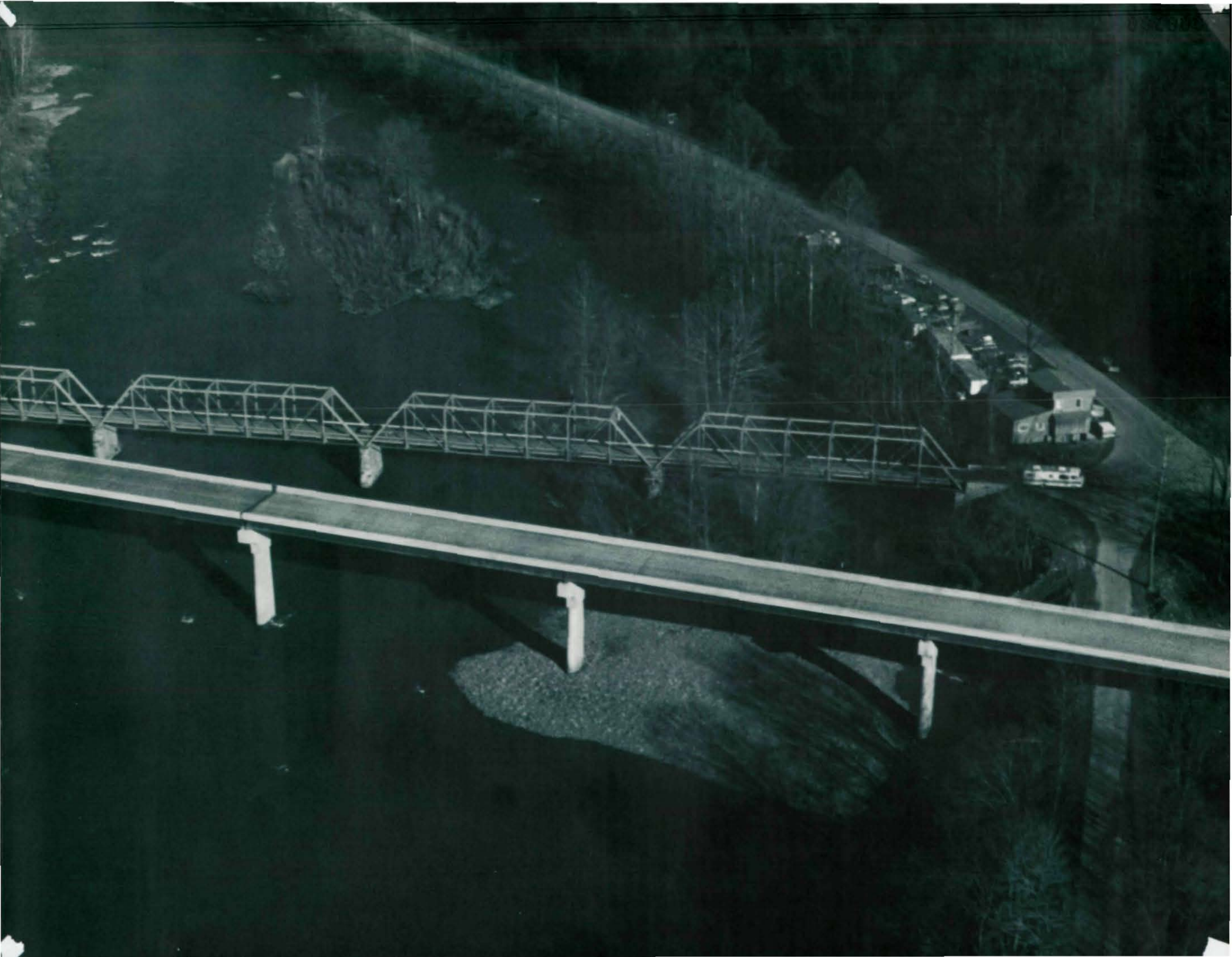
The new bridge is sited about 200' upstream of the existing bridge and constructed at a higher level so as to span the railroad, an access road to the lumber yard on the north, and a road paralleling the river on the south.

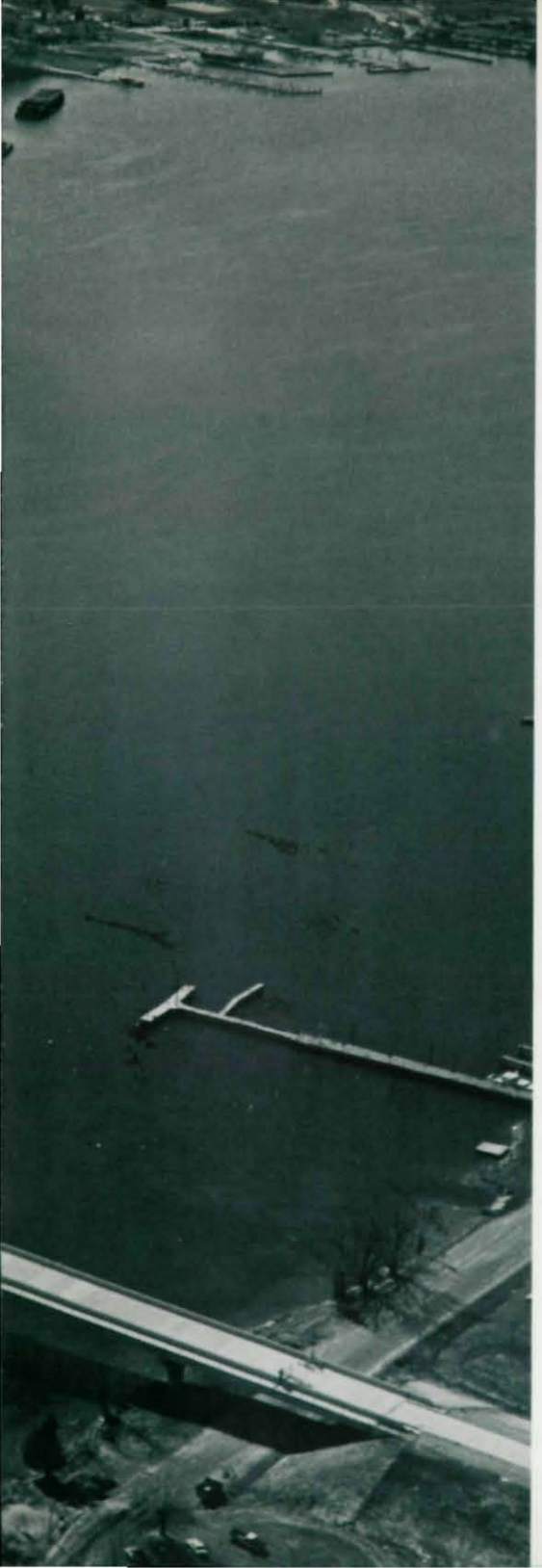
Various span arrangements with cost studies were made before arriving at the final 945' long bridge. The superstructure is comprised of one 3-span welded plate girder unit of 152' spans and one 3-span unit of 162' spans, all supporting a 30' roadway with safety parapets. Hammerhead piers founded on bedrock, along with pile-supported stub abutments, are used in the substructure.

All structural steel is ASTM A588 weathering steel, which requires little maintenance and, with its deep brown color, blends in with the natural beauty of this river valley.



"Slim and graceful, this bridge fits beautifully into its surroundings. Here is another example of design that is responsive to needs and expressive of materials which result in beauty."
—Jurors' Comments





STH 42 and 57 [B-15-4]

PRIZE BRIDGE 1980/MOVABLE SPAN

Designer
Hazelet & Erdal, Chicago, Illinois

Owner
State of Wisconsin, Department of Transportation, Madison, Wisconsin

General Contractor
Lunda Construction Company, Black River Falls, Wisconsin

Fabricator
Hartwig Manufacturing Corporation, Wausau, Wisconsin

Erector
Lunda Construction Company, Black River Falls, Wisconsin

On this new bridge, set in beautiful Door County, the bascule span, 204' center to center of bearings, provides a 160' wide clear channel at a skew of approximately four degrees, with a maximum underclearance of 50' in the closed position. The two adjacent steel approach spans, each 139' long, provide the live load uplift anchorage for the bascule span.

Each leaf of the double leaf rolling lift bascule span consists of two welded plate girders, welded plate girder floor beams, and rolled beam stringers supporting steel open grid flooring on the front arm and a reinforced concrete deck on the rear arm. The concrete counterweight is supported by vertical welded plate girders and horizontal trusses.

The approach spans adjacent to the bascule span consist of six welded plate girders connected with steel cross-frames and lateral bracing. The roadway deck is a reinforced concrete slab.

The structure provides a 34' roadway flanked by barrier walls. A combination sidewalk and bikeway is located on the east side of the bridge outside the barrier.

"This movable span bridge is nicely detailed and attractively scaled. The bottom flanges of the bascule girders follow a parabolic curve, giving a pleasing shallow-arch appearance. Matching curves in the fascia girders of the immediately adjacent approach spans provide a graceful transition to the remaining approach. The bascule piers give a feeling of strength and support to the spans."
—Jurors' Comments

Pine County, Minnesota

Snake River Trails Bridge

PRIZE BRIDGE 1980/SPECIAL PURPOSE

Designer
Bakke Kopp Ballou & McFarlin, Inc., Minneapolis, Minnesota

Owner
Minnesota Department of Natural Resources, Trails and Waterways Unit, St. Paul, Minnesota

General Contractor
M.G. Astleford Co., Inc., Burnsville, Minnesota

Fabricator
St. Paul Structural Steel Company, St. Paul, Minnesota

Erector
Waverly Steel Inc., Waverly, Minnesota

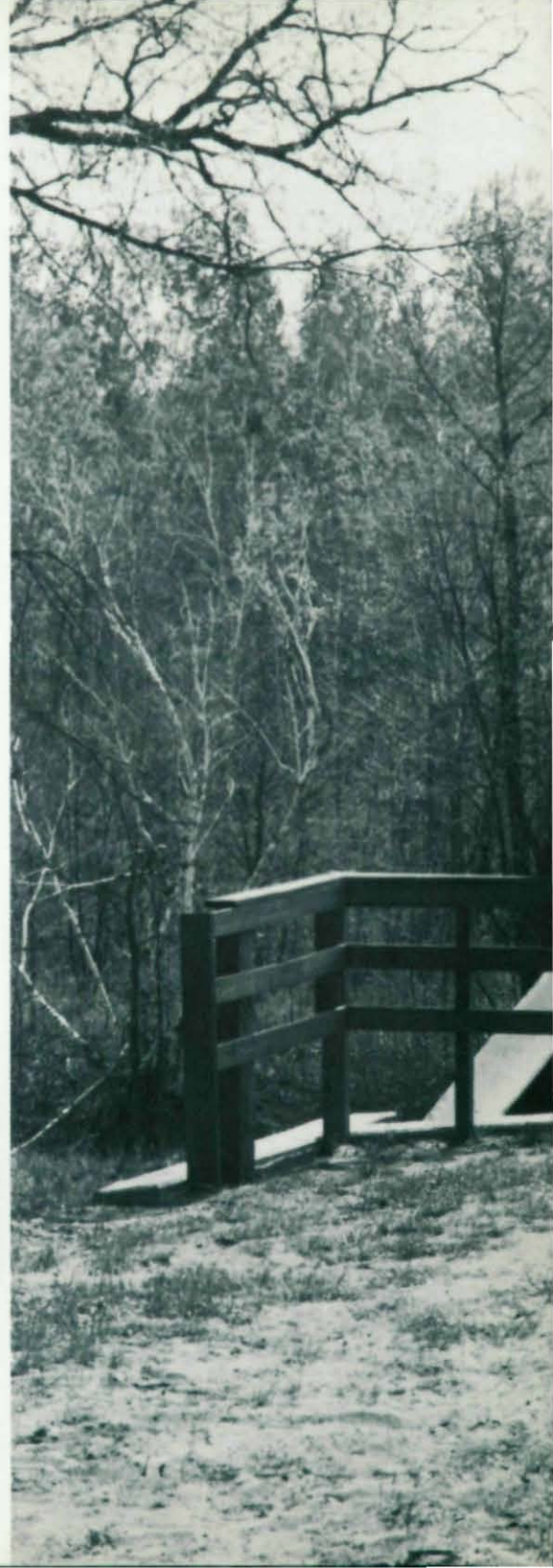
Situated across the Snake River in a very scenic wooded area, the bridge is a link in Minnesota's proposed multiple-use trails system. Bridge traffic includes cross-country skiers, snowmobilers, hikers, equestrians and cyclists, and will also accommodate a single service vehicle.

The floor structure is of longitudinally laminated timber panels, with the wearing surface being easily replaceable transverse planks. The tied arch was chosen for basic suitability, aesthetic qualities and reasonableness of cost. The two arches are a parabolic shape. Each tie is in the same plane as its arch, and is curved to match the vertical curve of the roadway.

The hangers are 1½" diameter rods with turnbuckles. The parabolic arch, parabolic tie and nine hangers are all in the same plane on each face of the superstructure. These planes are tilted vertically so that they are closer together at the high points of the arches than at their bearings.

Each arch spans 182.5' center to center of bearings. The rise, from center line at bearing to center line at center of span, is 26'. Bottom chords (ties) are 22' apart at bearings, with arches 11' apart at the top, center of span.

"The two well-proportioned, parabolic-shaped steel arches blend with the surroundings and the natural growth of trees, regardless of season. The thin rod hangers and timber deck complement the weathering steel construction. A simple statement acknowledging man's existence in a wilderness recreational area."
—Jurors' Comments



Southern Railway Bridge across Tennessee River

PRIZE BRIDGE 1980/RECONSTRUCTED

Designer
Tennessee Valley Authority, Knoxville, Tennessee

Consultant
Howard Needles Tammen & Bergendoff, Atlanta, Georgia

Owner
Southern Railway Company, Atlanta, Georgia

General Contractor
Vincennes Steel Division of Halle Industries, Vincennes, Indiana

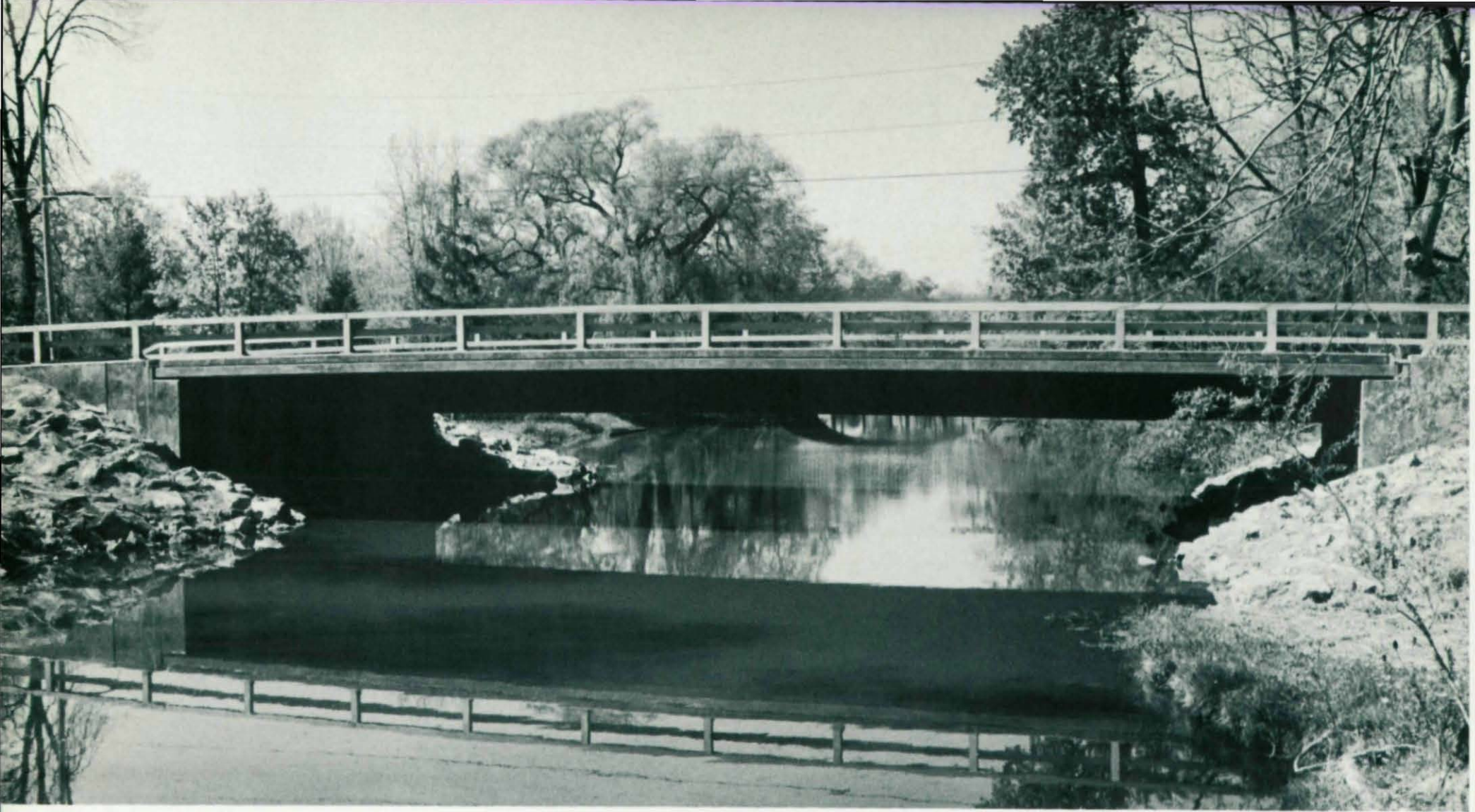
Fabricator
Vincennes Steel Division of Halle Industries, Vincennes, Indiana

Erector
John F. Beasley Construction Company, Dallas, Texas

The main portion of this old single-track railroad bridge, built in 1901, was comprised of eight fixed through-truss spans and a rim-bearing swing span. To improve navigation clearances, three of the existing through-truss spans, each approximately 157' long, were floated out and replaced by two lift towers and a 406' lift span. The width between trusses is 20.5'. The lift span, complete with tracks, was assembled on falsework prior to floating into place.

The lift span is counterweighted and powered by two 50-hp electric motors through a shaft-drive system. The lift span raises or lowers in two minutes. The new span increases the horizontal navigation clearance to 395' from the old swing span clearance of 180'. The old 157' truss spans were rated for E55 live load with steam impact, while the new structure is designed for a live load of E80 with diesel impact.

"A unique solution that saves the majority of the bridge while providing increased clearance and improved navigation. The new structure blends effectively with the retained truss spans, and the weathering steel emphasizes strength and serviceability."
—Jurors' Comments



Rochester, New York
Span Length: 85'

East River Road Bridge over Red Creek

AWARD OF MERIT 1980/SHORT SPAN

Designer City of Rochester, Department of Engineering and Maintenance, Rochester, New York
Owner City of Rochester, Rochester, New York
General Contractor Penn-Crete Construction Corp., Batavia, New York
Fabricator Ernst Steel Corporation, Titusville, Pennsylvania
Erector Ernst Steel Corporation, Buffalo, New York

High Street Bridge

AWARD OF MERIT 1980/GRADE SEPARATION

Designer Howard Needles Tammen & Bergendoff, Milwaukee, Wisconsin
Owner City of Rhinelander, Rhinelander, Wisconsin
General Contactor Edward Kraemer and Sons, Inc., Plain, Wisconsin
Fabricator Theo. Kupfer Iron Works, Inc., Madison, Wisconsin
Erector Edward Kraemer and Sons, Inc., Plain, Wisconsin

Rhinelander, Wisconsin
Span Lengths: 52'—2 at 65'—52'

Cuyahoga County, Ohio
Span Lengths: 11 at 300'—2 at 225'—200'—180'

I-480 over Cuyahoga River Valley

AWARD OF MERIT 1980 / ELEVATED HIGHWAYS OR VIADUCTS

Designer Howard Needles Tammen & Bergendoff, Cleveland, Ohio
Owner Ohio Department of Transportation, Columbus, Ohio
General Contractor The Horvitz Co., Valley View, Ohio
Fabricator Allied Structural Steel Co., Chicago Heights, Illinois
Erector The Vogt and Conant Company, Cleveland, Ohio

Bridge over the New River

AWARD OF MERIT 1980/MOVABLE SPAN

Designer
Greiner Engineering Sciences, Inc.,
Tampa, Florida

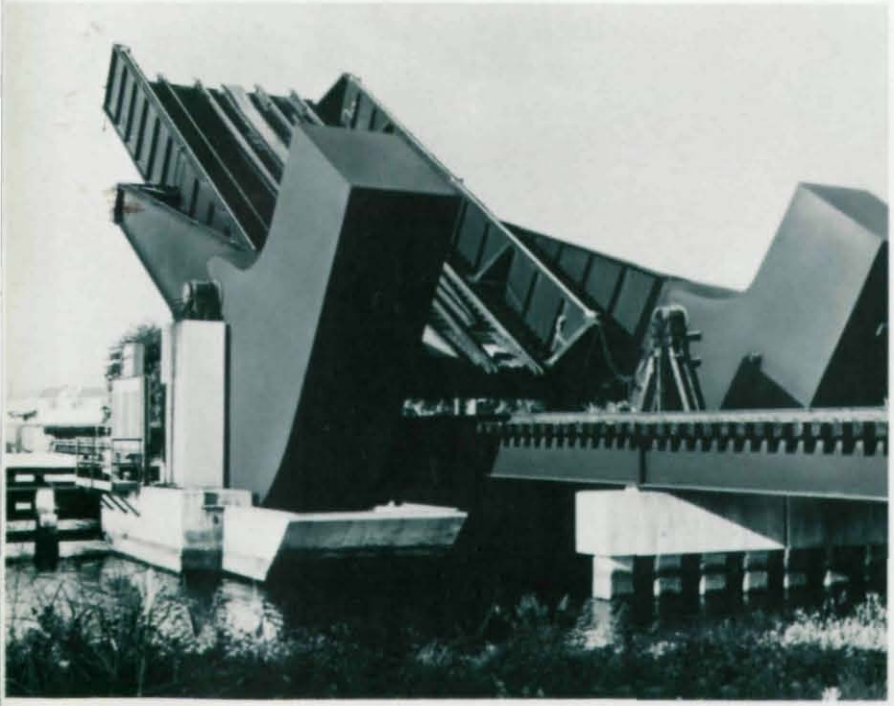
Owner
Florida East Coast Railway Company,
St. Augustine, Florida

General Contractor
Powell Brothers Contracting Company,
Ft. Lauderdale, Florida

Fabricator
Sheffield Steel Products, Inc.,
Palatka, Florida

Erector
Powell Brothers Contracting Company,
Ft. Lauderdale, Florida

Ft. Lauderdale, Florida
Span Length: 60'



Columbus, Ohio
Span Length: 160.7'

Hall of Justice Pedestrian Walkway

AWARD OF MERIT 1980/SPECIAL PURPOSE

Designer Prindle & Patrick Architects/Planners, Columbus, Ohio
Engineer Paul J. Ford & Company, Columbus, Ohio
Owner Franklin County Commissioners, Columbus, Ohio
Construction Manager Morse/Diesel, Inc., New York, New York
Fabricator The J.T. Edwards Company, Columbus, Ohio
Erector Industrial First, Inc., Cleveland, Ohio

Big Blue River Bridge A-8

AWARD OF MERIT 1980/RAILROAD

Designer Gibbs & Hill, Inc., Dallas, Texas
Owner The Kansas City Southern Railway Company, Kansas City, Missouri
General Contractor The Kansas City Southern Railway Company, Kansas City, Missouri
Fabricator/Erector Havens Steel Company, Kansas City, Missouri

Kansas City, Missouri
Span Lengths: 2 at 84'

New Britain, Connecticut
Span Lengths: 154.5'—137'—100'

Route 72 under Conrail

AWARD OF MERIT 1980/RAILROAD

Designer Edwards and Kelcey, Livingston, New Jersey
Owner Connecticut Department of Transportation, Wethersfield, Connecticut
General Contractor White Oak Corporation, Plainville, Connecticut
Fabricator The Standard Structural Steel Co., Newington, Connecticut
Erector White Oak Corporation, Plainville, Connecticut

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