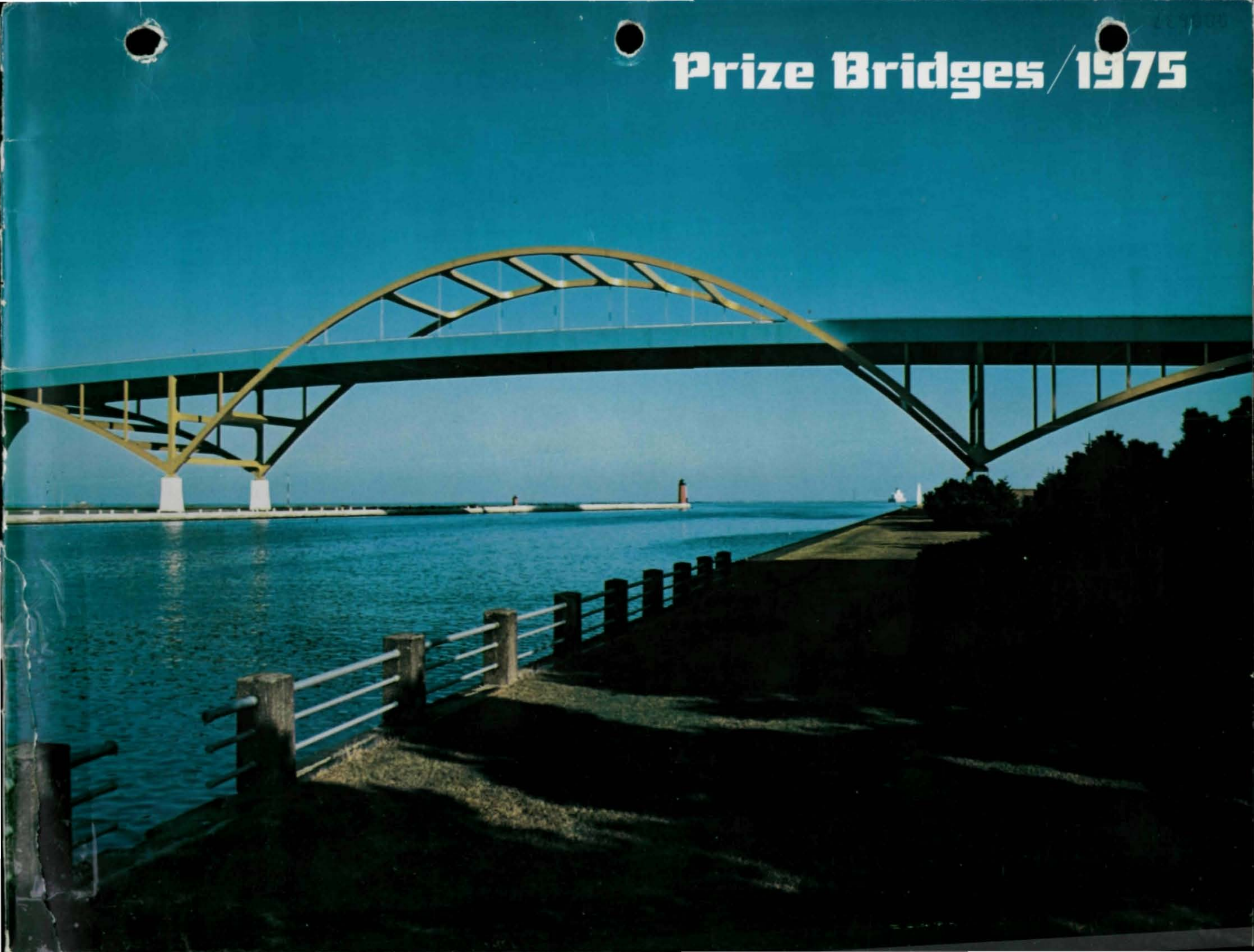
Prize Bridges/1975



Prize Bridges/1975

Steel bridges selected in the annual national competition conducted by the American Institute of Steel Construction as the most beautiful bridges opened to traffic in 1974.

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 supporting foundations) 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 supporting foundations) 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.

HIGHWAY GRADE SEPARATION
Bridges whose basic purpose is highway 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 overpass bridges, and other special purpose bridges not identifiable to one of the above categories.

AMERICAN INSTITUTE OF STEEL CONSTRUCTION
1221 AVENUE OF THE AMERICAS, NEW YORK, N.Y. 10020

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 an annual Prize Bridge Competition. Each year 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 year.

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.

JURY OF AWARDS

From left to right:

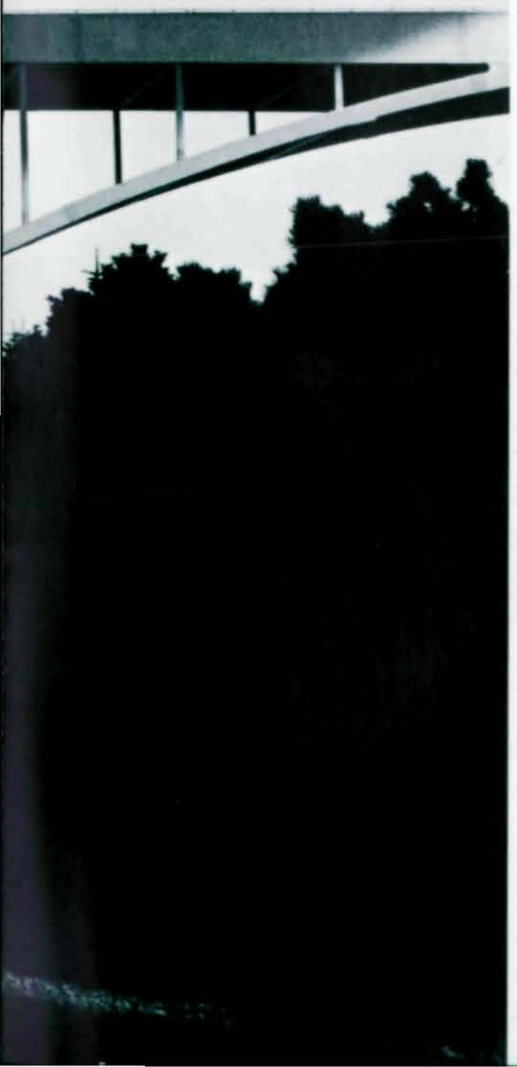
NELSON C. JONES, F.ASCE
Assistant Deputy Director (Retired)
Michigan Highway Department
East Lansing, Michigan

JOHN M. HAYES, F.ASCE
Professor, School of Civil Engineering
Purdue University
West Lafayette, Indiana

ARTHUR J. FOX, JR., F.ASCE
President-elect, American Society of Civil Engineers
Editor, Engineering News-Record
New York, New York

RUBEN N. BERGENDOFF, F.ASCE
Howard Needles Tammen & Bergendoff
Kansas City, Missouri

WILLIAM N. HOLWAY, F.ASCE
Executive Vice-President
Benham-Blair & Affiliates, Inc.
Tulsa, Oklahoma



Daniel Webster Hoan Memorial Bridge

PRIZE BRIDGE 1975 / LONG SPAN

Designer
Howard Needles Tammen & Bergendoff, Milwaukee, Wisconsin

Owners
Department of Transportation, State of Wisconsin, Madison, Wisconsin
Expressway and Transportation Commission, Milwaukee County, Milwaukee, Wisconsin

General Contractors
Superstructure: Pittsburgh-Des Moines Steel Company, Pittsburgh, Pennsylvania
Substructure: Druml/Hufschmidt, Sussex, Wisconsin
(A Joint Venture of The Druml Company, Inc. and Hufschmidt Engineering Company)

Fabricator
Pittsburgh-Des Moines Steel Company, Pittsburgh, Pennsylvania

Erector
John F. Beasley Construction Co. Dallas, Texas

Although cost was an important factor, a tied arch was selected primarily on the basis of design advantages and appearance. The absence of external horizontal thrust in this type of structure was significant because of the poor lateral resistance of the underlying foundation materials. The basic geometry and proportions of the structure, including its prominent vierendeel bracing system, were also established with careful consideration of both aesthetics and structural function.

The primary arch, tie, and bracing members are welded A588 steel box sections. The end sections of the tie girders are supported from the arch rib by box posts and the through-center section is suspended by bridge strand hangers. All member intersections are designed with generous fillets that provide increased section at these critically stressed locations and create a sculptured appearance. The exterior surfaces of the arch ribs, struts, and posts are painted gold. The girders and floor system, as well as the deck girders at the approach spans, are blue.

Span Lengths: 270'-600'-270'
Roadway Width: 112'
Vertical Clearance: 120'

Jurors' Comments: "This is a graceful structure that combines elegance with simplicity. The constant depth of the tie girder and its visual relationship with the arch give a streamlined effect. This is an impressive gateway to Milwaukee's harbor."

Kentucky Highway 312 Bridge over Laurel River Lake

PRIZE BRIDGE 1975 / MEDIUM SPAN, HIGH CLEARANCE

Designer
U.S. Army Corps of Engineers, Nashville District, Nashville, Tennessee

Owner
Department of Transportation, Commonwealth of Kentucky, Frankfort, Kentucky

General Contractor
Bush Contracting Company, Frankfort, Kentucky

Fabricator
Tucker Steel, Division of U.S. Industries, Inc., Knoxville, Tennessee

Erector
Lexington Bridge and Erection Co. Lexington, Kentucky

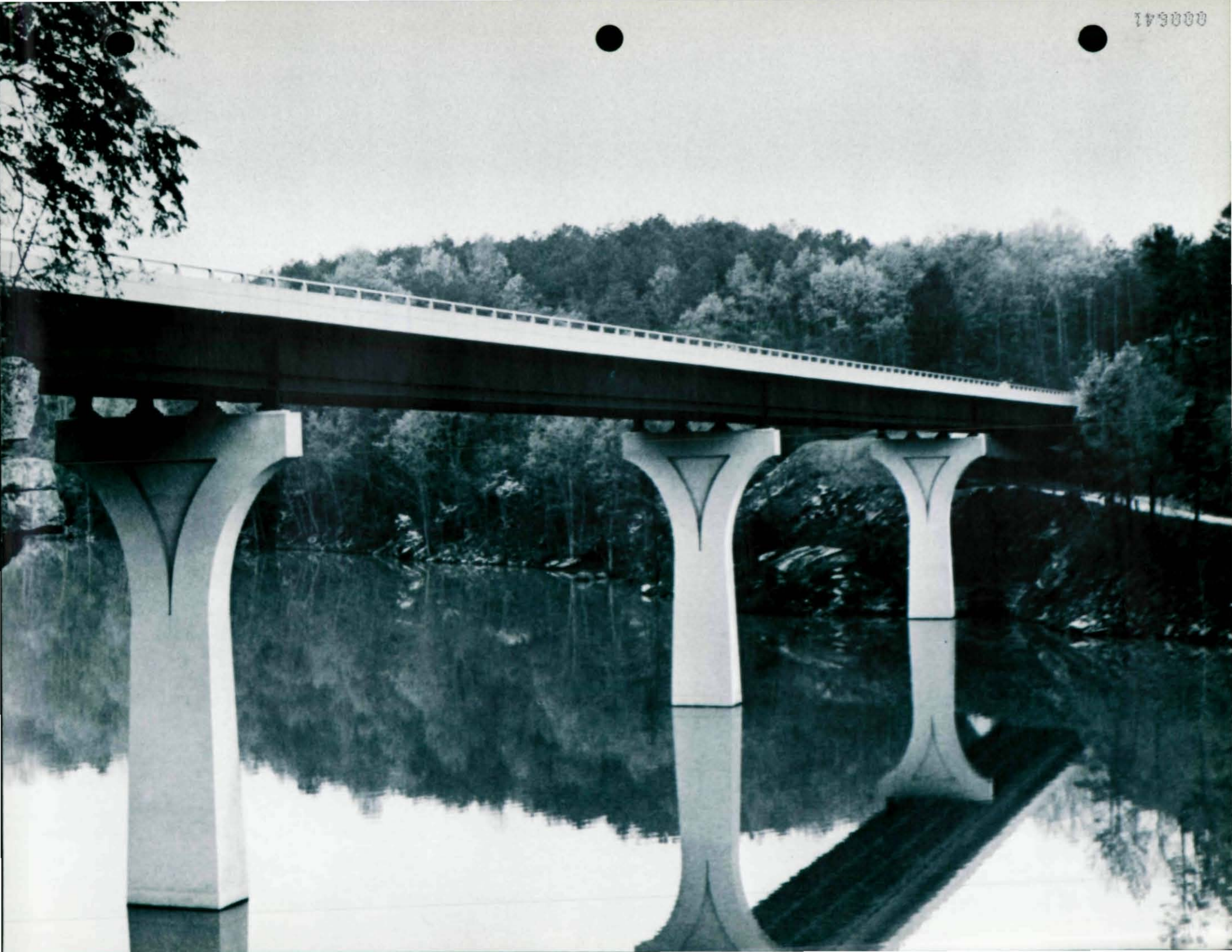
Both economic and aesthetic factors played an important role in the design of this welded plate girder structure. Economics dictated the number of spans, the ratio of center span to end span (1.3:1), and continuous plate girders over the four spans. Deck plate girders were selected over through trusses both for economy and to provide motorists with an unobstructed view of their surroundings. To provide a clean line to the structure, the girders were designed to be of uniform depth and all vertical stiffeners were located on the inside of the girder webs. Horizontal stiffeners on the outside add to the graceful appearance of the structure.

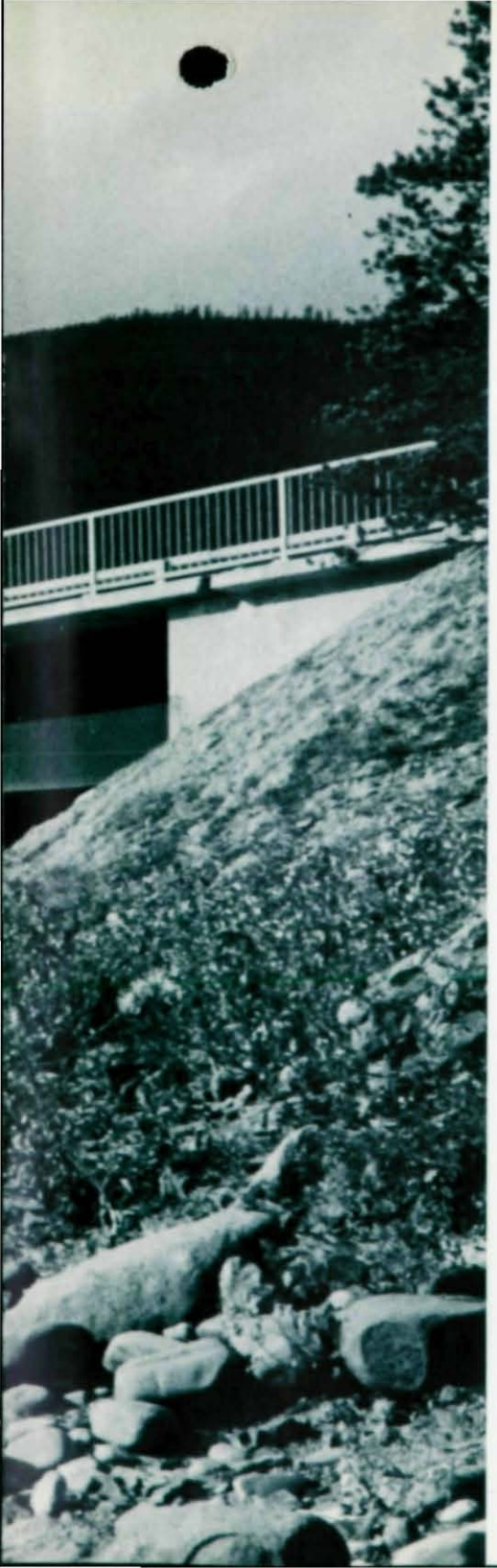
A great deal of effort was made to design a structure that is in harmony with the landscape. The deck and piers were sprayed with a light beige textured protective coating, similar in color to the adjacent native sandstone. The girders were painted forest green.

Span Lengths: 163'-210'-210'-163'
Roadway Width: 26'
Vertical Clearance: 55'

Jurors' Comments: "The designer achieved a harmonious relationship between the substructure and the superstructure. The ratio of span length to height is good... a pleasing proportion. The structure fits the landscape well."

Whitley and Laurel Counties, Kentucky





South Fork Flathead River Bridge

PRIZE BRIDGE 1975 / MEDIUM SPAN, LOW CLEARANCE

Designer
Morrison-Maierle, Inc., Helena, Montana

Owner
U.S. Forest Service, Region 1, Missoula, Montana

General Contractor
R. Redding Construction Company, Inc., Spokane, Washington

Fabricator
McNally Mountain States Steel Co., Provo, Utah

Erector
R. Redding Construction Company, Inc., Spokane, Washington

This three-span weathering steel welded plate girder bridge with varying-depth haunches evolved from comparative studies of five alternate bridge types which the Forest Service had determined to be structurally feasible and of varying aesthetic desirability.

The consulting engineers prepared preliminary designs and cost estimates of each structure type. In addition, perspective renderings of the bridge site were prepared, in color, with each alternate design drawn on a transparent film overlay. The comparative studies covered, in addition to a plate girder system used in the final design (with minor modifications): (1) a four-span continuous T-beam concrete superstructure with varying-depth haunches, (2) a three-span continuous welded steel trapezoidal box girder superstructure, (3) a four-span continuous prestressed concrete beam superstructure with cast-in place deck, and (4) a three-span continuous cast-in-place concrete box girder superstructure. All substructures were concrete.

Span Lengths: 122'-153'-122'
Roadway Width: 30' plus 5' sidewalk
Vertical Clearance: 22.5' above low water

Jurors' Comments: "This crossing is well dimensioned, well sized to span the stream. There is a pleasing curvature to the lower flange, which blends nicely into the piers and shorelines. The slender piers offer small resistance to stream flow."

85 miles southeast of Kalispell, Montana

Laceyville Bridge

PRIZE BRIDGE 1975 / SHORT SPAN

Designer
Gannett Fleming Corddry and Carpenter, Inc., Harrisburg, Pennsylvania

Owner
Department of Transportation, Commonwealth of Pennsylvania, Harrisburg, Pennsylvania

General Contractor
Higgins Erectors & Haulers, Inc., Buffalo, New York

Fabricator
Williamsport Fabricators Inc., Williamsport, Pennsylvania

Erector
Higgins Erectors & Haulers, Inc., Buffalo, New York

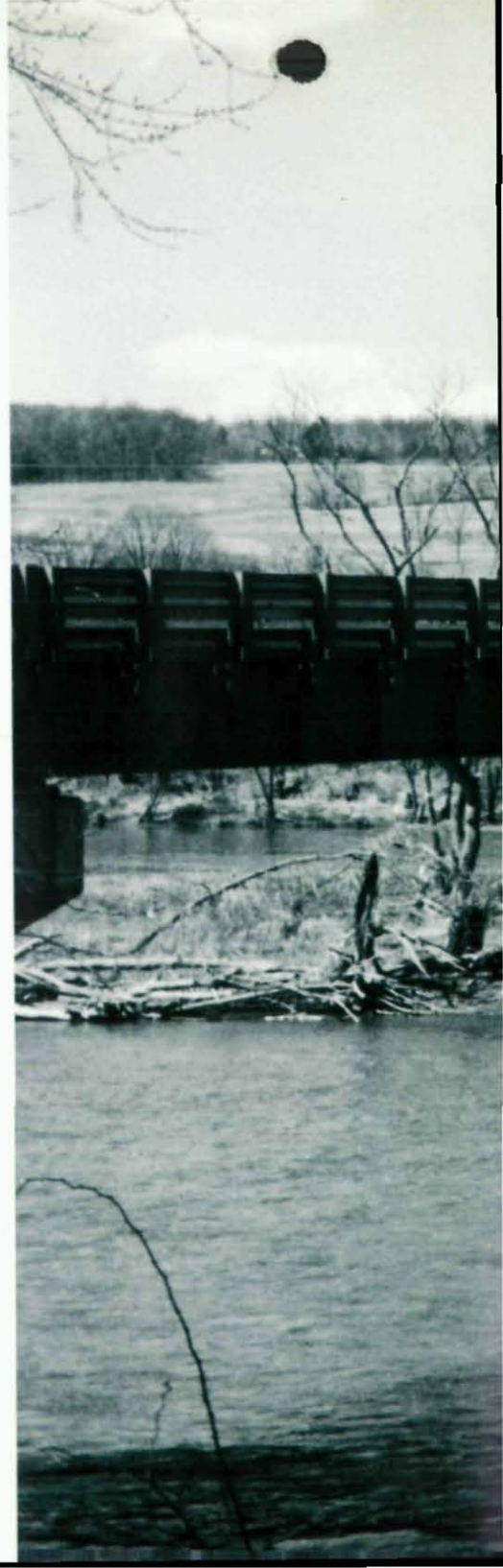
In June 1972, the destructive forces of Hurricane Agnes swept away a bridge that served as a vital link between the rural community of Laceyville and its access to jobs and commerce.

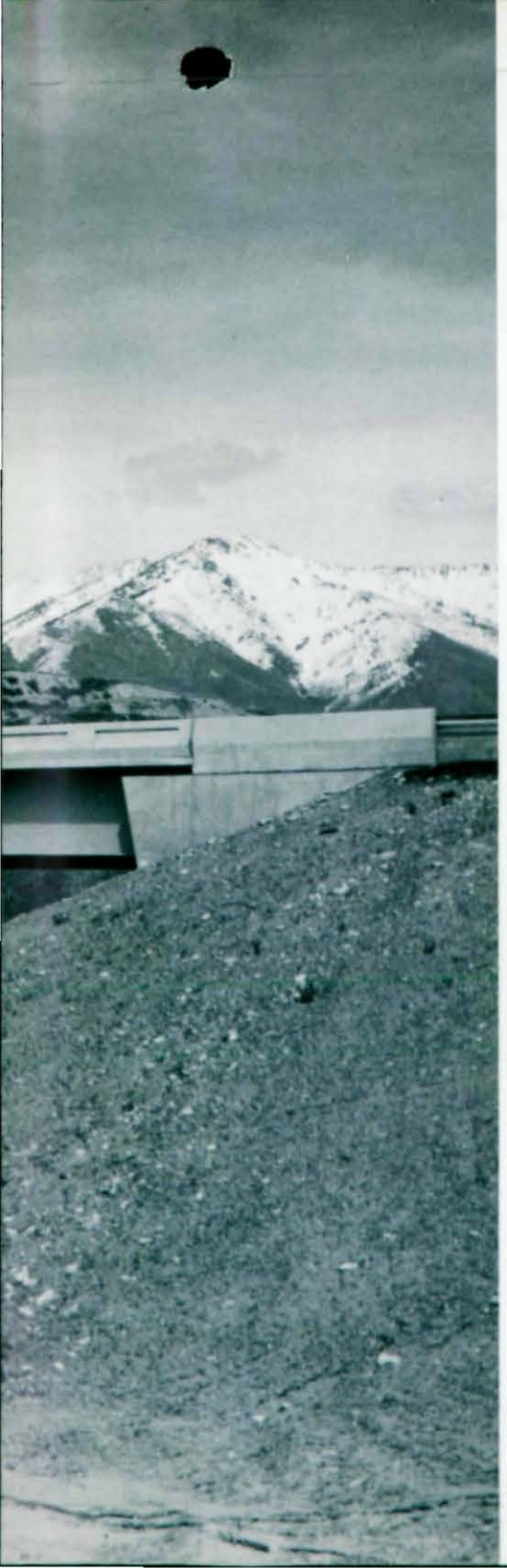
In an idyllic setting—a valley nestled between the rolling mountains of forested northeastern Pennsylvania—a new bridge was needed in the shortest possible time; yet the setting could not be disregarded. A ponderous structure could not, in good conscience, be constructed to meet the exigency of the circumstance. After several location studies, the site of the previous bridge, which provided the better approach connections to the existing roadway network, was selected.

It became apparent the superstructure that would best meet the requirements of quick construction and cost was a steel girder superstructure with an open steel grid deck, with a portion filled with concrete for pedestrians and bicycles. Although the spans were simple for quick transport and erection, the structure presents an excellent profile and is effectively integrated with the beautiful surroundings.

Span Lengths: 114.75'-8 at 115.5'-114.75'
Roadway Width: 26' plus 2' walkway
Vertical Clearance: 30' to 35'

Jurors' Comments: "There is beauty in the simplicity of this structure. It is light and airy, yet it really says steel."





South Weber Interchange

PRIZE BRIDGE 1975 / HIGHWAY GRADE SEPARATION

Designer
Utah Department of Highways, Salt Lake City, Utah

Owner
Utah State Road Commission, Salt Lake City, Utah

General Contractor
Peter Kiewit Sons' Co., Omaha, Nebraska

Fabricator
McNally Mountain States Steel Co., Provo, Utah

Erector
American Crane, Inc., Riverton, Utah

The bridge is situated in a river valley near the mouth of a canyon. It was decided that one long span in the wide median would provide a light airy appearance and provide a frame for the mountains behind without intruding.

The superstructure is designed with four welded plate girders continuous over the three spans, with cross-beams and one longitudinal stringer between each pair of girders. Erection of the steel framing required a minimum of interference with traffic on the Interstate roadway in service below.

Span Lengths: 147.5′-181.5′-147.5′
Roadway Width: 58′
Vertical Clearance: 16.5′

Jurors' Comments: "This sturdy-looking structure gives the appearance of strength without mass. Its slim appearing deck does little to obstruct the view of approaching motorists. Its piers look solid, yet not so massive as to detract from the superstructure."

Burlington Northern Bridge No. 117.35

PRIZE BRIDGE 1975 / MOVABLE SPAN

Designer
Howard Needles Tammen & Bergendoff, Kansas City, Missouri

Owner
Burlington Northern, Inc., St. Paul, Minnesota

General Contractor
American Bridge Division, United States Steel, Pittsburgh, Pennsylvania

Fabricator/Erector
American Bridge Division, United States Steel, Pittsburgh, Pennsylvania

The vertical lift span, which replaces an existing swing span structure, provides an improved navigation opening of 300 ft., with the sailing line on an 8 degree skew. The adjacent approach trusses were shortened to accommodate the increased span. Lift height is 48.9 ft.

All of the main truss members are welded H-sections. The tower columns are welded box sections braced with welded box section vierendeel struts. A588 weathering steel with A325 weathering steel bolts were used throughout the design.

The bridge is designed to be operated by remote control. The bridge tender is located in the railroad yards in Beardstown, approximately 2 miles from the bridge site. The bridge tender has complete visual coverage, both upstream and downstream, of the bridge surroundings by the use of a radar display system.

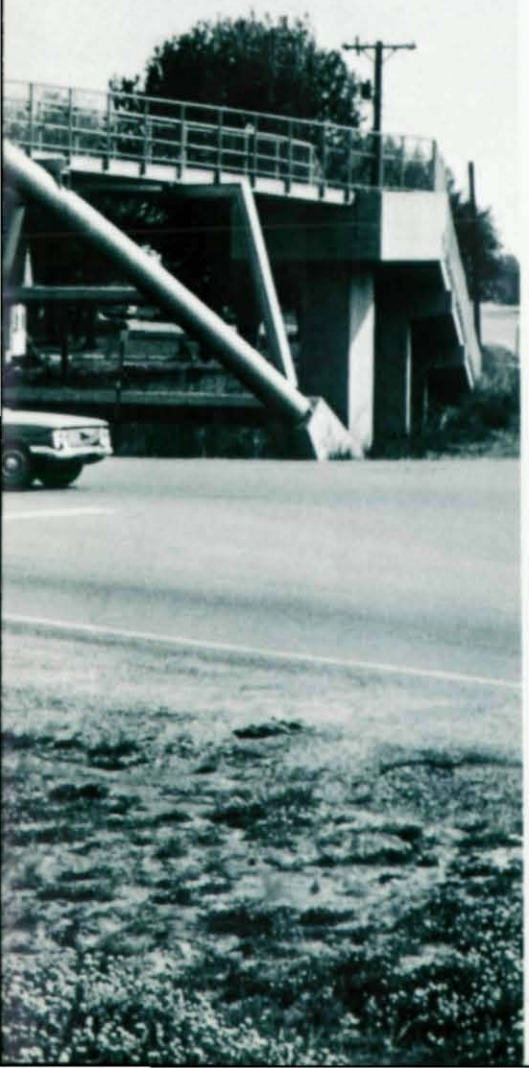
Span Length: 322'
Roadway Width: Single railway track
Vertical Clearance: 55'

Jurors' Comments: "The drive machinery atop the towers is well proportioned. Elimination of cross-bracing gives the towers a clean look. The ratio of the movable span length to that of the approach spans is good.

Beardstown, Illinois

Pedestrian Bridge over U.S. 27 at Pine Knot

PRIZE BRIDGE 1975 / SPECIAL PURPOSE



Designer
Kentucky Bureau of Highways, Division of Bridges, Frankfort, Kentucky

Owner
Department of Transportation, Commonwealth of Kentucky, Frankfort, Kentucky

General Contractor
McGregor & Neal Construction Company, Lexington, Kentucky

Fabricator
Wise Iron Works Company, Knoxville, Tennessee

Erector
Lexington Bridge and Erection Co., Lexington, Kentucky

The superstructure consists of steel pipes, heat curved to a parabolic arch shape that minimizes dead load moments. Each pipe arch was field welded, then erected completely assembled. The lateral connections were welded in place to stabilize the arches, and the hangers, floor beams, and wind bracings were field bolted.

The bridge is located on the crest of a long grade and from a distance of several miles the arches appear as a silver bow over the highway.

Span Lengths: 36'-35'-35'-160'-35'-36'
Roadway Width: 8'
Vertical Clearance: 16.5'

Jurors' Comments: "A clean, simple, and attractive design. By putting the walkway of this pedestrian crossing near the center of the arch, the designer emphasized the primary function of the structure, keeping the arch itself from dominating."

McCreary County, Kentucky

Between Paducah, Kentucky and Metropolis, Illinois

I-24 over Ohio River

AWARD OF MERIT 1975 / LONG SPAN

Designer Hazelet & Erdal, Louisville, Kentucky

Owners Department of Transportation, Commonwealth of Kentucky, Frankfort, Kentucky
Department of Transportation, State of Illinois, Springfield, Illinois

General Contractors *Superstructure:* Nashville Bridge Company, Nashville, Tennessee
Substructure: Traylor Bros., Inc., Evansville, Indiana

Fabricator/Erector Nashville Bridge Company, Nashville, Tennessee

Near Eureka, Montana

Sutton Creek Bridge

AWARD OF MERIT 1975 / MEDIUM SPAN, HIGH CLEARANCE

Designer U.S. Army Corps of Engineers, Omaha District, Omaha, Nebraska

Responsible Agency U.S. Army Corps of Engineers, Seattle District, Seattle, Washington

Owner Montana Highway Department, Helena, Montana

General Contractors Peter Kiewit Sons' Co., Omaha, Nebraska
Hensel Phelps Construction Company, Greeley, Colorado

Fabricator Fought & Company, Incorporated, Portland, Oregon

Erector Don L. Cooney, Inc., Tacoma, Washington

Pedro Avila-Cercadillo, Cayey, Puerto Rico

PR 52 Ravine Bridges [Nos. 2042 and 2043]

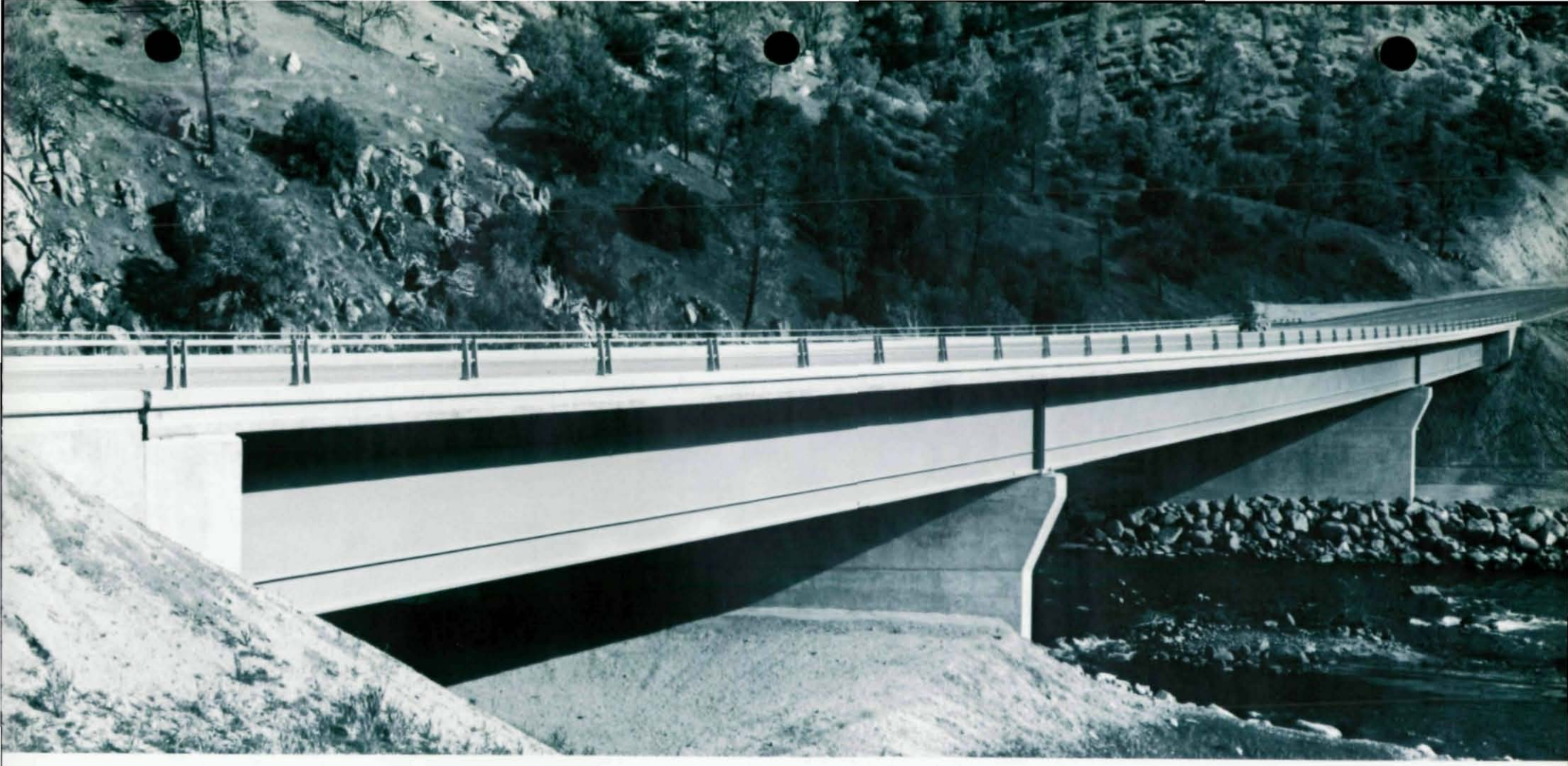
AWARD OF MERIT 1975 / MEDIUM SPAN, HIGH CLEARANCE

Designer Tippetts-Abbett-McCarthy-Stratton, New York, New York

Owner Commonwealth of Puerto Rico, Highway Authority, San Juan, Puerto Rico

General Contractor Constructora de Autopistas, Inc., Caparra Heights, Puerto Rico

Fabricator/Erector Sucesores de Abarca, Inc., San Juan, Puerto Rico



Kern County, California

Kern River Bridge

AWARD OF MERIT 1975 / MEDIUM SPAN, LOW CLEARANCE

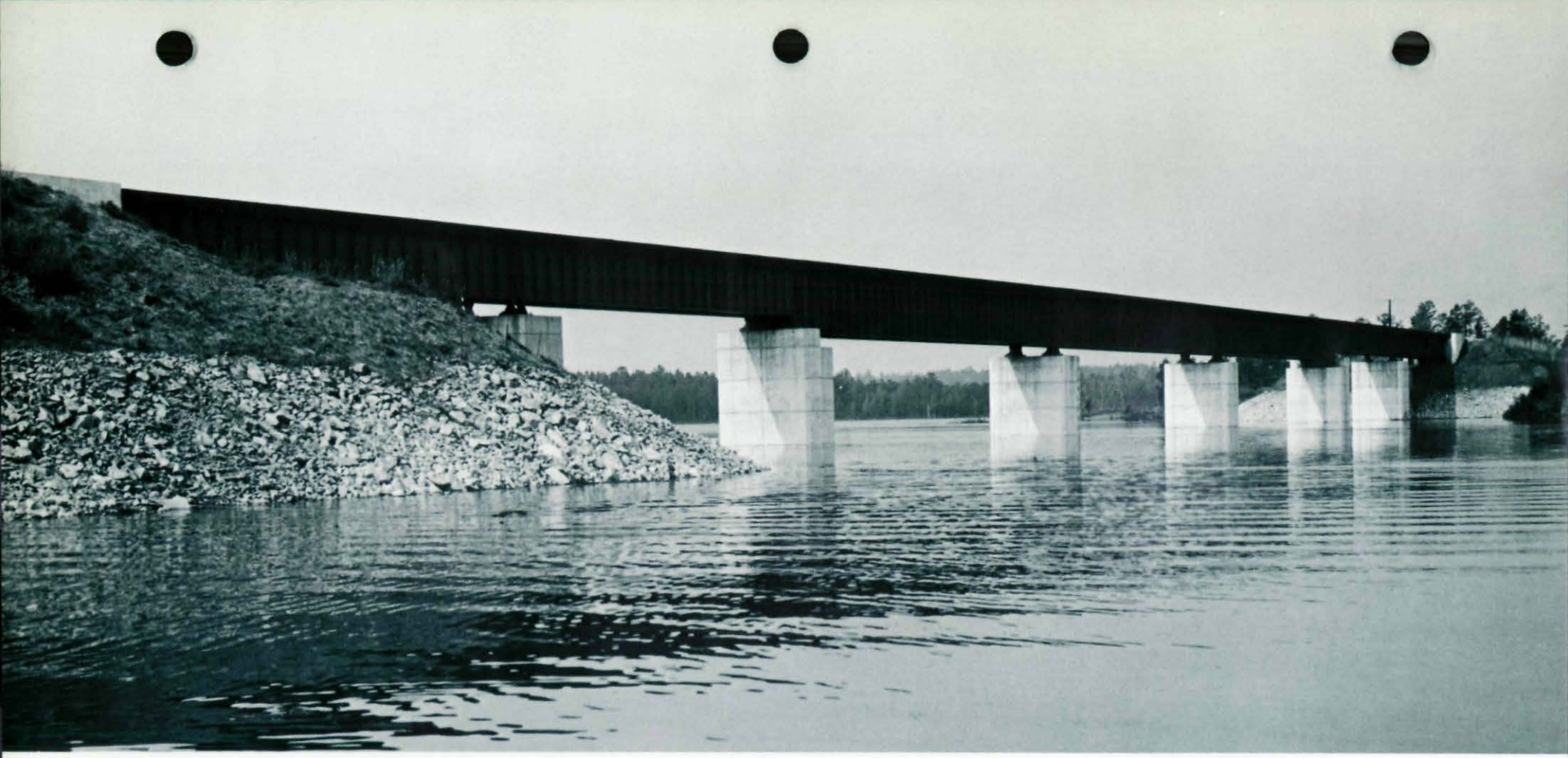
Designer CALTRANS—Division of Structures, State of California, Sacramento, California

Owner State of California, Sacramento, California

General Contractor Griffith Company, Long Beach, California

Fabricator Kaiser Steel Corporation, Fontana, California

Erector Kaiser Steel Corporation, Oakland, California



Near LaGrange, Georgia

Seaboard Coast Line R.R. Bridge over Chattahoochee River

AWARD OF MERIT 1975 / SHORT SPAN

Designer Prybylowski and Gravino, Inc., Atlanta, Georgia

Architectural Consultant U.S. Army Corps of Engineers, Savannah District, Savannah, Georgia

Owner SCL/L & N Railroad, The Family Lines System, Jacksonville, Florida

General Contractors W. H. Carder, Inc., Gould, Arkansas
Midwest Construction Company, Gould, Arkansas

Fabricator Gamble's, Inc., A Trinity Industries Company, Montgomery, Alabama

Erector Foster & Creighton Company, Nashville, Tennessee

St. Louis, Missouri

Kansas Avenue Bridge

AWARD OF MERIT 1975 / SHORT SPAN

Designer/Owner Missouri Pacific Railroad Company, St. Louis, Missouri

General Contractor St. Louis Bridge Company, St. Louis, Missouri

Fabricator Stupp Bros. Bridge & Iron Company, St. Louis, Missouri

Erector St. Louis Bridge Company, St. Louis, Missouri

Baton Rouge, Louisiana

Ramp E-2 Structure/I-10 to I-12 Connection

AWARD OF MERIT 1975 / HIGHWAY GRADE SEPARATION

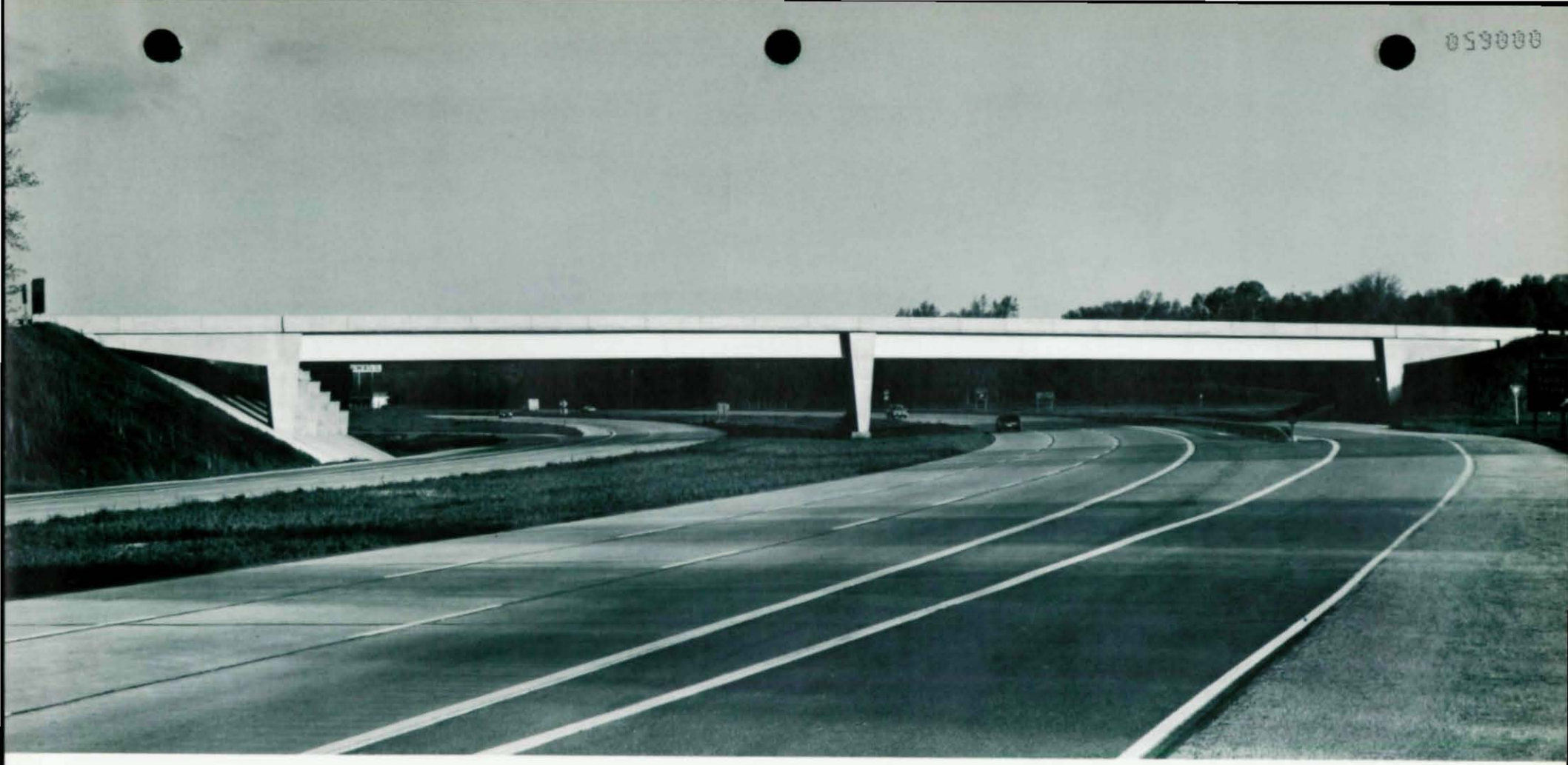
Designer Modjeski and Masters, New Orleans, Louisiana

Owner State of Louisiana, Baton Rouge, Louisiana

General Contractor Boh Brothers Construction Co., Inc., New Orleans, Louisiana

Fabricator Orleans Materials and Equipment Co., Inc., New Orleans, Louisiana

Erector Sun Erection Company, Inc., Jefferson, Louisiana



Anne Arundel County, Maryland

Sandy Point Park Road Overpass at U.S. 50

AWARD OF MERIT 1975 / HIGHWAY GRADE SEPARATION

Designer Whitman, Requardt and Associates, Baltimore, Maryland

Architectural Consultant Greiner Engineering Sciences, Inc., Baltimore, Maryland

Owner Maryland State Highway Administration, Baltimore, Maryland

General Contractor Williams Construction Company, Inc., Baltimore, Maryland

Fabricator/Erector High Steel Structures, Inc., Lancaster, Pennsylvania

Philadelphia, Pennsylvania

City Avenue Pedestrian Bridge

AWARD OF MERIT 1975 / SPECIAL PURPOSE

Designer/Owner Department of Transportation, Commonwealth of Pennsylvania, Harrisburg, Pennsylvania

General Contractor Miller & Brown Construction Company, Inc., Center Square, Pennsylvania

Fabricator Cumberland Bridge Company, Camp Hill, Pennsylvania

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

Madeira Beach, Florida

Madeira Beach Pedestrian Overpass

AWARD OF MERIT 1975 / SPECIAL PURPOSE

Designer/Owner Florida Department of Transportation, Tallahassee, Florida

General Contractor Scott Industries, Inc., Sarasota, Florida

Fabricator Bristol Steel & Iron Works, Inc., Bristol, Va.

Erector Scott Industries, Inc., Sarasota, Florida

AWARD OF MERIT BRIDGE DATA

Pg. 18
I-24 Over Ohio River

Span Lengths: 3 at 200', 1 at 630', 8 at 300', 1 at 730', 6 at 200'
Roadway Widths: 2 at 30'
Vertical Clearance: 75.5'

Pg. 19
Sutton Creek Bridge

Span Lengths: 175'-227.5'-175'
Roadway Width: 37.5'
Vertical Clearance: 181'

Pg. 20
PR 52 Ravine Bridges (Nos. 2042 and 2043)

Span Lengths: 99.5'-161'-99.5'
Roadway Widths: 2 at 42'
Vertical Clearance: 52.5'

Pg. 21
Kern River Bridge

Span Lengths: 102'-200'-102'
Roadway Width: 60'
Vertical Clearance: 30'

Pg. 22
Seaboard Coast Line R.R. Bridge

Span Lengths: 85.1'-83.4'-3 at 120'-83.4'-85.1'
Roadway Width: 12' to guardrail, 8' c. to c. girders
Vertical Clearance: 16'

Pg. 23
Kansas Avenue Bridge

Span Length: 90'
Roadway Width: 24' plus 2 sidewalks at 5'
Vertical Clearance: 19.3'

Pg. 24
Ramp E-2 Structure/1-10 to 1-12 Connection

Span Lengths: 70'-110'-142'-126'-3 at 124'-131'-117'-155'-100'-60'
Roadway Width: 25'
Vertical Clearance: 16.5'

Pg. 25
Sandy Point Park Road Overpass

Span Lengths: 179'-152'
Roadway Width: 60'
Vertical Clearance: 16.3'

Pg. 26
City Avenue Pedestrian Bridge

Span Lengths: 30'-110'-30'
Roadway Width: 7'
Vertical Clearance: 15.5'

Pg. 27
Madeira Beach Pedestrian Overpass

Span Length: 174.5'
Roadway Width: 8'
Vertical Clearance: 16.2'

American Institute of Steel Construction
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