Prize Bridges/1978

Prize Bridges/1978

Steel bridges selected in the national competition conducted by the American Institute of Steel Construction as the most beautiful bridges opened to traffic in 1976/1977.

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

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.

JURY OF AWARDS

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

SIDNEY L. POLEYNARD, F.ASCE
Deputy Assistant Secretary, Office of Highways, Louisiana Department of Transportation and Development, Baton Rouge, Louisiana

ROBERT C. WEST, F.ASCE
Chairman and President, Sverdrup Corporation, St. Louis, Missouri

CARL E. THUNMAN, JR.
Engineer of Bridge and Traffic Structures, Illinois Department of Transportation, Springfield, Illinois

WALTER E. BLESSEY, F.ASCE
President, ASCE, Professor, Civil Engineering and Head of Civil Engineering Department, Tulane University, New Orleans, Louisiana

WILLIAM ZUK, F.ASCE
Professor of Architecture and Director, Architectural Technology, School of Architecture, University of Virginia, Charlottesville, Virginia

Archie Stevenot Bridge

PRIZE BRIDGE 1978 / LONG SPAN

Designer
California Department of Transportation, Office of Structures Design, Sacramento, California

Owner
State of California, Department of Transportation, Sacramento, California

General Contractor
Hensel Phelps Construction Company, Burlingame, California

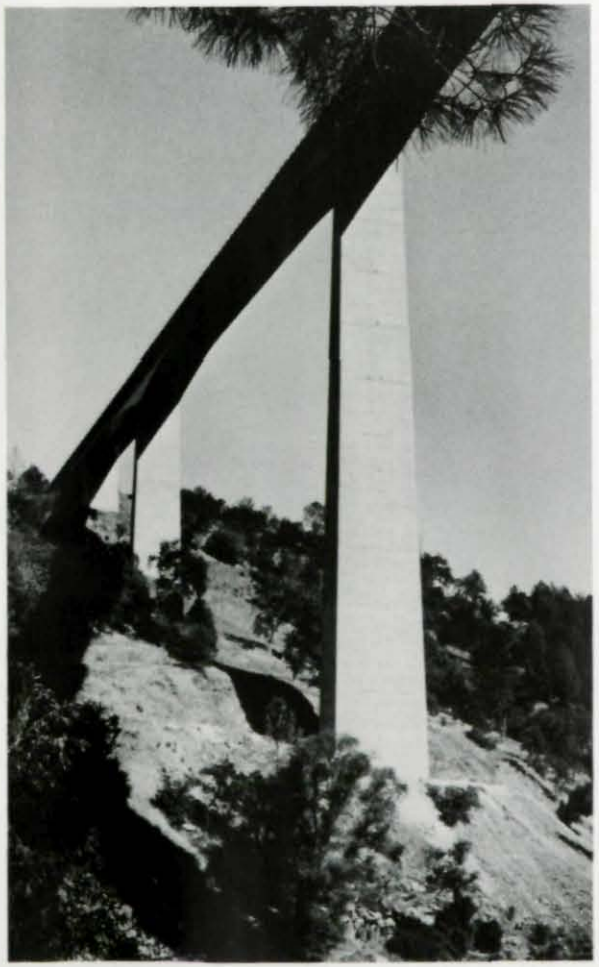
Fabricator/Erector
Kaiser Steel Corporation, Oakland, California

The Archie Stevenot Bridge is a twin composite-welded box girder bridge. The present 42' wide structure is designed for an ultimate 66' wide deck. The site, a steep, rocky canyon, required high piers and six spans: 1 at 200'–2 at 250'–2 at 500'–1 at 550'. Maximum depth at the haunches is 26'.

The bridge, named after "Mr. Mother Lode" of California's gold country, replaces about three miles of winding Route 49, the Golden Chain Highway, which will be inundated by the New Melones Reservoir.

Seven of nine bidders chose the winning steel box girder design over a similar non-steel alternate.

Jurors' Comments: This suggests the handsome bridges found in the Swiss Alps... very graceful with the mass and the strength where the higher stresses are. The use of big steel box girders adds to its attractive appearance, especially from the under-view.



State Route 49,
Near Sonora, California

Polk Creek Bridges

PRIZE BRIDGE 1978 / MEDIUM SPAN, HIGH CLEARANCE

Designer
Staff Bridge Design, Colorado Division of Highways, Denver, Colorado

Architectural Consultants
Taliesin Associated Architects of Frank Lloyd Wright Foundation, Taliesin West, Scottsdale, Arizona
Oliver and Hellgren, Denver, Colorado

Owner
Colorado Division of Highways, Denver, Colorado

General Contractor
Centric Corporation, Denver, Colorado

Fabricator
The Midwest Steel and Iron Works Co., Denver, Colorado

Erector
Centric Corporation, Denver, Colorado

The Polk Creek Bridges form part of an Interstate highway approach to a pass over the Continental Divide. The mountain terrain is heavily forested, with pine, fir and aspen on the lower slopes, and willows and grasses at higher elevations. Rock outcroppings are red sandstone.

The bridges cross a relatively small stream, and short structures with long, high approach fills could have been used. However, the consulting architect and the Division of Highways agreed that longer spans would avoid construction damage that would be difficult to repair at this high altitude, and would help the structures to harmonize with the mountain environment. Other goals that were achieved include avoiding stream encroachment, and providing a generous open space beneath the bridges to encourage the growth of natural vegetation and accommodate hikers, skiers, and wildlife.

The final bridge design was selected through an alternate bidding process. The successful steel alternate consists of two welded box girders, with sloping webs. Made of A588 weathering steel, the gently curving girder blends with the landscape in form and color, while assuring minimum maintenance.

Spans are 155'–208'–208'–155'; vertical clearance is 45'; roadway width is 38'.

Jurors' Comments: From a distance, the line of the railing blends in very well with the lines of the trapezoidal box girder and with the curvature of the deck surface...Weathering steel is certainly the right choice for use in this environment and it harmonizes beautifully with the great scenery of Colorado.

Interstate 70,
Eagle County, Colorado

Wilder Gulch Bridge

PRIZE BRIDGE 1978 / MEDIUM SPAN, LOW CLEARANCE

Designer
Meheen Corporation, Lakewood, Colorado

Architectural Consultants
Taliesin Associated Architects of Frank Lloyd Wright Foundation
Taliesin West, Scottsdale, Arizona
Oliver and Hellgren, Denver, Colorado

Owner
Colorado Division of Highways, Denver, Colorado

General Contractor
Colorado Constructors Division, Green Construction Company, Denver, Colorado

Fabricator
Burkhardt Steel Company, Denver, Colorado

Erector
Colorado Constructors Division, Green Construction Company, Denver, Colorado

Like the Polk Creek Bridges, the Wilder Gulch Bridge displays the clean, decisive lines of A588 weathering steel box girders at a remote stream, as part of the I-70 crossing of Colorado's Vail Pass. Major differences are seen in the absence of curves, design of the end abutments, and the overall landscape scene, with which this bridge blends successfully. Again, the steel design achieved both a highly cost-competitive bridge and an ideal response to the natural environment.

Span lengths are 30'–160'–30'; vertical clearance is 18'; roadway width is 38'.

Jurors' Comments: The designer has used coloring in his concrete to match the color of the neighboring landscape and has the horizontal lines on the upper railing matching those of the trapezoidal girder. Well proportioned... an artist could not have painted a better picture.

Interstate 70,
Summit County, Colorado

Pine Road Bridge over Pennypack Creek

PRIZE BRIDGE 1978 / SHORT SPAN

Designer/Owner
City of Philadelphia, Department of Streets, Philadelphia, Pennsylvania

General Contractor
Tel-Stock, Inc., Washington Crossing, Pennsylvania

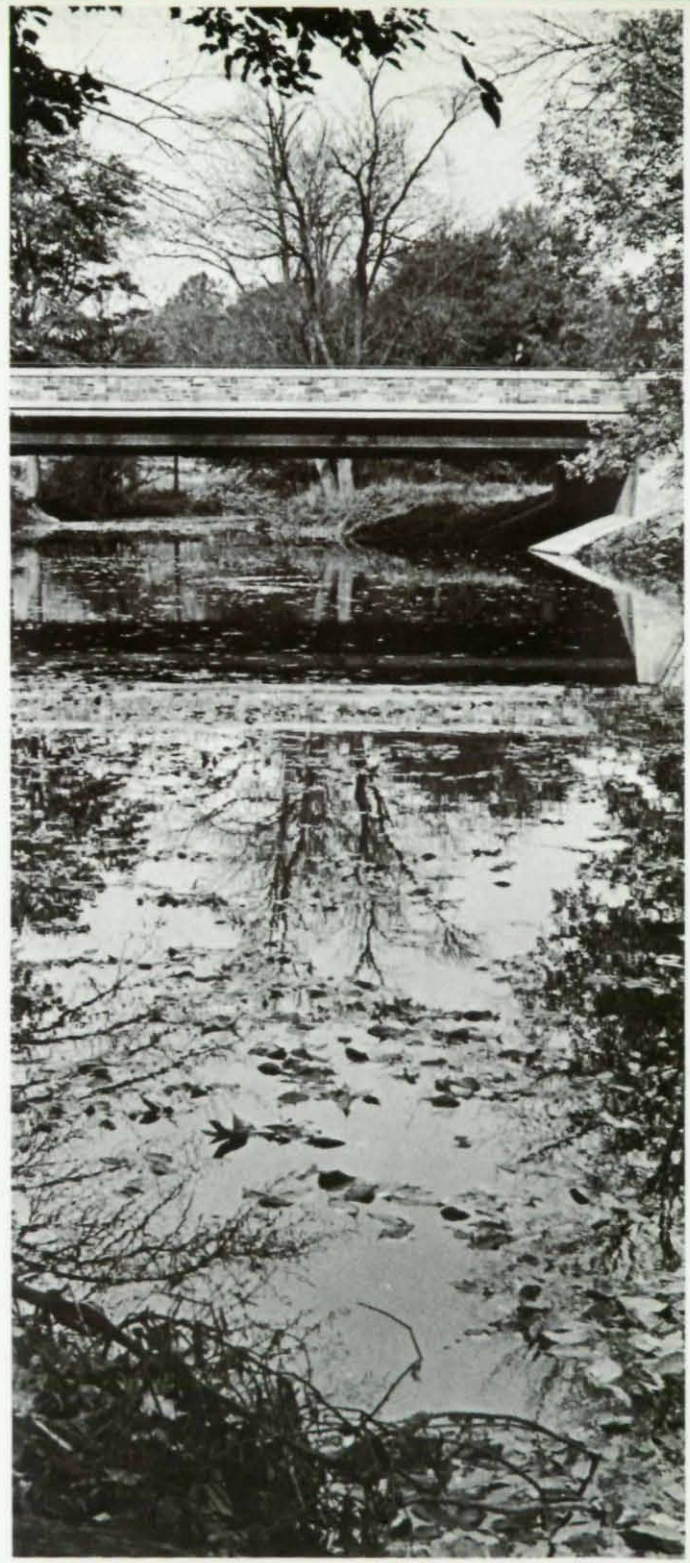
Fabricator
Williamsport Fabricators, Inc., Williamsport, Pennsylvania

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

A departure from the usual bare, undecorated look of weathering steel, local field stone veneer and concrete trim are added here in response to the Pine Road Bridge's romantic, wooded site near a heavily used Philadelphia picnic area. In doing so it seems to follow "post-modern" architecture's new acceptance of ornament, and the symbolism of a specific place. At the same time, there is a clear delineation between the single 80' steel span and what is obviously and intentionally the veneer of the wingwalls and parapets. The concrete abutments anchor the span visually as well as in fact.

The bridge provides a 44' roadway and 14' of vertical clearance.

Jurors' Comments: This is a beautiful and interesting use of natural stone to key into the environment. The stone... looks real and natural. It is not faked.



Jurors' Comments: The treatment of the wing walls at the abutments is very neatly done... The clean horizontal lines really emphasize the structure and produce harmony. The designer... has even avoided posts in the hand railing.

US 395, North of Reno, Nevada

Cold Springs Interchange Bridge

PRIZE BRIDGE 1978 / GRADE SEPARATION

Designer
Richard M. Morris, Principal Designer, Nevada State Highway Department, Carson City, Nevada

Owner
Nevada State Highway Department, Carson City, Nevada

General Contractor
Robert L. Helms Construction Company, Sparks, Nevada

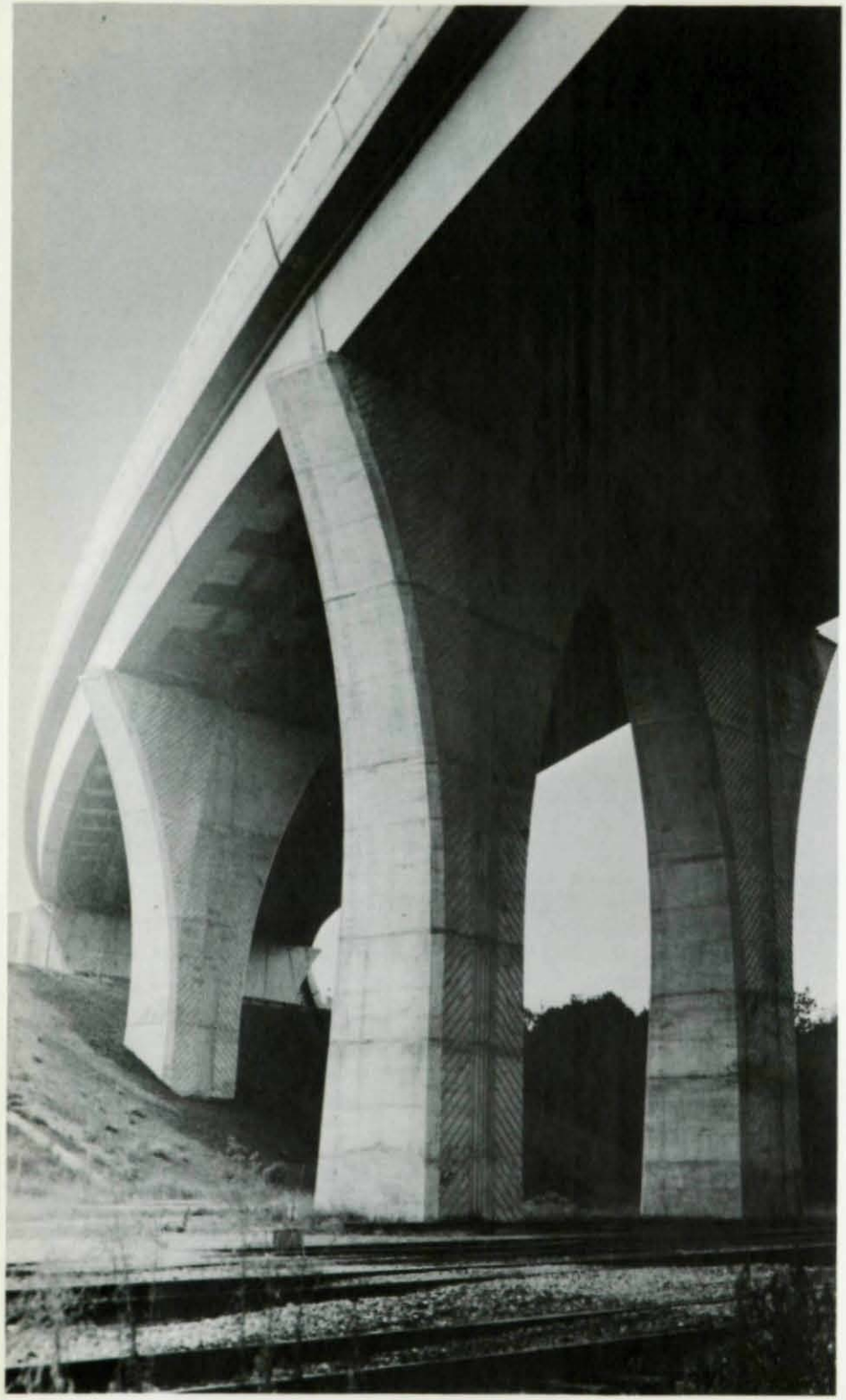
Fabricator/Erector
Utah Pacific Steel Company, Provo, Utah

Visual quality in a scenic location and construction safety above a busy highway were two goals met by composite designed steel plate girders at the Cold Springs Interchange.

Fine surface finished concrete, combined with decorative exposed aggregate to reduce the visual mass of the piers, compliments the clean lines of the cambered superstructure. White painted steel next to white concrete heightens the flowing look of the girders, which provide a pleasant contrast to the rugged Sierra Nevada Mountains.

Since it was necessary to maintain traffic below the structure during much of construction, steel provided a major plus by eliminating the need for falsework. By maintaining normal roadway width below, a high accident potential was avoided, while construction time was reduced.

Spans are 2 at 148'; vertical clearance is 16.7'; roadway widths are 36'.



Martin Luther King, Jr. Memorial Bridge

PRIZE BRIDGE 1978 / ELEVATED HIGHWAYS OR VIADUCTS

Designer
Parsons, Brinckerhoff, Quade & Douglas, New York, New York

Owner
City of Richmond, Richmond, Virginia

General Contractor
Central Contracting Company, Inc., Farmville, Virginia

Fabricator
Atlas Machine and Iron Works, Inc., Gainesville, Virginia

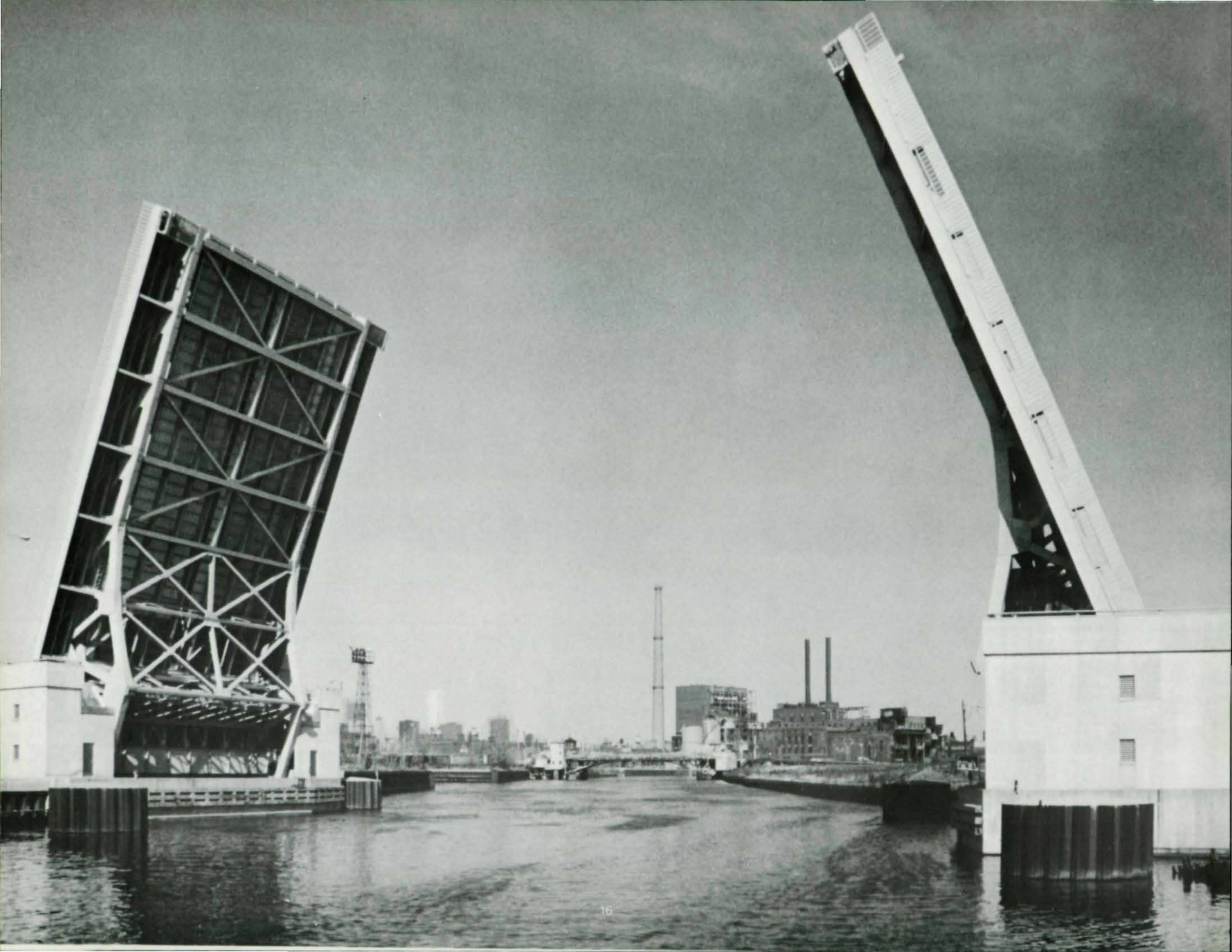
Erector
Cornell and Co., Inc., Woodbury, New Jersey

The superstructure for this long, curving viaduct consists of a reinforced concrete deck slab cast on a steel girder, stringer and floorbeam system. The main supporting elements are the 10' deep welded steel trapezoidal box girders, two for each roadway. This system was chosen because of its clean lines, lower maintenance requirements, inherent torsional strength for the curved alignment, and its suitability for the span lengths selected.

In addition, the girders allowed erection with a minimum of falsework, assuring no disruption to the highway and rail lines below.

Total length, abutment to abutment, is 2,142'. The viaduct's 11 spans vary from 282' to 140'. Maximum vertical clearance is 88' and roadway width is 111.2'.

Jurors' Comments: Truncated piers ... have striations which add texture and interest. The bridge is particularly handsome from underneath and enhances a generally disorderly setting.



Loomis Street Drawbridge

PRIZE BRIDGE 1978 / MOVABLE SPAN

Designer City of Chicago, Department of Public Works, Bureau of Engineering, Chicago, Illinois

Consultant City of Chicago, Department of Public Works, Bureau of Engineering, Chicago, Illinois

Owner City of Chicago, Chicago, Illinois

General Contractor Paschen Contractors, Inc., Chicago, Illinois

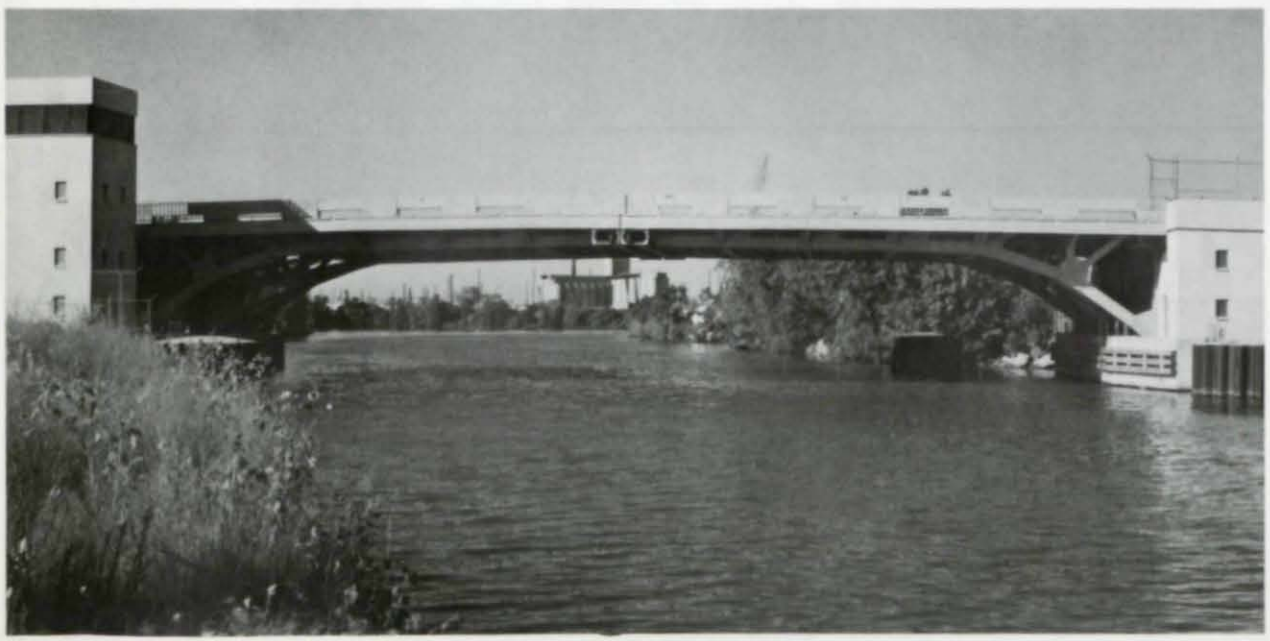
Fabricator/Erector American Bridge Division, United States Steel, Pittsburgh, Pennsylvania

The Loomis Street trunnion type drawbridge was built to replace an inadequate, 70-year old rolling lift bridge.

Primary requirements for the new bridge were a roadway with two 12' lanes in each direction; an increased underclearance to allow the passage of barge traffic, thereby reducing the number of required lifts; and a straight north approach roadway to replace a dangerous S-curve.

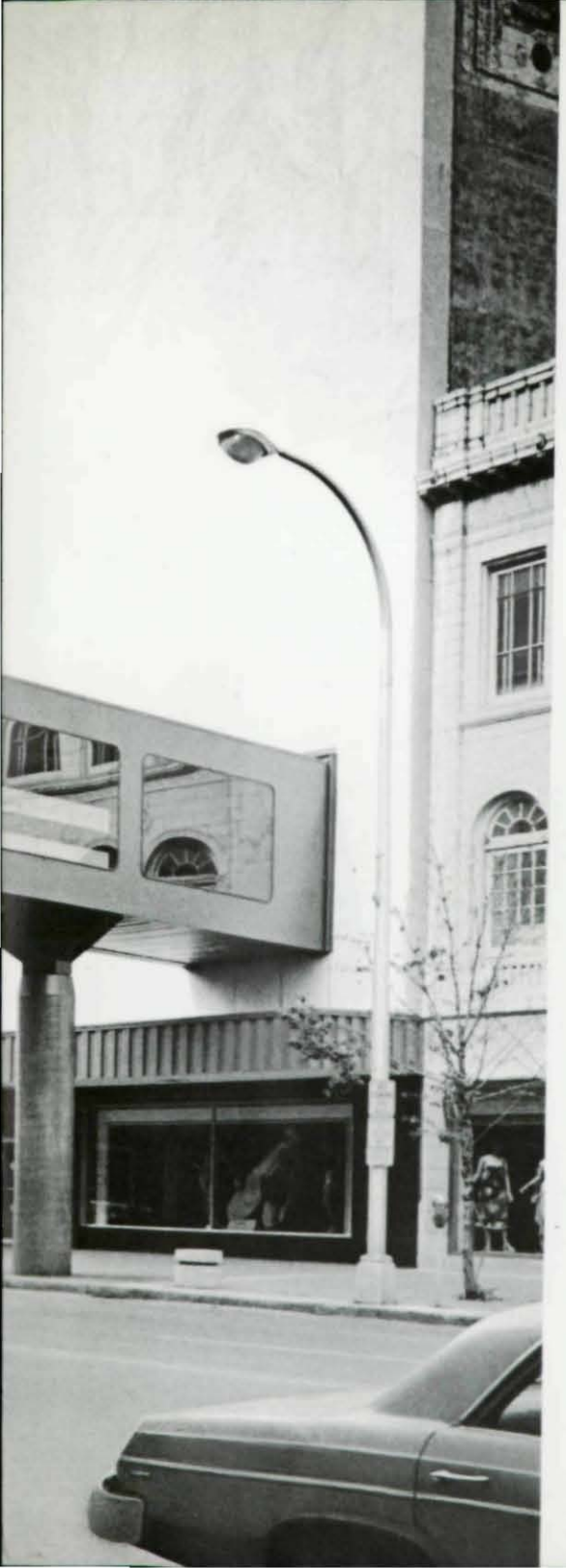
The new bridge is 74' wide, with 50' roadway width between curbs. Underclearance was increased to 21' by raising the bridge elevation and utilizing approach viaduct structures. The alignment was corrected by the use of a longer river span.

Span length is 213' c. to c. of trunnions. The bridge trusses project above the roadway, providing a sturdy and unobtrusive barrier at the sidewalks and at the same time allowing more clearance for boats passing below. Erection of each leaf was simplified by the shop fabrication and shipment of each truss as two units, and of the counterweight box as a single piece.



Jurors' Comments: The protective fender system... is outstandingly successful... a judicious use of steel as a structurally sound and aesthetically pleasing material.

Chicago, Illinois



Salina Street Bridges

PRIZE BRIDGE 1978 / SPECIAL PURPOSE

Designer
Schleicher-Soper Architects, AIA, Syracuse, New York

Owner
City of Syracuse, Syracuse, New York

General Contractor
Northeast Construction Managers Corporation, Syracuse, New York

Fabricator
Smith and Caffrey Steel Corp., Liverpool, New York

Erector
Onondaga Steel Erectors, Inc., Otisco, New York

This enclosed overpass forms part of a pedestrian skyway system designed to make downtown Syracuse more competitive with suburban malls.

A space frame that derives no support from adjacent buildings, the structure consists of two continuous, double cantilever Vierendeel girders, clad with ¼" steel plate on the exterior and exposed on the interior. The Vierendeel girders are supported by concrete-filled steel box beams rigidly attached to the 16' high concrete piers, 64' on center.

The vertical members of the girders form rigid frames in the lateral direction in conjunction with the roof beams. Lateral loads of the superstructure are transferred to the substructure of the bridge through the deck, acting as a diaphragm.

Fabrication was complicated by the skewed, sloped crossing combined with the structure's parabolically arched section.

Jurors' Comments: The Salina Street Overpass is almost the ultimate in simplicity, using a Vierendeel configuration. The skin and fenestration are handled well... the joints are beautifully executed.

L&N Railroad Bridge over Briley Parkway

PRIZE BRIDGE 1978 / RAILROAD

Designer Clarke and Rapuano, Inc., New York, New York

Owner State of Tennessee, Department of Transportation, Nashville, Tennessee

General Contractor Oman Construction Co., Nashville, Tennessee

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

Erector Metler Crane and Erection Service, Knoxville, Tennessee

This railroad structure, the first to be recognized in a new prize category, uses steel to achieve unusual grace and simplicity in a prominent location on one of Nashville's most heavily travelled expressways.

A multi-girder cross section, coupled with tapered end spans, complements carefully designed piers and railings to create a light appearance. The use of a brown silica chromate top coat, with textured coated beige concrete, helps the structure blend with its surroundings.

Eight simple span welded girders support a 37' wide, noncomposite concrete deck. Spans are 34'–2 at 102'–45'.

Jurors' Comments: Increased attention should be focused on the aesthetics of railroad bridges. This bridge shows an obvious concern... The designer is to be complimented on his attempt to keep vertical lines throughout the structure.

Nashville, Tennessee

Rapp's Bridge

PRIZE BRIDGE 1978 / RECONSTRUCTED

Designer
PennDOT, District 6-0, St. Davids, Pennsylvania

Owner
PennDOT, Harrisburg, Pennsylvania

General Contractor
Bear Creek Construction Co., Landisville, Pennsylvania

Fabricator
Cumberland Bridge Company, Camp Hill, Pennsylvania

Erector
Bear Creek Construction Co., Landisville, Pennsylvania

This wooden covered bridge, with a clear span of 100', was built with a Burr bowstring truss in 1866.

In recent times the bridge was in fair condition and posted for a weight limit of four tons, but repeated overloads by heavy construction equipment nearly collapsed the structure.

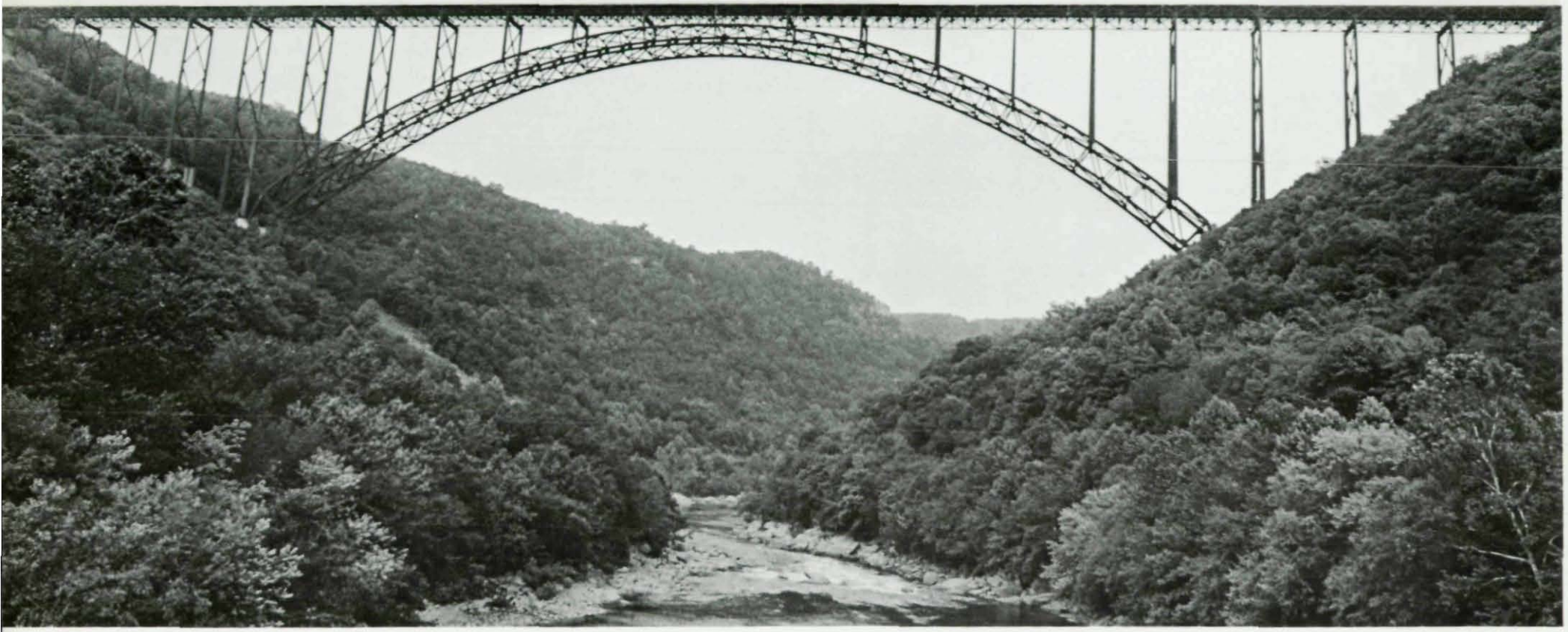
With rehabilitation seen as the best way to save time and money, as well as to preserve a historically significant structure, a system of four wide-flange stringers in A588 high strength weathering steel was chosen, both to save weight and to provide a no-maintenance finish that would look good next to the old wood members.

The new superstructure was designed to provide bracing for the wood trusses while transmitting minimal live load forces.

Replacement of rotted wood members, roofing, siding, and moldings completed the rehabilitation.

Jurors' Comments: The steel is concealed, but it certainly serves a vital function... This is an instance where steel makes a contribution in preserving a little of American history.

East Pikeland Township, Pennsylvania



Fayetteville, West Virginia
Span Lengths: 5 at 126'–1700'–4 at 143'

New River Gorge Bridge

AWARD OF MERIT 1978 / LONG SPAN

Designer Michael Baker, Jr., Inc., Beaver, Pennsylvania

Owner West Virginia Department of Highways, Charleston, West Virginia

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

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

Francis Scott Key Bridge

AWARD OF MERIT 1978 / LONG SPAN

Designers Greiner Engineering Sciences, Inc., Baltimore, Maryland
Singstad Kehart, November & Hurka, Baltimore, Maryland
Baltimore Transportation Associates, Linthicum Heights, Maryland

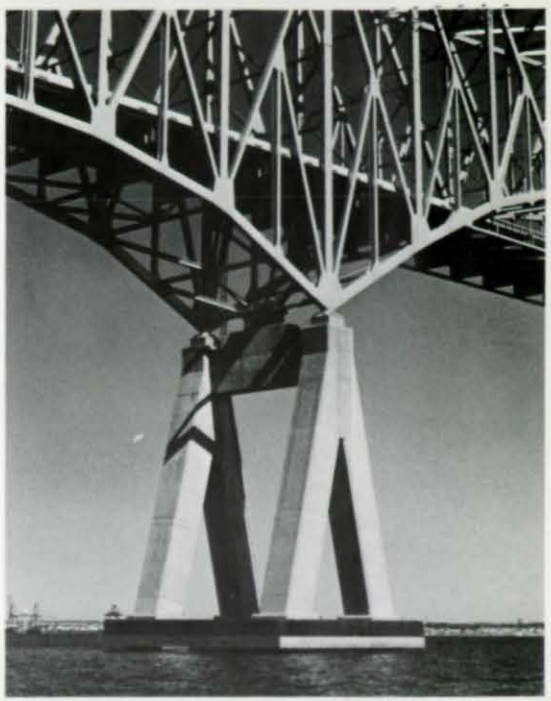
Engineering Consultant Greiner Engineering Sciences, Inc., Baltimore, Maryland

Owner Maryland Transportation Authority, Toll Facilities Administration, Dundalk, Maryland

General Contractor Pittsburgh-Des Moines Steel Company, Pittsburgh, Pennsylvania

Fabricator Pittsburgh-Des Moines Steel Company, Pittsburgh, Pennsylvania

Erector John F. Beasley Construction Company, Dallas, Texas



Baltimore, Maryland
Span Lengths: 25 at 150'-9 at 300'-720'-1200'-720'

New Milford, Connecticut
Span Lengths: 50'-240'-50'

Lover's Leap Bridge

AWARD OF MERIT 1978 / MEDIUM SPAN, HIGH CLEARANCE

Designer C.D.O.T. Bridge Design Unit, Wethersfield, Connecticut

Owner Town of New Milford, New Milford, Connecticut

General Contractor The Brunalli Construction Co., Southington, Connecticut

Fabricator West End Iron Works, Inc., Cambridge, Massachusetts

Erector The Brunalli Construction Co., Southington, Connecticut

Lexington, Virginia
Span Lengths: 182.7'–2 at 240'–182.7'

Maury River Bridges

AWARD OF MERIT 1978 / MEDIUM SPAN, HIGH CLEARANCE

Designer Knoerle, Bender, Stone and Associates, Inc., A Division of Environdyne Engineers, Baltimore, Maryland

Owner Virginia Department of Highways and Transportation, Richmond, Virginia

General Contractor Crowder Construction Company, Charlotte, North Carolina

Fabricator Carolina Steel Corporation, Greensboro, North Carolina

Erector Southern Contractors Service, Incorporated, Columbia, South Carolina

Sitting Bull Bridge

AWARD OF MERIT 1978 / MEDIUM SPAN, LOW CLEARANCE

Designer Bridge Division, North Dakota State Highway Department, Bismarck, North Dakota

Owner State of North Dakota, Bismarck, North Dakota

General Contractor James J. Igoe and Sons Construction Company, Bismarck, North Dakota

Fabricator Egger Steel Company, Sioux Falls, South Dakota

Erector James J. Igoe and Sons Construction Company, Bismarck, North Dakota

Mandan, North Dakota
Span Lengths: 50'–150'–50'

I-70 Bridge over Smith Gulch

AWARD OF MERIT 1978 / SHORT SPAN

Designer Meheen Corporation, Lakewood, Colorado

Architectural Consultant Taliesin Associated Architects of the Frank Lloyd Wright Foundation, Taliesin West, Scottsdale, Arizona

Owner Colorado Department of Highways, Denver, Colorado

General Contractor Green Construction Company, Denver, Colorado

Fabricator Burkhardt Steel Company, Denver, Colorado

Erector Green Construction Company, Denver, Colorado

Vail Pass, Colorado
Span Lengths: 2 at 120'

Airline Highway Interchange

AWARD OF MERIT 1978 / GRADE SEPARATION

Designer Modjeski and Masters, New Orleans, Louisiana

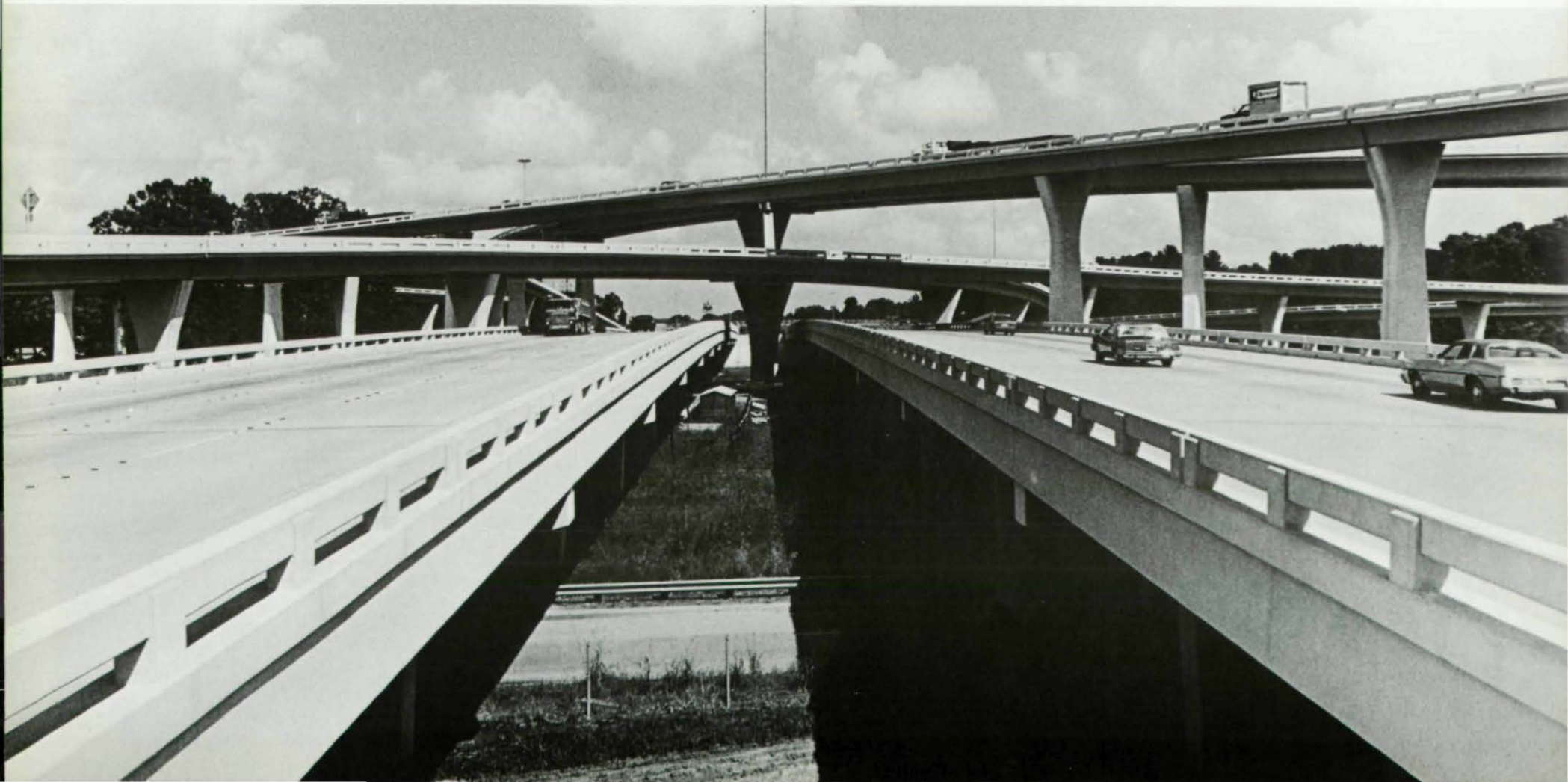
Owner State of Louisiana, Department of Transportation & Development, Baton Rouge, Louisiana

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

Fabricator Mississippi Valley Structural Steel Co., St. Louis, Missouri

Erector Sun Erection Co., Inc., Harahan, Louisiana

Baton Rouge, Louisiana
Span Lengths: Varied–140' maximum



Nashua, New Hampshire
Span Length: 172'

Mine Falls Park Pedestrian Bridge

AWARD OF MERIT 1978 / SPECIAL PURPOSE

Designer Smith & Hamilton, Inc., Nashua, New Hampshire

Consultant Andrews & Clark, New York, New York

Owner Park-Recreation Commission, City of Nashua, Nashua, New Hampshire

General Contractor Shoals Corporation, Eliot, Maine

Fabricator Bancroft & Martin, Inc., South Portland, Maine

Erector Shoals Corporation, Eliot, Maine

Fridley, Minnesota
Span Length: 10'

Manomin Park Bridge

AWARD OF MERIT 1978 / SPECIAL PURPOSE

Designer DeBourgh Manufacturing Company, Minneapolis, Minnesota

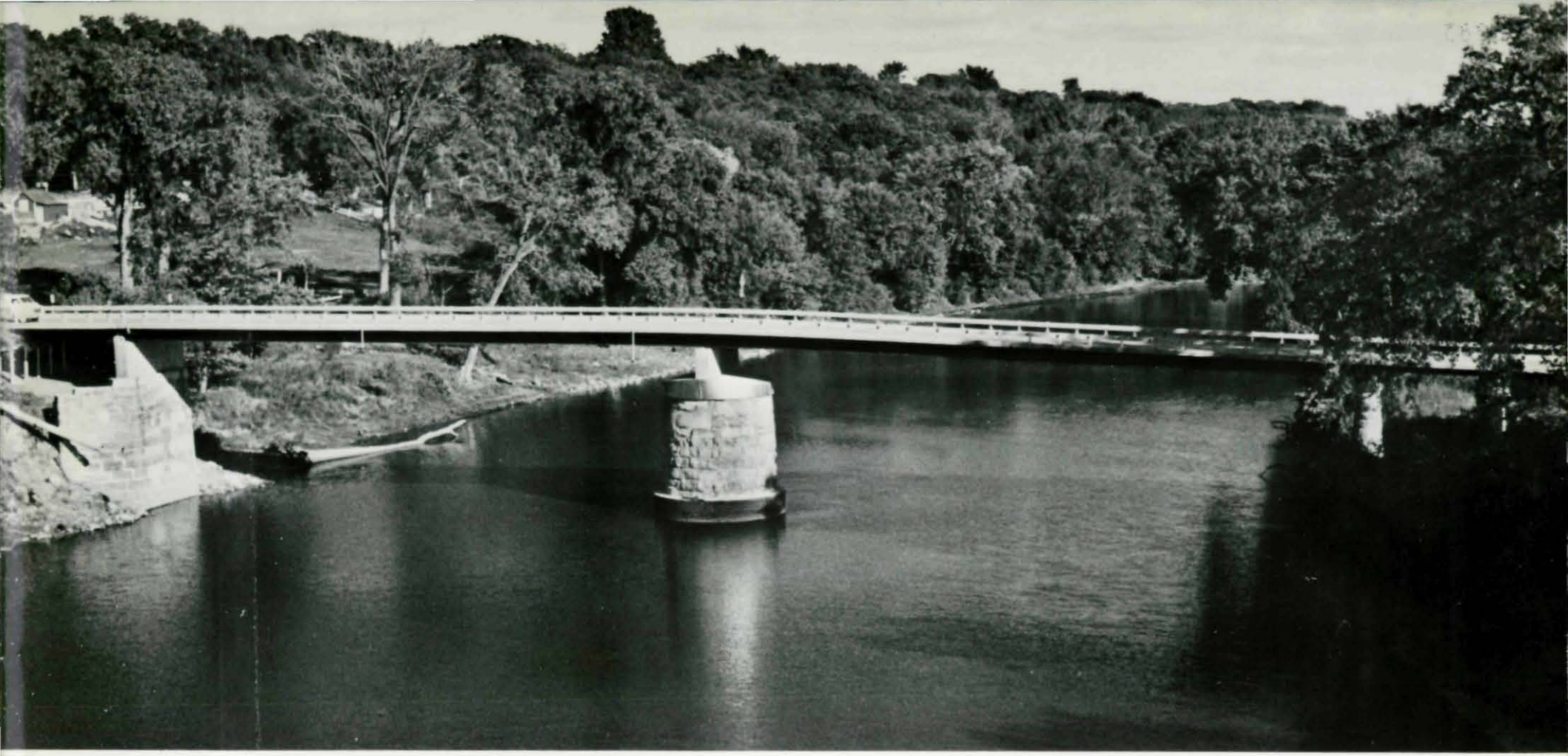
Consultant Dunham Associates, Minneapolis, Minnesota

Owner Anoka County Park Systems, Anoka, Minnesota

General Contractor Anoka County Park Systems, Anoka, Minnesota

Fabricator DeBourgh Manufacturing Company, Minneapolis, Minnesota

Erector Anoka County Park Systems, Anoka, Minnesota



CSAH 18 at the Hennepin County–Scott County line
Span Lengths: 3 at 25'–2 at 137'–3 at 30'

Bloomington Ferry Replacement Bridge

AWARD OF MERIT 1978 / RECONSTRUCTED

Designer Howard Needles Tammen & Bergendoff, Minneapolis, Minnesota

Owner Hennepin County, Hopkins, Minnesota, Scott County, Shakopee, Minnesota

General Contractor Johnson Bros. Corporation, Blaine, Minnesota

Fabricator Saint Paul Structural Steel Co., St. Paul, Minnesota

Erector Johnson Bros. Corporation, Litchfield, Minnesota