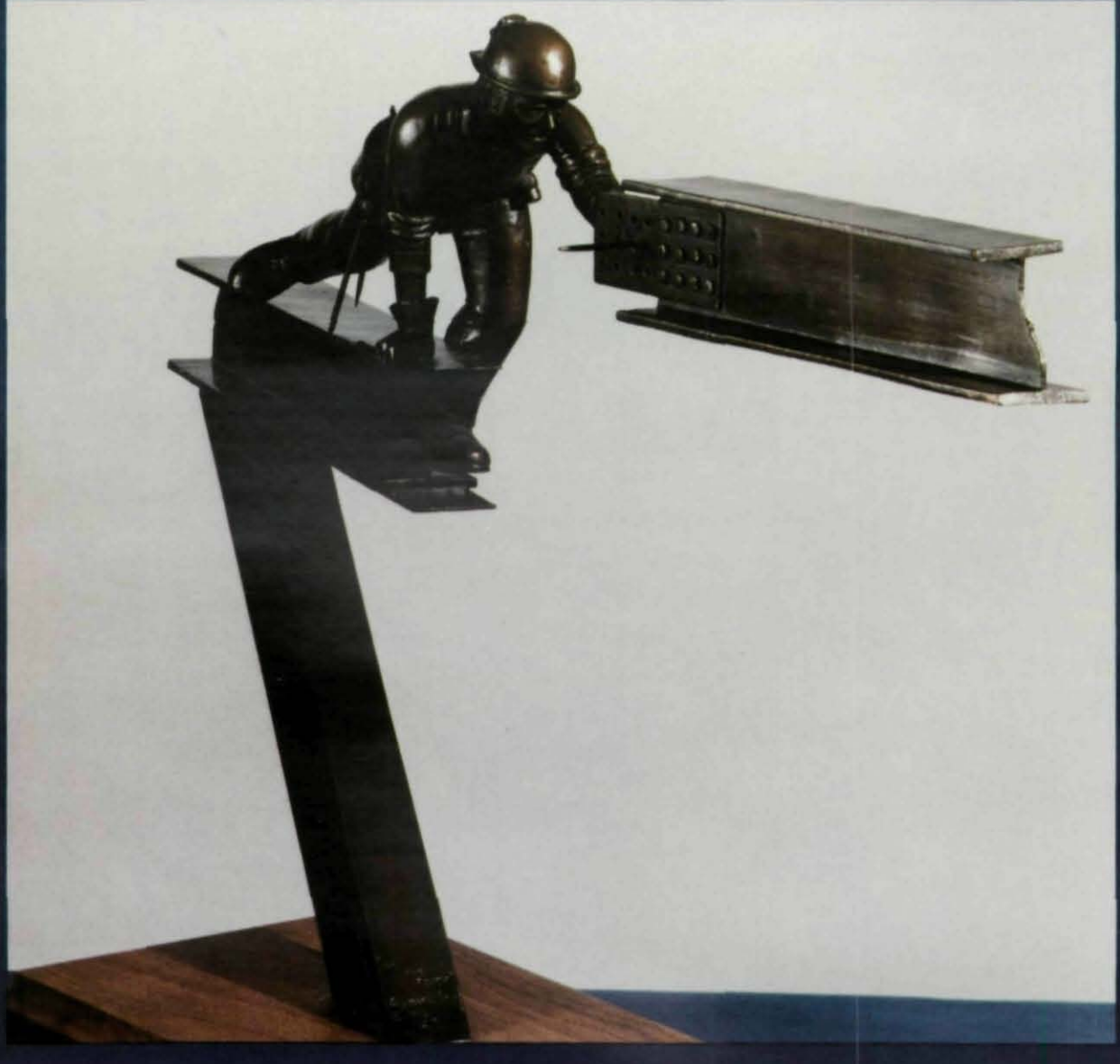
1989 AISC Prize Bridge Awards



Special Section

1989 AISC Prize Bridge Awards

The 1989 Prize Bridge and Merit Award winners have been announced by the American Institue of Steel Construction. This year, 10 Prize Bridge winners and 11 Awards of Merit were announced, chosen as the most handsome and functional bridges opened to traffic between July 1, 1986 and June 30, 1989. Prize Bridges were selected in each of the 10 judging categories.

The Prize Bridge awards will be presented to the designers of the winning bridges at a dinner Thursday evening, Oct. 19, at The Shoreham Hotel, Washington, D.C., during the 1989 National Bridge Symposium on Steel Bridge Construction. Plaques adapted from the Joe Kinkel-designed sculpture, "The Long Reach," will be presented to winners. Designers of bridges chosen to receive Awards of Merit will be honored at local ceremonies later this year.

The Prize Bridge Competition, conducted since 1928, has inspired much greater attention to the aesthetics of bridge design as well as to the advancement of steel as a structural material.

And the winners are . . .

The Awards Jury

(left to right)

DIRK LOHAN
President & CEO
Lohan Associates
Chicago, Illinois

JOHN SMITH, JR.
State bridge design engineer
North Carolina DOT
Raleigh, North Carolina

DR. ARTHUR W. HEDGREN, JR.
Vice president
HDR-Richardson Gordon
Pittsburgh, Pennsylvania

ALBERT A. GRANT
Past president
ASCE
Potomac, Maryland

A Joe Kinkel sculpture on permanent display at AISC headquarters, "The Long Reach," is the motif for AAE and Prize Bridge awards presented by AISC. Winners receive bas relief plaques adapted from the sculpture.

AWARD CATEGORIES

Movable Span
Bridges with a movable span

Long Span
Bridges with one or more spans over 400 ft

Reconstructed
Bridges with major rebuilding/reconstruction to upgrade to current needs

Grade Separation
Bridges whose basic purpose is grade separation

Short Span
Bridges with no single span 125 ft long, or more

Special Purpose
Includes pedestrian, pipeline, airplane and others not otherwise identified

Railroad
Bridges (non-movable), primarily to carry a railroad, but may also be a combination railroad-highway bridge

Medium Span, Low Clearance
Bridges with vertical clearances of less than 35 ft, with longest span no more than 400 ft nor less than 125 ft

Medium Span, High Clearance
Bridges with vertical clearances of 35 ft or more, with longest span no more than 400 ft nor less than 125 ft long

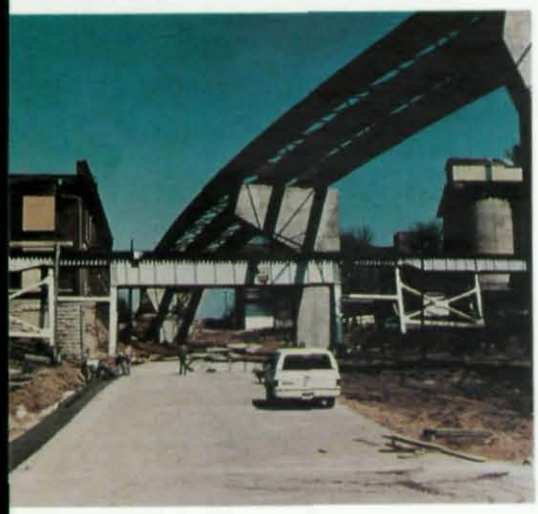
Elevated Highways/Viaducts
Bridges with more than five spans which cross one or more established traffic lanes, and may afford access for pedestrians or parking

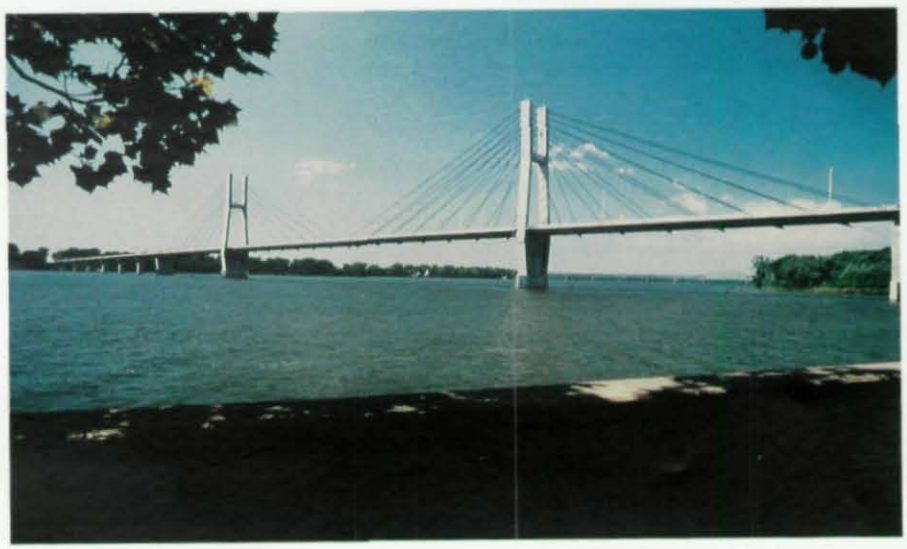
1989 Prize Bridge

LONG SPAN

QUINCY BAYVIEW BRIDGE

Quincy, Illinois





Structural Designer
Booker Associates, Inc.
St. Louis, Missouri

General Contractor/Steel Erector
McCarthy Bros.
St. Louis, Missouri, and
Traylor Bros., Inc.
Houston, Texas

Steel Fabricators
Trinity Industries, Inc.
Houston, Texas, and
McDermott Marine Construction
Morgan City, Louisiana

Owner
Harris County Toll Road Authority
Houston, Texas

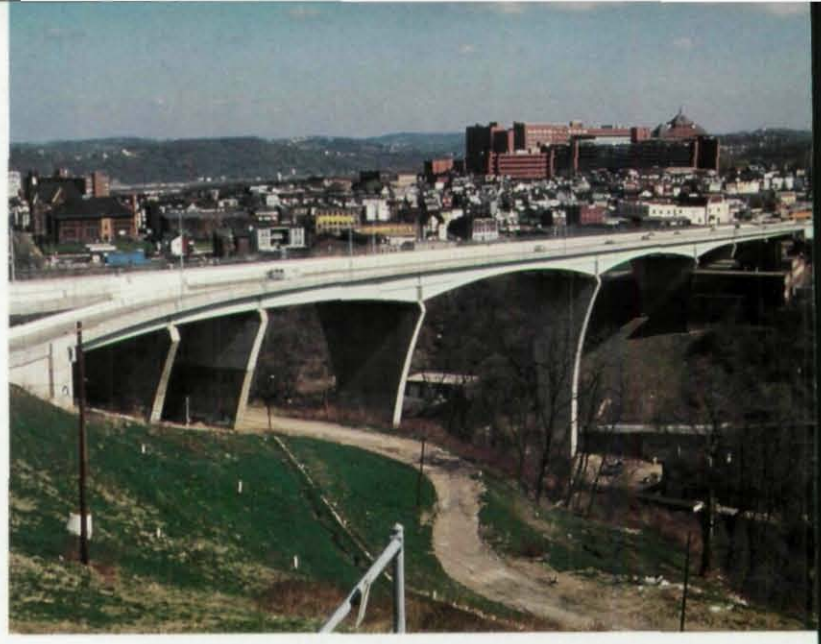
The component steel girder and concrete slab configuration of this 4,500-ft cable-stayed bridge is believed to be the first such application in the U.S. Other firsts: use of parallel, seven-wire strands for stay cables and use of epoxy strands (believed to be the first use in stay cables in the world). Framing includes longitudinal welded girders, transverse rolled-section floor beams and longitudinal roadway stringers. A computer, built into the bridge design, will monitor effects of wind, rain, traffic and motion of the river. Total cost was $29 million, reportedly $4 million less than a conventional truss-style bridge.

1989 Prize Bridge

MEDIUM SPAN, HIGH CLEARANCE

BLOOMFIELD BRIDGE

Pittsburgh (Allegheny County), Pennsylvania



Linking two hillside communities by traversing a steep-sided valley, the design of this 9-span, 1,535-ft long bridge was the result of a conscious and continuing effort to adapt the high-level structure to the urban environment. Bridge design features include unusual tulip-shaped pier configuration, main girder spans comprising a four-span continuous, composite haunched girder system longitudinally fixed on the three main bridge piers via pot bearings, and main girder spans comprising five girders with sub-floor stringer framing system. An inspection walkway is provided between each girder line.

Structural Designer
Gannett Fleming Transportation Engineers, Inc.
Pittsburgh, Pennsylvania

General Contractor
Thomas A. Mekis & Sons, Inc.
Fenelton, Pennsylvania, and
Middle States Steel Construction Co.
Eighty-Four, Pennsylvania, and
Anjo Construction Company
Plum Boro, Pennsylvania

Steel Fabricator
Williamsport Fabricators, Inc.
Williamsport, Pennsylvania

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

Owner
City of Pittsburgh
Department of Engineering & Construction
Pittsburgh, Pennsylvania

1989 Prize Bridge

SPECIAL PURPOSE

TRINITY CHURCH PEDESTRIAN BRIDGE

New York, New York

The Trinity Church Pedestrian Bridge connects the Gothic portico at the rear of the church with the second floor of a 25-story building across the street which houses parish offices and church and parish meeting rooms. The bridge design could not compromise the historical integrity of the landmark church, nor could construction be permitted to interrupt heavy vehicular and pedestrian street traffic. An architectural design came first: a lacey, graceful, flat-arched open metal structure patterned after the Loew Bridge at Saint Paul's Chapel built in 1866 and since dismantled. The structural design, a pair of Vierendeel-trussed deck arches, was shop-welded and fabricated in one piece and erected—in 90 minutes—as a unit. The final result appears so appropriate that "many regular passersby are not quite sure it hasn't always been there."

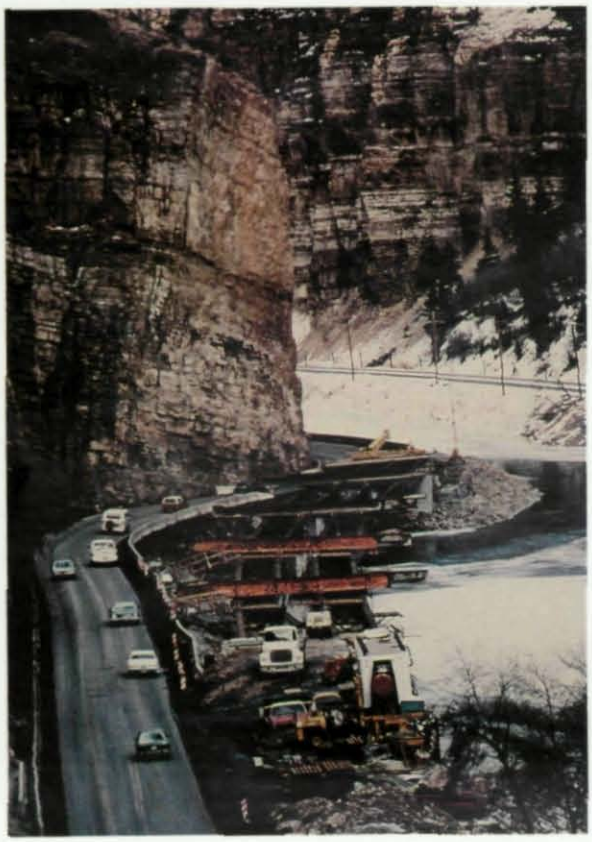
Structural Designer
Ammann & Whitney
New York, New York

Architectural Designer
Lee Harris Pomeroy Associates, Architects
New York, New York

General Contractor/Steel Erector
Nab Construction Corporation
College Point, New York

Steel Fabricator
Reynolds Manufacturing Company
Avonmore, Pennsylvania

Owner
Parish of Trinity Church
New York, New York



1989 Prize Bridge

MEDIUM SPAN, LOW CLEARANCE

STRUCTURE 18E (REVERSE CURVE)

I-70 in Glenwood Canyon (Garfield County), Colorado

Difficult foundation conditions, constructability constraints requiring lightweight members and a very short construction season made steel the most economical answer for this scenic canyon structure. Four steel plate girders spanning 136 ft clear made erection easy and required less foundation, were easy to curve in following the alignment. Box steel pier caps, cantilevering over a very narrow shaft, were framed with the *plate girders—rendering them invisible.*

Structural Designer
Meheen Engineering Corporation
Denver, Colorado

General Contractor
Flatiron Structures Company
Longmont, Colorado

Steel Fabricator
Grand Junction Steel
Grand Junction, Colorado

Steel Erector
Grett Steel & Iron Company
Denver, Colorado

Owner
Colorado Department of Highways
Denver, Colorado

1989 Prize Bridge

RAILROAD

CSX RAILROAD OVER RELOCATED US 25E

Bell County, Kentucky

Located in the Cumberland Gap National Historical Park (Bell County, Ky. and Clairborne County, Tenn.), *this single railroad track bridge had to blend with the* natural environment. Aesthetic considerations ultimately resulted in a design of two 100-ft simple spans with a ballasted track on a concrete deck supported by a single composite steel box girder. ASTM A588 weathering steel and stone masonry facades for substructure abutments and piers also assisted in accomplishing those objectives.

Structural Designer
Howard Needles Tammen & Bergendoff
Alexandria, Virginia

General Contractor/Steel Erector
London Bridge Company, Inc.
London, Kentucky

Steel Fabricator
Carolina Steel Corporation
Greensboro, North Carolina

Owner
National Park Service
Middlesboro, Kentucky

1989 Prize Bridge

SHORT SPAN

Bridge No. 3013—MD Route 7 over Gunpowder River

Baltimore County, Maryland

Although a painted steel arch was probably more expensive than a conventional steel girder structure, aesthetics governed in this bridge design, selected to replace a deteriorating 120-ft reinforced concrete arch. However, the bridge was built and opened within the eight-month time frame dictated by contract. Speed of fabrication and erection more than offset higher costs because of site and traffic constraints.

Structural Designer/Owner
Maryland State Highway Administration
Office of Bridge Development
Baltimore, Maryland

Consulting Firm
Envirodyne Engineers
Chicago, Illinois

General Contractor
Central Atlantic Contractors, Inc.
Aberdeen, Maryland

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

1989 Prize Bridge

GRADE SEPARATION

HENDERSONVILLE BY-PASS/STATE ROUTE 6

Sumner County, Tennessee

The need to eliminate a median pier support as well as to provide a 30-ft horizontal clear recovery zone from the edge of the traveled way to any fixed obstacle was successfully achieved by relying on the long-span capabilities of structural steel. The three-span, continuous welded plate girder bridge with composite concrete deck was constructed with no roadway expansion devices, thus making the structure virtually maintenance-free.

Structural Designer/Owner
Tennessee Department of Transportation
Division of Structures
Nashville, Tennessee

General Contractor
Vaughn Contractors, Inc.
Waverly, Tennessee

Steel Fabricator
Carolina Steel Corporation
Greensboro, North Carolina

Steel Erector
Sentry Steel Service Company, Inc.
Madison, Tennessee

1989 Prize Bridge

ELEVATED HIGHWAY

SAM HOUSTON/I-10 INTERCHANGE

Houston (Harris County), Texas

This multi-level interchange includes eight connector bridges (4½ miles of bridge structures) and a new mainline bridge carrying the tollway over IH-10. All were designed using A588 structural steel, selected because of vertical clearance requirements, restricted site conditions and economic considerations. Spans up to 245 ft were required, with horizontal curves ranging up to nine degrees, requiring unusual design and construction techniques. Continuous units (78 to 90 in. in depth with flange thickness up to 3 in.) required the handling and placing of steel member segments up to 180 ft long and weighing nearly 100 tons. Because of the existence of an active fault line with continuous and substantial movement, the bridge design permits the bridge to be jacked up to offset differential movement caused by the fault.

Structural Designer
Brown & Root U.S.A., Inc.
Houston, Texas

General Contractor/Steel Erector
McCarthy Bros.
St. Louis, Missouri, and
Traylor Bros., Inc.
Houston, Texas

Steel Fabricators
Trinity Industries, Inc.
Houston, Texas, and
McDermott Marine Construction
Morgan City, Louisiana

Owner
Harris County Toll Road Authority
Houston, Texas

1989 Prize Bridge

MOVABLE SPAN

DANZIGER BRIDGE

New Orleans, Louisiana

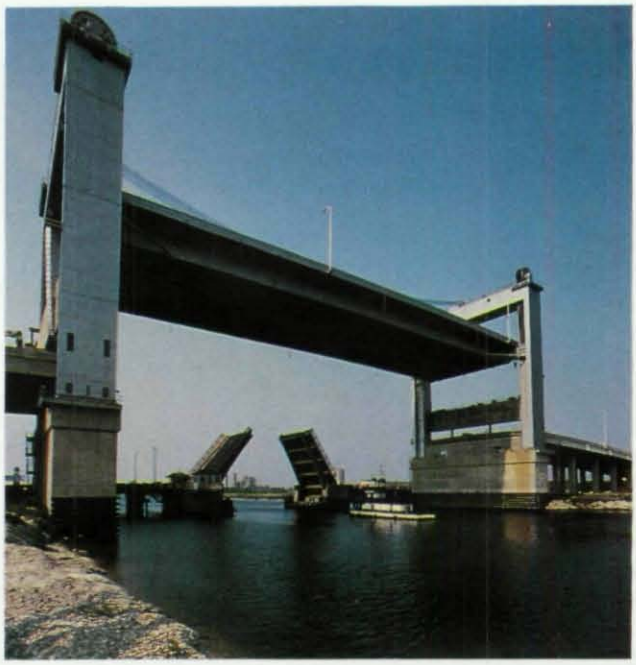
Because of the unusual size of the bridge (a main span length of 320 ft clearing the entire width of the Industrial Canal), the owner selected a design seldom used due to fabrication complexity and comparatively high costs: a system of longitudinal steel boxes with an orthotropic deck. However, the system was lighter and smaller, and comparable in price to a two-truss system with greater lift system requirements. The design produced a cleaner, more aesthetic structure and provided the bridge operator a clear view of both navigation and vehicular traffic.

Structural Designer
Sverdrup Corporation
St. Louis, Missouri

General Contractor/Steel Erector
Williams Brothers Construction Co., and
Cianbro Corporation (Joint Venture)
Houston, Texas

Steel Fabricator
USS Fabrication
Orange, Texas

Owner
Louisiana Department of Transportation & Development
Baton Rouge, Louisiana



1989 Prize Bridge

RECONSTRUCTED

CAPITOL BOULEVARD UNDERCROSSING

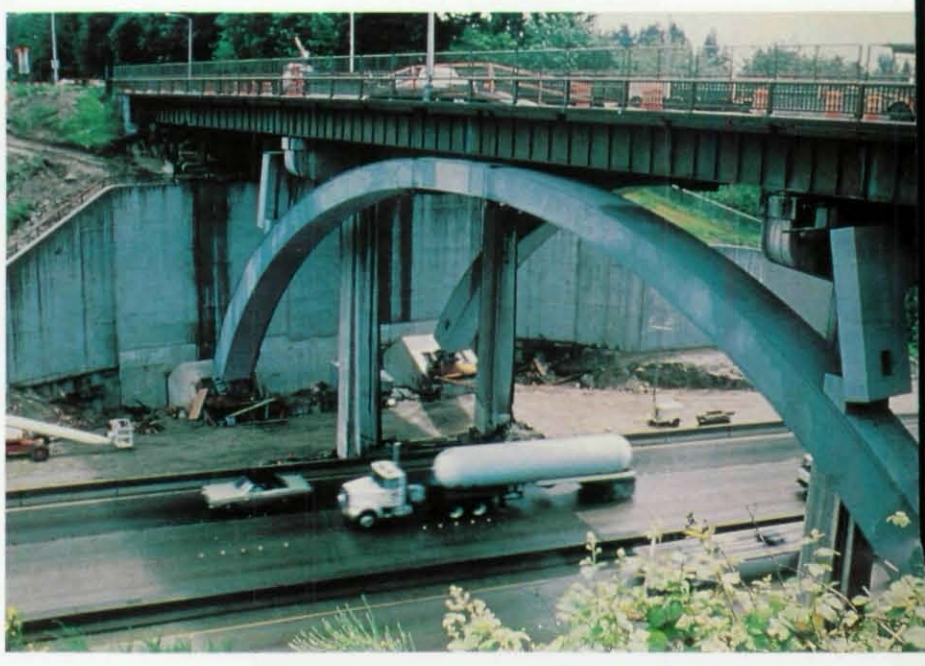
Olympia (Thurston County), Washington

One of the bridges scheduled as part of a 10-year project to widen seven miles of Interstate 5 through Olympia, this reconstructed undercrossing required four additional lanes of traffic and a new support system permitting existing piers to be removed while maintaining above- and below-bridge traffic at all times. A steel arch was the chosen design because it required minimal falsework, minimal traffic interruption—and the curved lines were considered more pleasing than the straight lines of a concrete sloped-leg frame (which had been proposed). Shop welding of thin, stiffened steel plates produced a strong, lightweight structure which was easy to ship, handle and erect.

Structural Designer/Owner
Washington State Department of Transportation
Olympia, Washington

General Contractor/Steel Erector
David A. Mowat Company
Bellevue, Washington

Steel Fabricator
Universal Structural, Inc.
Vancouver, Washington



1989 Award of Merit

LONG SPAN

GLADE CREEK BRIDGE

Raleigh County, West Virginia

Structural Designer
Greiner, Inc.
Timonium, Maryland

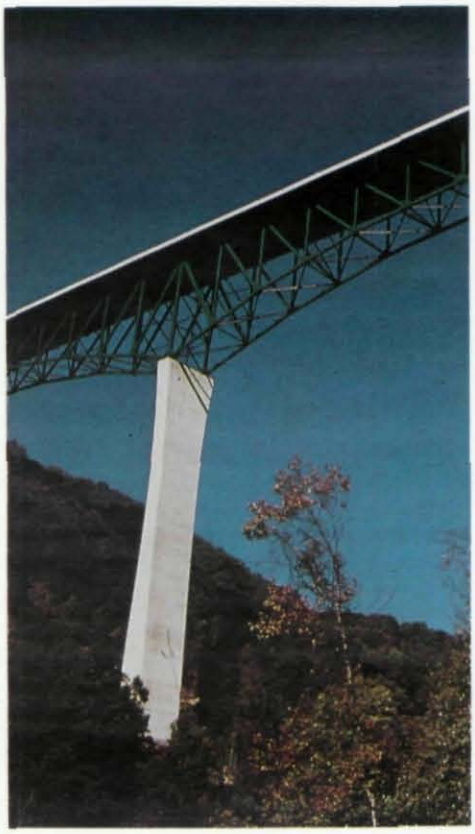
Consulting Firm
Sheladia Associates, Inc.
Rockville, Maryland

General Contractor
PCL Civil Constructors, Inc.
Plantation, Florida

Steel Fabricator
Harris Structural Steel Company, Inc.
South Plainfield, New Jersey

Steel Erector
American Bridge Company
Pittsburgh, Pennsylvania

Owner
West Virginia Department of Transportation
Division of Highways
Charleston, West Virginia



1989 Award of Merit

MEDIUM SPAN, HIGH CLEARANCE

PINEY CREEK BRIDGE

Beckley (Raleigh County), West Virginia

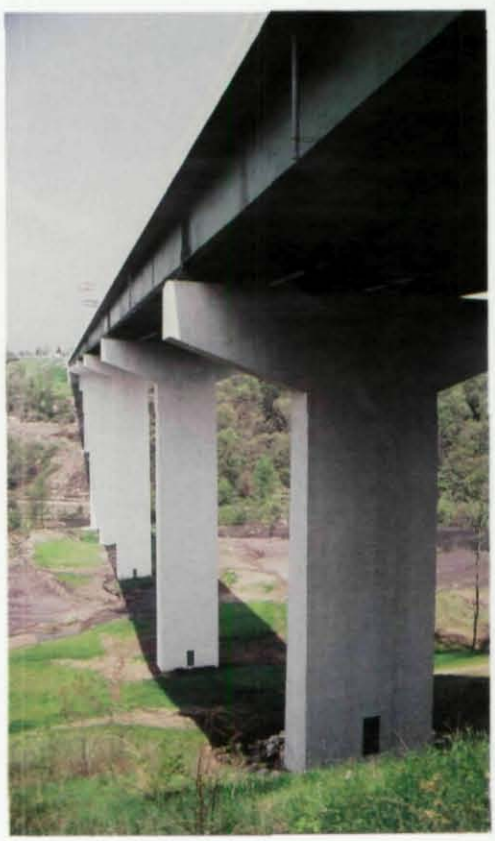
Structural Designer
Pavlo Engineering Co., P.C.
New York, New York

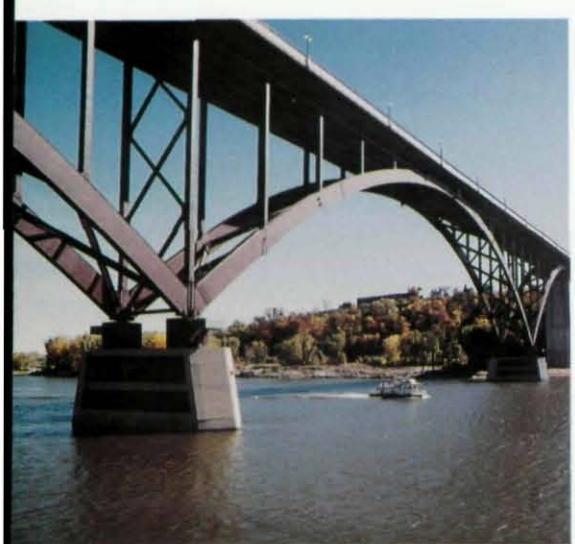
General Contractor
National Engineering & Contracting Co.
Strongsville, Ohio

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

Steel Erector
Broad, Vogt & Conant, Inc.
River Rouge, Michigan

Owner
West Virginia Department of Transportation
Division of Highways
Charleston, West Virginia





1989 Award of Merit

LONG SPAN

SMITH AVENUE HIGH BRIDGE

St. Paul (Ramsey County), Minnesota

Structural Designer
Strgar—Roscoe—Fausch, Inc.
Minneapolis, Minnesota

Consulting Firm
T. Y. Lin International
San Francisco, California

General Contractor
Edward Kramer and Sons, Inc.
Plain, Wisconsin

General Contractor/Steel Erector
Lunda Construction Company
Black River Falls, Wisconsin

Steel Fabricators
Phoenix Steel Inc.
Eau Claire, Wisconsin, and
Vincennes Steel Corporation
Vincennes, Indiana

Owner
Minnesota Department of Transportation
St. Paul, Minnesota

1989 Award of Merit

MEDIUM SPAN, LOW CLEARANCE

BROADWAY BRIDGE OVER CHERRY CREEK

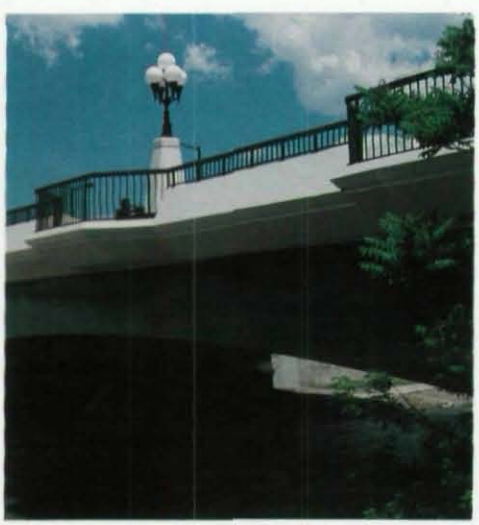
Denver, Colorado

Structural Designer
Howard Needles Tammen & Bergendoff
Denver, Colorado

General Contractor/Steel Erector
Centric-Jones Constructors
Lakewood, Colorado

Steel Fabricator
Avondale Industries
Avondale, Louisiana

Owner
City and County of Denver
Denver, Colorado



1989 Award of Merit

MOVABLE SPAN

LIBERTY BRIDGE

Bay City, Michigan

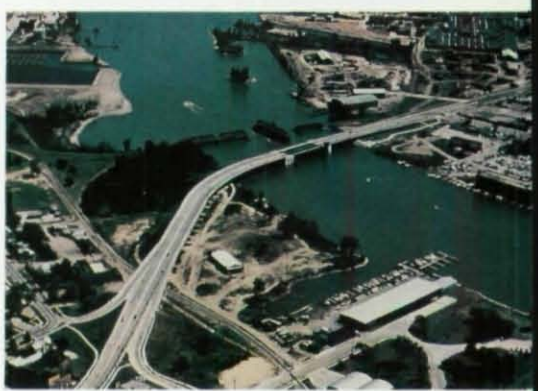
Structural Designer
Howard Needles Tammen & Bergendoff
Kansas City, Missouri

General Contractor
Midwest Bridge
Williamston, Michigan

Steel Fabricator
Phoenix Steel, Inc.
Eau Claire, Wisconsin

Steel Erector
Alliance Steel
Superior, Wisconsin

Owner
City of Bay City, Michigan



1989 Award of Merit

SHORT SPAN

LECHMERE CANAL BRIDGE

Cambridge, Massachusetts

Structural Designer
Howard Needles Tammen & Bergendoff
Boston, Massachusetts

General Contractor
John Mahoney Construction Co., Inc.
Milton, Massachusetts

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

Steel Erector
Rusco Steel Co.
Warwick, Rhode Island

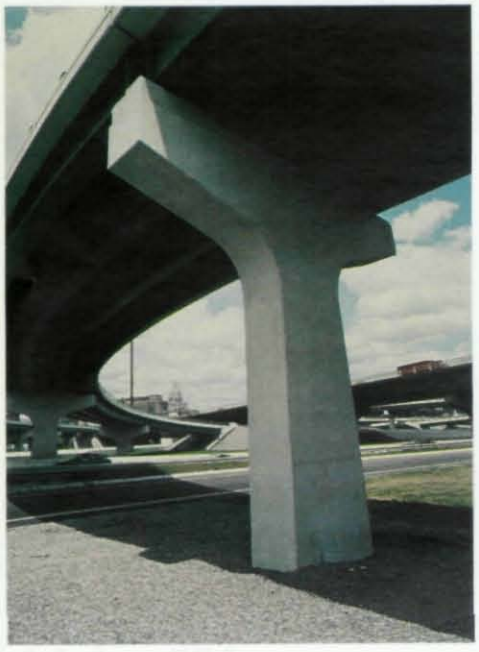
Owner
Commonwealth of Massachusetts,
Department of Public Works
Boston, Massachusetts

1989 Award of Merit

ELEVATED HIGHWAY OR VIADUCT

CIVIC CENTER INTERCHANGE

Providence, Rhode Island



Structural Designer
Maguire Group Inc.
Providence, Rhode Island

General Contractor
Aetna Bridge Company
Pawtucket, Rhode Island

Steel Fabricator
High Steel Structures, Inc.
Lancaster, Pennsylvania, and
Carolina Steel Corporation
Greensboro, North Carolina

Steel Erectors
Aetna Bridge Company
Pawtucket, Rhode Island, and
Northeast Steel Corporation
Wickford, Rhode Island

Owner
Rhode Island Department of Transportation
Providence, Rhode Island

1989 Award of Merit

SPECIAL PURPOSE

WADDELL "A" TRUSS BRIDGE

Parkville (Platte County), Missouri

Structural Designer
Howard Needles Tammen & Bergendoff
Kansas City, Missouri

Steel Erector
Bratton Corporation
Kansas City, Missouri

Owner
City of Parkville, Missouri

1989 Award of Merit

RAILROAD

PATTERSON AVENUE/CSX GRADE SEPARATION

Grand Rapids (Kent County), Michigan

Structural Designer
Williams & Works, Inc.
Grand Rapids, Michigan

General Contractor/Erector
Argersinger-Morse Construction Co.
Ann Arbor, Michigan

Steel Fabricator
Phoenix Steel, Inc.
Eau Claire, Wisconsin

Owner
Kent County Road Commission
Grand Rapids, Michigan

1989 Award of Merit

RECONSTRUCTED

MERRIAM STREET BRIDGE OVER MISSISSIPPI

Minneapolis (Hennepin), Minnesota

Structural Designer/Owner
Hennepin County Bureau of Public Service
Minneapolis, Minnesota

Consulting Firm
Van Doren-Hazard-Stallings, Inc.
Minneapolis, Minnesota

General Contractor
Lunda Construction Company
Black River Falls, Wisconsin

Steel Fabricator
Phoenix Steel, Inc.
Eau Claire, Wisconsin

Steel Erector
Alliance Steel Construction, Inc.
Superior, Wisconsin

1989 Award of Merit

RECONSTRUCTED

ROEBLING DELAWARE AQUEDUCT BRIDGE

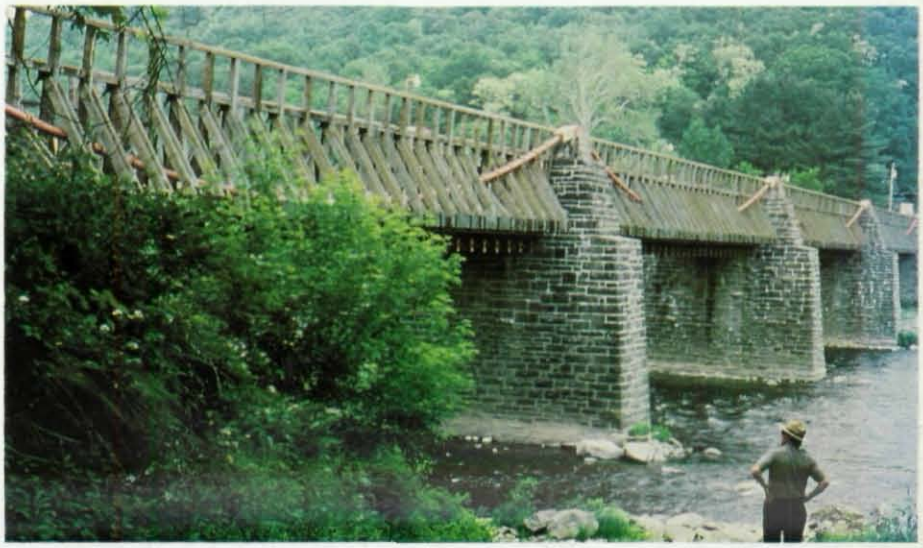
Lackawaxen (Pike County), Pennsylvania and
Minisink Ford (Sullivan County), New York

Structural Designer
Ammann & Whitney
New York, New York

Architectural Designer
Beyer Blinder Belle
New York, New York

General Contractor/Fabricator/Erector
Chesterfield Associates, Inc.
Westhampton Beach, New York

Owner
National Park Service
Narrowsburg, New York



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