

MERIT AWARDS

Long Span: SH-67 Realignment – Arequa Gulch Bridge, Cripple Creek, CO



Each day, 90-ton mine-haul trucks crossed Colorado State Highway 67 (SH-67) where it bisected Cripple Creek & Victor (CC&V) Gold Mine, interfering with operations and impeding development. Mine operations presented safety concerns to travelers and the highway's location impeded the mine's operations and development plans. To address these issues, CC&V and the Colorado Department of Transportation (CDOT) developed one of the state's largest public/private partnerships to realign SH-67. CC&V sponsored and managed the design and construction with CDOT reviewing the design and construction operations at key milestones. Ultimately the new roadway was swapped with the existing SH-67 alignment, resulting in a win-win-win for CC&V, CDOT, and travelers.

OWNER

Colorado Department of Transportation

STRUCTURAL ENGINEER

HDR Engineering, Inc., Denver

ENGINEERING SOFTWARE

SIMON

BRIDGE CONTRACTOR

Edward Kraemer & Sons, Inc.,
Castle Rock, CO

STEEL FABRICATOR

Trinity Industries, Houston (AISC member)

Movable Span: Sixth Street Viaduct, Milwaukee

OWNER

City of Milwaukee Department of Public Works

ARCHITECT/STRUCTURAL ENGINEER

HNTB Corporation, New York City

ENGINEERING SOFTWARE

GTStrudl

GENERAL CONTRACTOR

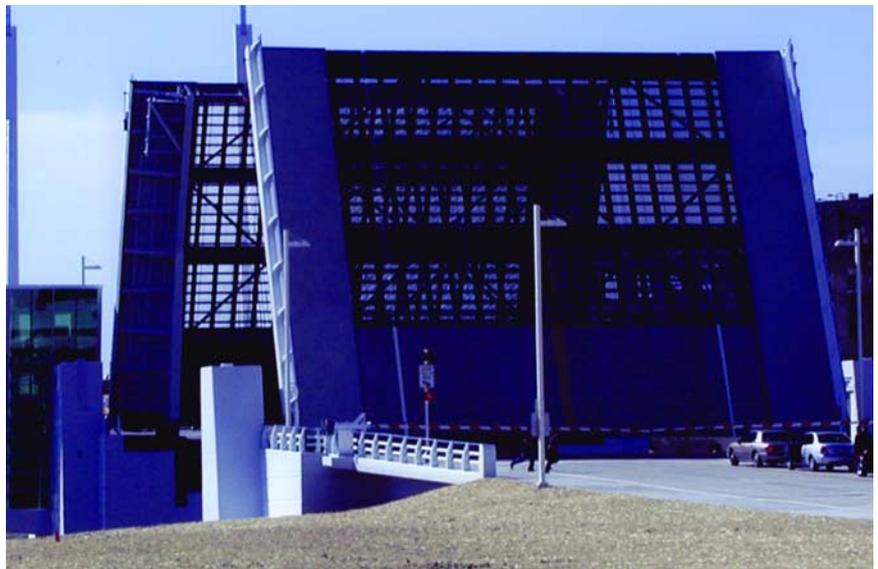
Milwaukee Gateway Partners,
Milwaukee

STEEL FABRICATOR

PDM Bridge, Eau Claire, WI
(AISC member)

STEEL DETAILER

Tensor Engineering Co., Indian Harbor
Beach, FL (AISC/NISD member)



The Sixth Street Viaduct was a design-build project that replaced approximately 2,500' of bridge in downtown Milwaukee. The project includes two double-leaf bascules and two cable-stayed bridges whose design and construction were completed within just 24 months. Careful planning and coordination was required to meet the schedule for this complex bridge. The Sixth Street Viaduct is Wisconsin's first design-build project.

Major Span: William H. Natcher Bridge, Between Owensboro, KY and Rockport, IN



OWNER

Kentucky Transportation Cabinet

STRUCTURAL ENGINEER

Parsons Brinckerhoff Quade & Douglass, Inc., New York City

STRUCTURAL ENGINEERING SOFTWARE

LARSA

GENERAL CONTRACTOR/ERECTOR

Traylor Bros., Inc., Evansville, IN

STEEL FABRICATOR

Vincennes Steel Corporation, Vincennes, IN (AISC member)

STEEL DETAILER

Tensor Engineering Co., Indian Harbor Beach, FL
(AISC, NISD member)

STAY CABLE SUPPLIER

VSL, Hanover, MD

WIND TUNNEL TESTING

Rowan Williams Davies & Irwin, Guelph, Ontario

The William H. Natcher Bridge over the Ohio River carries Route 231 between Owensboro, KY, and Rockport, IN. The four-lane, 4,505'-long bridge includes 2,200' of cable-stayed spans and approximately 3 miles of approach embankment and relief structures. One of the longest cable-stayed bridges in the U.S., the Natcher Bridge features a 1,200' main span and distinctive dia-

mond-shaped concrete towers that enhance the structure's aerodynamic stability. The bridge features innovations designed to minimize environmental impact, reduce costs, simplify construction, and to ensure that the structure will be easy to inspect and maintain.

Major Span: Gene Hartzell Memorial Bridge, near Easton, PA

The Gene Hartzell Memorial Bridge was part of a roadway project that extends S.R. 33 south to connect with Interstate Route 78. Possible locations for the new, 1870' bridge over the Lehigh River were limited due to environmental and right-of-way concerns. Also, the bridge had to span an active railroad to the south, the Lehigh canal and its towpath, and a public bikeway to the north. The four-span truss configuration was developed to optimize the structural-span lengths while still meeting these restrictions. Steel met aesthetic goals and provided light lifts with small profiles, minimizing wind concerns.

The community indicated a desire for the bridge to have an "old time" aesthetic. The truss bridge provides a superstructure from another era yet incorporates modern design concepts.

OWNER

Pennsylvania Department of Transportation

STRUCTURAL ENGINEER

URS Corporation,
King of Prussia, PA

STRUCTURAL ENGINEERING SOFTWARE

GTStrudl

STEEL FABRICATOR

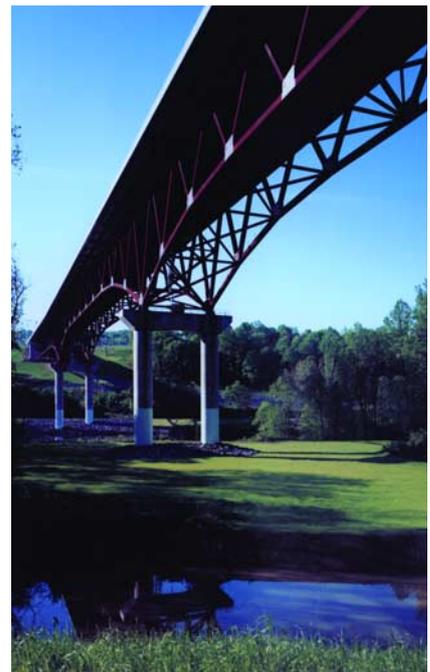
PDM Bridge, Eau Claire, WI
(AISC Member)

STEEL DETAILER

Tensor Engineering, Indian Harbor Beach,
FL (AISC, NISD member)

STEEL ERECTOR

American Bridge Manufacturing,
Coraopolis, PA (AISC member)



MERIT AWARDS

Railroad: Henry Ford Grade Separation



The challenge of the Henry Ford Grade Separation was to design a cost-effective grade separation in a key portion of a \$2.4-billion program—in an area that is congested with mixed-use port traffic, has three existing mainline railroad tracks that cannot be disturbed, required soil remediation and required the spanning of a water channel and intersection. Some of the major issues confronting the project were finding an economical foundation solution to building in a high-seismic zone; overcoming tight construction staging spaces; and coordinating with up to six local transportation agencies at once, all while mitigating construction impacts on existing vehicular and rail traffic.

OWNER

Alameda Corridor Transportation Authority

STRUCTURAL ENGINEER

HNTB Corporation, Santa Ana, CA

GENERAL CONTRACTOR

Shimmick Construction Company, Inc., joint venture with Obayashi Corporation, Hayward, CA.

ENGINEERING SOFTWARE

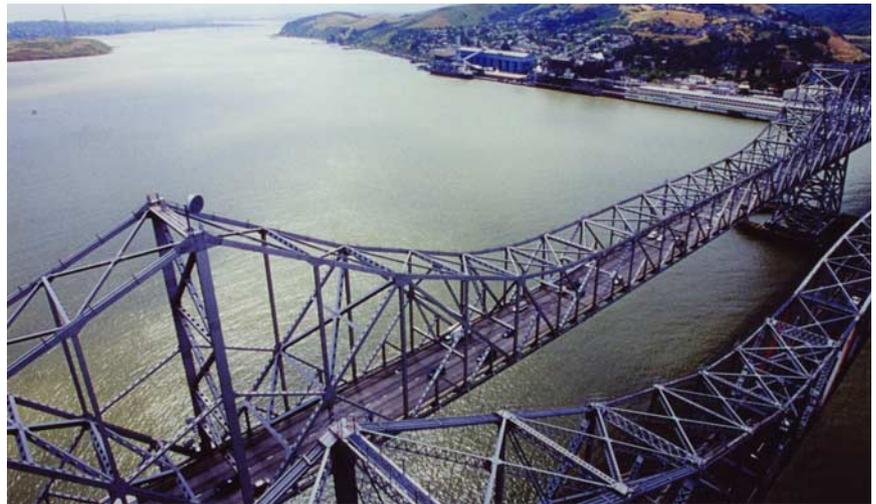
GTStrudl

STEEL ERECTOR

Adams & Smith, Inc., Lindon, UT (AISC member)

Reconstructed: East Carquinez Bridge, Vallejo, CA

The Carquinez Bridge, located near San Francisco is a 3,350'-long steel cantilever through-truss structure. The existing structure, completed in 1958, was the first highway bridge in the United States to use high-strength (T-1) steel, the first to use welded built-up members, and the first to use high-strength bolted connections. In 1994, the bridge was determined to be vulnerable to collapse during an earthquake. From 1995 to 1997, the project team developed a design to prevent collapse of the structure during the maximum credible earthquake. The retrofit was constructed from 1998 to 2002. The outcome was a successful \$85-million bridge reconstruction for the tens of thousands of motorists in the Bay area who travel daily on this major artery.



OWNER

California Department of Transportation

STRUCTURAL ENGINEER

CH2M Hill, Sacramento

ENGINEERING SOFTWARE

ADINA

GENERAL CONTRACTOR

Balfour Beatty Constr., Inc., London, UK

STEEL ERECTOR

Christie Constructors, Inc., Richmond, CA (NEA members)

Reconstructed: Strawberry Mansion Bridge, Philadelphia

The original Strawberry Mansion Bridge was built in 1897 by the Fairmount Park Transportation Company, and spans the Schuylkill River in Philadelphia. The newly rehabilitated, 1,250'-long bridge consists of six deck-truss approach spans and four steel-arch-truss river spans. The capacity of the structure was increased to HS-20 live load by using a light-weight deck and strengthening the truss members. Severe section losses to truss members necessitated complex and sequenced strengthening while the bridge was open to traffic. Replacement of the arch trusses' vertical and horizontal gusset plates at the deteriorated connections required temporary support systems for unloading and loading the connections. At abandoned trolley-track locations, a 27'-wide by 800'-long promenade was employed. The promenade is surrounded with original and replicated railings, trolley catenary portals, ornamental light poles and fixtures. Also included in the project was the erection of 14 historic signs along an 8½-mile route that passes beneath the structure.



OWNER

City of Philadelphia, Department of Streets, Bridge Division

SPONSOR

Philadelphia Department of Transportation

GENERAL CONTRACTOR

IA Construction Corp., Concordville, PA

ARCHITECT

Susan Maxwell Architects, Philadelphia

STRUCTURAL ENGINEER

Lichtenstein Consulting Engineers, Inc., Langhorne, PA

ENGINEERING SOFTWARE

STAADPro (STAAD-III)

Medium Span: Fort Meigs Memorial Bridge, Maumee & Perrysburg, OH



The Ohio Department of Transportation designed the new Fort Meigs Memorial Bridge, crossing the Maumee River in northwestern Ohio, to replace an existing bridge almost 75 years old. The bridge connects the City of Maumee in Lucas County and the City of Perrysburg in Wood County, and carries U.S. Route 20 and State Route 25 traffic across the river.

The previous structure was a seven-span, filled-spandrel concrete-arch bridge constructed in 1927-1928. The bridge had deteriorated, resulting in crumbling concrete along both sides and closing the sidewalk on the upstream side. The two-lane bridge was functionally deficient to carry the current traffic volume of 29,000 vehicles per day. There were sharp curves on the roadway approaches at both ends of the bridge. The new \$9.2-million replacement bridge is a seven-span, variable-depth, haunched, horizontally curved steel-girder structure with a composite, reinforced-concrete deck and substructure. The bridge is located on a sweeping five-degree, horizontally curved alignment to eliminate the sharp curves on each end.

OWNER

Ohio Department of Transportation

GENERAL CONTRACTOR

Mosser Construction, Inc., Fremont, OH

STRUCTURAL ENGINEER

Adache Ciuni Lynn Associates, Inc., Cleveland

ENGINEERING SOFTWARE

C-Bridge

STEEL FABRICATOR

PDM Bridge, Eau Claire, WI (AISC member)

STEEL DETAILER

Tensor Engineering, Indian Harbor Beach, FL (AISC member, NISD member)

MERIT AWARDS

Short Span: 21st Avenue Pedestrian Bridge, Nashville, TN

Photo © Anton Grassl



In 1979 Vanderbilt University acquired Peabody College, a neighboring institution. The busy 21st Avenue South divided the two campuses and caused a number of safety concerns due to the heightened foot traffic across the busy corridor. The design team was presented with the challenge of successfully linking the two main campuses across the four-lane thoroughfare. A modified bow-truss design was chosen as the main span to act as a signature landmark. The brick and cast-stone piers anchor the main span that defines the structure as a gateway. The bridge not only provides safe passage above a busy street but also gives identity to the institution.

OWNER

Vanderbilt University, Nashville

ARCHITECT

William Wilson Associated Architects, Inc., Boston

GENERAL CONTRACTOR

Centex Rodgers, Inc., Nashville

CONSULTANT

Carpenter-Wright Engineers, PLLC, Nashville

Special Purpose: Berkeley Pedestrian and Bicycle Overcrossing, Berkeley, CA



The Berkeley pedestrian and bicycle overcrossing provides access between the City of Berkeley's Aquatic Park and the Eastshore Regional Park (Berkeley Marina) to pedestrians, bicyclists, and people with disabilities. The new bridge, completed in February 2002, crosses the Interstate 80 freeway with a tied-arch span of 293', with curved box-girder ramps at each end. Its dramatic clear span across one of the most congested freeways in North America provides access for users not served by previous facilities, an architectural landmark for the City of Berkeley, and excellent vistas of parklands and cityscapes.

OWNER

City of Berkeley

ARCHITECT

MacDonald Architects, San Francisco

STRUCTURAL ENGINEER

OPAC Consulting Engineers, Inc., San Francisco

ENGINEERING SOFTWARE

SAP 2000

GENERAL CONTRACTOR

C.C. Myers, Inc., Rancho Cordova, CA

STEEL FABRICATOR

Universal Structural, Inc., Vancouver, WA (AISC member)

STEEL DETAILER

Wasatch Detailing Corporation, Salt Lake City, UT (AISC member)

DETAILING SOFTWARE

AutoCAD 2002

STEEL ERECTOR

Adams & Smith, Lindon, UT (AISC member)

CONSULTANT

Lin Tung-Yen China, Inc., San Francisco

Special Purpose: Millennium Bridge, Denver, CO

In the late 1990s, the City of Denver began a massive redevelopment project to revive Lower Downtown (LoDo) Denver and the adjacent Northwest Neighborhoods. To foster urban renewal in the area, the 16th Street Mall was designed to link the LoDo district and the valley. The Millennium Bridge, a cable-stayed pedestrian structure located along the Mall, is the central focus and visual marker on the vista down 16th street. The bridge's 200', 110-ton steel mast rises distinctively above the Platte Valley on the northwest edge of downtown. The bridge carries pedestrian traffic over the Consolidated Main Line tracks and a light rail corridor.



OWNER

Central Platte Valley Metropolitan District, Denver

ARCHITECT

ArchitectureDenver, Denver

STRUCTURAL ENGINEER

Arup, New York City

GENERAL CONTRACTOR

Edward Kraemer & Sons, Inc., Castle Rock, CO

CONSULTING FIRM

Ewbank, Inc., Phoenix

Short Span: Spanish Oaks Golf Course Bridge, Bee Caves, TX



In designing the Spanish Oaks Golf Course Bridge at Hole #18, the landscape architect envisioned a structural steel pedestrian/golf cart bridge spanning over a man-made reflecting pond. The end result was a variable-depth arched-steel truss spanning to limestone-clad bents and abutments.

The bridge consists of a 100' main span with two 45' approach spans. A weathering steel railing, consisting of HSS 2x2x $\frac{3}{16}$ posts, $\frac{1}{2}$ "x2"-plate top-and-bottom rails, and $\frac{1}{4}$ "x $1\frac{3}{8}$ " plate balusters, completes the bridge aesthetic. Steel angle frames provide the structural support for stone pilasters that project above the deck at the abutments and interior bents.

OWNER

CCNG Development Co., L.P., Austin

STRUCTURAL ENGINEER

Pickett, Kelm & Associates, Austin

GENERAL CONTRACTOR

JC Evans Construction, Leander, TX

ENGINEERING SOFTWARE

RISA-3D

STEEL FABRICATOR

Hirschfeld Steel Co, Inc. Abilene, TX (AISC member)

CIVIL ENGINEER

Murfee Engineering, Austin

LANDSCAPE ARCHITECT

Bosse Compton & Turner, Austin