AB CONNECTIONS

Winter 2017 - Issue #1008

PICTURE PERFECT

A historic project site scores an appealing upgrade

Cover: Portageville Bridge Replacement | Portageville, New York

www.AmericanBridge.net

CONTENTS

AMERICAN BRIDGE CONNECTIONS
Winter 2017 – Issue #1008

American Bridge

Downstream view following closure of the Portageville Bridge Replacement arch span

Location: Portageville, New York

Owner: Norfolk Southern Railway Company

PICTURE PERFECT

A historic project site scores an appealing upgrade

American Bridge (AB) has once again found itself working in a national treasure. Considered the "Grand Canyon of the East" as well as the 2015 winner of the USA TODAY Reader's Choice Award for Best State Park in the United States, Letchworth State Park is home to one of AB's latest bridge replacements, the Portageville Bridge.

Over one million people visit this natural beauty annually to take in the stunning views of the three large waterfalls in the Genesee River, as well as the beautiful gorge that the Portageville Bridge traverses. With the scenic views and the historic heritage, creating a safe new crossing for Norfolk Southern Railway Company (NS) has given AB a picture perfect project.

The existing Portageville Bridge

> This popular option would leave no physical footprint in the water below and no obstructions to the scenery, unlike the current structure, ultimately enhancing the views in the park.

Historical Heritage

This historic connection has been the centerpiece of photos for almost two centuries. Over 166 years ago, the first of three Portageville Bridge structures was acting as a vital link for the Erie Railroad across the Genesee River. The 800-foot-long bridge opened in August 1852 after 13 months of construction. It was a massive timber trestle, with the track sitting 234 feet above the river, and it was claimed to be the largest timber bridge ever built. When it burned down unexpectedly in May 1875 due to embers from a passing train, a replacement was needed immediately. In just three months, a new bridge made of iron was constructed on the same alignment. This was an enormous feat—even by today's standards—and despite the rapid erection, the bridge remains in use over a century later. Local lore has it that the fire may not have been an accident, thus explaining how the new structure could be devised, built, and opened to rail traffic so quickly.

The existing structure has 13 open-deck spans totaling 819 feet carrying a single track across the gorge, 235 feet above the Genesee River. It consists of six towers, four girder spans, and three truss spans. Besides a 1903 strengthening project in which the shorter superstructure spans were replaced with steel deck girder spans and the longer spans were replaced with pin-connected steel deck truss spans, and some additional maintenance repairs, the structure that remains is largely in part the same from the late 1800s. The existing structure is one of the nation's oldest iron rail bridges and has become an important connector for NS's Southern Tier line between Binghamton and Buffalo, New York.

Monthly inspections are performed on the existing bridge, a costly and time-consuming effort for NS. As the last bridge on this route to be replaced or rehabilitated for modern freight loads, it is currently the weakest link and is not able to handle modern transportation needs. The structure is not capable of carrying the 286,000 pound freight cars, therefore weights must be reduced by 13,000 pounds to cross the bridge. Even with the weight restriction, train speed is reduced to 10 miles per hour to prevent overloading the existing bridge. This has created a bottleneck in this main east-west corridor. With anticipated expansion along the Southern Tier Route, the bridge was no longer able to keep up with expectations.

A Modernized Improvement

In the late 1990s, Modjeski and Masters (Modjeski) was hired to evaluate both repair and replacement options for the Portageville Bridge. Replacement was deemed the most viable option. This new bridge was essential for NS to operate safe, reliable, and efficient rail operations on the Southern Tier Route. Just under 10 years later, in 2007, Modjeski started design research and provided the best options to complete the enhancement of the route.

Because of the high visibility of the bridge and the large number of visitors to the area, it was required by the National Environmental Policy Act to obtain public input on the design. Both parties agreed on a spandrel-braced arch bridge that would span the entirety of the gorge, framing the beautiful backdrop. This popular option would leave no physical footprint in the water below and no obstructions to the scenery, unlike the current structure, ultimately enhancing the views in the park.

The new arch bridge is a single track railroad crossing with a ballast-filled concrete deck. The main span is a 483-foot-long arch and there are three 80-foot-long girder span approaches on each end, for a total length of 963 feet. The deck sits 235 feet above the Genesee River and contains 7,348,000 pounds of steel. The approach spans consist of 1,231,000 pounds of steel, and the access system has 205,300 pounds. The project also includes 4,030 cubic yards of concrete.

Setting Rough Terrain crane on the east side of the arch span

Erecting final arch span floor system assembly at the center of the arch prior to beginning arch closure sequence

After successfully closing the arch span

> The Arch Tieback System was an integral part of the cantilever erection and was designed specifically for governing the arch construction stage.

Construction

In November 2015, just a mere 75 feet south of the existing structure, construction got underway on the new bridge. The proximity to the existing structure made the project site a bit difficult to command. Being a linear project with limited lateral space because of the proximity to the existing structure and surrounding State Park property, the AB team had to overcome obstacles regarding space for materials, construction staging, and housekeeping. Because of these challenges, the construction method had to be carefully considered, but thanks to AB's talented in-house engineering team, the task seemed effortless. To avoid the need for falsework and to keep the physical footprint in the Genesee River at a minimum, the cantilevered erection method with a tie-back system was implemented for the main part of the project—the arch erection.

To begin arch erection, AB placed a Manitowoc 4100W Ringer Crane with 300-foot boom on each side of the gorge. This allowed each half of the arch to be constructed simultaneously using the cantilevered erection method until each side met in the middle. To support the segments during construction, a temporary tieback system was used.

The first two approach girder spans and the arch span from panel point 0 to panel point 4 were erected using the 4100 Ringers. These cranes then lifted rough terrain cranes onto both cantilevers which were then used to erect the remaining members, lowering each piece into place. This allowed the two cantilevers to be joined together and the bridge to function as a complete arch. The ringer cranes fed material to the rough terrain cranes and erected the final approach span once the arch was completed. The temporary tiebacks were then released upon joining the cantilever halves. This method was possible because a spandrel-braced arch with temporary tiebacks is a self-supporting structure when cantilevered.

The temporary works consisted of two major items: the Stage 1 Support Tower and the Arch Tieback System. The Support Tower on the east side was made up from the falsework towers used on the Puerto Rico Convention Center and U.S. 69 Missouri River Bridge projects (AB Connections Issue #1006). The tight footprint of component rock on which to found the west side support tower required the innovative use of F1 falsework instead of the Puerto Rico falsework.

Setting Puerto Rico Falsework Tower in East Skewback Excavation

Tieback strands installed and making preparations to remove falsework towers

The towers were used to erect Stage 1, consisting of three arch members. Once they were erected, the arch tieback system was installed and engaged, ultimately releasing the Stage 1 Assembly from the Support Tower, and the Support Tower was removed. Then, the cantilever arch erection continued from both the east and west to eventually close the arch.

The Arch Tieback System was an integral part of the cantilever erection and was designed specifically for governing the arch construction stage. This stage required 900 tons per truss line (1,800 tons total) to hold back the arch. The tieback system consisted of cables that tied into each U0 gusset plate and anchored into a series of guy towers and backstays. The delta plate also served as an erection aid and each tieback cable pinned into a plate which connected to the jacking rod clevis. The jacking rod fed into the tieback tensioning device equipped with one center hole jack and a lock off nut. The tensioning device adjusted the cable lengths and thus the arch geometry during the erection and arch closure. Four guy towers each received three tieback tensioning devices, transferred the demands to the back stay members, and directed the vertical components into the permanent approach span abutment. The backstays were pin connected to a grillage system that was anchored by 140-foot-long pretensioned rock anchors.

As erection progressed, AB's in-house engineering group monitored the deflection of the arch as well as the tension in the tieback system strands. The engineering group provided the field group with guidelines for the tieback cable tension demands and

Tieback strand installation

Installing 3-inch diameter strands at west arch tieback system

Arch Tieback System

panel point deflections according to AB's structural analysis model. The engineering group also provided jacking stroke distances for the adjustment stages. Through a coordinated effort between the east and west tieback system, the arches were adjusted until the bolt holes in the lower panel point were aligned and the field team was able to zip up the mid span panel point connections starting from the bottom, using the tieback system for further adjustment.

AB's scope of work also included skewback excavation, rock fall protection/fencing, site work, micropile foundations, form/pour concrete and mass concrete, and landscaping and site restoration. AB was working in very close proximity to the original foundations of the existing structure when performing skewback excavation, so AB had to be extremely diligent.

The new bridge was also required to be built on a parallel alignment in order to maintain rail traffic at all times. AB worked closely with NS to plan operations around their train schedule. Once the structure is complete, waterproofing is applied to the concrete decks, and the approaches leading to the bridge have been final-graded with subballast, AB will hand the bridge and new alignment over to NS. NS will then install the ballast, install the rail, make the tie-ins, and switch the traffic.

Once train service is re-routed, the existing bridge and foundations will be demolished, save one small piece. A portion of one tower will be preserved and given to Letchworth State Park to incorporate into a permanent historical display within the park. Detailed demolition procedures are not yet finalized for the existing structure but AB is working hard to complete the plan. It is likely that the team will perform explosive demolition on two towers and two spans and de-erect the balance of the structure with regular cranes and equipment.

Post-blast view of controlled rock blasting at Skewback 1 excavation

Portageville Bridge arch in place

> The bridge will be a beautiful addition to the already appealing scenic views and a complement to what Letchworth State Park is known for. AB is proud to have a hand in continuing this historical narrative.

Environmental Considerations

As with any project of this size and magnitude, particularly a project through a state park, a large number of permits are required. Two of the more unusual contract permit requirements for this project involved AB compliance with a Bald Eagle Protection Plan, as well as a Timber Rattlesnake Protection Plan.


Eagle nest approximately 1,200 feet upstream from bridge

Approximately 1,200 feet upstream from the Portageville Bridge sits an occupied eagle's nest. Because eagles return to the same nest every year, NS was required by the U.S. Fish and Wildlife Service to monitor the eagles' use of the nest as well as their behavioral responses to AB's construction activities. From mid-January until the eaglets fledged the nest each year, NS engaged an Eagle Monitor to observe and record the raptor's behavior. This meant that in turn, AB also was required to take some precautions. Concerns with noise disturbances that may cause the eagles to abandon the nest and relocate were raised. One way to alleviate this concern was to install the micropiles via drilling rather than driven piles. The only other restriction made due to the eagle permit was limiting the number of blasts AB could perform each week during the skewback rock blasting and excavations. AB could conduct no more than three blasts per side of the gorge every week. This never impacted the planned schedule and since the project started, the eagle nest has not been abandoned. Eagle chicks have also successfully hatched in both years that AB has occupied the site.

Timber Rattlesnakes are also a concern in the area. Dens within Letchworth State Park are located several miles north of the bridge and the nearest sighting was within a mile. However, some existing or expected site conditions appeared to be a suitable summer migration habitat and because the Timber Rattlesnake is protected, AB also had to comply with the protection of this species. A "rattlesnake barrier" was installed around the project's perimeter. This barrier is a silt fence titled outward at a 15 degree slope to keep the snakes from climbing over and entering the work zone—much to the contentment of the employees too! Training on the Timber Rattlesnakes is also mandatory for all employees and subcontractors. Training involves instructing employees of what to look for, as well as steps to take if one happens to visit the site. Since the project began, there have been no sightings.

Just under one year away, at the end of 2018, the entirety of the Portageville Bridge project is expected to be complete. The new structure will be operating in late fall 2017, with demolition of the existing structure to follow. AB will wrap up the project with an extensive landscaping component and trail reestablishment. The bridge will be a beautiful addition to the already appealing scenic views and a complement to what Letchworth State Park is known for. AB is proud to have a hand in continuing this historical narrative.

A MARVEL OF MODERN HISTORY

Record-breaking Queensferry Crossing officially opens to traffic

Location: Edinburgh, Scotland **Owner:** Transport Scotland

After six years of construction, the tremendous efforts for the highly-anticipated Queensferry Crossing over the Firth of Forth in Edinburgh, Scotland were realized as the first car traveled across the bridge on August 30th. Five days later, the bridge was closed one last time for the official opening ceremony. Her Majesty Queen Elizabeth II attended to perform the official ribbon cutting, exactly 53 years—to the day—after she also opened its neighboring crossing, the Forth Road Bridge.

The Queen then traveled by car across the structure, made a speech, and unveiled a plaque declaring the crossing formally open. 50,000 members of the public, selected in a ballot, were also given the chance to walk across the bridge. Local schools and community groups followed before the bridge closed to pedestrians for good on Tuesday, September 5th.

This 8,639.5-foot cable-supported crossing of the Firth of Forth will go down in history as a record-breaking structure. Prior to the completion of the final closure sections on the deck, the balanced cantilevers were recognized as the longest ever by the Guinness Book of World Records. It is also the longest three-tower, cable-stayed bridge in the world at 1.7 miles and the biggest infrastructure project in Scotland in a generation. It has the highest bridge towers in the UK at 689' and a new world record was achieved in 2013 when the team performed the largest continuous underwater concrete pour, depositing 595,723 cubic feet of concrete into the water-filled south tower caisson non-stop in 24 hours.

The project, a total of 13.7 miles long, also included major motorway upgrades to the north and south of the bridge. This important link between Lothians

The completed Queensferry Crossing

and Fife was built to alleviate traffic from the Forth Road Bridge, and is projected to carry about 24 million vehicles per year with a life expectancy of 120 years. The Forth Road Bridge will remain in place and be available for cyclists, pedestrians, and buses to use.

With upwards of 10,000 people working on this project at some point throughout the six years of construction, the team, Forth Crossing Bridge Constructors (FCBC) comprised of American Bridge, Hochtief, Dragados, and Morrison, along with the subcontractors, also clocked more than 10 million manhours. ✦

BY THE NUMBERS

48 Number of London busses stacked on top of each other required to reach the same height of the Queensferry Crossing towers

Number of Boeing 747 planes that make up the same weight as the steel required for the bridge deck **200**

23,000 Miles of cabling used—almost enough to stretch around the entire Earth

Number in tons of concrete poured—almost the same amount used for the entire London Olympic Park and Athletes' Village **165,347**

Photo courtesy of New York State Thruway Authority

MIGHTY MARIO CUOMO BRIDGE

The first of two spans on the largest infrastructure project in New York opens

Location: Tarrytown, New York **Owner:** New York State Thruway Authority

In January 2013, the biggest project in the history of the New York State Thruway Authority broke ground. Less than four years later, on August 24th, a ribbon-cutting ceremony was held to mark the opening of the first span of that project—the new Tappan Zee Hudson River Crossing—recently renamed the Governor Mario M. Cuomo Bridge. More than 800 dignitaries, as well as residents from Rockland and Westchester counties attended the ceremony to mark the occasion. To commemorate the official opening, the Governor of New York, Andrew Cuomo, drove on the new span in a 1955 Corvette with Armando "Chick" Galella in the passenger seat. Galella, a veteran who survived the 1941 attack on Pearl Harbor, drove the same model year Corvette across the original Tappan Zee Bridge (AB Order #Q-4100-9) in December 1955 as part of the opening ceremony.

At exactly 1:36 a.m. on August 26th, appropriately just upstream from the "city that never sleeps", a major milestone was reached when the first public motorist traveled across the bridge, marking the first span officially open to the public. Tappan Zee Constructors, LLC (TZC), of which American Bridge is a member, successfully shifted the Rockland-bound traffic on the existing bridge over to the first span of the new structure. In October 2017, Westchester-bound traffic was also switched to the first new span. Now that all traffic is on the new structure, the tie-ins from the existing bridge to the landings can be demolished which will allow the second span to be connected to land. Once the second span is complete, each direction of traffic will occupy one 4-lane crossing.

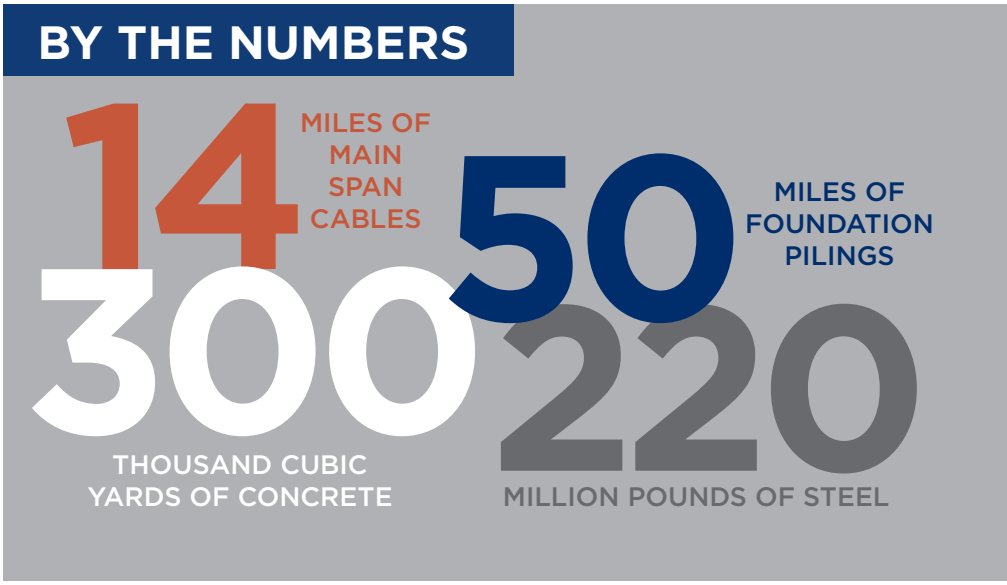
The complete replacement of the Tappan Zee Bridge consists of two new, 3.1 mile, parallel, cable-stay crossings. Each bridge comprises a 2,240' three-span channel unit with a 1,200' main span founded on 72" diameter steel piles up to 100 meter deep, a precast pilecap form and cofferdam, concrete outwardly inclined towers, and composite steel/concrete superstructure supported by stay cables. Also included are 42 approach spans founded on steel piles up to 72" diameter, precast pilecap tubs, concrete piers and steel girder approach spans with precast piercaps and precast concrete decks. The TZC team will demolish the existing bridge once construction is complete.

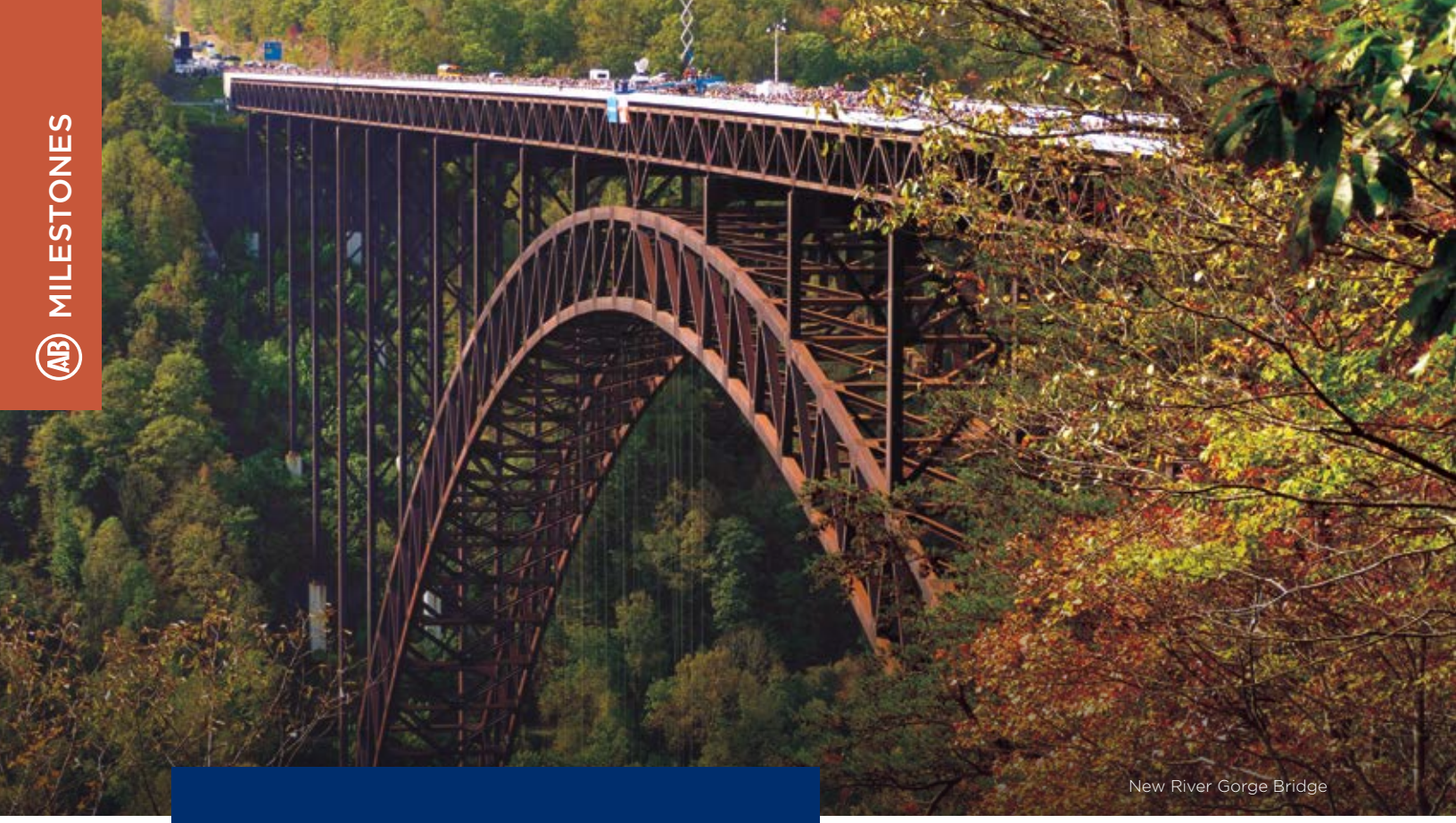
While the bridge is not quite done, this monumental occasion marks the beginning of the end. As one

> **"As one of the largest construction projects in the nation, approximately 7,000 people have contributed to the construction, totaling close to nine million manhours."**

of the largest construction projects in the nation, approximately 7,000 people have contributed to the construction, totaling close to nine million manhours. When complete, the new structure is expected to serve the Hudson Valley for the next century allowing over 140,000 vehicles to cross the Hudson River safely every day.

BY THE NUMBERS





New River Gorge Bridge

A RUBY RED BRIDGE BASH

The New River Gorge Bridge celebrates its 40th anniversary

Location: Fayetteville, West Virginia

Owner: West Virginia Department of Transportation

As the largest project in the West Virginia Department of Highways' history at the time of construction, the New River Gorge Bridge is one of the most prominent structures in the state. This AB-built bridge located in Fayetteville is even the featured image on the West Virginia quarter unveiled in 2005. Every year since 1980, to commemorate the day the first cars drove over the bridge on October 22, 1977, the bridge is closed to traffic and a celebration ensues. Now known as "Official Bridge Day", this tradition takes place annually on the third Saturday in October in recognition of this national engineering landmark.

This year was a special celebration as the bridge celebrated its 40th anniversary of service. In addition to the regular festivities of BASE

L to R: Barry Bender, Tom Owens, Tom Daley, Dan Radu

jumping, rappelling, zip lining, and sightseeing, a special presentation was coordinated with remarks from a handful of people including the Governor of West Virginia, Jim Justice. Among the more than 100,000 attendees, a few select AB employees and retirees who were essential pieces of the 1970's construction team were invited to sit front row for the festivities. Tom Owens, Dan Radu, Tom Daley, and Barry Bender were in attendance, proudly displaying the AB logo on the hardhats atop their heads.

AB was the general contractor, fabricator, and steel erector for this 3,030' iconic structure and also performed all temporary works engineering for the project. Because of its location over the expansive New River Gorge, the construction for the bridge proved to be challenging and many innovations were developed to make the project successful. AB designed and built a four tower, dual cableway crane system with a span of 3,500' to erect components weighing up to 100 tons. The towers were 330' tall, and the cableway used 22 miles of wire rope up to 3" diameter. AB also developed a deck level tieback system to restrain the uncompleted arch, constructed of high strength pipe material anchored to gravity blocks. This eliminated the need for tieback anchors, a major cost savings. The arch weighed 10,533 tons and another 11,470 tons of steel was used to complete the superstructure.

In 2013, just 36 years after its completion, the bridge was listed on the National Register of Historic Places for not only its engineering significance, but also its exceptional impact on local transportation. Before the bridge existed, it took 45 minutes to get around the river valley. The new bridge reduced this travel time to just 45 seconds.

40 years later, this bridge still has a significant impact on the community and continues to hold some record-breaking statistics. At 1,700' pin to pin, it is the longest single arch bridge in the Western Hemisphere and third longest in the world. At 900' above the river elevation, it is also the second highest vehicle carrying bridge in the United States and fifth in the world. Overall, it is the third highest bridge in the United States and 13th in the world.

FEATURED EMPLOYEE

KEN SHOVLIN

SENIOR ESTIMATING MANAGER

Meet Ken Shovlin. Ken is a Senior Estimating Manager based out of the American Bridge Headquarters in Coraopolis, Pennsylvania. Ken has been in the construction industry since 2002 and joined AB in 2015 which involved a move back to his hometown of Pittsburgh. He has a Bachelor of Science in Civil Engineering from the U.S. Coast Guard Academy and a Master of Science in Civil Engineering from the University of Illinois. He is a Professional Engineer and has held a variety of positions throughout his career including project engineer, engineering manager, project manager, and chief estimator.

How did you become interested in the construction industry?

I had an affinity for math as a student, and that led me towards engineering disciplines. Growing up near Pittsburgh, I always loved bridges and skyscrapers which narrowed my focus to civil engineering. My favorite building in Pittsburgh is the US Steel Building and my favorite bridges are the ones known locally as the "Three Sisters." They're actually called the Roberto Clemente (Sixth Street Bridge), the Andy Warhol (Seventh Street Bridge), and the Rachel Carson (Ninth Street Bridge).

You have a bachelor's degree and a master's degree in Civil Engineering. Your master's had an emphasis in Structural, Geotechnical, and Construction Management. How did this prepare you for your career path?

I am lucky that a good deal of my education, like many at American Bridge, is directly relevant to the work we do day-to-day. I'm not sure that many people in other industries can say that. I felt that I needed a firm technical base from my education even if I was not doing design and engineering analysis as core job tasks. The technical emphasis in school has served me well.

What brought you to AB in 2015?

It's not uncommon for major companies to be out on the market looking for Senior and Chief Estimating capabilities. Though I usually ignore most of the solicitations that I see, Pittsburgh and American Bridge literally hit home and piqued my interest enough to explore contributing to this legendary company.

How did your experiences working for the U.S. Coast Guard prepare you for your position at AB? How are the experiences different?

I found that the Coast Guard helped instill a discipline and attention to detail that are critical in the construction industry. My Coast Guard experience grounded me and helped me understand how to handle stress and be a better manager. I did spend some time in Coast Guard operations, but much of my time was in Civil Engineering and Project Management. In that regard, I was in the same industry but as an owner. Having the perspective of an owner has been very helpful in developing my approach as a contractor. My biggest lesson learned in the USCG were to respect the power of Mother Nature and maintain composure in stressful situations.

What is the best part about working for AB?

The best part about working for AB is getting the opportunity to collaborate with the people in the organization. A company could have the best construction opportunities and the best company resume, but if they don't have a good core group of people I don't think the employees would be happy. AB is lucky to have that good core group of people—it is a pleasure to see and work with them every day. The signature jobs we get to pursue, of course, don't hurt either.

Ken with Pittsburgh Penguin's current owner and former player, Mario Lemieux, during contract signing at the 2016 Mario Lemieux Fantasy Camp

What do you find most challenging at AB?

I would say that the most challenging thing is the unique nature of so many of our jobs. We don't get to use the same labor tables, equipment lists, and general contract language like many of our regional highway contractor counterparts. For us, every job could mean starting anew with contract review, new standard specifications, new labor unions, etc.

What is your biggest professional achievement to date?

My biggest professional achievement to date was my involvement in the response to the tragic Oso landslide in 2014. With my prior company, I was the Chief Estimator, Estimate Sponsor, and then Project Manager for an emergency design-build to restore the state route through the disaster area in Oso, Washington. I led every aspect of the pursuit and project from the Statement of Qualifications to closeout and wetland remediation. The job was as much of a coordination effort between a client and a devastated community as it was a conventional construction job. We completed the new highway ahead of schedule (and exactly six months from the date of the slide), well under budget, and included a memorial to the 43 victims.

If you could have worked on any AB project since our inception in 1900, what would it be and why?

That's a tough one! The cable-stayed Sunshine Skyway, Verrazano Narrows, and the Three Sister Bridges top my list. There are so many good options, but I would choose one of those beautiful signature bridges. Seeing them in use for so many years and knowing that you contributed would be something to be really proud of.

What do you like to do in your free time? Do you have any hobbies or interests?

I'm an avid hockey player and fan. I also enjoy traveling with my wife whenever I can. This past September we went on a quick one week getaway to Paris.

NEW EMPLOYEES

Pamela DiNardo Project Administrator, 10th Street Bridge Rehabilitation

Ryan Drebert EHS Manager I, Edmonton, Alberta

Chris Fannin Corporate Scheduler

Michael Hiniker General Superintendent I, Coco Cay, Bahamas

Dana Johnson Treasury Analyst

James Laing Senior Vice President

Rodrigo Prado Paramio Sub Agent, Tamar Bridge

Anthony Raphael Project Manager, Brazoria, TX

Peter Redfern Estimating Manager, ABI

Laura Ferri Sanchez Senior Engineer, Tamar Bridge

Mark Shaffer Help Desk Technician

Howard Wilkinson Project Manager, ABI

Garrett Worden Field Engineer, Tappan Zee

NEWS + ACHIEVEMENTS

- The Horseshoe Arch Pedestrian Bridge project in Dallas, Texas was awarded with the 2017 National Award of Merit in the Transportation category from the Design-Build Institute of America. AB is working as a subcontractor to Pegasus Link Constructors and is responsible for the construction of the twin 1,125' long, 290' tall bridges which provide pedestrian access across the Trinity River.

- AB's Annual Meeting took place September 29th to September 30th this year. AB employees from all over the world gathered in Farmington, Pennsylvania to partake in some fun activities and to gain insight on what's ahead for the company.

- On August 31st, after 16 years, Jeanne Zorn retired. She joined AB in 2001 as the Accounts Payable Supervisor and last year transitioned to Treasury Supervisor to focus on cash management. Jeanne is continuing to work with AB on a part-time basis to help through the transition but is looking forward to this new chapter in her life. Jeanne, we wish you the best!

- The U.S. 69 Missouri River Bridge project (Issue #1006) was awarded the Safety Award of Merit from ENR Midwest. Out of over 100 projects, AB was selected because of the project's exemplary safety record and well-documented safety strategies.

CURRENT CONTRACTS

- **10th Street Bridge Rehabilitation and Cable Dehumidification** Pittsburgh, Pennsylvania
- **Angus L. Macdonald Bridge Suspended Spans Deck Replacement** Halifax, Nova Scotia, Canada
- **Blount Island Marine Terminal Wharf Reconstruction** Jacksonville, Florida
- **BNSF Truss Bridge Over I-235** Oklahoma City, Oklahoma
- **Coco Cay Pier Development** Little Stirrup Cay, Bahamas
- **Crown Bay – Mooring Dolphin** St. Thomas, U.S. Virgin Islands
- **Delaware Memorial Bridge First and Second Structures – Dehumidification of Main Cables and Anchorages** Wilmington, Delaware
- **Edmonton Valley Light Rail Tawatina Bridge** Edmonton, Alberta, Canada
- **Forth Road Bridge Main Cable Inspections** Edinburgh, Scotland, United Kingdom
- **Horseshoe Arch Pedestrian Bridge** Dallas, Texas
- **I-90 Floating Bridges Anchor Cable Replacement** Seattle, Washington
- **Peace Bridge Rehabilitation** Ft. Erie, Ontario, Canada
- **Portageville Bridge Replacement** Portageville, New York
- **Spuyten Duyvil Bridge Rehabilitation** New York, New York
- **Tacony-Palmyra Mechanical Rehabilitation** Palmyra, New Jersey
- **Tamar Bridge Suspension System Remedial Works** Plymouth, SW England, United Kingdom
- **The New NY Bridge (Tappan Zee)** Tarrytown, New York
- **Tintagel Castle Footbridge** Cornwall, United Kingdom
- **UPRR Lift Bridge** Angleton, Texas
- **Wharf Bravo Structural Repairs Naval Station** Guantanamo Bay, Cuba
- **WV Corridor H – Kerens to U.S. 219** Tucker/Randolph Counties, West Virginia
- **Rotherhithe Pedestrian Bridge** London, United Kingdom

PROJECT WINS

FORTH ROAD BRIDGE MAIN CABLE INSPECTIONS
Edinburgh, Scotland, United Kingdom

SPUYTEN DUYVIL BRIDGE REHABILITATION
New York, New York

I-90 FLOATING BRIDGES ANCHOR CABLE REPLACEMENT
Seattle, Washington

ROTHERHITHE PEDESTRIAN BRIDGE
London, United Kingdom

FLASHBACKS

LOUISIANA SUPERDOME

Location: New Orleans, Louisiana
Completion Date: 11/21/1973
AB Order #: K-4710-19

44 years ago, AB completed the erection of structural steel for the Louisiana Superdome, known today as the Mercedes-Benz Superdome. AB was a subcontractor for this fully-enclosed stadium with 72,000 seats. The stadium is 750' by 750' at ground level and 273' high with a 680' diameter roof. AB erected over 17,009 tons of structural steel and 10,000 tons of precast concrete. This stadium is home to the New Orleans Saints of the National Football League (NFL).

SAN DIEGO PADRES BASEBALL STADIUM

Location: San Diego, California
Completion Date: 04/15/2003
AB Order #: 400710

In 2002, AB began work as the prime structural steel contractor on the new San Diego Padres Ballpark in downtown San Diego. Just over one year later, work was complete on this one-of-a-kind baseball stadium, which is also known as Petco Park. AB was responsible for the fabrication and erection of approximately 10,000 tons of steel, which included beams, columns, trusses, and the scoreboard tower. An extended cantilever brings fans seated on the top two decks closer to the playing field and made this stadium a unique player among the many baseball stadiums.

GUND ARENA

Location: Cleveland, Ohio
Completion Date: 10/05/1993
AB Order #: 43001

AB completed the Gund Arena 24 years ago. AB was responsible for the erection of the structural steel including long-span roof trusses as well as the fill-in for this 480' by 345' domed arena. The roof includes a 35' cantilevered truss that forms an entrance canopy to the arena. This multi-purpose arena is home to the Cleveland Cavaliers of the National Basketball Association (NBA) and is now known as the Quicken Loans Arena, or "The Q".

UNITED CENTER

Location: Chicago, Illinois
Completion Date: 09/02/1993
AB Order #: P-206AB

The United Center in Chicago, Illinois was completed 24 years ago. AB erected the structural steel and metal deck for this stadium, including the long-span roof system. This indoor sports arena has been home to the Chicago Bulls of the National Basketball Association (NBA) since opening in 1994 and the Chicago Blackhawks of the National Hockey League (NHL) since 1995.

AN UNCONVENTIONAL CENTER

Although it's not in our name, there is no shortage of completed special structures in AB's inventory. AB has logged close to 100 of these types of projects throughout the company's history. These special structures range from sports arenas, to observation wheels, to convention centers, and promote the congregation of communities while supporting entertainment and education.

Located on the site of the former U.S. Naval and Coast Guard base in San Juan, the Puerto Rico Convention Center is a prime example of these projects. When the Puerto Rico Tourism Company was looking for a way to broaden the vacation industry with more group and business travel, a plan to build a convention center was developed. Just over 15 years ago, in October 2002, the idea turned into a reality as work began on the structure. AB was hired by a joint venture of Hardin and QB Construction to fabricate and erect approximately 11,000 tons of structural steel, metal deck, and stairs consisting of beams, columns, and long span trusses.

Because of its location on a tropical island on the peninsula of Isla Grande, surrounded simultaneously by the Atlantic Ocean and the Caribbean Sea, this structure takes after its surrounding elements. One of the most notable inspirations is the unique roof top that subtly resembles an undulating ocean wave. Large diameter pipes that are architecturally exposed in the front entrance make up the wave-shaped roof. These pipe arches span as much as 600' and are made from welded 60" by 1-5/8" pipe sections supported by AB-designed falsework.

These falsework towers have become a valuable part of AB's inventory and were reused during the construction of the U.S. 69 Missouri River Bridge (Issue #1006) and the Portageville Bridge Replacement project (pg. 4). The ocean theme also continues throughout the venue in smaller details such as the custom-designed carpets and door pulls which are shaped and colored to represent the Caribbean.

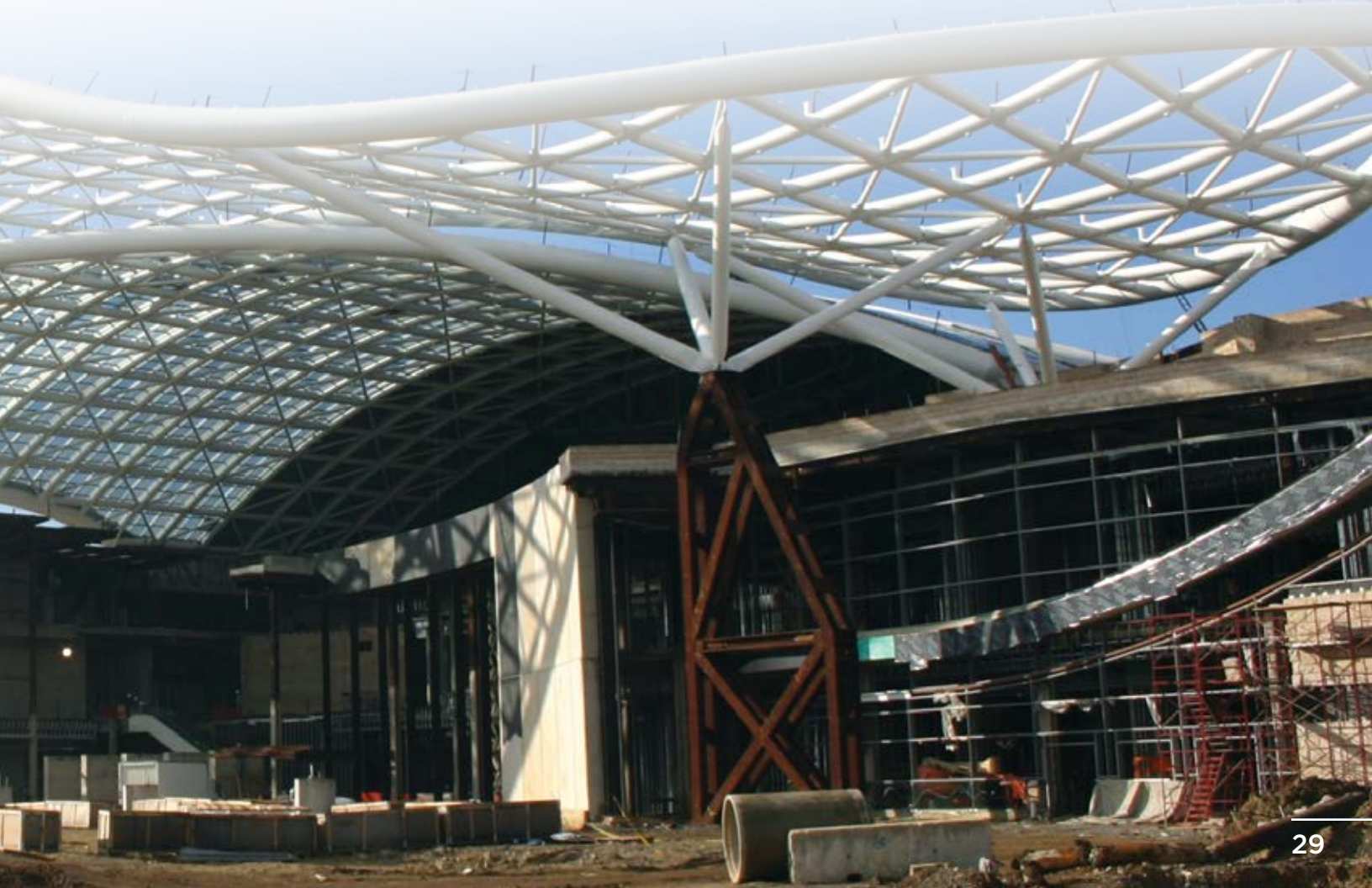
The Puerto Rico Convention Center under construction

PUERTO RICO CONVENTION CENTER

Location: San Juan, Puerto Rico **Completion Date:** 08/11/2004 **AB Order #:** 520110

At 600,000SF, it is the largest convention center in the region with 150,000SF of exhibition halls, 40,000SF of meeting rooms, and a 40,000SF ballroom which is the largest in the Caribbean. The center measures 734' wide by 550' long and 120' high. It is also one of the most technologically-advanced in the Caribbean and Latin America with high-speed wireless internet services as well as the ability to video conference with simultaneous language translation, among other things. At any given time, the center can accommodate approximately 25,000 people and can handle conventions with as many as 10,000 participants. The exhibition hall can seat up to 16,965 people and the ballroom can hold up to 4,158 people.

This visually stunning convention center has not gone unnoticed and has received numerous awards throughout its lifetime. It has even been featured as one of the World's Top Convention Centers—twice—in Trade Show Executives Magazine in 2011 and 2013. There is no doubt that the unconventional AB-built wave-shaped roof helped to put the convention center at the top of the list. This never-been-done-before complex design gave AB yet another checkmark in the "making history" category continuing the tradition of engineering excellence.



THE PATH TO ZERO

Edmonton Valley LRT project demonstrates safety success with zero lost time incidents (and lots of barbeque)

American Bridge is currently stationed in Alberta, Canada working as a dedicated subcontractor to Trans Ed Partners on the Edmonton Valley Light Rail project. AB is tasked with the construction of the new Tawatina Bridge, an 853', three-span extradose cable-stayed bridge and pedestrian walkway over the North Saskatchewan River, as well as the design and demolition of the existing Cloverdale Pedestrian Bridge.

Safety has to be at the forefront of every action on a construction site, and continues to be AB's top priority. Employees at the Edmonton project site have been 100% dedicated to the zero-incident company goal. Throughout the duration of the project, the team has hosted on-site training days to educate employees. Sessions on Emergency Response Procedure and Self-Contained Breathing Apparatus have been provided to keep employees abreast of important safety practices.

The due diligence and pride of the employees, along with the provided safety trainings, have led up to an extremely successful year for the project team. On April 29th, the project team celebrated 200 days without a lost time incident. They were rewarded with a barbeque and custom-made hats. With incentives along the way, and a new goal every time the previous is achieved, the project team remains excited and dedicated to the objective. On August 4th, the team hit 300 days and celebrated with another barbeque, clearly a popular preference.

Anticipation was strong as the team approached one year, and on October 13th the project team crossed the mark. Another barbeque was held and each employee received custom monogrammed hoodies. This was an incredible accomplishment considering the high hazard work involved in the construction of this project. But the Edmonton team isn't stopping there. Even though one year is a substantial feat, the team is still pushing forward with a new goal—500 days of zero lost time incidents. AB is proud to have these dedicated employees as part of our team. Congratulations to all!

The Edmonton Team in their custom monogrammed hoodies

AB CONNECTIONS

CONTRIBUTORS

EDITOR

Heather Engbretson

ASSISTANT EDITOR

Kelsey Gooding

CONTRIBUTORS

Bill Felker

Ken Shovlin

Jon Weaver

SPECIAL THANKS

Norfolk Southern Railway Company

GRAPHIC DESIGN

www.TaraHoover.com

American Bridge

1000 American Bridge Way
Coraopolis, PA 15108
United States of America

www.AmericanBridge.net

info@americanbridge.net
412-631-1000

Fraud & Ethics Hotline:
888-247-3198

CONNECTIONS

INSIDE THIS ISSUE

Winter 2017 – Issue #1008

PRSRT STD
U.S. POSTAGE PAID
CORAOPOLIS, PA
PERMIT NO. 7