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Wisconsin

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ENGINEERING

EXCELLENCE AWARDS



A CLOSER LOOK AT HOW ENGINEERS MAKE IT HAPPEN



ENGINEERING

Critical link to prosperity

American Council of Engineering Companies of Wisconsin

ACEC WI members develop innovative solutions that increase our state's economic growth. Facing a complex issue? They collaborate with stakeholders to successfully design our state's future.

ENGINEERS PROMOTE WISCONSIN'S GROWTH



HUMAN MOVEMENT

Infrastructure for multi-modal movement (land, air and water)



WATER RESOURCES

Drinking water, wastewater and stormwater



VERTICAL STRUCTURES

Public and private entities



ENVIRONMENT

Recycling, solid waste, brownfields and remediation



UTILITIES/ENERGY

Communication and power generating infrastructure

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REPORTER**

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A CLOSER LOOK AT HOW ENGINEERS MAKE IT HAPPEN

Engineering Excellence Awards Recognize Outstanding Professional Work

ENGINEERS MAKE IT HAPPEN



John Kissinger, PE
Chair of the Board

Excellence is defined as “The quality of being outstanding.” The American Council of Engineering Companies of Wisconsin (ACEC WI) has recognized excellence in engineering for over 50 years. This long tradition continues as we celebrate the 2021 Engineering Excellence Awards. The projects featured in this publication will join previous award winners to recognize engineering innovation in Wisconsin.

A record 27 projects were submitted for this year’s competition, and our award winners showcase the wide variety of creative engineering solutions from Wisconsin companies. The projects range from river restoration to dam design and construction to lift bridge reconstruction and even raising the roof of an existing amphitheater. Each project submitted has its own unique aspects highlighting the talents and skills of our professional engineers.

All these projects would not be possible without a team of engineers, planners, technicians, scientists and others who collaborate with their clients to produce outstanding results. These diverse teams combine the innovative ideas of new graduate engineers with the proven experience of seasoned engineers and designers. The award winners represent a vision of the future, incorporating creative design ideas and new technologies to make the world a better place.

ACEC WI is proud to celebrate the achievements of the engineering professionals who help bring their clients’ ideas to reality. We also celebrate the owners and public officials who entrust their projects to our engineering teams.

Many of the projects in this year’s competition were procured through a Qualifications-Based Selection (QBS) process; these projects are highlighted with a red ribbon. This is an important aspect in the selection process for engineering teams. QBS allows engineers to be innovative, creative and flexible, thereby giving our clients the best results possible. Often, QBS leads to cost savings during the construction and operation phases of a project, which provides the best value to our clients and owners.

On behalf of the ACEC WI Board of Directors, I would like to congratulate this year’s award winners, and to encourage our member firms to start thinking about the great projects that could be eligible for next year’s competition. I would also like to thank our sponsors for their support of our Engineering Excellence Awards program and ACEC WI. Their support helps to provide visibility for our member firms and helps to spread the word on how engineers make our lives safer, easier, happier and healthier, and continue to display “the quality of being outstanding.”

Engineering Excellence Awards

RECOGNIZING EXCEPTIONAL IDEAS & INNOVATIONS IN ENGINEERING

Like the Academy Awards for the film industry, the Engineering Excellence Awards highlight the best of the best in professional engineering. ACEC WI’s Engineering Excellence Awards program recognizes and celebrates engineering achievements that demonstrate the highest degree of skill and ingenuity. Established in 1970, this statewide competition effectively ensures firms achieve the recognition they so richly deserve.

Through exceptional engineering design, these award-winning projects significantly contribute to the quality of life of the state’s citizens. They also recognize the design professionals involved for their expertise and dedication to the profession. The 2021 winners strengthened our infrastructure, enhanced public safety and bolstered the economy.

The winning projects focus on public health and economic growth through cost-effective solutions. These engineers developed innovative solutions that successfully tackle complex issues.

Congratulations to all our award-winning firms and clients on your outstanding projects! An Engineering Excellence Award is a tribute not only to the winning project and design firm, but also to the clients, owners, subconsultants, contractors and everyone else who played a role in making these projects a reality.

Qualifications-Based Selection Delivering Winning Projects



Many of the award-winning projects were procured using Qualifications-Based Selection (QBS). On the following pages, a QBS label indicates projects that were procured using QBS. QBS is a proven process to help owners find the highest-qualified engineering or architectural firm or team for a project. Page 31 of this magazine provides information on the QBS process.

The following 2021 Engineering Excellence Awards were presented:



State Finalist Awards are presented to entries demonstrating a high degree of client satisfaction through quality, cost-effective solutions. This year, ACEC WI presented 18 State Finalist Awards.



Best of State Awards are presented to entries representing the highest degree of technical innovation, client satisfaction and contributions to the engineering industry. Best of State winners are eligible to compete in the ACEC National Engineering Excellence Awards competition. This year, ACEC WI presented nine Best of State Awards.

The Grand Award is selected from the Best of State winners. It is the entry the judges felt best represented the spirit and criteria of the competition. The Grand Award will be announced at the Awards Banquet.

Engineering Improves Our Lives

Each of our projects covers at least one of the core facets of engineering – environment, human movement, utilities/energy, vertical structures and water resources. Look for these symbols on each project to see which areas that project addresses.

Judging & Awards

A panel of highly qualified judges reviewed this year's entries. Each entry was judged on its own merits and specifically on the role of the engineering firm submitting the project.

The panel used the following criteria to evaluate each submission:

- Original or innovative application of new or existing techniques.
- Future value to the engineering profession and perception by the public.
- Social, economic and sustainable design considerations.
- Complexity.
- Exceeding client/owner needs.

Each entry is truly an example of excellence in engineering, which made the judges' deliberation difficult.

2021 Engineering Excellence Awards Judging Panel

Brandon Braithwaite

Wisconsin Department of Natural Resources

Sharon Bremser, PE

Aurigo Software Technologies

Tom Buchholz, PE

Wisconsin Department of Transportation

Jerry Deschane

League of Wisconsin Municipalities

Molly Gribb, PhD, PE

University of Wisconsin-Platteville

Mark Kruser, AIA

OPN Architects

Errin Welty, CECD

Wisconsin Economic Development Corporation



Human Movement

Infrastructure for multi-modal movement (land, air and water)



Water Resources

Drinking water, wastewater and stormwater



Vertical Structures

Public and private entities



Environment

Recycling, solid waste, brownfields and remediation



Utilities/Energy

Communication and power generating infrastructure



AMERICAN FAMILY INSURANCE AMPHITHEATER RENOVATION

LARSON ENGINEERING INC. CLIENT: Milwaukee World Festival Inc.



A 300-ton center portion of the roof was lifted in the middle of winter to stay on schedule.

A historic venue. The world's largest outdoor music festival. There are not many engineering projects with more star power than renovating the American Family Insurance Amphitheater at Summerfest. The original structure was built in 1987 and was in desperate need of a facelift. The venue was no longer capable of hosting modern acts.

Raising the Roof

Larson Engineering was up to the challenge. The main hurdle was to raise the roof from 39 feet to 65 feet. One of the first plans was to demolish and rebuild the venue but it was deemed wasteful and expensive. Instead, the design team and client developed a staged process that would perform renovation work on the existing structure. The work was staged to occur in the off-season and proceeded over a two-year span.

One of the most important aspects was designing a process that could achieve the roof lift. Unique elements of this project included the segmented fan shape of the roof and the cold weather during the work, such as the negative 10 degree temperature during the actual roof lift.

"This project will be a guiding star for property owners who want to preserve what's best about their older facility while making the most of modern building and design techniques." —Awards judge Jerry Deschane

Time to Start the Show

Larson Engineering was the rock star this time. By carefully designing and coordinating the roof lift, the amphitheater can continue to serve as the focal point of Summerfest. This will allow the festival to attract top acts and provide a vibrant music environment on Milwaukee's lakefront.



The completed amphitheater is a modern environment for all types of musical acts.

BEST OF STATE



CITY OF MADISON NEW FIRE STATION 14

IMEG CORP. CLIENT: OPN Architects OWNER: City of Madison



The new station achieved LEED Platinum certification thanks to sustainable design and unique energy efficiencies.

Residents of the City of Madison's rapidly growing southeastern side faced 10- to 15-minute waits for emergency services. This was a major safety issue, but it also pointed out that the entire area was underserved by all city services. The city decided to construct a new fire station that would alleviate immediate safety issues and provide a gathering place for the area.

Building a 21st Century Fire Station

IMEG made the city's vision a reality. The design team prioritized two things above the rest — people and the environment. Additional space was included so the facility can double as a community center for the underserved area.

A geothermal heating and cooling system provides top-level temperature control. LED lights combine with sensors to reduce energy waste. And a major solar energy system will be able to make the facility net zero in energy use.

"I applaud the design receiving a LEED Platinum certification and that it benefits the community by including publicly accessible spaces and creating jobs. Its interior that helps create a work environment to alleviate the high stress and major health risks the firefighters experience will pay it forward for generations to come." —Awards judge Sharon Bremser

Saving the Environment, Money and Time

The station's smart design resulted in a 58% energy cost reduction. The new station is certified as LEED Platinum, the highest level and far exceeding the city's goal of LEED Silver.

Madison's new fire station saves the city money while providing unparalleled service for its employees, residents and the community at large.



Community spaces with natural light improve mental and social health.

BEST OF STATE



GLENDALE LANDFILL REDEVELOPMENT

AYRES ASSOCIATES INC. CLIENT: Rettler Corporation OWNER: City of Glendale



The community center is a gathering point for anyone enjoying the new park.

The City of Glendale prides itself on its stewardship of natural resources. Two major county parks are within city limits and the Milwaukee River runs through the community. To enhance the community's outdoor recreation, the city sought to build a park and sporting complex. Finding space for this project would be difficult in a rapidly growing community.

Transforming A Blighted Space

Ayres Associates and the client found a perfect spot — an unused former landfill. The landfill had ceased operations in 1976 and had sat capped and vacant since 2000. This 15-acre spot met the city's needs for the new park. The design team went to work to find out how to protect the environment and development from the trash beneath.

The top priority was finding a way to deal with gas and water problems that occur within a landfill. The design team relocated vents and pipes to prevent buildup of gas and water underneath the park structures. Strict construction oversight ensured that the landfill cap was not disturbed.

The final park has a wide variety of facilities. A collegiate-level baseball field and accompanying facilities is the cornerstone of the new park and there are plans to add smaller baseball fields as well. The community can also enjoy a playground and an outdoor amphitheater.

"Ayres Associates brought invaluable environmental expertise to this exciting community project. An old landfill site is now an invaluable community asset."— Awards judge Jerry Deschane

From Trash to Treasure

By daring to transform the old landfill space, the community can now enjoy what used to be vacant land. The engineering team overturned long-held perceptions of the land and created an asset. The new park reinforces Glendale's commitment to environmental stewardship and outdoor recreation.



The baseball field features bleachers, a press box and batting cages.

BEST OF STATE



I-94 N-S FREEWAY / STH 11 INTERCHANGE

SE DESIGN WORKS LLC CLIENT: Wisconsin Department of Transportation



The newly finished corridor quickly and safely moves people and freight between Milwaukee and Chicago.

I-94 is a critical link between Milwaukee and Chicago. It is a key freight corridor and is quickly growing as businesses and populations boom between the two metro areas. While expansion of the highway was previously discussed, the incoming 2,700-acre Foxconn manufacturing campus required design and construction to begin immediately.

A Group Effort on a Major Project

SE Design Works is a coalition effort created to handle the immense work and quick timeframe. Design work was completed in six months, rather than the typical three to five years. Design included the freeway, local roads and nearby interchanges. Bridges had their height increased to accommodate the expected influx of large trucks. The design team coordinated with local entities, environmental authorities and construction teams to keep the process on schedule.

Saving Lives and Travel Time

The improvements will save lives and reduce travel times. The outdated design and degraded pavement contributed to a crash rate 20% higher than the stage average. The new design and pavement rehabilitation will significantly reduce the crash rate. The expansion provides quicker and safer travel for businesses and residents. Wisconsin products travel efficiently and safely through the corridor.

"I was impressed with SE Design Works team... and how they ... deliver the design project in just six months. A project of this size and challenge would normally take three years to complete". —Awards judge Tom Buchholz

Mega-project Mega-fast

Construction was completed in only 18 months and the project was the fastest completed mega-project in state history. An open, collaborative effort meant that the design team was able to meet the fast-paced schedule. The new freeway corridor is a vital asset for the state and provides immediate social and economic benefits.



Additional stormwater runoff protections ensure no extra impact to the environment from the expanded roadway.

BEST OF STATE



LITTLE FALLS DAM DESIGN AND CONSTRUCTION OWNER: Wisconsin Department of Natural Resources
MEAD & HUNT INC. CLIENT: Division of Facility Development & Management



The new control gates allow proper water flow in addition to regulating temperature and sediment discharge.

The Little Falls Dam is a 104-year-old structure and a core part of Willow River State Park. Before the Wisconsin DNR breached the dam in a controlled manner to prevent bursting, the dam's reservoir provided a wide range of recreation activities and animal habitats.

Replacing a Historic Structure

Mead & Hunt developed a plan for this historic structure. While most dams in the country are now demolished when they reach the end of their lifespan, the client and design team determined to replace the Little Falls Dam. This would restore the reservoir's benefits. The team designed a structure that could withstand a 1,000 year flood event. The new structure was reinforced and control gates were expanded to allow more water to flow through in an emergency.

A New Structure for Environmental Stewardship

Environmental concerns were also high on the list of priorities. An intake tower and slide gate were installed to allow park staff to control the temperature of discharged water, providing a healthier habitat for trout and other river species. The structure itself does a better job as preventing overflows, which protects the environment and downstream residents.

"This project achieves multi-faceted improvements utilizing state-of-the art engineering and good old ingenuity to improve the environmental quality of the lake, including improved management over the water quality, improving fish habitat and the lake's recreational opportunities." —Awards judge Mark Kruser

Revitalizing the Natural Environment

The new Little Falls Dam is expected to last another 70 years, which means that everyone and everything will be able to enjoy its environment for a long time. It offers comprehensive flood protection downstream and many recreation options in its reservoir.



The reservoir created by the dam is a perfect place for a multitude of recreational activities.

BEST OF STATE



SHELL LAKE DOWNTOWN REDEVELOPMENT

SHORT ELLIOTT HENDRICKSON INC. CLIENT: City of Shell Lake



The reconstructed urban roads are safer for multimodal users and keep traffic moving.

The City of Shell Lake had the opportunity to revamp its entire downtown when a major medical center wanted to expand its operations in the city. In addition, Washburn County wanted to consolidate its operations in the city. The challenge was finding space for the new facilities and to upgrade transportation and utilities in the area to meet these new needs.

A Downtown Facelift

Short Elliott Hendrickson led the way for every part of the project. This collaboration allowed the design team to take on complex engineering challenges. To provide space for the medical center expansion, the city gave up two blocks of prime downtown real estate and provided the necessary infrastructure improvements. The medical center utilized a block and upgraded to a 9,000-square-foot clinic, which included an ambulance garage and helicopter pad. The county consolidated its health and human services facilities on the other block.

Engineering the New Downtown

The design team engineered a new downtown, taking on nearly every aspect of the project from site work to road reconstruction. Coordination was essential to make sure every part of this project fit into the overall schedule.

"Short Elliott Hendrickson benefitted not only the clients but also the citizens of Shell Lake and the region by expanding jobs and access to medical services within the community. The re-imagined multi-block area offers an improved user experience for employees and visitors to downtown Shell Lake." —Awards judge Errin Welty

The New Cityscape

This is a visible sign of progress for Shell Lake and for everyone who uses the services located in the community. The result was a dramatic change in the cityscape for the city's 1,300 residents.



The new buildings stand out clearly in downtown Shell Lake.

BEST OF STATE



WEST RIVERSIDE ENERGY CENTER

HDR CLIENT: Alliant Energy



The new facility gives off less than half the greenhouse gases a traditional plant emits.

Alliant Energy needed a new power plant that would meet its goal of transitioning to a cleaner energy future. Alliant developed an ambitious plan to replace older plants and replace them with a plant that could power 550,000 homes.

Modern Energy Generation

HDR worked closely with the company to achieve that vision. The new plant uses natural gas, which is cleaner than other fossil fuels. By using cutting edge two-on-one cycle technology, the plant is also more efficient, which reduces waste energy. The team created a complex system that would reuse wastewater, collect more stormwater and store additional water on site. All these changes mean that the facility uses 90% less water than similarly sized plants elsewhere and saves over 70,000 gallons of fresh water a year. These improvements resulted in the project being awarded the first Envision Platinum designation in Wisconsin.

Caring for the Environment

The plant does not occupy the lot's entirety. The design team seized the opportunity to restore 67 acres of land and improve the biodiversity in the area. A nature path snakes through the natural prairie, providing outdoor recreation for residents.

"This project defines what it means to be both energy- and environmentally-conscious. This is something we can all be proud of." —Awards judge Jerry Deschane

A Model for Future Power Plants

The new energy center incorporates a wide range of energy-conscious solutions and the end result makes a big difference. These innovations deliver on Alliant Energy's goal to become more environmentally friendly and serve as a blueprint for other power plants.



A new substation will improve energy transfer to the nearby City of Beloit.

BEST OF STATE



WIS 441 TRI-COUNTY FREEWAY EXPANSION

TRI-COUNTY PARTNERS CLIENT: Wisconsin Department of Transportation



Access to the expanded freeway system is facilitated by roundabout intersections nearby.

Everything about the US 10/I-41/WIS 441 freeway system is big. It is the busiest system in northeastern Wisconsin, carrying over 100,000 cars a day. This stretch covers three counties and its most unique feature is an over 3,000-foot bridge over Little Lake Butte des Morts. The system was showing its age and needed pavement and structure redesign.

Redesigning a Complex System

To spread the design and construction load on this major project, joint venture Tri-County Partners was created. The team identified choke points that decreased safety and increased traffic. These interchanges were redesigned for better traffic flow. The freeway was expanded to six lanes and six separate interchanges were redesigned.

One of the biggest choke points was the bridge over the lake. The team designed a bridge that would sit right next to the existing structure to provide the necessary lane expansion. Construction required additional drainage to secure the footings on uncertain soils and to protect the local environment.

"This project had a little bit of everything: busy interchange, construction and rehabilitation of numerous bridges, coordination with multiple local agencies, a unique Diverging Diamond Interchange, a multi-modal transport network, and even some roundabouts." — Awards judge Brandon Braithwaite

Providing for Wisconsin's Growing Transportation Needs

The team successfully navigated the extremely complex requirements and delivered a project that meets current and anticipated traffic needs. The new design improves safety and keeps motorists moving. Through careful design and coordination, the project was delivered on-time and \$10 million below budget.



The completed project provides users with quick transit in a fast-growing section of Wisconsin.

BEST OF STATE



WISCONSIN REGIONAL ORTHOIMAGERY CONSORTIUM

AYRES ASSOCIATES INC. CLIENT: North Central Wisconsin Regional Planning Commission



Data can show the exact outline of highways, paving the way for rehabilitation and expansion projects.

Surveying information is one of the first things needed when starting an engineering project. Clients make decisions based on available imagery and elevation data. Unfortunately, not every community can afford to produce such data by themselves.

A Statewide Effort

Ayres Associates manages the Wisconsin Regional Orthoimagery Consortium (WROC). This group aspires to provide high quality orthoimagery (also known as aerial photography) and elevation data throughout the state. More than 100 county and municipal entities, alongside other government and tribal partners, work together to pool their data and provide a comprehensive database of information. This database covers 56,000 square miles. Cooperation saves time, prevents duplication of effort, and gives smaller communities access to this important information. This data can be used for a staggering number of things — floodplain delineation, forest management and even a better 911 system.

Importance of Advanced Technology

Improved technology provides more accurate information. For the first time, the entire state has been mapped at a 12-inch level. This accuracy allows WROC participants to customize the data to fit their needs. The Ayres team provides support, oversight and technical expertise to keep the project moving. And in a year of uncertainty the team pushed state government to allow continued work on this project, which delivered results within the year.

"The WROC is a great example of how effective collaboration between public and private entities can lead to superior outcomes at a lower cost." —Awards judge Molly Gribb

A New Way to Look at Wisconsin

The data collected by WROC is essential for things like building a park or zoning a town. Even though the work is not in the public eye, everyone benefits from the information gathered through extensive cooperation.



False color contrasts woodlands, rivers and other elements of the environment to tailor the data to a community's needs.

Congratulations

To All ACEC Award Winners!



City of Schofield

Maryland Avenue & Radtke Street

Becher Hoppe is honored to serve the City of Schofield on the Maryland Avenue and Radtke Street Improvements! The collaborative design met the City's goals of increasing urban green space, improving the environment, and staying within budget. Congratulations Schofield for your vision on this award winning project!

"Improving

Communities"

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If you've been cooped up during quarantine and itching to get out, thanks to engineers you can safely ride on a bike path.



Thanks to engineers, we have access to clean water to wash our hands for 20 seconds whenever we need to.



The start of your day might look different, but we are still able to start our day with a hot cup of coffee thanks to engineering.

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Thanks to engineering it's possible to renovate to create a home office, virtual school or tricked out rec room.



Thanks to engineering you can enjoy the trails, clean air and open spaces in the great outdoors.

**With engineering,
everything's possible.**

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STATE FINALIST



BARK RIVER RESTORATION

SHORT ELLIOTT HENDRICKSON INC. CLIENT: City of Delafield

Bark River runs through downtown Delafield, an inviting asset with the potential to facilitate development and bring visitors. The river was not being used to its potential. An ugly water main ran across it and the entire stretch had become unkempt.

Short Elliott Hendrickson implemented the city's vision for an inviting waterfront and moved to make that dream a reality. The design team worked closely with an existing waterway volunteer group. Short Elliott Hendrickson used an environmentally friendly method to bury the water main without disrupting the local ecosystem. They also expanded the local trail system to run along the waterfront and improved the entire experience. Accessibility was a top concern; an ADA-compliant canoe/kayak launch was installed too.

A critical component was purchasing and demolishing an abandoned structure. This house was a major eyesore and locked up valuable river real estate. By removing it, the design team was able to add a small park so more people can enjoy the waterfront. It serves as a gathering point for the downtown and the riverfront.



The new riverfront provides ample access to everyone and encourages a variety of uses.

The improvements bring visitors and residents to enjoy the riverfront and the surrounding downtown. Delafield now has an asset in its downtown to work with in the future.

STATE FINALIST



CTH N RECONSTRUCTION

JEWELL ASSOCIATES ENGINEERS INC. CLIENT: Crawford County Highway Department

A vital road in Crawford County, CTH N was beset by problems. The crash rate was nine times greater than the statewide average and the effective speed on the road was less than 20 mph. The road was also prone to flooding. When the existing pavement needed to be replaced, the county highway department decided on a more radical change.

Jewell Associates Engineers designed solutions for every issue. By restructuring pavement and grade, the overall road design was shifted and brought to modern design standards. This allows for greater speed in this segment as well as lowering the overall crash rate. The changes also created space for a bike lane. Modern drainage and extensive ditching protects the road from flooding and preserves access during all seasons.

One of the main concerns for residents was that nine separate driveways connected with the road in a small area. The design team took this into account and shifted the road design. With that shift,



The new road's gentler curves and extensive drainage meet modern design standards and reduce crashes and flooding.

business and residential access was preserved and many of the driveways were moved off to side streets.

The new road is safer, more user-friendly and provides local drivers with easy access to businesses and homes.

STATE FINALIST



**CTH GI RECONSTRUCTION
SHORT ELLIOTT HENDRICKSON INC.**

CLIENT: Wisconsin Department of Transportation
OWNER: La Crosse County Highway Department

Environmental concerns are frequently part of engineering. It is important to adapt infrastructure to the environment it will function in. Reconstructing CTH GI went above and beyond the usual. This road winds through extensive wetlands and required a unique amount of coordination and planning to meet the client needs.

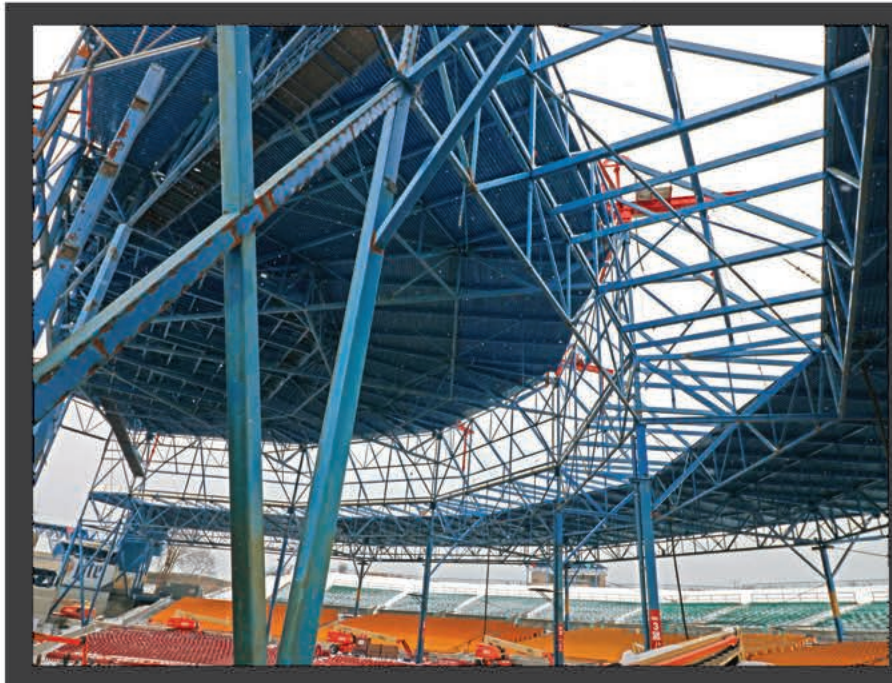
Short Elliott Hendrickson worked closely with the client, owner and a large range of stakeholders who prioritized preserving the wetlands environment. The design team worked with these entities to expand the roadway and to improve public facilities at a nearby park. The widened roadway provides multi-modal access to the park and new boat launches give visitors easy access to fishing and recreation spots.

The new road incorporates multiple cement culverts to reduce flooding and balance the natural environment. A special, larger culvert was installed to improve the local fish habitat. This feature allows the Department of Natural Resources to control water inflows and the oxygenation of the water. With the proper control mechanisms in place, this will make the environment healthier overall.



The reconstructed roadway gives users safe access to the beautiful wetlands surrounding the area.

The reconstruction of this road went beyond a simple transportation project. It was a lesson in how proper coordination and broad thinking can go beyond a road improvement to benefit all aspects of the built and natural environments.



**GREAT TEAMWORK.
GREAT SUCCESS.**

STATE FINALIST



EAST JOHNSON STREET RECONSTRUCTION

STRAND ASSOCIATES INC.

CLIENT: City of Madison

The City of Madison has a unique layout. Its core downtown is located on an isthmus and is densely packed. There are only three major roads leading in and out; East Johnson Street is one of these arteries. It was in desperate need of an upgrade to adequately serve 30,000 cars a day and additional bike/pedestrian traffic.

Strand Associates' top task was coordinating all elements on a busy road. The staging work included multiple railroad crossings and extensive bike/pedestrian traffic. The design team's staging schedule maintained traffic flow while improving the road surface. Lane widths were narrowed to provide additional space for bikers and to avoid issues with railroad crossings. These safety features were enhanced with a curb bump out and a raised median.

During the redesign, the corridor experienced extensive flooding and closed the road for several weeks. The design team moved quickly to revise its schedule and designs to prevent future flooding. Quick thinking led to raised pavement in the flooding-prone area by one foot and the overall project stayed on schedule.



The new bridge over the Yahara River provides additional and safer space for bike/pedestrian traffic.

East Johnson Street now better serves as a key link to downtown Madison. The multi-modal elements of the project ensure easy travel by car, bike or foot.

STATE FINALIST



GOLF ROAD ROUNDABOUT AND GOLF COURT ROUNDABOUT

SHORT ELLIOTT HENDRICKSON INC.

CLIENT: City of Delafield

The Golf Road and Golf Court traffic corridor in Delafield is a major vector of expansion for the city. Golf Road already served several businesses and new traffic solutions were key to improving access.

Short Elliott Hendrickson analyzed traffic flows and concluded that a roundabout would serve best for Golf Road and Golf Court in addition to traditional signal controls. While this was clearly the best option from a traffic perspective, it created issues with the business community. The design team worked closely with local stakeholders to show them how the roundabout would benefit them and not adversely impact their access or their parking spaces. The roundabout was placed in a former retention pond to not take any land from the businesses and the road was adjusted to work with the changes.

Another constraint was the timeframe. New developments were anticipated to open in early 2020. The design team completed the design work in three months and the construction work was completed in five. The new roadway was ready for business by October 2019, plenty of time for the city to advertise the improved infrastructure to incoming businesses.



The new roundabout system keeps traffic moving and expands capacity for future development.

Close coordination between businesses, the city and the design team resulted in solution that will facilitate business growth and development in the area.

STATE FINALIST



LAWE STREET TRESTLE TRAIL

CORRE INC. CLIENT: City of Appleton Parks and Recreation Department

A decaying railroad bridge over the Fox River in Appleton was a concern for the city. It was no longer used for trains, but locals used it as an informal crossing point. It was dangerous and an eyesore that needed a solution.

CORRE noticed the value of the bridge's location to tie together various trails in the city. Instead of demolishing the bridge, the design team provided a solution to renovate it and turn it into a pedestrian path. The 103-year-old bridge required extensive structural work to make it sound for the planned use. Additionally, CORRE engaged the community to lobby for grant money to offset the cost.

The new bridge serves a dynamic and growing area of the city. Lawrence University students, residents of the Eagle Point Senior Living development and other users can now cross the Fox River safely. It expanded access to local businesses and connects this area of the city to the wider trail network. The new bridge pays homage to the city's history through local art and a name that recognizes the historic hydroelectricity plant nearby.



An iconic sculpture that honors Harry Houdini, this art installation was given a prime location at the beginning of the trail bridge.

The design team's quick thinking turned a safety problem into a unique solution. The new trail bridge benefits all users and fulfills the city's interconnectivity goals.



emcs.^{inc}

Transforming Challenges into SOLUTIONS

STATE FINALIST



MARYLAND AND RADTKE ROADWAY & UTILITY IMPROVEMENTS

BECHER HOPPE ASSOCIATES INC. CLIENT: City of Schofield

Reconstruction of an urban road is rarely easy. With a multitude of highly invested stakeholders and narrow confines, it can be hard to deliver a top-tier final product. The City of Schofield needed help to address a section of road and sewer infrastructure originally designed in the 1950s.

Becher Hoppe Associates was up to the task. One of the streets involved was constrained by the geography of the area and had to be reconstructed as-is. But another street, Maryland Avenue, provided an opportunity for a major rebuild. Residents were concerned with new proposals for altering the street's design in a way that could impact local parking. The design team worked with residents and the city to craft a new roadway that met all needs. The new road reduces stormwater runoff, creates safer conditions for pedestrians and preserves parking.

The project was also an opportunity to replace the utility infrastructure. The water mains had years of buildup that limited flow. The design team installed new mains while reconstructing the road which now delivers better water service for the whole community.



The new design features of the road provide a safer design and set a standard for other roads in the city.

The new street configuration preserves parking and expands green space. Becher Hoppe worked with the city and residents to deliver an infrastructure solution that met every need.

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Pioneer Road - STH 175 to Richfield Parkway | Washington County

STATE FINALIST



MEAD LIBRARY PLAZA

AYRES ASSOCIATES INC.

CLIENT: City of Sheboygan

Originally constructed in 1974, Sheboygan's Mead Library was designed to be an integral part of the downtown. The large plaza featured unique artwork and a fountain designed by a renowned landscape architect. Following building remodels, the plaza space was no longer meeting the needs of library patrons.

Ayres Associates saw the potential and went to work. A pedestrian walkway was reoriented toward the library's new main entrance. This integrated the plaza and its iconic water fountain with the library and the art center nearby. The design team made other small changes to the plaza to provide a better flow and allow visitors clear sight lines to the historic fountain. This was all accomplished within the tight constraints of the existing plaza and adjacent buildings.

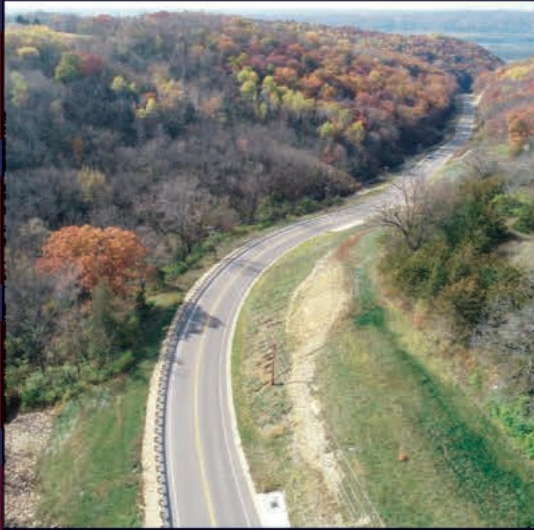
One of the most unique aspects of the project was incorporating local artwork. Four large artwork panels were removed from a defunct clock tower and relocated to prominent location. At the artist's request, the panels were designed to be moveable and can be reinstalled somewhere else easily if need be.



The clear sight lines allow people walking past the front of the building to see the unique plaza design and art panels in front.

A focus on local traditions resulted in a plaza that highlights the unique design. The area now serves as a welcoming gathering place for the entire downtown.

Congratulations 2021 ACEC Award Recipients!



We congratulate the Crawford County Highway Department on the success of their project. The CTH N reconstruction project addressed erosion issues, sight distance to intersections and driveways, and steep grades. We are honored to be recognized as a part of their team.



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MOUNT PLEASANT TID 5 & ENVIRONS WATER PROJECT

RUEKERT & MIELKE INC. CLIENT: Racine Water & Wastewater Utility

The Village of Mount Pleasant made a big move — it finalized plans to add 20 million square feet of manufacturing space. In addition to surface infrastructure, this massive expansion required nearly six million gallons of water for a variety of purposes. This would be one of the biggest water utility expansions in Wisconsin's history.

It would also be the biggest project in Ruekert & Mielke's history. To carry this much water out to the new space, the design team laid out nearly 34 miles of new water mains. These ranged from 16 to 48 inches in diameter, requiring careful placement in areas and soils that can hold such large pipes. In addition to these underground improvements, new water facilities were needed aboveground. Two new pump stations were constructed, and two others were extensively renovated to move the increased volume of water.

The design team expedited the process. Occupants were moving into the new development quickly. Design work that usually takes a year was completed in two months and frequently design, permitting and construction all proceeded at the same time.



A new water tower supports the water infrastructure below and signposts the development for the village.

The result is a massive expansion of water infrastructure in a short timeframe. The design team's efforts will result in jobs and tax revenue from the new manufacturing district.

STATE FINALIST



PADDOCK LAKE WATER SYSTEM IMPROVEMENTS

BAXTER & WOODMAN INC. CLIENT: Village of Paddock Lake

The Village of Paddock Lake operated with a water system originally built in the 1950s and faced increasing costs. Repair costs increased as outdated parts had to be replaced. The increasing costs and limited existing capacity stymied efforts to expand the system to serve new developments.

Baxter & Woodman focused on the big picture and evaluated not just technical aspects but the entire development of the community. Water infrastructure is critical for future village growth. The design team assisted in finding funding for the project, worked through the permitting process and incorporated public comments into the design.

The engineering design was difficult. The existing infrastructure was located on the east side of the village, but growth was occurring on the west side. The team used trenchless technology to minimize disruptions and run the new water infrastructure around existing buildings. A complex staging process made sure that existing users were not affected during construction. Changes to the



The new wellhouse was placed on public land, avoiding time-consuming and costly land acquisition processes.

pump house and a new water reservoir increased capacity and cut down on costly repairs.

The new system gives the village a great base for future growth and saves money right off the bat.

STATE FINALIST



PIONEER ROAD RECONSTRUCTION

GRAEF CLIENT: Washington County **OWNER:** Wisconsin Department of Transportation

Pioneer Road in Washington County is a vital transportation artery for local businesses and residents. The heavy wear and tear and outdated design increased transit times and safety. Major changes were necessary to address these issues.

GRAEF engineered a dramatic solution. The entire road would be re-profiled to address sharp turns and unnecessary altitude changes. But this change required an additional step — reclassifying the town road into a state highway. By upgrading the road, a nearby intersection was changed into a two-way stop instead of four-way and the overall speed limit increased. The new design made this safer while still meeting the county's goals and improving transit times. The reclassification means that the county will share the maintenance burden with the state, relieving pressure on the local budget.

The type of businesses using this stretch of road created an additional complication. The quarries and asphalt plants in this area need heavy trucks coming and going constantly. The design team reinforced the road to be thicker than average. This will preserve



The new two-way stop at this intersection is safer than the previous intersection and prioritizes traffic on the busiest road.

the driving surface longer and reduce maintenance costs for the county moving forward.

Washington County's newest state highway features a modern design that increases safety and speed.



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SOUTH 60TH STREET RECONSTRUCTION

EMCS INC. CLIENT: City of Milwaukee

The South 60th Street corridor was in major need of changes. The road surface was so poor that signs were posted to warn motorists. Outdated roadway design and overcrowded driveways resulted in a crash rate 16% higher than the state average. On top of this, there was no space for multi-modal accommodations.

EMCS knew that it would be a big task to address all these concerns. The team analyzed traffic patterns and determined that the number of lanes could be reduced in each direction without impacting traffic flow. Implementing this solution was only possible because the design team met with and listened to residents and local officials to ensure that their concerns were incorporated into the final design. The new design adds green space, makes multi-modal travel safer and reduces the crash risk.

The design team saved the city money. Project repairs also addressed stormwater runoff into the nearby Kinnickinnic River. Environmental permitting was obtained to better protect the river as it runs through a local park.



The new road provides more green space, a welcome addition in any cityscape.

A "road diet" isn't always the best option, but on South 60th Street it met every concern. The new road is safer, smoother and a beneficial part of the community.

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STH 130 REHABILITATION CONSTRUCTION SERVICES

MICHAEL BAKER INTERNATIONAL CLIENT: Wisconsin Department of Transportation

Three bridges in a small area facilitate a substantial amount of traffic over the Wisconsin River. These are a vital transit point for residents and businesses. However, these 80-year-old steel-truss bridges were in desperate need of repair and renovation.

Michael Baker International has ample experience working with steel truss bridges. Typically, these bridges are replaced but the design team developed a plan to rehabilitate the bridges.

Rehabilitation saved money, time and allowed each bridge to be rehabbed at the same time. Repairs included replacing rivets, reinforcing corroded parts and material inspection on every structure to ensure quality. Rehabilitation saved money by avoiding expensive replacements.

By working closely with the client, the design team made modifications on the spot which avoided delays. In fact, all work was done in just 39 days. The bridges stayed open during the work, avoiding major traffic detours. Michael Baker International's experience working on bridges provided the team with the resources needed to pull off a complex job.



The rehabbed structures ensure safety for the over 2,000 cars that travel across the Wisconsin River daily.

The renovations will add 10 years to the lifespan of each span. The careful design work ensured success in a short timeframe.

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Waukesha Bypass, Waukesha, WI
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White Street Bridge, Milwaukee, WI
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From initial planning and design to construction and operation, Michael Benesch & Company has played a role in shaping Wisconsin infrastructure for decades.



STATE FINALIST



THE VILLAGE OF MUKWONAGO BUSINESS PARK TID 5

RUEKERT & MIELKE INC. CLIENT: Village of Mukwonago

The Village of Mukwonago is home to the growing business Banking Wire. The firm provides many good employment opportunities for the community and is a local cornerstone. But when the firm wanted to expand, the village was not ready to meet all their needs.

Ruekert & Mielke was already working with the village to develop a 115-acre business park. This space would provide space for new businesses and accommodate local firms like Banking Wire. When the firm indicated it wanted to expand now, the design team scrapped its old timeframe and adjusted. Generally, from the beginning of design to ribbon-cutting, a business park takes three to six years to finish. To help the village secure Banking Wire, the design team cut that process down to three months of design work and six months of construction.

Open communication with the village and other stakeholders was critical. Multiple entities had to provide permits for the work. The project budget provided contingency funding to cover unexpected issues as well. Throughout, the design team was a continuous presence organizing the whole effort.



The new business park is already up and running while new businesses continue to move in.

Through careful coordination and an incredible timeframe, the village provided space for Banking Wire and other businesses, creating \$68 million in value from new developments and existing growth.

STATE FINALIST



USH 10/STH 42 (WALDO BOULEVARD) URBAN RECONSTRUCTION

AYRES ASSOCIATES INC. CLIENT: Wisconsin Department of Transportation

Waldo Boulevard is a three-mile stretch of road running through the City of Manitowoc. Over two years of reconstruction, this project ran into almost every possible complication. A guiding authority to oversee the entire project was critical.

Ayres Associates used its expertise to steer this project to completion. The corridor's urban setting created many problems. The design team coordinated construction and design elements to meet stakeholder needs. Traffic was carefully staged to allow use of the road during construction and a temporary road was constructed specifically for a fire station located on the stretch. A roundabout was installed at a dangerous intersection — the solution reduces speed and improves safety.

Along with the surface renovations, the Ayres team also oversaw below-ground improvements. A new water main and accompanying pipes were installed to improve water flow. A six-foot storm sewer was buried almost 30 feet deep. These water-related improvements were vital to protect nearby Lake Michigan.



The new multi-lane roundabout is a modern design addition that increases safety at a critical intersection.

The result is a safer, more stable roadway that will benefit the community for years to come.

STATE FINALIST



UV DISINFECTION SYSTEM

BAXTER & WOODMAN INC. CLIENT: City of Milton

The City of Milton faced a steep challenge in treating wastewater in its service area. Because it was discharging to the nearby Rock River, the city used a substantial amount of chlorine to treat the water. That chlorine use caused early failure of the pumps and continuous replacement would be extremely expensive. The city needed a new treatment option.

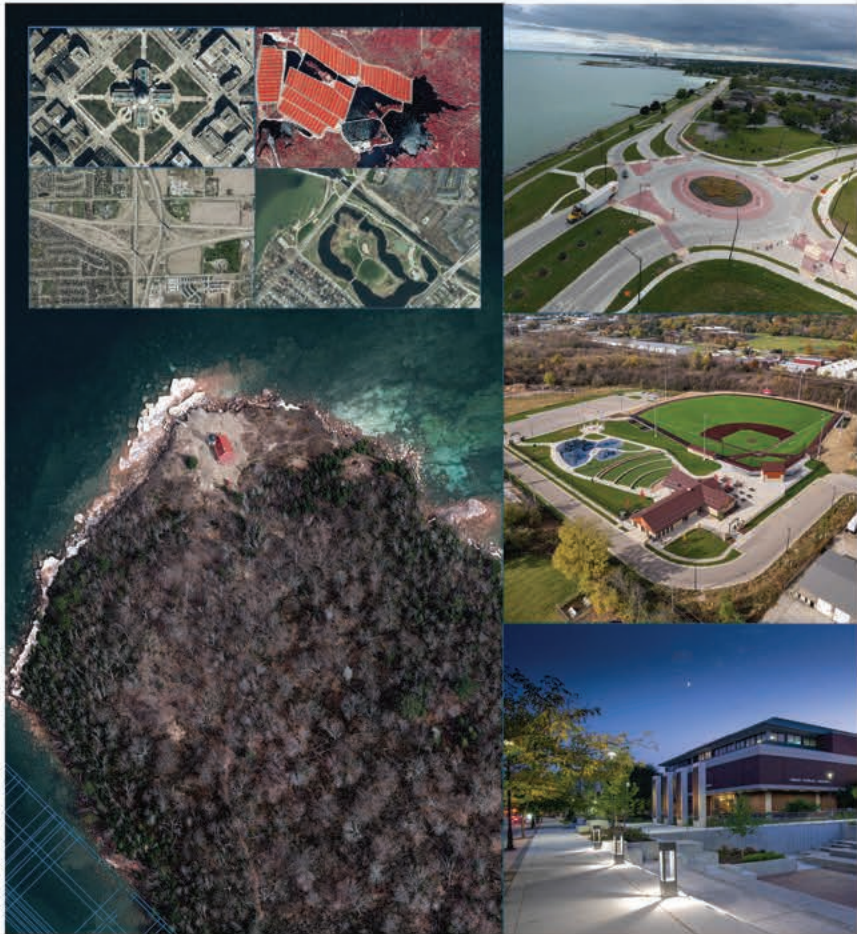
Baxter & Woodman recommended a UV disinfection system. The installation costs are less than the continuing maintenance costs from chlorine and provide the same level of treatment. Existing pipes and hydraulics complicated the plan and required the design team to pivot to in-pipe UV lights. An automatic bulb cleaning system was included to minimize invasive maintenance and ensure that the system is working at peak efficiency.

Other system requirements added complications. The entire system required reorientation to provide space for the UV lights in pipes and connecting existing pumps and hydraulics. On top of that, the system was not expected to run from October to April so a way to bypass the disinfection portion had to be designed.



Sensors in the water provide information to a control center that adjusts the strength of the UV lights to meet needs.

The design team's innovative work provided a sustainable and cheaper solution for the City of Milton.



> Congratulations!
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 achievements.

Left: Wisconsin Regional Orthoimagery Consortium 2020, NCWRPC
 Top: USH 10/STH 42 (Waldo Boulevard) Urban Reconstruction, WisDOT, NE Region
 Middle: Glendale Landfill Redevelopment, Rettler Corporation
 Bottom: Mead Library Plaza, City of Sheboygan

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STATE FINALIST



WAUKESHA BYPASS, USH 18

BLOOM COMPANIES LLC CLIENT: Wisconsin Department of Transportation OWNER: Waukesha County

The Waukesha Bypass was a project long in the making. Growing traffic volumes and an appreciation of future growth prompted WisDOT and Waukesha County to first start looking at options 40 years ago. There were many involved parties and transportation complexities that made the project a major undertaking.

Bloom Companies knew that the first place to start was with the various stakeholders. Local roads were a tangle of different turn lanes and driveways which increased crash rates and slowed down traffic. The design team met with residents and businesses to determine their needs. Driveways were consolidated and nearly three miles of roads were realigned. This allows motorists to maintain speed and reduce traffic jams. The new corridor has four lanes, a wide median and modern bike and pedestrian protections.

The design team faced environmental concerns as well. Waukesha is home to unique glacial wetlands that require protection while providing room for urban expansion. An environmentally sensitive part of the roadway was narrowed the team worked closely with Wisconsin DNR to minimize additional impacts.



The new widened roads and modern intersections provide room for the community's future growth.

Through the careful work of the design team, a 40-year goal was finally realized. The new bypass accommodates a rapidly growing community and provides future projects with a blueprint on how to accomplish difficult designs.

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WELLS STREET LIFT BRIDGE REHABILITATION

ALFRED BENESCH & COMPANY CLIENT: Wisconsin Department of Transportation OWNER: City of Milwaukee

One of the most used bridges in Milwaukee was showing its age. The iconic Wells Street Bridge was becoming unsafe for vehicles and pedestrians and the façade needed a facelift.

Alfred Benesch kept the historic nature of the structure in mind when rehabilitating the bridge. The team replaced many of the core components of the lift bridge, a time-consuming and delicate process. These components were frequently unique and required additional design work to fit the bridge. By machining and modifying the components, rather than buying all new ones or replacing the entire span, the design team saved money and time. On top of that, they preserved the classic look of the bridge.

Much of the construction work was also unique. Construction occurred off-season to not interrupt tourist traffic on the river or at nearby businesses. To avoid impacts to the river environment, a special pressure vacuum system was installed to keep debris and paint from falling.

The rehabbed structure retains its core flexibility and iconic look – providing a crossing for vehicles, pedestrians and avoiding impacts



By replacing the mechanical components, the lift bridge will be able to function as intended to let boats pass underneath.

with boats below. The safer crossing allows the use of the bridge for many years.

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