2015 ACEC-ILLINOIS ENGINEERING EXCELLENCE AWARDS
HONOR AWARD WINNERS

- Building/Technology Systems
  Hanson Professional Services Inc.
  Camp Lincoln Headquarters Geothermal System
  Owner: Illinois Army National Guard
  Consultants: Illinois Geothermal Engineering Inc.

  The Illinois National Guard’s Camp Lincoln headquarters in Springfield, Ill., houses the Illinois Department of Military Affairs. An aging heating, ventilating and air-conditioning system and failing chiller made heating and cooling the 74,000-square-foot facility a challenge. The building was one of the Guard’s highest energy users.

  Worked with the Guard to study innovative, energy-efficient and cost-effective options. Hanson also found a $1.2 million grant from the U.S. Department of Energy to help fund the project. Hanson designed a hybrid geothermal variable refrigerant system to serve the Guard’s immediate needs while allowing for future expansions to the building’s entire system.

- Building/Technology Systems
  Primera Engineers, Ltd.
  El Centro
  Owner: Northeastern Illinois University
  Consultants: JGMA / Forefront Structural Engineers, Inc. / Prism Engineering Inc. / Site Design Group, Ltd. / Arup

  Due to the growing needs of its students, Northeastern Illinois University has worked to expand and modernize its academic programming by opening its new El Centro location in Chicago’s Avondale neighborhood. This 66,000-square-foot facility expands NEIU’s capabilities by providing technology-enhanced classrooms, state-of-the-art laboratories, and modern offices and spaces.

  Working closely together with Juan Gabriel Moreno Architects, Primera provided all the building engineering systems designs. Primera delivered a new sustainable building featuring high efficiency HVAC, energy saving daylight harvesting, occupancy lighting control, low flow plumbing fixtures, system metering and measurement, and programmable HVAC schedules for reduced energy consumption during off-peak hours.
### Structural Systems

**AECOM / Parsons Brinckerhoff**  
**Rehabilitation of Wells Street Bascule Bridge**  
Owner: Chicago DOT  
Consultants: DB Sterlin, Inc. / AAA Engineering, Inc. / Muller + Muller Architects / Dynasty Group / Johnson and Laskey Architects

Wells Street Bascule Bridge carries two major CTA rail lines in a busy downtown business district of Chicago. “River Arm” portions of the trusses were replaced entirely during two nine-day shutdowns. The river arm leafs were carried by a barge to the project site and spliced back with the existing trusses in matter of hours. Vehicle and pedestrian traffic were detoured and river traffic was accommodated by keeping one leaf operational at all times. The design team balanced the need for in-kind replacement of historic elements with the need to upgrade systems with current technology to improve bridge operations and lifespan.

### Structural Systems

**Parsons**  
**Hastings Bridge Design-Build**  
Owner: Minnesota Department of Transportation  

The innovative Hastings Bridge, a 545-foot freestanding tied-arch bridge, carries Trunk Highway 61 over the Mississippi River in Minnesota. This structure is the longest freestanding arch in North America, has a 100-year life, and utilizes a steel box arch rib with a post-tensioned concrete tie girder and a network hanger system. With its approaches, the bridge features 11 spans, totaling 1,938 feet. The main span was erected on land, transferred onto barges using self-propelled modular transporters, floated downriver, and lifted 55 feet into place using strand jacks. Additional elements include roadway, drainage, maintenance of traffic, and overall quality systems management.
Environmental

**Baxter & Woodman, Inc.**
**Barium/Radium Removal Pretreatment System**
**Owner:** Village of Gilberts, IL

Baxter & Woodman developed an innovative Pretreatment System at the Village of Gilberts' water plant. A Barium/Radium Removal Pretreatment System was added to the Village’s existing municipal ion exchange softener regeneration system, allowing compliance with new IEPA NPDES limits and IEMA residual disposal regulations in a cost-effective manner. The Pretreatment System uses technologies not previously utilized at municipal water treatment plants. During the process, highly corrosive wastewater, contaminated with barium and radium, is separated from normal regeneration wastewater. The barium and radium precipitates in a specially designed vessel. Then, dewatered sludge, complying with IEMA regulations, is sent to a landfill for disposal.

Environmental

**Huff & Huff, Inc. / GRAEF**
**Illinois Route 47 Interchange at I-90**
**Owner:** Illinois Tollway
**Consultants:** HDR Engineering, Inc. / TranSystems Corporation

The Illinois Route 47 interchange at the Jane Addams Memorial Tollway (I-90) Project upgraded and expanded the existing interchange with myriad sustainable features. The project emphasized energy conservation in the construction and operation phases and improved water quality by reducing storm water runoff and enhancing treatment. Energy savings were achieved through the use of warm-mix asphalt, geothermal energy sources, a reflective roof on control buildings, and light emitting diode (LED) lighting. Water quality was improved by using permeable pavement for greater infiltration and by using infiltration cells, micro pools, plantings and bioswales to filter out suspended solids and contaminants.
Waste and Storm Water

Thouvenot, Wade & Moerchen, Inc.
Belleville Water Reclamation Facility
Owner: City of Belleville

Thouvenot, Wade & Moerchen, Inc. collaborated with the City of Belleville, Illinois to develop a Long-Term Control Plan for Combined Sewer Overflows (CSO), as required by the Illinois and U.S. EPA. The first, and largest, phase of this plan included an expansion of and modifications to the existing Water Reclamation Facility. TWM converted existing sludge lagoons at the Facility into CSO management basins, providing holding capacity for wet weather flows. Nearly all flows will be returned to the expanded Facility for full biological treatment, exceeding EPA requirements. TWM’s design minimized costs and utilized limited available space at the Facility.

Water Resources

Hurst-Rosche Engineers, Inc.
Otter Lake Water Treatment Plant UV Treatment
Owner: Otter Lake Water Commission

The Otter Lake WTP Ultraviolet Light – Advanced Oxidation Process (UV-AOP) treatment system is the first UV-AOP system permitted by IEPA and installed in the State of Illinois. The UV-AOP system consists of parallel 3.5 MGD UV reactors; 24 ft x 60 ft UV Vault addition; hydrogen peroxide chemical feed; stand-by generator; and updates to the SCADA system. The system provides 1.5-log removal (96.8%) for taste and odor, and 3-log removal (99.9%) of cryptosporidium (crypto), and has been proven to provide removal of taste and odor, while also providing required IEPA crypto disinfection credits.
Water Resources

Strand Associates, Inc.
Innovative Treatment Saves Romeoville’s Well
Owner: Village of Romeoville

With the implementation of this project, the first permanent and permitted ultraviolet (UV) treatment system for inactivating bacteria in groundwater is operational in Illinois. Before this project, the Village of Romeoville faced expensive and environmentally unfriendly options: dump chemicals down Well 3 to treat it or abandon Well 3 and construct a new well. The project team not only obtained IEPA approval for the use of UV in a unique application but also proposed dosing requirements, which IEPA subsequently adopted as standards to be applied to future innovative and beneficial UV applications of this type in Illinois.

Transportation

Civiltech Engineering, Inc.
Algonquin Western Bypass
Owner: McHenry County Division of Transportation

As part of a feasibility study initiated in 1996, the McHenry County Division of Transportation in cooperation with the Illinois Department of Transportation identified the Algonquin Western Bypass as the solution to severe congestion at the intersection of Illinois Route 31 and Illinois Route 62 in downtown Algonquin. Construction the Western Bypass was completed in 2014 and included rerouting Route 31 through an abandoned gravel pit with a compressed diamond interchange at Route 62 including four new bridges, twelve retaining walls, lighting, traffic signal improvements, and major modifications to Towne Park, including restoration of a previously altered creek alignment.
Prior to October 2014, I-294 at I-57 was one of two locations in the country where two interstates met without connecting. In a joint-effort, the Illinois Department of Transportation and Illinois Tollway worked with T.Y. Lin International and team to create an interchange between these two busy roadways.

This included construction of new ramps, raising the level of earth embankment, drainage culvert extension, creek re-alignment, erosion and sediment control, shoulder removal and replacement, median improvements, and pavement and bridge construction.

This undertaking created thousands of jobs and will result in significant savings in travel time, energy costs, and fuel emissions.

The I-90/94 Interchange at Ohio Street is a major gateway into Chicago’s Central Business District. The replacement and rehabilitation of the highly trafficked interchange called for innovative methods to avoid major lane and ramp restrictions and minimize negative impact on the 300,000+ daily users. A crucial phase of construction called for a portion of the interstate to be shut down for demolition of a box beam structure over the course of two weekends. This “get in and get out” approach was a first in Chicago. It was successfully executed, and is now being considered for use on other major projects.
Transportation

Crawford, Murphy & Tilly, Inc.
Morgan Street Bridge Community Revitalization

Owner: City of Rockford

Replacing the aging Morgan Street bridge in Rockford served as a rallying point to revitalize an area that was once the center of a thriving river town. The Morgan Street Bridge and Community Revitalization project is centered on a 503-ft, network tied-arch structure, and includes quality-of-life enhancements, neighborhood revitalization and economic development. Value engineering solutions resulted in savings of $1.36 million and included an ambitious railway consolidation effort. A unique approach was taken for the modeling, fabrication and installation of the structural steel. Construction was completed ahead of schedule and under budget at a cost of $30 Million.
**Transportation**

TranSystems / Burns & McDonnell Engineering

I-90 Rebuilding and Widening, Western Segment

Owner: Illinois Tollway

Prime Design Firms: Bowman, Barrett & Associates/
Christopher B. Burke Engineering/Ciorba Group/
Fehr-Graham & Associates/H.W. Lochner/Hanson
Professional Services/McClure Engineering
Associates, Inc./Primera Engineers/Stanley
Consultants

Prime Construction Management Firms: AES
Services/Bollinger, Lach & Associates/Globetrotters
Engineering/Harry O. Hefter, Associates/HR
Green/Milhouse Engineering & Construction/SDI
Engineering/Spaan Tech

Subconsultants: 2IM Group/ABNA Engineering/
American Surveying & Engineering/APS Consulting/
Artisan Consulting Engineers/Atlas Engineering Group/Baxter & Woodman/Chicago Testing Laboratory/
Collins Engineers/Coordinated Construction Project Control Services/Crawford, Murphy & Tilly/DB Sterlin
Consultants/DAAR Engineering/d’Escoto/DuSABLE/Dynasty Group/EJM Engineering/Everest Engineering
Company/Fuhrman Engineering/Gandhi & Associates/Geo Services/GSG Consultants/GSG Material
Testing/Huff & Huff/Jacobs Engineering Group/Material Service Testing/Millennia Professional Services/
Parsons Transportation Group/R.M. Chin & Associates/Quigg Engineering/Regina Webster & Associates/
Consultants/Thomas Engineering Group/Wang Engineering/Zroka Engineering

The Jane Addams Memorial Tollway (I-90) western segment extends 37 miles between the Elgin Toll Plaza and the Cherry Valley Interchange in Rockford, Illinois. This $644.1 million widening and reconstruction project is one of the first projects completed under the Illinois Tollway’s 15-year, $12 billion capital program, Move Illinois. It is a state-of-the-art tollway that increases mobility by adding a third lane in each direction while providing for future transit opportunities through the use of a wider inside lane and median. Design and construction were completed in less than three years and involved more than 50 engineering firms and more than 40 construction contracts.
Small Projects

Ciorba Group, Inc.
Rollins Road Millennium Trail Underpass
Owner: Lake County Forest Preserve District
Consultants: Soil and Material Consultants, Inc.

The project was part of the completion of the Millennium Trail a 35 mile multi-purpose trail that connects central, western and northern Lake County communities and the Lake County Forest Preserve’s Des Plaines River Trail. The trail work included two crossings on a new alignment at two County roads, Rollins and Wilson. One of the project goal was to minimize impacts to wetlands and trees. We studied different type of bridges from pre-engineered to signature bridges and underpasses and compared pros and cons including a cost comparison. The selected option at Rollins Road was a cast-in-place concrete underpass with aesthetics finishes.