Studies, Research and Consulting

Clark Dietz, Inc.
I-55 at Weber Road Interchange
Owner: Illinois Department of Transportation/Will County Division of Transportation
Consultants: Lin Engineering, Ltd. / Huff & Huff, Inc. / Planning Communities, LLC / Wang Engineering, Inc. / Singh & Associates

A study commissioned by Will County and performed by Clark Dietz under contract to IDOT, resulted in the selection of a Diverging Diamond Interchange (DDI), to optimize traffic flow, safety, and operations at the I-55/Weber Road Interchange. Due to rapid residential, commercial, and industrial growth, existing intersections experienced delays due to high-volume turning movements, large numbers of heavy vehicles, and closely spaced signals. After extensive public involvement, evaluation and analysis, the DDI was selected as the preferred solution to increase overall intersection capacity, decrease traffic delays, eliminate left-turn conflicts and potentially reduce turning, rear end, and right angle crashes.

Studies, Research and Consulting

Parsons Brinckerhoff, Inc.
Illiana Corridor Tier One EIS
Owner: IDOT

In a unique bi-state collaboration, the Illinois and Indiana Departments of Transportation retained Parsons Brinckerhoff to prepare a tiered environmental impact statement (EIS) and preliminary engineering studies for the Illiana Corridor on an expedited schedule. The Tier One EIS study, initiated in June 2011, was completed just 19 months later in January 2013 with a combined Final EIS/Record of Decision. This combined document—the first of its kind in the United States—selected for further study a new limited access transportation corridor, approximately 50 miles long and 2,000 feet wide, connecting I-55 near Wilmington, Illinois, and I-65 near Lowell, Indiana.
Studies, Research and Consulting

Epstein
Illinois Tollway Maintenance Facility Planning
Owner: Illinois Tollway
Consultants: Environmental Design International Inc. / Quigg Engineering, Inc. / GSG Consultants, Inc. / Effective Management Decisions, LLC / Maron Structure Technologies / Cotter Consulting

Epstein was recently hired to provide Phase I and Phase II engineering services for the development of a strategic system-wide Master Plan to include LEED certified structures, site specific master plans, and phased repair plans for the Illinois Tollway's maintenance facilities. As a part of the 'Move Illinois' Program, the Tollway is reconstructing and rehabilitating its aging maintenance facilities. This program entails the design and construction documents for two sizes of maintenance facilities, master plans for 10 other sites, and facility assessments of all sites on a two-year re-occurring basis.

Building/Technology Systems

Burns & McDonnell Engineering Company, Inc.
Profile in Partnering: The Joint Use Facility
Owner: Dept. of Military Affairs - Illinois
Consultants: Farnsworth Group / Terracon / Consulting Engineers and Scientists

Burns & McDonnell completed the design of a joint use Readiness Center facility for the Illinois Army National Guard at Heartland Community College in Normal, Illinois. A first of its kind in Illinois, this project provides a permanent readiness and training center to meet the mission requirements of the National Guard 404th Maneuver Enhancement Brigade (MEB). This project is a joint use facility with the Heartland Community College integrating both classroom space as well as office/administrative spaces. The Readiness Center encompasses approximately 56,000 SF and the Prairie Style design is compatible with the architectural style of the existing buildings on the Heartland Community College campus.
### Building/Technology Systems

**CDM Smith Inc.**  
**McDonough County Public Transit Facility**  
Owner: City of Macomb  

To consolidate operations in one location, McDonough County Public Transit contracted CDM Smith for the architectural, structural, HVAC, plumbing, fire protection, and electrical design of a new 66,683-square-foot administration, maintenance, and storage transit facility. The building features a flexible maintenance area for vehicles of varying sizes, consolidation of fixed-route and demand-response staff for improved efficiency, an enhanced public presence for the agency, and a myriad of sustainable elements. In addition to reusing an abandoned factory building, green features include high-efficiency water fixtures, energy-efficient forced air HVAC systems, natural daylighting, as well as utilizing recycled and regionally-sourced materials during construction.

### Structural Systems

**Harry O. Hefter - Associates, Inc.**  
**Torrence Avenue Lift Bridge Rehabilitation**  
Owner: Chicago DOT  

The 70 year old Torrence Avenue Lift Bridge over the Calumet River was designed by the Chicago Department of Public Works and constructed in 1938. The bridge has a main span of 276 feet, width of 66 feet, and lift of 104 feet. The 1996 Project Development Report recommended the bridge rehabilitation effort achieve a service life of 40 years. The entire span is lifted similar to an elevator by means of cables connected to large drive motors and counterweights. Awarded to F.H. Paschen, S.N. Nielsen & Associates for $24,078,000 in 2011 the bridge rehabilitation was completed in 2013.
> **Structural Systems**

**Fehr Graham**  
**Scout Camp Road Bridge**  
Owner: Jo Daviess County Highway Department  
Consultants: Midwest Testing Services, Inc.

The 74 year-old bridge, located at Scout Camp Road over the Apple River in Jo Daviess County, was in need of replacement due to its “structurally deficient” state. In order to address vertical and horizontal alignment deficiencies, the roadway was realigned and the new bridge repositioned. To respond to varying geotechnical site conditions, foundation treatment varied significantly at each substructure unit. The roadway realignment allowed the existing bridge and roadway to be utilized during the majority of the construction operations, minimizing disruptions to the traveling public. The project was completed on schedule and greatly appreciated by local highway users.

> **Structural Systems**

**Willett Hofmann & Associates, Inc.**  
**CH 8 Over the IAIS Railroad & Hennepin Canal**  
Owner: Bureau County Highway Department

Originally constructed in 1931, the existing structure carrying C.H. 8 over IAIS Railroad and the Hennepin Canal was a six span structure that included a single span Historic Pratt Truss. The project involved removing and replacing the structure and rehabilitating the Historic Pratt Truss for use at another location nearby. In addition to the relocation and structure replacement, the profile of C.H. 8 was raised approximately 10’, resulting in the realignment of Tow Path Road, reconstruction of the railroad crossing and a portion of the multi-use path, and extending an existing double barrel reinforced concrete box culvert.
2015 ACEC-ILLINOIS ENGINEERING EXCELLENCE AWARDS
MERIT AWARD WINNERS

➤ Structural Systems

HDR Engineering, Inc.
I-270 Canal Crossing: Deficient to Efficient
Owner: IDOT
Consultants: ABNA Engineering, Inc. / Kaskaskia Engineering Group, LLC / McDonough Associates, Inc. / Volkert, Inc. / Coombe-Bloxdorf, P.C.

Structurally deficient and functionally obsolete — the technical terms for “way past its prime” — is the best way to describe the twin truss bridges carrying I-270 of the Chain of Rocks Canal near Granite City, Illinois. Built in 1963, the bridges have served as a major St. Louis commuter link between Illinois and Missouri, crossing the canal that acts as a Mississippi River Bypass for all barge traffic traveling through St. Louis. With so many impacts to the traveling public, IDOT worked collaboratively with HDR to study and design a replacement bridge in a condensed 24-month schedule.

➤ Structural Systems

URS Corporation
Services Road Tunnels-O’Hare Airport
Owner: Chicago Department of Aviation

The service road tunnels provide grade separations at intersections in alignment of Mount Prospect Road/Taxiway Z, South Access Road/Taxiway AA and Post Office Road/Runway 10R/28L. Due to their location, the design provided a 75-year service life, low maintenance and be aesthetically pleasing. The design addressed critical clearances for aircraft and roadway traffic, FAA security requirements, fire protection, roadway lighting, video surveillance, emergency communications, and traffic control.

To meet the sustainable goals the design used recycled materials, smart lighting controls, collecting storm runoff containing winter deicing chemicals, and unique deck design which minimizes taxiway/runway pavement surface icing above each structure.
Structural Systems

BCP Tollway Partners JV
I-90 Bridge over the Union Pacific Railroad
Owner: Illinois Tollway
Consultants: EJM Engineering Inc. / Everest Engineering Co. / Geo Services, Inc. / Huff & Huff, Inc. / Thomas Engineering Group, LLC. / Structure Designs, Inc. / Burns and McDonnell

Dual bridges over the Union Pacific Railroad were designed by BCP Tollway Partners JV (BCP) as part of the Jane Addams Memorial Tollway (I-90) Rebuilding and Widening Project – Western Segment. Built in the 1950s, the original bridges were structurally deficient, and functionally obsolete. BCP coordinated with the Illinois Tollway, UPPR and Illinois Commerce Commission to design a bridge that balanced the interests of all parties, innovatively used materials, provided clear span for a future railroad track and was selected for a research program by the University of Illinois. BCP progressed from concept to final plans within nine months.

Structural Systems

Ciorba Group, Inc.
I-90/Bridges over the Kishwaukee River
Owner: Illinois Tollway
Consultants: Huff & Huff / Millennia Professional Services of Illinois / Wang Engineering / Zroka Engineering

The project consisted of the replacement of the existing seven-span dual precast prestressed concrete (PPC) bridges over the Kishwaukee River. The new four-span weathering steel-plate girder bridges utilize integral abutments; these bridges are now the longest of this type in Illinois. River hydraulics were improved through the realignment and reduction of the total number of piers in the river. Design included a causeway and haul roads to overcome environmental restrictions to perform work in the river. The structures were each completed in a single construction season. Because of the innovative design of this project the eastbound bridge is instrumented to gain insight into the behavior of long integral abutment bridges.
**Surveying & Mapping Technology**

**Horner & Shifrin, Inc.**

**Marion Cemetery Digs GIS**

**Owner:** City of Marion

The project consisted of developing a web-based Geographic Information System (GIS) and mobile mapping system to locate/reconcile data pertaining to existing burial sites, real-time, at three cemeteries totaling nearly 35,000 burial sites. Many sites have multi-level burials requiring 3”-4” accuracy. The new process breaks from the traditional way of collecting data with a total station survey, high accuracy GPS receiver, matching data to points, and then populating a traditional map. Instead, a combination of a Trimble VRS network, a sub decimeter handheld receiver, and a web-based GIS and mobile mapping system results in more accurate, real-time data available immediately.

**Surveying & Mapping Technology**

**Environmental Design International inc.**

**Calumet TARP Drop Shaft Screens**

**Owner:** Metropolitan Water Reclamation District of Greater Chicago

**Consultants:** Rubinos & Mesia Engineers, Inc. / V3 Companies Ltd.

EDI performed laser scanning of the ground floor of the MWRD TARP Shaft building and of the east and west wetshafts connecting to the Deep Tunnel system. Scanning a shaft 360 feet deep with no real access points except from above presented a logistical and procedural problem.

EDI mounted the scanner inverted on the bottom of a man cage. The scans were performed every 20 to 25 feet vertically. The scans were then registered to match the point clouds together, and a 3D model was produced along with horizontal cross-sections of the drop shaft taken every 10 feet vertically.
Transportation

HR Green, Inc.
Johnsburg Rd Widening and Reconstruction Contract 2
Owner: McHenry County Division of Transportation
Consultants: State Testing

The Johnsburg Road Widening project consisted of the construction of the first roundabout in McHenry County in the Downtown area of the Village of Johnsburg. The project also included widening of Johnsburg Road from Spring Grove Road to Fairview Avenue, installation of traffic signals at the intersection of Spring Grove and Johnsburg Roads, installation of roadway lighting, decorative pedestrian lighting with banner arm and planter arms, innovative decorative thermoplastic crosswalks, installation of sidewalks within downtown Johnsburg with decorative brick paver sidewalk banding and brick pavers, decorative planting within the center of the roundabout, and decorative retaining walls.

Transportation

HR Green, Inc.
Grove Road Realignment
Owner: Kendall County Highway Department
Consultants: Traffic Surveys, Inc. / McCleary Engineering

The project consisted of the realignment of approximately one mile of Grove Road, north of Illinois Route 126. The north and south legs of Grove Road previously intersected Route 126 approximately one-third mile apart. The realignment of the north leg resulted in one, 4-way intersection where previously only the south leg intersected Route 126. The new alignment also eliminated the existing, substandard reverse curves near Roberts Drive, approximately one-half mile north of Route 126. Associated improvements included the widening of Route 126 and the south approach of Grove Road to accommodate added auxiliary turn lanes at the new, combined intersection.
Transportation

Infrastructure Engineering, Inc.
(I-355) Resurfacing and Bridge Repairs
Owner: Illinois Tollway
Consultants: Hanson Professional Services, Inc. / Dynasty Group, Inc. / SpannTech / HBM Engineering Group, LLC

Resurfacing and repairs of an 18 mile corridor of the Veterans Memorial Tollway (I-355) was initiated to address safety, mobility and improve guidance along this highly traveled interstate. The work included mainline patching, resurfacing, lighting replacement, median barrier and bridge parapet extension, rehabilitation of retaining and noise abatement walls, I-88 underpass lighting replacement and four overhead segmental bridge structures repair. Precast panels for pavement patching and fiber wraps for overhead bridge repairs were used to expedite construction and minimize inputs to traffic flow. Exit numbering signs were added to better direct drivers and overall roadway safety was enhanced.

Transportation

STV Incorporated
IL 2 Reconstruction
Owner: IDOT
Consultants: American Surveying Consultants / Ground Engineering Consultants

The Illinois Department of Transportation’s new IL Route 2 four-lane expressway runs from Elmwood Road to Latham Road. Congestion caused by increased population growth and new development prompted the need for improvements in this area. The project goal was to improve safety and travel time in northern Illinois, and spur economic growth along the corridor. The project includes three new signalized intersections, a new two-lane frontage road, twin single-span integral abutment bridges over the Mud Creek, and a two-span, 160-foot-long bridge carrying Latham Road over the new IL 2 and 15 box culverts.
2015 ACEC-ILLINOIS ENGINEERING EXCELLENCE AWARDS
MERIT AWARD WINNERS

Transportation

Patrick Engineering Inc.
Illinois Route 47 at College Drive Intersection
Owner: Waubonsee Community College
Consultants: Wang Engineering, Inc. / Huff & Huff, Inc. / Santacruz Land Acquisitions

The Waubonsee Community College worked with the Kane County Division of Transportation to secure a federal Highway Safety Improvement Program grant through IDOT for safety upgrades to their north entrance. Through a QBS process WCC selected Patrick Engineering to perform the Phase I Study required to be able to utilize these funds.

The scope of work of the improvement included the installation of a traffic signal, realignment of the west leg of Old Oaks Drive, addition of a northbound right turn lane, and offsetting (or burying) the left turn lanes along IL 47 to improve sight distance and safety.

Transportation

TAPS Ramp Partners, a joint venture between Thomas Engineering Group, LLC and APS Consulting, Inc.
Non-Planar Precast Pavement on Tri-State Ramp
Owner: Illinois Tollway
Consultants: Lin Engineering, Ltd. / Alfred Benesch & Company / Wang Engineering, Inc.

In 2013, the Illinois Tollway put a new twist on precast concrete pavement (PCP) when it designed and reconstructed long sections of a multi-lane ramp along the Tri-State Tollway (I-294). This project utilized innovative non-planar PCP which was the first non-planar application in the state of Illinois. This project called for two continuous placements (a 1,130-foot section and a 325-foot section) on a multilane ramp with complex geometry (narrowing pavement width, reverse horizontal curves, superelevation, superelevation transitions, and vertical sag curves). This project proved that PCP can be applied to situations other than pavement patching with planar or flat panels.
Transportation

Chastain & Associates LLC
South Country Club Road-A Path to the Future
Owner: Macon County
Consultants: SKS Engineers, LLC

The South Country Club Road project delivered on all of its goals.

The intermodal path meandering through scenic vistas has delivered program opportunities for Scovill Zoo and the Children’s Museum.

The project was the missing link in an intermodal loop around Lake Decatur Basin 2. Local running/bicycling clubs who had petitioned Macon County are now very pleased.

There was no intermodal Safe Route to School for children attending Muffley School. Students now can actually walk to the Zoo and Museum as part of their education.

This project hit a grand slam with the residents of Decatur and Macon County!

Special Projects

OMEGA
US 34 Reconstruction
Owner: IDOT
Consultants: Atlas Engineering Group

OMEGA provided construction engineering services for this $15 Million reconstruction of US 34. The project consisted of 1.94 miles of roadway reconstruction and widening, the installation of an enclosed storm sewer system, and modernization of three signalized intersections from east of Lew Street to west of Eldamain Road in Plano, IL. Additionally, the bridge over Big Rock Creek was widened to accommodate two lanes of traffic in each direction, and two stamped concrete retaining walls were installed to ensure structural stability. A shared use path was also installed throughout the project for the safety and convenience of pedestrian traffic.
Special Projects

OMEGA
143rd Street Reconstruction
Owner: Will County Division of Transportation
Consultants: Material Service Testing, Inc. / MST

This improvement consisted of the removal of an existing two lane asphalt pavement and replacement with a five lane full-depth asphalt pavement. A major component of the work was to construct extensive new drainage facilities and two 2.6 million gallon detention basins to increase storm water storage capacity and eliminate flooding which had been a major problem for this area. Ancillary construction included extensive soil stabilization, sidewalk, curb and gutter, traffic signal modernization, landscaping, pavement marking, and other appurtenant work on 143rd Street from Greystone Drive to Pinewood Drive and on Will-Cook Road from Heather Drive to Ruggles Court in Will and Cook Counties.

Special Projects

ESI Consultants, Ltd.
(I-88) Rebuild and Widen, Route 56 to Orchard
Owner: Illinois Tollway
Consultants: dsi Associates, Inc. / Materials Service Testing Laboratories / TranSystems

ESI Consultants, Ltd., provided construction management services for the widening of an existing four-lane Interstate highway to six lanes. Project work included construction of two-lift black rock composite concrete pavement for the mainline lanes; reconstruction of the drainage system; median barrier wall; warm-mix asphalt shoulders; and new lighting, signing, and pavement striping. Bridge work included substructure repairs, replacement of the parapets, bridge deck patching, and a latex concrete overlay. The work, completed in stages, maintained two open lanes in each direction at all times. The bridge work was completed within 40 days.
Special Projects

Christopher B. Burke Engineering, Ltd.
Lake Cook Road Multi-Use Path
Owner: Forest Preserve District of Cook County
Consultants: Altamanu, Inc. / Material Service Testing

The project consisted of the construction of a multi-use path between the northern termini of the North Branch Trail and the Green Bay Trail in Glencoe, IL. The Lake Cook Road Multi-Use Path provides an important link between these two regional trails and provides bicycle and pedestrian access to the Chicago Botanic Garden (CBG) and Metra’s Braeside Station. The path is approximately one mile long and located within and adjacent to the grounds of the CBG and the Forest Preserve District of Cook County (FPDCC). The path is ten feet wide with two foot wide aggregate shoulders on both sides.

Special Projects

Collins Engineers, Inc.
Wells Street Bascule Bridge Reconstruction
Owner: CDOT
Consultants: Walsh/II in One (JV) / Parsons Brinckerhoff / AECOM

The two-level Wells Street Bridge carries rail traffic, vehicles, and pedestrians over the Chicago River. Throughout the yearlong reconstruction of the bridge, vehicle and pedestrian traffic were detoured. However, CTA rail traffic was uninterrupted except for two nine-day windows when the center four bays of each truss were removed and the new truss arms were installed. Collins and Walsh developed the plan that minimized the length of the shut-downs and their impact on commuters: the new movable truss arms were pre-assembled off-site, floated up the river to the project site, and floated into place, all within the approved time limits.
Globetrotters designed and engineered an 1100 mile fiber optic addition to the State of Illinois Central Management Services' Illinois Century Network under the Broadband Technology Opportunity Program and performed the Environmental Assessment for its authorization. The design contained 12 construction packages, 24 fiber backbones, and 158 fiber laterals to deliver the 1,485,546 fiber strand miles to 229 community anchor institutions in 55 counties in central and eastern Illinois. The fiber backbone was routed along Interstate Highway ROW through 7 IDOT Districts. 800 permits were prepared for river, railroad, and pipeline crossings. 5000+ drawings were prepared.

In preparation of the opening of the west landfill unit expansion, Winnebago County Landfill made the decision to improve the creek crossing. Access to the western portion of the landfill has historically occurred via a ford through Kilbuck Creek. The ford caused silt to be deposited in the creek and was not always available for truck traffic due to high water elevations. This project keeps heavy packer trucks and waste haulers off of the adjacent public roads, improving local traffic safety and contributing to an enhanced environmental condition for Kilbuck Creek, a local natural resource and wildlife habitat.
Small Projects

Stanley Consultants
Bus Circulation Enhancement Project
Owner: Museum of Science and Industry
Consultants: CYLA Design Associates / EJM Engineering

Safety and traffic flow has been improved through the Bus Circulation Enhancement Project at the Museum of Science and Industry’s Group Center drop off area, which is heavily used by school buses dropping off students. The new traffic flow configuration improves pedestrian safety by establishing an efficient traffic ingress/egress pattern and an organized parking and staging area. Permeable pavers used in the project double as a sustainable stormwater management system component. The Museum of Science and Industry is the only Chicago museum to incorporate this innovative and sustainable method of stormwater management into its facilities.

Energy

Primera Engineers, Ltd.
DC J31 Plainfield Facility Relocation
Owner: ComEd
Consultants: M.J. Electric, LLC / Prit Service, Inc.

Due to the widening of U.S. Route 30 and the addition of a new bike path, the facilities at ComEd’s DC J31 Plainfield substation needed to be relocated. Primera engineered this project, which included the design of all: construction drawings, sequencing sketches, material lists, and civil and electrical calculations.

This project had special considerations that Primera had to take into account, including: nonconventional property boundaries, reduction of property space, avoidance of existing structures, and the alignment with new distribution poles. As a result, Primera designed an asymmetrical layout that provided many benefits while limiting outage time for each transformer.