

Engineering Excellence Project Samples #1

MGP Site Remediation in Missouri

The AmerenJE manufactured gas plant (MGP) site remediation in Moberly, Mo., broke new ground with the erosion control initiatives implemented. The concept and execution of a temporary building to contain airborne contaminants during remediation is a bold step in MGP site remediation. The engineering required to design and construct these controls was also new to the field. The citizens of Moberly and AmerenJE employees were protected as a result of these initiatives. While challenging and costly, these controls are of high importance to AmerenJE and Burns & McDonnell.

Construction with existing building for temporary building
Remediation and health care for temporary building
Temporary building used to contain airborne contaminants during remediation and prevent water contamination

AmerenJE **ACEC**

Lower Meramec River Wastewater Treatment FACILITY IMPROVEMENTS

Unique and Challenging

The Lower Meramec WWTPT was designed to consolidate four existing treatment facilities into one regional plant, using a phased approach. The initial phase eliminated two facilities. The new plant can treat 15 mgd average day and 62.5 mgd peak day flows and can easily be expanded to eliminate two other treatment plants. The layout allows future integration of sludge-line and nutrient removal processes. Factors that influenced the design process included meeting regulatory objectives, energy conservation, a high degree of automation, campus-style appearance, and innovative odor control approaches. The facility achieved these objectives and was constructed with change orders below 2 percent, well below industry standard.

As a result of a 2011 evaluation process, the Lower Meramec Wastewater Treatment Facility was selected as the optimal way of addressing future wastewater needs.

Successful operation of a 100-million-gallon-per-year plant is a testament to the design team's ability to anticipate and address the challenges of a complex wastewater treatment facility.

Key challenges included: high water quality standards, limited space, and the need for a facility that could be expanded to meet future needs.

ACEC **CH2M-HILL**

City View Drive Parclo Interchange with Roundabouts

First known Two-Quadrant Type A Parclo Interchange with Roundabout in the U.S.

Project Owner: Public/Private Partnership composed of Jefferson City, Cole County, Missouri Department of Transportation and Wal-Mart Stores, Inc.

Project Location: Jefferson City, Missouri

Client: Public/Client: Murphy & Tilly, Inc. St. Louis, Missouri

ACEC Missouri

Jefferson City, Cole County, the Missouri Department of Transportation and Wal-Mart Stores formed an innovative public/private partnership to fund a long sought after interchange near a proposed retail development. As a regular consultant to both MoDOT and Wal-Mart, Crawford, Murphy & Tilly called upon its fluency in both entity's procedures and design requirements to efficiently execute the project's many complex aspects. This new interchange improves safety and features the first known Two-Quadrant Type A Parclo Interchange with Roundabouts in the U.S. Approximately \$1.4 million in public funds were saved by implementing cost-saving Practical Design alternatives.

Delich Roth & Goodwill's (DRG) team developed a design that was dramatically less expensive than budgeted in the 2006-2010 STP. The design met or exceeded all project objectives, addressing both the purpose and needs of the local communities and State. This success was realized when DRG used innovative methods of design that minimized the impacts to motorists and the surrounding community, shortened construction time, improved traffic flow and capacity, and addressed the structural and safety concerns of the bridge, all at cost savings to MoDOT.

DRG team also discovered through practical design that a cascading cost savings effect resulted from the selection of a Taper Urban Diamond Interchange (TUDI) design. In order to employ this TUDI design, this was required to develop an innovative bridge design that incorporated shallow 4'-0" water piers, pre-stressed concrete box girders. The TUDI's light geometrics resulted in minimal impacts along the Island Road profile grades. Above the existing viaduct to maintain right-hand traffic movements throughout the construction process, and addressed the need for any ROW acquisition or the replacement of a nearby railroad bridge.

The original STP estimated the construction cost for the replacement of this interchange at \$33.36 million. Through the application of practical design principles and a comprehensive management approach, the actual project cost was \$13.12 million (design & construct), which resulted in a realization of \$20.24 million in savings for MoDOT.

NOLAN ROAD AND I-70 INTERCHANGE PROJECT Independence, Missouri

MISSOURI DEPARTMENT OF TRANSPORTATION District 4

Delich Roth & Goodwill, P.A. Engineers
1001 E. 301st Terrace, Suite 210
Kansas City, Missouri 64111

ACEC

170/Route 94 Interchange Improvements - St. Charles, Missouri

Missouri Department of Transportation - Chesterfield, Missouri (St. Charles, Missouri)

Looking North on Route 94 - Completed north of interchange showing very little of bridge required at 4 sets of spans within 1000 feet.

Looking East on new South Outer Road - Replacing lower South Outer Road Bridge to eliminate 34'-0" curb Road Right-of-Way.

Looking North on Route 94 - Clear cut level of interchange away from traffic conditions.

Looking West on north side of I-70 - Showing new interchange operations on Bowler's Loop (road) involving required by existing businesses and existing substation to the north.

Looking West on I-70 - Showing new interchange operations with the addition of the South Outer Road Bridge to eliminate left turn movements and congestion of right-of-way.

ACEC

NEW OIL EXPORT LINE

World Record HDD Shore Approach

GeoEngineers provided expert horizontal directional drilling (HDD) design and construction consulting services for a shore approach installation of a 30-inch diameter steel export pipeline off the southeastern coast of Trinidad.

The 90' Trifold & Stage (BPTT) New Oil Export Line (NOEL) project called for a 30-inch diameter pipeline installed under the sea floor. Installation required intense coordination with other contractors during the various off-shore pipe sections of the project as well as extensive complex geology, facility, environmental, and cultural issues during design and construction. A number of factors made this project worthy of recognition:

- The project featured a world-record 5,780-foot (1,762 meters) HDD shore approach installation with 1.85 inches of concrete casing on a 30-inch diameter pipe, thereby achieving HDD design bestings.
- GeoEngineers led the client approximately \$1 million in construction claims through detailed construction observation.
- The NOEL HDD project reduced the BPTT Gasoline Plant Storage Terminal facility's environmental impact both during and after the pipeline construction.
- With the NOEL HDD completion, BPTT can now realize millions of dollars in savings as off-shore pipe installation can be moved for shorter periods of time.

ACEC **GeoEngineers**

Project: New Oil Export Line, Trinidad, Trinidad & Tobago
Client: BPTT, Trinidad & Tobago
Team: GeoEngineers, ACEC

CITY OF JACKSON WATER STORAGE TOWER KARST EVALUATION

Jackson, Missouri

Geotechnology, Inc. St. Louis, Missouri

Client: Horner & Shifrin, Inc., St. Louis, Missouri / Owner: City of Jackson, Missouri

PROBLEM: Precise geotechnical engineering services to help design a shaft for the construction of a 400,000 gallon, 100-foot elevated water storage tower.

CHALLENGES: The project site featured several hard topography including a visible sinkhole.

SOLUTION: Geotechnology and Horner & Shifrin developed a geotechnical engineering approach including borings, geotechnical reflections and "soil nail" borings to identify zones of karst, karst and karsting geotechnical parameters for design and construction.

The various reflection survey generated detailed views of the ground surface and subsurface. The soil-nail borings were used to determine the karsting potential of the site.

where borings for multiple water storage tower shafts were needed - "soil nail" borings.

The communication approach was used to inform and influence the owner and reflecting their other technical expertise.

Soil-nail borings can be used to identify karsting potential and to determine the karsting potential of the site.

Identified higher quality borings, including karsting borings, and soil-nail borings, to determine the karsting potential of the site.

Geotechnology, Inc. **ACEC**

Route 19 Missouri River Bridge at Hermann, Missouri

This showcase project required innovative solutions to numerous issues, along with the complexity of design and construction of bridge over the Missouri River. The design team provided a comprehensive design and long-term cost-effective design over a 10-year project timeline. Close coordination with the architect and contractor allowed for a cost effective bridge design.

The attractive bikeway with scenic overlooks provides a safe way for motorists for access to the nearby "Red, Amber & Blue" State Park. The new bridge spans an economically transformed area in a rural structure. The new bridge spans an economically transformed area in a rural structure. The new bridge spans an economically transformed area in a rural structure.

ACEC

BLACK CREEK SEWER PILOT TUBE MICROTUNNELING PROJECT

St. Louis, Missouri

The First Pilot Tube Microtunneling (PTMT) Project in the St. Louis Area for the Metropolitan St. Louis Sewer District

Using PTMT provided safe and unrestricted access for all materials during construction.

Precast 4-foot diameter manholes were set inside 11 working shafts after pipe installation.

PTMT also minimized disturbance of trees, landscaping, sidewalks and signage - final restoration at a jacking shaft.

The Result -- Successful installation of pipe that is rife barrel straight!

Horner & Shifrin designed the first major project in the St. Louis metropolitan area using the pilot tube microtunneling method for trenchless underground pipe installation. The Metropolitan St. Louis Sewer District's Black Creek Sewer pilot tube microtunneling project, involving the Black Creek Sanitary Relief Sewer, is located under the Saint Louis Galleria, one of the busiest shopping malls in the St. Louis metropolitan area.

Horner & Shifrin **ACEC**

Engineering Excellence Project Samples #2

FHR Archer

ACEC

WATER SUPPLY & TREATMENT FACILITY EXPANSION

for the
Tri-County Water Authority
Independence, MO

2009 Engineering Excellence Award Competition

Historical Collector Well Technology delivers 116 percent more groundwater than vertical well alternatives.

Overhaul of existing groundwater pump and distribution systems to improve distribution system that meets regulatory and energy conservation targets.

High capacity and communication systems throughout of facilities allow operators to access real-time information from anywhere in the world.

Future Engineering Value

- To County is one of the major regional water suppliers in Missouri that operates with a regional water-only model.
- As water resources are becoming scarcer, the authority and staff across the country will begin incorporating similar water supplies and will draw upon the wealth of operational and technical knowledge of the project.
- Expensive resources will draw down the investment portfolio and reduce water supply treatment plants and wastewater system design.

Social, Economic & Sustainable Design

- Historical collector well increases production and recharge rate within the aquifer due to proximity to river, reducing the impact on nearby agricultural wells.
- Safety for operators and surrounding community provided by continuous detection system from 1 km (0.62 mile) gas column to liquid sodium hydroxide.
- Additional treatment system designed provides for a higher, more reliable level of service for Tri-County Water Authority's customers.

Complexity

- Project comprised of 11 simultaneous contracts that were spread over 28 Bids in 2009.
- Treatment plant expansion introduced efficient new technology and investment strategy to address customer water demands and meet future regulations.

Exceeding Client / Owner Needs

- This \$22 million project was completed 10 percent under budget.
- Extensive regulatory approvals with maintained to meet financing availability.

BLAZING THE TRAILS

Original design, robust, safety on Kansas City's most complex interchange.

Extensive public involvement, innovative design, project financing and construction innovation transformed this 64-million interchange into a safer, smarter facility. The new and improved 3-Track Crossing Memorial Highway was completed on budget and one year ahead of schedule, significantly reducing accidents and easing congestion at the convergence of I-435, I-470 and US-71. The \$300 million project included complete replacement of the structure and increased its capacity to 400,000 vehicles per day.

- 64 construction stages
- 2.4 million cubic yards of excavation
- 2.3 million cubic yards of embankment
- 283,000 tons of rebar
- 283,000 tons of bridge steel
- 2.2 million square feet of cast-in-place concrete
- 5 miles of interchanges
- 4,000 feet of creek mitigation

Project: 3-Track Crossing Memorial Highway
Client: Missouri Department of Transportation
Firm: HNTB Corporation

St. Louis, Missouri Branch Street Trestle

ACEC

The Branch Street Trestle, a 3.25-mile abandoned railroad alignment, opened to bicyclists and pedestrians in June 2008. The primary goals of the project were to increase the abandoned trestle and to provide connectivity between an extensive network of similar trails in Missouri and Illinois. The project provides benefits not only to active residents but to others throughout the area wishing to experience the city and the river while protecting nearby wildlife.

The Branch Street Trestle project faced several challenges both in design and construction. The project team developed effective and creative solutions to incorporate as much of the original structure as possible. The team was particularly successful in their efforts to transform abandoned structures into new purposes.

The new bikeway path improves mobility and minimizes adverse impacts to the environment and of quality residents in the neighborhoods of the city. Also and outdoors over the Mississippi River. As a site of the path continues to increase, the design will enhance and facilitate development within the city and surrounding neighborhoods.

Innovation, creativity and collaboration were the key components in delivering a solution to an uncharted and historical infrastructure program. The project represents a successful engineering achievement that secures the economic viability of Missouri and Illinois, and provides connectivity between the most north side neighborhoods of St. Louis and their sister communities in Illinois.

Client/Owner: Missouri State Parks Commission, Dept. of Transportation
Firm: HNTB Corporation

A Pivotal Central Urban Gateway

St. Louis Gateway Transportation Center

JACOBS

The City of St. Louis has been challenged with integrating multiple modes of transit into a single facility with its own identity and vision. The St. Louis Gateway Transportation Center is a pivotal, one-of-a-kind site as a central gateway into and out of St. Louis. It incorporates historic and St. Louisian with other and identity and is a sign of the city's future.

The project was completed for the \$400 million interchange and was providing the development of primary bridge design for the project was completed in 2008. The design included the design of the bridge structure, including the design of the bridge structure, including the design of the bridge structure, including the design of the bridge structure.

ACEC

I-44/US 65 Interchange Improvements

Springfield, Missouri

The preliminary design was completed for the I-44/US 65 interchange and was providing the development of primary bridge design for the project was completed in 2008. The design included the design of the bridge structure, including the design of the bridge structure, including the design of the bridge structure.

Chouteau Avenue Bridge

St. Louis, MO

Chouteau Avenue is located on Route 100 and is an east-west arterial that defines the northern edge of the historic Midtown neighborhood within the City of St. Louis. This major thoroughfare for commerce, connects neighborhoods and commercial areas. The original Chouteau Avenue Bridge was built in the early 1930s and spanned the Burlington Northern and Union Pacific Railroad tracks. By 2004, this 1100-foot long historic structure had deteriorated to the point that it was deemed unsafe and needed to be replaced.

Through innovative design, URS was able to save the city \$6.8 million in construction costs. URS determined that improving local infrastructure to accommodate additional traffic would be a more cost-effective solution than building a new bridge. URS selected the steel truss design for the Chouteau Avenue Bridge from 1100 to 65 feet by utilizing retained fill connecting the separate arterial structure to the existing bridge structure. URS determined that the project required 18 months of design and construction. Analysis of the soil under the existing Chouteau Avenue Bridge revealed to the design and team that the existing bridge structure was in poor condition and required full-scale remediation of the underlying soil prior to the first permanent bridge project.

This project required significant coordination between the City of St. Louis, the Missouri Department of Transportation, the Union Pacific Railroad and the Union Pacific Railroad and local business owners.

Client: City of St. Louis
Firm: URS Corporation

London Avenue Canal Load Test Instrumentation

New Orleans, LA

URS

After Hurricane Katrina, the U.S. Army Corps of Engineers Maritime Protection Office conducted a five-month load test on a 100 foot long section of levee and flood wall along the London Avenue Canal. One of five levees along the canal, this test allowed the Corps to determine if the canal's blackwater water elevation could be increased.

URS designed, installed and operated an automated structural and geotechnical instrumentation monitoring system that monitored potential failure modes. An Automated Data Acquisition System (ADAS) was installed to monitor the levee subsidence and the load. The system included sensors, data processing units, and data storage. The system was installed in the levee and flood wall. The system was installed in the levee and flood wall. The system was installed in the levee and flood wall.

STRUCTURED TO SHOW

Unparalleled Flexibility Sets New Standards Kansas City, Missouri

Walter P Moore

Walter P Moore and its team of experts designed and constructed the new Kansas City Convention Center. The new 1,350,000 sq. ft. facility features 130 events and 120,000 guests in its first year.

Structure designed a long-span steel roof system that provides rigidity capacity and design flexibility that meets the highly complex and unique design requirements. The innovative steel roof panel profile reduced steel tonnage, simplified erection, and achieved an 80 percent reduction in weight.

Client: City of Kansas City
Firm: Walter P Moore

Turning Waste to Power

St. Joseph, MO

ACEC

Waste methane gas is being a clean, efficient and power-generating stream flowing from a regional landfill serving St. Joseph, MO.

Burns & McDonnell teamed with Kansas City Power & Light (KCPL) and the City of St. Joseph to design and build a 141 megawatt landfill gas-to-energy project at the St. Joseph Landfill. The project went online in December 2011.

Key components:

- 47 landfill gas (LFG) collection wells, plus an LFG conditioning system to prepare gas for engine-generator use.
- A 1.6 megawatt reciprocating engine, which uses LFG to generate energy — 12 million kilowatts a year — to power 1,000 homes annually.
- An advanced system to separate cooling system to boost summer-time operations.
- Overhead, variable-speed fans to reduce noise.
- Two field analytical units, to track performance and assist during scheduled maintenance.

The project cost the landfill's release of carbon dioxide by 50,000 metric tons each year. Innovative, modular design allowed for design, permitting, construction and startup within 18 months.

KCPL and the city also receive from the sale of other waste-to-energy products: Renewable Energy Certificates and carbon offset credits.

Client: Burns & McDonnell
Firm: ACEC

Engineering Excellence Project Samples #4

INNOVATIVE VERTICAL SOLUTION

PROJECT: Replacement of 800' Bridge 204-A over the Missouri River (Burlington Line)
CLIENT: BNSF Railway Company (The North, West, and Southwestern Regions Div.)

Today, a new lift span provides safer transportation by river and route-track main line transportation by air. The successful completion of the lift span marks the end of a 20-year effort to replace the aging bridge structures.

the commitment of the United States to safer infrastructure through the Truman roads Act and efforts of investment by the cooperative effort and commitment of all who were involved.

HNTB **ACEC**

Sidewalk Inventory & ADA Transition Plan

The City of St. Charles is proud to announce the launch of the Sidewalk Inventory and ADA Transition Plan. This project is the first of its kind in the state and is a critical step in ensuring that the City's sidewalks are accessible to all citizens.

The City of St. Charles and City Associates are proud to announce the successful completion of the Sidewalk Inventory and ADA Transition Plan. This project is the first of its kind in the state and is a critical step in ensuring that the City's sidewalks are accessible to all citizens.

ACEC-Missouri | 2013 Engineering Excellence Competition
 Qaim Associates, Inc., St. Louis, Missouri
 Sidewalk Inventory and ADA Transition Plan | St. Charles, Missouri
 City of St. Charles, Missouri

Marquette Energy Renewable Energy Center

The Marquette Energy Renewable Energy Center (MREC) is a new natural gas power generation facility with a capacity of 100 MW. The facility is located in Marquette, Missouri, and is owned and operated by Marquette Energy. The project is a joint venture between Marquette Energy and Ameren Missouri.

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ACEC - Missouri
 2013 Engineering Excellence

Slide-in of the I-44 Bridge over the Gasconade River

Laclede County, MO

On the 100th anniversary of the I-44 Bridge over the Gasconade River project, Emery Sapp & Sons conceived a fast, innovative, efficient solution that benefited all parties involved, and Parsons, as specialty move engineers, executed the plan. Emery Sapp & Sons conceived a fast, innovative, efficient solution that benefited all parties involved, and Parsons, as specialty move engineers, executed the plan.

Parsons
 Jefferson City, MO

ACEC
 Des Moines, MO

Streamlining Tornado Debris Cleanup

After a devastating EF-4 tornado hit the town of Marquette, Missouri, the U.S. Army Corps of Engineers (USACE) needed to help with a major, complex debris cleanup project. ACEC was selected to provide project management and construction management services.

ACEC provided project management and construction management services for the debris cleanup project. The project involved the removal of debris from the town of Marquette, Missouri, and the reconstruction of damaged infrastructure.

ACEC

BLUE RIVER AND INDIAN CREEK CONFLUENCE TRAIL

KANSAS CITY, MISSOURI

The Blue River and Indian Creek Confluence Trail is a new multi-use trail located in Kansas City, Missouri. The trail is a joint venture between the City of Kansas City and the State of Missouri.

The trail is a joint venture between the City of Kansas City and the State of Missouri. The project involved the construction of a paved trail through a natural area, providing a safe and scenic route for walking, jogging, and cycling.

ACEC

JEFFERSON BARRACKS NATIONAL CEMETERY

PHASE 1A- EARLY TURNOVER St. Louis, MO

Throughout the design process, the team members provided valuable expertise on all disciplines, offered excellent design options and responded promptly to all client requirements and demands without compromise, demonstrating integrity and creativity." Department of Veterans Affairs

ACEC
 DESIGN TEAM

Gundersen Health System & La Crosse County Landfill Gas Electricity Project with Waste Heat Recovery and Utilization

The electricity produced is transferred to the local utility grid and used to power the Gundersen Health System's medical center. The project is a joint venture between Gundersen Health System and La Crosse County.

The project is a joint venture between Gundersen Health System and La Crosse County. The project involved the construction of a power plant at a landfill, which will generate electricity and provide waste heat recovery.

ACEC

I-44 Over Rangeline Road Diverging Diamond Interchange • Joplin, Missouri

The I-44 Over Rangeline Road Diverging Diamond Interchange is a new highway interchange located in Joplin, Missouri. The project is a joint venture between the Missouri Department of Transportation and Benesch & Company.

The project is a joint venture between the Missouri Department of Transportation and Benesch & Company. The project involved the construction of a complex highway interchange, providing improved traffic flow and safety.

Owner/Client: Missouri Department of Transportation
Engineer: Alfred Benesch & Company (Kansas City, MO)

benesch **MO DOT** **ACEC**

Engineering Excellence Project Samples #5

GRAND AVENUE VIADUCT

The Grand Avenue Viaduct Replacement makes aesthetically pleasing, pedestrian-friendly features, including decorative towers, pedestrian overpasses, separate bus lanes, ramps, illuminated walkways, decorative lighting and lighting and soundproof barriers and guard rails.

The new bridge improved functionality and safety, and also created a flexible work space and pedestrian design features that satisfied a wide range of stakeholders. The new structure, which is built on the original bridge's foundation, is built to last, built to the heart of the city that accomplished the project's goals and exceeded expectations.

The new 3-span steel bridge consists of variable-depth steel girders and spans a two-lane street, a local street, several bicycle lanes, light rail tracks and parking, and the 100-foot Mill Creek stream. The project was supported by cast-in-place concrete foundations and precast concrete piers. The viaduct's design includes a 100-foot wide approach ramp and north side of the original viaduct. The remaining length of the original structure was reinforced with precast concrete pier supports and mechanically fastened with steel reinforcement, supported on existing aggregate pier foundations and protected for precast concrete bridge walls. The new structure meets seismic Category C requirements for a "V" bridge.

The location required the team to bring special access equipment and off-road machinery. Precise surveying, including aerial photography, allowed for full road closure, including the main bridge, the approach from three points to slightly more than one construction season.

HR **ACEC**

Project: Replacement of Grand Avenue Viaduct | St. Louis, MO
Client: City of St. Louis, Board of Public Safety | St. Louis, MO
Year: 1997 | 1.5m US\$

Missouri Route 141 Improvements

St. Louis County
Client: Missouri Department of Transportation
Year: Jacobs Engineering Group Inc., St. Louis, MO

JACOBS

The Missouri Route 141 project provides one of the best ways to the most planned and best engineering in St. Louis County. The new facility includes improved and full access to the bridge, while improving travel from all angles, and safety for the traveling public. Jacobs worked on the design for the overall and for the preliminary engineering, the final design to meet the short design schedule dictated by ADA, safety requirements. Through their expertise, the project was able to deliver a design that met the needs of the customer, delivered on time, and met the needs of the community. The project was a success and proved that the combined project benefits.

ACEC

Westbound Blanchette Bridge Rehabilitation

St. Charles, MO
Client: Missouri Department of Transportation
Year: Jacobs Engineering Group Inc., St. Louis, MO

JACOBS

The Jacobs designed Westbound Blanchette Bridge Rehabilitation project was to meet the owner's operation budget and to expand to exceed the desired 20 year service life of the bridge. Jacobs provided the design, construction, and maintenance of the bridge, including the bridge deck, approach, and abutments. The project was a success and proved that the combined project benefits.

ACEC

Wood River Refinery's CCU-1 (Fluid Catalyst Cracking Unit) stands 18 stories tall, covers an area of approximately 8,826 square feet, and is composed of over 7,000 steel beams, columns, diagonal braces, and secondary members.

Phillips66 called upon Juneau Associates to retrofit their World War II era unit, bringing it up to current seismic and safety standards.

This massive three part project - inspection, analysis, and retrofit design - was completed with no downtime to the unit, even though each member had to be individually inspected.

This project defined a comprehensive approach to repairs and upgrades that is cost-effective and non-disruptive to facility operations.

ACEC **Wood River Refinery** **JUNEAU**

CCU-1 INSPECTION, ANALYSIS, AND RETROFIT PLANS

Wencker Treebrook Storm Channel Improvements

Ladoux, Missouri

Wencker Treebrook Storm Channel Improvements project was a success and proved that the combined project benefits.

ACEC

WOODS CHAPEL ROAD DIVERGING DIAMOND INTERCHANGE

BLUE SPRINGS, MISSOURI

OWNER - City of Blue Springs, Missouri
Blue Springs
ENTERING FIRM
TransSystems

ACEC

GEOTECHNICAL ENGINEERS INNOVATES TO HELP COMPLETE CHALLENGING PIPELINE CROSSING I-84 Directional Micropile Crossing

GeoEngineers

The project involved a challenging pipeline crossing over a highway. The project was a success and proved that the combined project benefits.

ACEC

DESIGN, INSTALLATION AND O&M OF BLUESTONE DAM ADAS

Completed in 1949, Bluestone Dam is a 165 foot high by 2,048 foot long concrete gravity flood control dam on the New River near Hintons, West Virginia. In recent years, the US Corps of Engineers prioritized the dam for upgrades to meet current safety standards and to reduce the risk of failure.

Improvements include a concrete scour pit downstream of the dam to create a stilling basin, and to prevent erosion by trapping a deep excavation to construct the pit.

URS designed, installed and maintained an Automated Data Acquisition System (ADAS) to monitor the dam during operation and construction of the scour pit. The state-of-the-art data acquisition system provides daily safety monitoring, and can send immediate alerts to both on-site and off-site construction personnel if unexpected movements are measured. The system also includes a set of video cameras for office surveillance.

MULTIPLE ADVANCED TECHNOLOGIES

- 10-Speed telemetry network.
- Wide variety of automated instrumentation both inside the concrete monoliths and on exterior sections of the dam.
- High-resolution IP video cameras.
- Precision Level Automated Total Station and prism system with wireless link.
- Industrial-grade central monitoring system using the latest computer hardware and storage technologies.

CLIENT EXPECTATIONS

URS' performance on this project was rated "A" Exceptional by all categories by the USACE Contracting Officer on the ADAS evaluation documents.

"Work, communication, adjusting of schedules - everything was handled professionally and would highly recommend this contractor be considered for other work of this type."

ACEC **URS** **US Army Corps of Engineers**

GATEWAY GUIDE REGIONAL MOBILITY REPORT

URS completed the MMR to provide guidance and support services for the Gateway Guide Transportation Management Center located in St. Louis, under the contract, URS provided transportation, leading and other services for the 24 hours a day, 7 days a week TMC operation.

In the TMC, 300 miles of St. Louis area roadway are supported utilizing over 100 traffic cameras and 100+ traffic sensors. Together and collect are managed through close coordination with the Missouri State Police and Missouri State Highway Patrol.

In addition to monitoring and leading to transportation operations, URS provides support services including parking and guiding the Missouri State Police Regional Mobility Report, which provides a comprehensive review of the area mobility. URS developed a regional report with data into a user-friendly tool analysis and planning tool.

VALUE TO CLIENT

- Reduce MMR to track and reduce traffic congestion and support allowing drivers to know the most appropriate to their location to travel and off the roadway.
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IMPACT ON THE ENVIRONMENT

- Reduces the number of vehicles on the road, which helps to reduce air pollution.
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The Mobility Report is a powerful tool for identifying bottlenecks that impact the quality of people's lives in the St. Louis area. The report provides clear information and insight into the current state of the region's mobility and provides a clear path forward for improving the overall mobility of the region.

ACEC **URS** **Missouri** **MDOT**

Engineering Excellence Project Samples #6

ACEC MONARCH - CHESTERFIELD LEVEE TRAIL

The City of Chesterfield, Missouri, initiated the Monarch-Chesterfield Levee Trail project in August 2009 in cooperation with the Missouri-Chesterfield Levee District. The City was assisted by Cape River Gateway (CRG) District in developing an interconnected regional greenway system. The trail is an elevated concrete-on-grade trail for bicycles and the City's public recreation and trail system.

Kulman design Group, Inc. (KDG) led a team of specialists from its design, construction, and engineering services divisions to provide the design and construction services for the trail. The trail project includes the design and construction of the trail, including the trail's alignment, stationing, and construction. The trail project also includes the design and construction of the trail's infrastructure, including the trail's lighting, signage, and maintenance. The trail project was completed in 2012 and is now open to the public.

Kulman design Group, Inc.
16 Progress Parkway
St. Louis, Missouri 63103
314.434.8888 314.434.8280
kdg.com

ACEC ISLE CASINO CAPE GIRARDEAU

In early 2010, the City of Cape Girardeau, Missouri, engaged Kulman design Group (KDG) as the design team for the Isle Casino Cape Girardeau. The project was a multi-phased project involving the design and construction of the casino building, parking garage, and other infrastructure. The project was completed in 2012 and is now open to the public.

Kulman design Group, Inc.
16 Progress Parkway
St. Louis, Missouri 63103
314.434.8888 314.434.8280
kdg.com

"FROM PACIFIC TO TERRIFIC!" BROADWAY STREETSCAPE Cape Girardeau, Missouri

The City of Cape Girardeau, Missouri, engaged Kulman design Group (KDG) as the design team for the Broadway Streetscape project. The project was a multi-phased project involving the design and construction of the streetscape, including the sidewalk, lighting, signage, and other infrastructure. The project was completed in 2012 and is now open to the public.

Kulman design Group, Inc.
16 Progress Parkway
St. Louis, Missouri 63103
314.434.8888 314.434.8280
kdg.com

ACEC I-70 INTERCHANGE NEW MISSISSIPPI RIVER BRIDGE St. Louis, Missouri

The Interstate 70 interchange is a critical part of the New Mississippi River Bridge project. The project was a multi-phased project involving the design and construction of the interchange, including the interchange structure, lighting, signage, and other infrastructure. The project was completed in 2012 and is now open to the public.

Kulman design Group, Inc.
16 Progress Parkway
St. Louis, Missouri 63103
314.434.8888 314.434.8280
kdg.com

ACEC Sanitary Sewer Overflow Strategy Coldwater Wet Weather Storage Facility Tank "A" Metropolitan St. Louis Sewer District

The Sanitary Sewer Overflow Strategy project was a multi-phased project involving the design and construction of the storage facility, including the storage tank, lighting, signage, and other infrastructure. The project was completed in 2012 and is now open to the public.

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ACEC Route 5 Use of LiDAR Scanning BARTLETT & WEST

The Route 5 project was a multi-phased project involving the design and construction of the road, including the road structure, lighting, signage, and other infrastructure. The project was completed in 2012 and is now open to the public.

Bartlett & West
16 Progress Parkway
St. Louis, Missouri 63103
314.434.8888 314.434.8280
bartlettwest.com

BURNS & MCKENNA New Chilled Water Plant: Meeting Mizzou's Future Columbia, Mo.

The University of Missouri campus is served by beautiful historical buildings. These buildings have over 100 years of history and are a significant part of the campus. The new chilled water plant was designed to meet the needs of the campus and provide a sustainable and efficient energy source. The project was completed in 2012 and is now open to the public.

Burns & McKenna
16 Progress Parkway
St. Louis, Missouri 63103
314.434.8888 314.434.8280
burnsmckenna.com

DESIGN, INSTALLATION AND O&M OF BLUESTONE DAM ADAS

The Bluestone Dam project was a multi-phased project involving the design, installation, and operation and maintenance of the dam. The project was completed in 2012 and is now open to the public.

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16 Progress Parkway
St. Louis, Missouri 63103
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acecmissouri.com

GATEWAY GUIDE REGIONAL MOBILITY REPORT

The Gateway Guide Regional Mobility Report is a comprehensive report that provides information on the regional mobility system. The report includes information on the regional mobility system, including the regional mobility system, lighting, signage, and other infrastructure. The report was completed in 2012 and is now open to the public.

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