2019 Engineering Excellence Awards



American Council of Engineering Companies of South Carolina



2018









2017

Tuesday February 5, 2019 University of South Carolina Alumni Center

ENGINEERING EXCELLENCE AWARDS

Engineering Excellence is an annual competition sponsored by the American Council of Engineering Companies (ACEC) and its member organizations. It recognizes engineering achievements which demonstrate the highest degree of merit and ingenuity.

The ACEC-SC Palmetto Award (top overall project) and the five other entries judged to be the best overall were eligible to enter the national competition. National winners are announced in May at a gala event in Washington, D.C.

The ACEC-SC competition is open to all firms engaged in the practice of consulting engineering. Projects must have been designed in the state of South Carolina with construction substantially completed between Nov. 1, 2016 and Oct. 31, 2018. Projects could have been constructed anywhere in the world as long as they were designed in South Carolina.

A distinguished panel of judges was selected. Each judge separately reviewed the projects. Criteria for judging included: 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; and exceeding owner/client needs.

We applaud and congratulate all the firms that entered the 2019 Engineering Excellence Awards Competition.

PALMETTO AWARD

Thomas & Hutton Engineering Co. Horry County Schools Think Energy Positive, Horry County, SC Horry County Schools Special Projects Over \$10 Million ACEC FINALIST · ENGINEERING EXCELLENCE AWARD



Horry County Schools embarked on а quarter billion-dollar endeavor to design and construct five new state-of-the-art schools simultaneously within 21 months to control overcrowding due to increased development in Horry County, South Carolina. While accommodating for growth in the area was a top priority, funding the schools into the future was also a concern. Horry County Schools decided to build high efficiency, "energy positive" buildings that consume less energy than they



generate, in turn providing cost-savings over the lifetime of the schools.

Working closely with the design/build team, Firstfloor Energy Positive, Thomas & Hutton led the site planning and design and ensured project objectives were achieved for the establishment of five energy positive schools. The team worked seamlessly to achieve the Horry County School's aggressive timeline and to keep the projects under budget. With the schools as the first of its kind in the region, Thomas & Hutton laid the groundwork that would support the buildings and facilities. With a fundamental mission of efficiency, Thomas & Hutton's objectives were to foster an environment with safe and efficient transportation, provide sustainable site designs while meeting the energy goals of the project, and maintain cohesion across the school sites, while accounting for the buildings' architectural styles.

Planning for pedestrian walkways and vehicular circulation began early in the process to facilitate a site layout that would provide safe travel ways for students, cars, and buses. The layout and orientation of the buildings were essential in maximizing solar gain for climate control in the buildings. Land use was maximized for stormwater ponds, athletic fields, geothermal well fields, solar arrays, parking, and extended car stacking loops for parents waiting to pick up their children. Landscape architecture designed placement of trees and shrubs to shade the buildings in summer and allow for warming sunlight penetration in the winter months. The energy efficient buildings, outdoor classrooms, sustainable and safer site designs will all have positive impacts on the students of Horry County Schools for generations to come.

ACEC FINALISTS

Mead & Hunt, Inc.

Historic Glendale Iron Pedestrian Bridge, Glendale, SC South Carolina Department of Transportation Special Projects \$500,000-\$2 Million

ACEC FINALIST · ENGINEERING EXCELLENCE AWARD





The Historic Glendale Iron Pedestrian Bridge, received new life after Mead & Hunt led this rehabilitation project through an intricate design and construction process. Our team navigated numerous historic and environmental considerations to reconstruct this fading landmark to its original charm.

The design kept much of the original structure intact. Our improvements increased pedestrian safety and restored the bridge's vintage aesthetic, making it an ideal location for an event venue. This required implementing additional features to increase the bridge's functionality. The structure's quaint beauty combined with modern touches will provide a stunning

backdrop to any gathering.

The Historic Glendale Iron Pedestrian Bridge is an iconic landmark that stands out against Glendale Shoals' natural beauty and the ruins of the Glendale Cotton Mill. As nearly 100 years has passed since its initial construction, the structure now serves as a destination for recreation, socialization and relaxation.

Michael Baker International

Nexton Parkway Interchange, Berkeley County, SC Berkeley County Public Works Transportation Over \$10 Million

ACEC FINALIST · ENGINEERING EXCELLENCE AWARD



Michael Baker International provided engineering services to Berkeley County for the Nexton Parkway Interchange and I-26 Widening Project. This project widened Interstate 26 from four to six lanes for 2.2 miles just west of the new Nexton Parkway Interchange and created a new interchange and associated frontage roads totaling almost 10 miles of new or improved roadways. The project also required a rigorous seismic analysis and design including a Site-Specific Seismic Response Analysis, the use of structural ground improvement techniques, and a unique abutment wall

configuration to economically mitigate the impact of liquefaction on the bridge due to its close proximity to the epicenter of the Middleton Place Summerville Seismic Zone. As the commercial opportunities continue to flourish in this area, this project is not only important to the local community but also supports the economic growth in all of South Carolina.

Thomas & Hutton Engineering Co.

South Carolina's Framework for Freight, from Cross, SC to Ridgeville, SC Tarek "T" Ravenel (Palmetto Railways) Surveying/Mapping Technology \$0-\$500,000

ACEC FINALIST · ENGINEERING EXCELLENCE AWARD

Camp Hall Rail, a 25-mile long rail line connecting Camp Hall in Ridgeland to the CSX Generating Station in Cross, South Carolina, was made possible by the surveying services of Thomas & Hutton. Development within the Camp Hall Commerce Park, including Volvo Cars, has increased demand for rail service. This rail line will allow trains to transport cars and goods from Camp Hall to inland distribution centers for distribution throughout the United States and internationally.

Route and property surveys were provided to analyze potential impacts and feasibility of running the rail line along privately-owned properties and environmentally sensitive lands. With combined LiDAR and ground survey, this approach provided timely data collection for design and acquisition saving the state of South Carolina money. With full operation set for June 2020, the rail service will lessen the environmental and physical impact of hundreds of trucks on the already congested Interstate 26 corridor.

Civil Engineering Consulting Services, Inc.

Interstate 95/US 301 Interchange and US 301 Connector Design-Build Project, Orangeburg County, SC South Carolina Department of Transportation Special Projects Over \$10 Million

ACEC FINALIST · STATE FINALIST



Providing access to an area important to economic development in Orangeburg County under an accelerated schedule was the challenge. The South Carolina Department of Transportation selected design-build as the method of delivery for the I-95 / US 301 Interchange and SC 6 Connector project. Completing this project under an accelerated schedule would help the public-private collaboration between the County and Jafza International attract companies and jobs to the area, as a multimodal distribution center was in the planning stages.

Civil Engineering Consulting Services, Inc. (CECS) completed a complicated design-phase for the project within the proposed accelerated schedule. Major challenges included right-of-way acquisition and coordinating designs with a foreign entity in Dubai, UAE, relocation of transmission lines with season restrictions, environmental permitting with changes in the floodway mapping released during the design phase of the project, and a railroad encroachment permit for a new overpass.





TranSystems Corporation

Salters Road Widening Improvements, Greenville County, SC South Carolina Department of Transportation Transportation Over \$10 Million

ACEC FINALIST · STATE FINALIST





The Salters Road Widening was designed to significantly upgrade an important transportation connection over Interstate 85 between the Clemson University International Center for Automotive Research and the Millennium Campus areas, and the Verdae Boulevard corridor. The roadway, which bisects the Preserve at Verdae Golf Course and crosses the Laurel Creek tributary, was widened from two to four lanes and includes a raised grassed median as well as grassed buffer/curb lawn

for landscaping. New bicycle and pedestrian accommodations allow for safe travel through the corridor and provide a critical link over I-85 to the Verdae Boulevard corridor and future Swamp Rabbit Trail Extension. The project also includes the bridge replacements over I-85 with a new, two-span, five lane bridge designed with enhanced architectural features and pedestrian and street lighting accommodations. TranSystems led the planning and engineering services for these upgrades in association with HDR, Inc. and S&ME, Inc.

ENGINEERING EXCELLENCE AWARDS

American Engineering Consultants, Inc.

Dodging Landmines: 64" Interception Sewer, Forest Acres, SC East Richland County Public Service District Water and Storm Water \$2 Million-\$10 Million

ENGINEERING EXCELLENCE AWARD



Five years ago, the East Richland County Public Service District began planning for replacement of two critical large diameter interceptor sewers that were located in the Gills Creek Floodway. They were reaching the end of their useful life and believed to be contributing large amounts of storm water/ groundwater inflow and infiltration, which compromised the District's ability to convey and treat sewer flow. Because of their criticality and potential to produce significant environmental impacts, replacement had to be done carefully, mitigating the potential for sewer spills and flood impacts. A primary goal of the project was to minimize

bypass pumping of sewer flow around the project area. Through design of an innovative concrete junction box and gravity sewer bypass lines, the total bypass pumping duration was limited to 5% of traditional methods. In September of 2017, the remnants of Hurricane Irma came through the Columbia area bringing heaving rain and flooding to Gills Creek. Thanks to the foresight and planning for such an event, the junction boxes performed as designed, and the project sustained no damages or sewer overflows. Although this solution is relatively simple, the risk mitigated was significant to the owner and contractor. Since completion in March of 2018, the interceptor sewer has contributed to a significant reduction in inflow and infiltration; translating to cost savings and improved reliability for the owner.

Civil Engineering Consulting Services, Inc.

Richland County Transportation Program Design-Build Intersection Improvements, Richland County, SC Richland County, SC Special Projects \$2 Million-\$10 Million

ENGINEERING EXCELLENCE AWARD



In an effort to reduce the delivery time for safety improvement projects, Richland County initiated a Design-Build Proposal to design and construct six intersections. The contract was the first ever attempted multi-project design-build for Richland County.

The C.R. Jackson project team was selected to perform this work and included Civil Engineering Consulting Services, Cox & Dinkins, and PAN. The team knew that these intersection projects would be challenging.

By minimizing the number of potential factors involving third parties, the ability to deliver the overall project on time was greatly enhanced.

All intersections were completed within the allotted time and the traveling public began driving through six safer intersections designed, constructed and delivered in a very timely and cost-efficient manner. More importantly, the citizens of Richland County will benefit from reduced accidents, injuries, lost work days, insurance costs, and lost economic output.

GWA, Inc. House Of Raeford-Wallace, Teachey, NC House of Raeford Building/Technology Systems No budget

ENGINEERING EXCELLENCE AWARD AND SMALL FIRM AWARD



After a fire destroyed the House of Raeford's Wallace, NC, plant, an adjacent cold storage warehouse was repurposed for processing. GWA designed electrical systems in accordance with USDA requirements for the new 200,000 square foot Ready-to-Cook poultry processing facility, support for over 5,800 HP (horsepower) refrigeration loads to maintain a 45° F temperature in production and dock areas and 30° F in the storage cooler, and for process loads of over 4,800 HP.

The plant is outfitted with leading-edge technology promoting food safety, preventive maintenance, and product tracking systems; advanced security and fire prevention equipment;

and enhanced wastewater treatment.

Project delivery was accelerated design-build. House of Raeford's charge was to get the plant back into operation better than it was and to get their employees back to work as quickly as possible. In the first phase of operation, they currently employ 500 people and process 650,000 chickens per week.

Infrastructure Consulting & Engineering, PLLC

Finley Road Bridge Replacement, Ridgeway, SC Fairfield County Small Projects \$0-\$500,000.00

ENGINEERING EXCELLENCE AWARD



The Finley Road Bridge Replacement Project consisted of replacing the 20-year-old existing structure over a tributary to Big Cedar Creek which was originally built with a salvaged truck scale platform. The bridge was closed due to severe damage caused by the flooding events of October 2015.

Infrastructure Consulting & Engineering, PLLC (ICE) served as the primary consultant for the overall design, project management, and successful delivery of the bridge replacement. The firm was responsible for bridge, roadway, and hydraulic

design, utility coordination, geotechnical engineering, permitting, and construction, engineering, and inspection (CE&I) services. ICE delivered an efficient design while minimizing impacts to the surrounding environment and developed plans that resulted in an easily constructible, low-maintenance bridge for Fairfield County.

Stantec Consulting Services, Inc.

Lake Elizabeth Dam Removal, Blythewood, SC South Carolina Department of Transportation Environmental \$500,000-\$2 Million

ENGINEERING EXCELLENCE AWARD



Before it failed, the Lake Elizabeth Dam formed the lake and served as the roadbed for a busy highway. When flooding from Hurricane Joaquin collapsed the dam, it destroyed the roadway, too.

While the priority was to fix the highway, the project presented a unique environmental stewardship opportunity. The South Carolina DOT, Stantec team, residents and other stakeholders collaborated on a creative solution to completely "un-dam" the lake and restore the original stream ecosystem. A "hybrid" design approach used Natural Channel Design practices to stabilize the stream as it passed under the highway bridge.

It was a win for everyone. The ecosystem restoration cost South Carolina DOT a fraction of the overall highway project, improved the schedule, and eliminated the need for expensive offsetting

mitigation. Now the community enjoys improved water quality and flood storage, along with rich wildlife and the natural beauty of the restored stream, creeks and wetland.

Weston & Sampson Engineers, Inc.

BCWS PS001 Rehabilitation, Goose Creek, SC Berkeley County Water and Sanitation Water Resources \$2 Million-\$10 Million

ENGINEERING EXCELLENCE AWARD



In 2012, Berkeley County Water & Sanitation's PS 001, the largest pump station in the wastewater system, began experiencing frequent pump failures necessitating replacement. In lieu of a simple change in pumping equipment, the Weston & Sampson Team was selected to study and evaluate the cause of the pump failures and make recommendations for improvements to modernize the station. The study included: a physical hydraulic model; a comprehensive evaluation of the existing electrical system; an analysis of hydrogen sulfide gas emissions and a comprehensive evaluation of future growth.

Weston & Sampson was selected to design BCWS PS001 Renovation Project based upon recommendations from the study. The design incorporated modifications to the existing wetwell, the installation

of two different sized pumps for handling average daily and wet weather flows, and a modern and robust electrical system. The 27 MGD (million gallons per day) pump station was thoughtfully designed for maintenance, ease of operation, and flexibility.

Weston & Sampson Engineers, Inc.

City of Charleston Church Creek Stormwater Basin Study, Charleston, SC City of Charleston Water Resources \$2 Million-\$10 Million

ENGINEERING EXCELLENCE AWARD



Church Creek drainage basin in Charleston, South Carolina is a 15,000-acre area including residential and commercial development and significant transportation corridors. The basin also includes wetlands and tracts of undeveloped property. Further, Church Creek drainage basin is adjacent to tidally affected creeks and rivers. Based on flooding, the City implemented a moratorium on development and commissioned a study by Weston & Sampson to evaluate existing conditions and develop solutions to prevent future flooding that would

allow growth while protecting transportation corridors and private property.

Weston & Sampson evaluated past studies, upgraded the hydraulic model, and developed seven initiatives that would fix the flooding problems if implemented. The model was used to help screen significant improvement projects for effectiveness in preventing future flooding while accounting for tidal impacts at outfalls. Recommendations included tidal surge protection, diversions, channel maintenance, protecting the flood plain, a regional stormwater pumping facility, and policy recommendations.

STATE FINALISTS

Infrastructure Consulting & Engineering, PLLC

I-26 Widening/Nexton Parkway Interchange Project, Berkeley County, SC Berkeley County, SC Special Projects Over \$10 Million



The new I-26 Interchange / Nexton Parkway project is a crucial key in providing adequate infrastructure to support the regional growth demands in Berkeley County, SC. The work included construction of a new interchange at I-26 and Nexton Parkway; widening I-26 lanes for two miles; demolishing the existing Sheep Island Road Bridge; and constructing frontage road connectors and auxiliary lanes for connectivity to the local road network. Nexton Parkway is the new "Gateway to Summerville" with divided four-lane roadway, planted medians, and multi-use bike paths. The new roadway system totals a little over eight miles.

As Berkeley County's CE&I firm, Infrastructure Consulting & Engineering was responsible for the construction management and inspection services. Although several challenges were presented during construction, including three natural disasters and added scope items, the project was ultimately delivered on time and under budget, greatly benefiting the taxpayers and economic development interests in the area.

. **Mead & Hunt** Horry County Ride II 100-mile Dirt Road Paving Program, Horry County, SC Horry County, SC Transportation Over \$10 Million



Mead & Hunt placed Horry County and its citizens' satisfaction at the heart of this sales tax-funded program. The team was good stewards of the County's funding and collaborated with each property owner to find solutions and ease their design concerns. By engaging the public and addressing their concerns, the team successfully negotiated 99.3% of the necessary 1,400 easement. Through streamlined organization and a commitment to client and public satisfaction, Mead & Hunt completed the RIDE II 100-mile Dirt Road Paving Program \$51.7 million under budget – a 47% savings.

Judges

A special thank you is extended to the competition judges who volunteered valuable time to carefully review each project.

Dennis J. Fallon, PhD, PE, PMP, F.ASCE, F.ASEE

Professor Emeritus The Citadel

Robert W. King, Jr., P.E.

Retired, Former Deputy Commissioner, SC Department of Health & Environmental Control and ACEC-SC Public Service Award Recipient

Dimitris C. Rizos, PhD

Director of the Advanced Railroad Technology Group and Associate Professor Department of Civil and Environmental Engineering University of South Carolina

American Council of Engineering Companies of South Carolina (ACEC-SC) is a member organization of the American Council of Engineering Companies. For information on ACEC-SC or the Engineering Excellence Awards competition, please contact us at P.O. Box 11937, Columbia, SC 29211 · (803) 771-4271

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