

2020 Engineering Excellence Awards



2019



2017



2018

Tuesday
February 4, 2020
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 are eligible to enter the national competition. National winners are announced in April 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, 2017 and Oct. 31, 2019. Projects may be 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 2020 Engineering Excellence Awards Competition.

PALMETTO AWARD

HDR

SC 41 Design-Build Bridge Replacement Over Wando River
South Carolina Department of Transportation
Transportation Over \$10 Million



ACEC FINALIST • ENGINEERING EXCELLENCE AWARD

The SC-41 Design-Build Bridge Replacement over the Wando River replaced the aging swing span bridge with a high-level fixed span bridge providing 55 feet of vertical clearance over mean high tide. The HDR | ICA team provided a design that greatly reduced the impacts to wetlands, right-of-way, and utilities compared to the preferred alternative identified in the project's Environmental Assessment. The bridge's design was complicated by the severe seismic demands and the design requirements for vessel collision on the bridge's substructure. The outcome of this project is a new bridge that will serve Lowcountry residents and visitors by providing enhanced mobility on the road and the water and provide SCDOT with an economical, low maintenance, and resilient structure



ACEC

AMERICAN COUNCIL OF ENGINEERING COMPANIES
of South Carolina

2020 Engineering
Excellence Award

PALMETTO AWARD

Rewarding Excellence in Engineering

ACEC FINALISTS

HDR

Carolina Crossroads Corridor Improvement
South Carolina Department of Transportation
Studies, Research, and Consulting Over \$20 Million



ACEC FINALIST • ENGINEERING EXCELLENCE AWARD



Located in the heart of South Carolina, the I-20/I-26/I-126 corridor is the crossroads of the state economy and the major hub for the Midlands' commuters, travelers and commerce. In addition to being a main route in and out of Columbia, I-26 is a thoroughfare for travelers headed to the coast and mountains and a major cargo route between Lowcountry ports and Upstate manufacturers. Last improved in the 1980s, the I-20/I-26/I-126 corridor does not meet current traffic demands. Finding a solution became a statewide priority.

Following extensive traffic, environmental and engineering analysis, an alternative was selected to improve level-of-service and travel-time benefits, reduce delays and maintain travel efficiencies through the design year (2040). The Environmental Impact Statement was completed in less than four years, well below the national average for the industry. The HDR team worked with SCDOT to complete alternatives development, environmental analysis and

documentation, public and stakeholder engagement and preliminary design.

Carolina TEA

Emergency Bridge Replacement 2018 2A DB
South Carolina Department of Transportation
Structural Systems \$2 Million - \$10 Million



ACEC FINALIST • ENGINEERING EXCELLENCE AWARD • SMALL FIRM AWARD



The Palmetto Design-Build Team, including Palmetto Infrastructure (contractor); Carolina TEA (Lead Engineer); Holt, V&M, F&ME, Three Oaks and KCI (subconsultants); and CDM Smith (owner's rep.) partnered with SCDOT to replace three bridges damaged by Hurricane Florence. SCDOT's expedited schedule required the design, permitting, demolition and construction of all three bridges in 200 days.

The Team replaced all three bridges, improved an intersection, repaired a leaking sewer line, and significantly improved safety at all three sites. SCDOT was very pleased with the Palmetto DB Team, noting that, as issues arose, the Team implemented solutions

rather than point fingers. Project success is directly attributable to the diligence of the entire team in resolving disagreements and implementing innovative solutions while maintaining an aggressive schedule.

Carolina TEA is very proud to have served SCDOT on this Emergency Bridge Replacement Project.

Johnson, Mirmiran & Thompson, Inc.

I-26 and Volvo Car Drive Interchange
South Carolina Department of Transportation
Transportation Over \$10 Million



ACEC FINALIST • STATE FINALIST



All design-build projects experience challenges during construction. The design team was diligent in providing plan and design changes as necessitated by field conditions. At one point near the end of the bridge construction, JMT placed a senior engineer on-site to better respond to day-to-day questions in the field and keep the project on track.

Additionally, the geotechnical engineer provided on-site staff to assist with earthwork when the project site was suffering from inundation after large rain events. The team also promoted goodwill for the project and the SCDOT through their interaction with the adjacent landowners who were even included in

the ribbon cutting inaugural drive.

Overall, JMT and their partner firms designed a quality project that met SCDOT's expectations and was opened to traffic on schedule, creating an important new regional economic development connection.

Davis & Floyd, Inc.

Sumter Water Treatment Plant No. 6
City of Sumter
Water Resources \$15 Million - \$25 Million



ACEC FINALIST • ENGINEERING EXCELLENCE AWARD



Clean water, a basic human need, provides health, environmental, and economic benefits. But what if the water source has a high iron content or existing infrastructure is unable to meet the demands of a growing area?

Facing these challenges, the City of Sumter worked closely with Davis & Floyd to develop sustainable, energy-efficient solutions by building Sumter Water Treatment Plant No. 6. Our energy-saving innovations to treat high iron content groundwater and recycle backwash water benefit the community by reducing costs to provide drinking water to customers. These operational cost savings are passed on to customers.

Another benefit of Sumter WTP No. 6 is it promotes economic development by providing infrastructure necessary to attract new industry to the area. More industry creates more jobs, making the area more self-sustaining.

The City of Sumter can now meet current and future water demands.

Collins Engineers, Inc.

Drum Island Marsh Restoration
South Carolina Ports Authority
Environmental \$2 Million - \$10 Million



ACEC FINALIST • ENGINEERING EXCELLENCE AWARD



During construction of the South Carolina Ports Authority's Hugh Leatherman Terminal in North Charleston, 11 acres of critical salt marsh habitat were infilled. To offset the loss of those 11 acres, 22 acres of marsh were restored on the southern tip of nearby Drum Island in Charleston Harbor. Collins Engineers, Inc. provided coastal and marine engineering services for the intertidal marsh restoration. The goal was to recreate the natural grade of affected areas by removing dredge material, providing an inlet and creek system to nourish the marsh, and replanting the

area with indigenous species. Its central location in Charleston Harbor ensures that its function as an intertidal marsh provides an ecosystem to help maintain water quality and provide a habitat for juvenile fish and other local marine and avian species. Additionally, the tidal marsh acts as an attenuator of the destructive wave forces that accompany large storms.

Infrastructure Consulting & Engineering

Emergency Bridge Package 2018-1
South Carolina Department of Transportation
Transportation \$2 Million - \$10 Million



ACEC FINALIST • ENGINEERING EXCELLENCE AWARD



The Dillon and Orangeburg County bridges serve as one of the main routes between adjacent communities; therefore, it was critical that the bridges be designed and constructed as soon as possible. The new S-50 bridge includes a two-span replacement bridge that consists of approximately 90' spans, Type III prestressed girders, and mechanically stabilized earth walls placed in front of steel pile-supported end bents. The S-45 project

involved a multiple crossing of two bridges, one main bridge over the Little Pee Dee River and one swamp relief bridge. The swamp relief bridge over Little Pee Dee River Swamp includes three spans (44'-50'-44') totaling 138' long and the main bridge over the Little Pee Dee River includes three spans (66'-66'-66') totaling 198' long. All bridge replacements were successfully completed to the satisfaction of SCDOT and were re-opened to traffic in October 2019.

ENGINEERING EXCELLENCE AWARDS

HDR

Folly Rd. & Camp Rd. Intersection Improvements
Charleston County
Special Projects Over \$10 Million

ENGINEERING EXCELLENCE AWARD



As Charleston County's chosen Construction Engineering and Inspection firm, HDR was responsible for the construction management services for the Folly Road at Camp Road Intersection Improvements Project. To meet the County's project goals, HDR developed a robust public involvement and communication program. Additionally, HDR developed a construction management plan that took a proactive approach to managing the project with a focus on schedule, budget, utility coordination, environmental impacts, protected grand oak trees, and minimizing impacts to the traveling public. Throughout construction, HDR overcame many challenges, including a hurricane,

a snow storm, undocumented/unregistered underground storage tanks, and complex utility conflicts. The HDR team worked closely with the local communities and businesses which allowed for the avoidance of potential conflicts. Despite all the challenges faced by the project, the project was ultimately completed on time and under budget. HDR's team delivered the County's goals, which led to the successful construction of the project.

Thomas & Hutton Engineering Co.

Connecting the Creek
Town of Mount Pleasant
Small Projects \$15 Million - \$25 Million

ENGINEERING EXCELLENCE AWARD



Connecting the Creek increased public access and enjoyment of the popular Shem Creek area of Mount Pleasant. The project included the design and construction of an independent pedestrian bridge along Coleman Blvd. and the creation of a public park destination. The pedestrian bridge provides a safe and fun accessway from one side of the creek to the other, enhancing the area's recreation and dining options. Designing the bridge in a congested, environmentally sensitive area required extensive Thomas & Hutton led coordination between the Town of Mount Pleasant, businesses, and various state and federal agencies. The pocket park transformed an otherwise unsightly

area into a quaint and popular destination. Design challenges included hurricane force winds, high seismic loads, and very poor soils. The design features of the pedestrian bridge and pocket park identify with the area's coastal heritage while providing public water access, improving connectivity, and prioritizing the pedestrian experience.

Infrastructure Consulting & Engineering

Daniel Island Roundabout

Berkeley County

Transportation \$500,000 - \$2 Million

ENGINEERING EXCELLENCE AWARD



Daniel Island is a rapidly growing area; therefore, it is necessary for Berkeley County to address capacity and delay concerns as they arise and increase connectivity by improving local infrastructure. The County recognized an opportunity to improve the heavily traveled intersection of Daniel Island Drive at Seven Farms Drive. This was accomplished by replacing the four-way intersection with a single lane roundabout. Altering this intersection presented many challenges, including maintaining traffic flow equal to the previous intersection; retaining adequate access to adjacent schools, churches, and businesses; and providing safe bike/pedestrian accessibility. In addition, a very short

construction window of only 90 days was stipulated in the contract. ICE served as the County's Construction Management and Construction Engineering and Inspection Firm to oversee the day-to-day operations and manage inspection and testing services. The County and ICE worked together to successfully complete this project under budget and ahead of schedule.

Civil Engineering Consulting Services, Inc.

Utility Coordination & SUE for S-112 (Beechcreek Rd) Emergency Repair

South Carolina Department of Transportation

Special Projects \$500,000 - \$2 Million

ENGINEERING EXCELLENCE AWARD



In July 2018, the South Carolina Department of Transportation (SCDOT) closed (S-112) Beechcreek Road between Old Chapin Road and Wise Ferry Road in Lexington County due to embankment shearing (shoulder collapse). Located adjacent to Lake Murray, the project had environmental concerns in reconstructing a safe road and shoulder for the traveling public.

Subsequent to the closure and between July and October 2018, the SCDOT designed the repair for the emergency SCDOT roadway project, which included the installation of triple 48" smooth wall pipes (to replace the old twin

36" pipes), and a multi layered geo-grid system to help stabilize the embankment.

SCDOT realized construction of the repair of the roadway and new pipes would be difficult since the pipe inverts were about 11 feet below normal pool elevation of the lake (360 MSL). However, in October 2018, Dominion Energy (formerly SCE&G) began a "drawdown" of Lake Murray to 350.0 mean sea level to allow the fall weather to clean the shorelines, eliminate weed overgrowth, and to maintain good water quality (a periodic occurrence last performed in 2015). In January 2019, Dominion planned to start raising the lake level such that in the spring the lake would be at a normal level of around 360 mean sea level. Final SCDOT design plans for the project were completed in mid-November 2018 in anticipation for a December 12, 2018 letting.

S&ME

Brooks Stadium Expansion
Coastal Carolina University
Structural Systems Over \$20 Million

ENGINEERING EXCELLENCE AWARD



S&ME used a wide variety of geotechnical technologies on a tightly confined site to expand Brooks Stadium at the campus of Coastal Carolina University from 9,400 seats to 20,000 seats by adding a new upper deck. High capacity drilled displacement piles were used to support very heavy columns that had to be constructed immediately behind the existing stands, where driven piles could not be used due to excessive vibrations. There were also liquefiable soils on the site, which can turn to quicksand during an earthquake. S&ME's inventive development of positive solutions to this project's

challenges played a major role in making this stadium expansion a reality, which is of significant social and economic benefit to Coastal Carolina University and the Conway community. Go Chants!

American Engineering Consultants, Inc.

Cayce's Massive Water Infrastructure Renewal
City of Cayce
Water & Storm Water \$15 Million - \$25 Million

ENGINEERING EXCELLENCE AWARD



With aging infrastructure creating numerous issues in older portions of its distribution system, the City of Cayce embarked on an ambitious effort to renew its water distribution infrastructure and invest in its future by replacing 75 percent of the waterlines within its original city limits. Rather than undertaking numerous small projects over a long time period, the City elected to replace as many aging waterlines as possible all at once, resulting in design and construction of approximately 50 miles of waterline, a one-million gallon elevated storage tank, and approximately 3,800 meter replacements.

AEC ensured that this critical project was a resounding success with careful planning of line routes through established neighborhoods, meticulous structuring of construction documents to include provisions for timely restoration of driveways and landscaping, and assisting the City in its vigorous public outreach program, keeping the City "ahead of the curve" in the unending task of infrastructure renewal.

POND

New McEntire Headquarters Facility
McEntire Joint National Guard Base
Building/Technology Systems \$2 Million - \$10 Million

ENGINEERING EXCELLENCE AWARD



Designing an adequately sized, comprehensive headquarters for a National Guard base that houses some of the most advanced equipment in the Air Force inventory is no small endeavor. The Pond team was tasked with constructing a 21,000 SF facility that consolidated multiple departments, included audio-visual space, and supported training operations. Propelled by a client-centered focus, Pond delivered a fully-configured facility that creatively blends the National Guard's brand with functionality. Well-versed in the specifications associated with government

projects, the team carefully followed guidelines and designed features that aligned with the client's standards. The project also prioritized sustainability to ensure responsible building.

In addition to supporting the National Guard's operational functions, the headquarters will provide opportunities to celebrate the honor of each member's service. As new guards are sworn in, the design pays homage to their strength, service and commitment to the nation.

STV

Folly/Camp Road Intersection Upgrade
Charleston County
Water & Storm Water \$10 Million - \$15 Million

ENGINEERING EXCELLENCE AWARD



As part of an improvement program to alleviate traffic congestion, enhance safety, and upgrade stormwater drainage infrastructure at the intersections of Folly and Camp Roads in James Island, SC, STV was contracted by Charleston County to perform a range of design services for the \$12.4 million project. A key part of this project was designing a wider roadway, with additional turning lanes, as well as bike lanes and more accessible sidewalks, without disrupting a complex system of underground utilities. This challenge was magnified by the fact that the project team had to develop customized

drainage solutions to address the space constraints of the intersection and the surrounding businesses. Meanwhile, Folly and Camp Roads are lined with heritage oak trees, so the final design solution had to operationally improve the roadway while avoiding the removal of these historically significant trees.

Parrish & Partners, LLC

S-39 Bridge Replacement over Little Fork Creek
South Carolina Department of Transportation
Small Projects Under \$500,000

ENGINEERING EXCELLENCE AWARD



Vital to the Jefferson Community, the Parrish & Partners Team replaced the structurally deficient and hydraulically restrictive S-39 bridge with a functional and efficient structure, while also restoring natural stream flow within Little Fork Creek. Responding to growing public concern, SCDOT expedited the plan process to enable the project to be let for construction as quickly as possible. Parrish & Partners delivered innovative, cost effective, and environmentally conscious design plans, three months ahead of schedule. In turn, the Parrish & Partners' methodical and forward-thinking plans aided

the contractor to construct the project in a timely manner and the new bridge opened to traffic eight months ahead of SCDOT's original schedule.

Michael Baker International

Greenway Extension & Bergen Rd Tunnel
City of North Augusta
Small Projects \$500,000 - \$2 Million

ENGINEERING EXCELLENCE AWARD



The tunnel under Bergen Road provides safety, connectivity and inclusivity. This segment of the Greenway connects approximately 500 homes north of Bergen Road to the path, promoting wellness and a sense of community. The system of ramps and landings employed on this project is ADA-compliant and inclusive of the widest range of users. Though the high groundwater table made water intrusion a concern, Michael Baker was able to apply mitigative solutions to ensure structural integrity and usability would not be compromised. The cost-effective solution of precast

concrete culverts used common construction techniques in innovative ways. The project met the expectations of both the client and the public.

STATE FINALISTS

Infrastructure Consulting & Engineering

Wando Welch Terminal Flow Improvement Phase 2

South Carolina Ports Authority

Special Projects Over \$10 Million



The South Carolina Ports Authority (SCPA) has completed a new roundabout, part of the Traffic Improvements, Phase 2 Project at the Wando Welch Terminal (WWT). At an outer diameter of 220 feet, this is the largest operating roundabout in the state of South Carolina. On August 12, 2019, the roundabout was opened to traffic and has proven to successfully accomplish the goals of the SCPA. ICE served as the Lead Design Firm responsible for providing the planning, innovative preliminary and

final design which were instrumental in resolving the congestion issues at WWT. The completed roundabout not only improves the efficiency of processing over 5,000 daily trucks and privately owned vehicles in and out of the terminal but also increased safety by providing more separation between the trucks and privately owned vehicles.

TranSystems

Coleman Boulevard Revitalization Project

Town of Mount Pleasant

Transportation Over \$10 Million



Coleman Boulevard in Mount Pleasant, SC, is a heavily trafficked corridor that faced an increase in traffic demand caused by the explosive growth of the Greater Charleston Area. The need to accommodate increased roadway traffic while better promoting pedestrian and bicycle traffic led to a road widening effort. This also included storm water drainage, sewer, potable water and power line improvements underground to solve the roadway's drainage and flooding issues, as well as improve the Town's deteriorating utility infrastructure.

TranSystems provided the engineering design services from conceptual phase through final design phase for

the widening improvements of Coleman Boulevard from Mill Street to Ben Sawyer Boulevard.

By redeveloping the corridor and working with several key project stakeholders, the project offers the community improved traffic operations and promotes safe pedestrian and bicycle transportation, spurring increased economic growth in the area.

CDM Smith

Shop Road Extension Phase 1

Richland County

Transportation Over \$10 Million



Located in Richland County (the County), the Shop Road Extension Phase 1 project opened to traffic in July 2019. The project was built on a new location and provides access to the new 900-acre Pineview Industrial Park, improving connectivity in the area. The project facilitated development of the new industrial park and enabled the County to attract a \$300 million investment. The China Jushi plant is the cornerstone of the Pineview Industrial Park, employing nearly 400 people. The CDM Smith team provided critical permitting and design services to the County throughout the development of this hugely successful transportation and economic development project.

Infrastructure Consulting & Engineering

Boundary Street Redevelopment

Beaufort County

Structural Systems Over \$20 Million



The Boundary Street Improvement Project was initiated in 2005 from an open and innovative planning process that established the objective to create a “Gateway Project” for the City of Beaufort. This redevelopment project took place along US 21 between Neil Road and Ribaut Road and included improvements to First Street between Hogarth Street and the US 21 and SC 170 intersection. It also consisted of improvements such as the addition of a raised median, construction of a multiuse path, landscaping, lighting, signal work, and undergrounding existing overhead utilities. The Project

encountered significant challenges including undergrounding the utilities into large ductbanks to provide a location for the existing overhead utilities. Considering the utility challenges, the Project was ultimately delivered in July 2018 and the long-term plan was fully realized as the project was completed on budget with only a minor delay in time.

Infrastructure Consulting & Engineering

I-77 Widening & Rehabilitation (MM 15 - MM 27)

South Carolina Department of Transportation

Special Projects Over \$10 Million



The ICE Team successfully provided design and quality control services for this interstate widening project. The construction involved widening the interstate by adding one lane in the median in each direction for seven miles to include widening of 10 mainline bridges over roadways and streams. This section also included rehabilitation of an asphalt overlay with a concrete base and cross slope verification/correction. The work also included eight additional miles of pavement rehabilitation and cross slope verification/correction of southbound lanes. The pavement throughout the

project consisted of asphalt overlay with a concrete base. Challenges included the construction of rigid concrete barriers at the US-21 and maintaining traffic throughout all phases of construction.

ECS Southeast, LLP

Historic Railroad Cut Soil Stabilization Project

City of Aiken

Special Projects \$500,000 - \$2 Million



Aiken, SC, is known for its many historical sites, including the Willcox Hotel which was built along the historic railroad cut in the late 19th century. The Willcox is registered as a historic property through the City, State, and National Historic Register. Over the years, the slope had failed such that the erosion of the railroad cut endangered the Willcox.

The City of Aiken received a two-phased Federal Hazard Mitigation Grant from FEMA to stabilize the railroad cut slope to prevent the Willcox from being compromised. The first phase of the project consisted of completing a geotechnical evaluation; completing

the design of the stabilization project; developing project specifications and a bid specification; and completing a bid of the project to determine the actual costs for FEMA consideration of a Phase 2 award consisting of construction of the soil stabilization design.

Infrastructure Consulting & Engineering

Maybank HWY Phase 2 Widening
Charleston County
Special Projects Over \$10 Million



This project consisted of widening Maybank Highway for approximately one mile to continue the lane from the bridge over the Stono River to the existing right-turn lane at the intersection of River Road. Also included under this contract was constructing a multi-use path and sidewalks for bicycles and pedestrians, closed and open ditch drainage, curb and gutter, and traffic signal improvements at River Road. Challenges included preserving the tree canopy and ensuring minimal disturbance to the surrounding wetlands, as well as maintaining traffic flow of this heavily traveled road during construction. ICE provided project management,

design changes management, construction engineering and inspection, and surveying services.

CDM Smith

Rivers Avenue Park & Ride Facility
CARTA (Charleston Area Regional Transportation Authority)
Transportation \$2 Million - \$10 Million



Berkeley-Charleston-Dorchester Council of Governments, on behalf of CARTA, selected CDM Smith in July 2017 to provide preliminary engineering, final design, and construction management to develop and deliver a new park and ride facility in the North Charleston region of South Carolina. This key location was chosen to provide needed parking and connection with CARTA bus service for daily tri-county commuters using the Rivers Avenue corridor in North Charleston. CDM Smith provided critical planning, permitting, design services, and construction oversight to BCDCOG

throughout the development of this hugely successful transportation and economic development project. As a direct result of the CDM Smith team's involvement in this project, CARTA was able to successfully construct the region's first permanent park and ride facility and realize another step forward for transit and alternative modes of transportation for the traveling public in the Lowcountry region of South Carolina.

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., PE

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

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