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n February 2019, the massive Marc Basnight Bridge, which spans Oregon Inlet connecting Hatteras Island to mainland North Carolina, was opened to traffic. For the massive 2.8-mile project, more than 100 engineers were involved in its planning and design—including many ACEC/NC Member Firms.

Construction of the $252 million superstructure included materials and engineering concepts that were not even available in 1963 when its predecessor, the Herbert C. Bonner Bridge, was built.

The Basnight Bridge was constructed using segmental box girders, creating a lighter and stronger structure. Also unlike its predecessor, the Basnight Bridge has a design life of 100 years—70 years longer than the planned life of the original span.

Similar to the Basnight Bridge, North Carolina’s engineering industry also is a beneficiary of many technical and socioeconomic advancements over the last
50 years—with plenty of room for growth ahead.

Thanks to an influx of new technology firms, manufacturing and distribution centers, and increasingly affordable living, North Carolina was ranked one of the top three states for doing business in 2019, according to CNBC. The ranking considers each state’s workforce, economy, and infrastructure. The state’s growing population—currently at 10.5 million—is projected to reach 10.8 million by 2021.

“With this surge in population comes a surge in new development and the need for new infrastructure, new and improved facilities, and maintenance of existing facilities and infrastructure,” says Derek Clyburn, ACEC/NC president and senior vice president at Engineering Consulting Services (ECS Ltd.). “When it comes to economic development in North Carolina, consulting engineering companies are at the foundation of it, with ACEC/NC at its center.”

Celebrating its 50th anniversary last year, ACEC/NC includes 235 Member Firms representing 10,500 employees, up from 185 Member Firms in 2013. Member Firms throughout the state are engaged in a wide range of engineering projects that propel the economy and safeguard the state’s quality of life.

The organization hosts a dozen major events each year for its members, and its budget tops $1.2 million, double its $560,000 budget in 2013.

Furthermore, the state organization serves as a powerful political voice for the engineering industry at the North Carolina General Assembly.

**MAJOR LEGISLATIVE ACHIEVEMENTS**

Over the last decade, ACEC/NC has scored several major legislative victories for engineers that have paved the way for better business relationships with public and private clients.

One major win saw ACEC/NC lead a coalition of professional service organizations in 2018–2019 that protected engineering firms from onerous, third-party indemnification and duty to defend requirements on both public and private contracts. Third-party indemnification has dogged professional services organizations such as engineering firms for decades. They become particularly onerous when project owners pile on duty to defend requirements where an engineer has to pay for the defense costs of an owner regardless of whether the engineer had any fault in the lawsuit.

“We were one of the first states, along with Indiana, that actually got that protection for both private and public contracts,” says James Smith, executive director of ACEC/NC and ExCom NAECE Representative. “Because it affects every one of our Member Firms—that would probably be one of the biggest achievements we have had.

“Particularly, small firms do not have the resources to do that,” Smith says. “It could be a year or two before a lawsuit is settled, and in the meantime, you could go bankrupt. Professional liability insurance does not cover third-party lawsuits, so getting rid of that was huge.”

ACEC/NC also helped lead the effort (along with other A/E/C industry organizations) to pass a bill that corrected and eliminated the loophole in North Carolina’s Qualifications-Based Selection (QBS) law. Most states such as North Carolina have mini-Brooks Acts that mirror but customize the federal QBS legislation. However, North Carolina allowed public entities to opt out of using the Act and QBS in project solicitations.

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**JAMES SMITH**

**EXECUTIVE DIRECTOR**

**ACEC/NC**

**EXCOM NAECE REPRESENTATIVE**
“A number of municipalities were famous for opting out of every contract. It just became a standard procedure with their local governing entities,” Smith says. ACEC/NC and the coalition was able to package the legislation within a larger bill that set up design-build contracting in North Carolina.

“We were able to get buy-in from all the disparate entities who really wanted design-build and were willing to give up that loophole of the QBS opt-out in exchange,” Smith adds.

ACEC/NC has also been instrumental in getting several state bills passed to increase transportation funding. The organization was part of a broad-based state chamber-led coalition in 2016 that helped establish the base for the motor fuels tax and increased DMV fees.

“This effort probably ended up increasing funding to transportation infrastructure by nearly $1 billion every two-year cycle,” Smith says.

In 2017, the coalition helped pass a $2 billion vertical infrastructure bill, called Connect NC, that focused on new building construction around the state. In 2018, the state passed the Build NC Bond Act, a 10-year, $3 billion program to maintain accelerated project delivery.

**MILESTONE PROJECTS**

ACEC/NC Member Firms have been involved in many milestone projects that showcase innovative engineering practices.

The Linn Cove Viaduct, a 1,243-foot concrete segmental bridge that snakes around the slopes of Grandfather Mountain in North Carolina connecting to the Blue Ridge Parkway, is considered one of the state’s most challenging bridge constructions in terms of complexity and environmental concerns.

The viaduct was built to minimize damage that a traditional cut-and-fill road would have caused to Grandfather Mountain. Supported by seven massive pillars, the cantilever viaduct does not disturb the land below. To eliminate damage to the environment, no access roads were built for transporting heavy equipment on the ground. The bridge’s segments were precast at an indoor facility and transported to the bridge site, where each section was lowered into place by a custom crane placed on both edges of the existing structure.

ACEC/NC awarded its Grand Conceptor Award to WK Dickson for its USDA Raw Water Main Project in Boone—the largest public infrastructure project in the town’s history. The project expands the town’s existing water treatment plant from 3.0 MGD to 4.5 MGD and the project’s infiltration gallery is the first and only one of its kind east of the Mississippi River.

Several state historic landmarks have also benefited from ACEC/NC Member Firm ingenuity.

In 1999, the Cape Hatteras Light Station, a nearly 5,000-ton, nearly 19-story tall lighthouse along with six accompanying historic structures, was successfully relocated about a half-mile from the spot on which it had stood since 1870 to escape an eroding shoreline. The entire light station was safely moved to a new site where the historic buildings and cisterns were placed exactly as they had been at the original site.

ACEC/NC firms were instrumental in plans to move the lighthouse to safety without damaging the structures and ensuring that the new location could support it.

“That was some incredible engineering design work provided by our Member Firms,” Clyburn says. “It took very sophisticated geotechnical engineering, structural engineering, and forensic engineering to be able to move this lighthouse. It is not something that other firms in the nation have pulled off.”

**NORTH CAROLINA’S ENGINEERING MARKET**

When it comes to describing the business climate for engineers in the state, “healthy, but very competitive” is the overall sentiment.

“There are a lot of infrastructure needs and firms expanding into the North Carolina market, which is increasing competition, but there are plenty of opportunities out there,” says Gary Hartong, president of The Wooten Co. and national director of ACEC/NC.
But the state also shares the national challenges of funding and talent resource shortages. “Like most every other marketplace, our Member Firms are having a hard time finding good qualified people,” says Smith, who also sees a growing movement toward moving project management responsibilities away from traditional engineers to free them up for more technical tasks. “Those tasks could be done by non-engineers who have the training. And if you bring in people to do that work from other industries, whether it is pharmaceutical or manufacturing, you end up bringing in a more diverse workforce, as well,” he says.

Macro-environmental conditions, such as recent hurricanes, climate change, and the need for clean energy, also present industry challenges, according to Clyburn. In fact, environmental issues have become so prevalent that in October 2018, North Carolina Gov. Roy Cooper signed an executive order that not only supports the 2015 Paris Agreement on climate goals, but pledges that by 2025, North Carolina will reduce statewide greenhouse gas emissions to 40 percent below 2005 levels, increase the number of registered, zero-emission vehicles to at least 80,000, and reduce energy consumption per square foot in state-owned buildings by at least 40 percent from 2002–2003 levels.

Major hurricanes in 2016 and 2018 caused significant business disruptions, slowed projects, and halted funding for many infrastructure projects. Those hurricanes played a major role in the North Carolina Department of Transportation’s (NCDOT) cash crunch in 2018, which impacted many ACEC/NC Member Firms.

In 2016, NCDOT pledged to ramp up transportation project delivery. The budget for engineering and planning nearly doubled in size from about $250 million per year to over $500 million. “Our firms scrambled to ramp up and deliver the program,” Smith says. However, after a series of substantially damaging hurricanes, NCDOT went from spending about $60 million for storm recovery to well over $200 million. Along with lawsuit settlements as a result of a bill called the Map Act, which allowed NCDOT to reserve land for future projects, that was ruled unconstitutional, the state quickly reached its mandated cash balance floor, which led to more than 900 accelerated transportation projects being suspended indefinitely.

“That was a huge blow to the industry,” Smith says. “Many firms held on to what they still had going, but by the time we got to October, we had a lot of firms facing major layoffs come the holiday season.”

In response, the state organization led a coalition effort that successfully urged the legislature to infuse over $200 million into the NCDOT budget, which helped get many projects restarted. It was also able to push restart dates up by two months, so most of the layoffs did not occur, according to Smith.

It has been the relationships built over the last 50 years, with the state’s General Assembly and with state agency leaders, that provided the foundation for the state’s engineering industry to receive legislative help through this “NCDOT Cash Balance,” a crisis which affected both large and small Member Firms.

“Our sole mission is to promote the business interests of engineering firms in North Carolina through legislative advocacy and business services,” Clyburn says. “We are the watchdogs for legislation that can affect the business of engineering in North Carolina, and we have the strategic relationships and regular contact with leaders to make sure we are articulating the concerns of the industry and meeting their best interests.”

Stacy Collett is a business and technology writer based in Chicago.