

New Charlotte airport traffic control tower aims high with precast concrete

For one precast concrete company, becoming the premier contractor in a specialized type of construction is paying off.

In recent years, Gate Precast Co. has successfully built six airport traffic control towers, including those in Atlanta, Ga., and Orlando, Fla., and has two in the works. The company's expertise was a significant factor in its winning the bid to build the new airport traffic control tower in Charlotte, N.C., which, at 370 ft (113 m) in height, is the second tallest airport traffic control tower in North America.

"We got involved early on in the bidding process and, with our experience and expertise in the fabrication of these tight-tolerance towers, we were able to provide the tight tolerances required for the fabrication and installation of the Charlotte [airport traffic control tower]," says Chris Galde, vice president of sales and marketing for Gate's Northern Division.

On the Charlotte project, Gate worked with general contractor Archer Western, architect URS, engineer of record AECOM, and the Federal Aviation Administration (FAA).

Approximately 85% of the tower is precast concrete. From ground level to level 10 (244 ft [74.4 m] in height) is 100% precast concrete, and from level 10 to the top is 70% precast concrete in the form of cladding panels.

The total number of pieces for the tower itself was 621, with the heaviest panels weighing 70,000 lb (311 kN) each. The total number of pieces for the terminal radar approach control facilities was 124, with the heaviest panels weighing 40,000 lb (178 kN) each.

There were some challenges along the way. During production, for example, one challenge was that the flare panels required a number of compound angles and precise measurements and layouts in order to ensure proper panel-to-panel fit-up in the field. "Special attention to quality and workmanship from our Oxford plant allowed this project to be a success," says Travis Fox, vice president and operations manager for Gate's Northern Division.

There were also some challenges during installation. For one, the area within the tower core was tight, making it difficult for the erector to accomplish its installation task, which had to meet the exacting tolerance specification guidelines set by the FAA. There were also a few challenges related to grouting in cold weather.



Gate provided precast concrete for the new airport traffic control tower in Charlotte, N.C. It's the second tallest airport traffic control tower in North America. Courtesy of Gate Precast.

Overall, however, the project was a total success. In fact, "The composite rebar alignment at the base of the tower to the precast panels was the best layout the FAA has experienced to date," says project manager Chad Smith.

According to Galde, the company's success with this and other airport traffic control tower projects led to its being awarded work on the new FAA Piedmont Triad ATCT control tower in Greensboro, N.C., which is in production and installation now. "We are now in production on this project and installation has commenced," he says.

—William Atkinson

Gage Brothers finds success with automated concrete placement at new plant

Gage Brothers Concrete Products of Sioux Falls, S.Dak., which manufactures precast and prestressed concrete panels, bridge girders, hollow-core flooring, and more, reached a milestone in December 2018 when it completed the first concrete placement from its automated manufacturing equipment, part of its \$40 million, state-of-the-art plant. The new plant itself includes a dining area for 80 people, offices and training space for 100, and even new locker rooms.

The new plant, which was first announced in mid-2017 and became fully operational in June 2019, was designed to replace several labor-intensive processes with a single automated process.

"We became interested in automated concrete pour technology as a way to increase our efficiency and capacity in order to remain competitive," says Tom Kelley, Gage Brothers president and CEO. "We also wanted to provide our employees with a safer work environment and be able to make their days more predictable."

Setting up the technology involved more than just putting equipment together, though. There was a lot of research involved. "We researched across Europe and the Middle East to find the most efficient processes that we could," he says. "Next, we started with a 'clean sheet of paper' and laid out what our ideal plant would look like." The team then wrote requests for proposals for what it wanted in terms of equipment and then priced it out.

After that, Gage Brothers found financial partners for the project and then began constructing the facility, procuring

the equipment, and training its employees on what the system would look like and the role that they would play in its success.

The first key to the success of the project was taking the time to do things right. "We spent a year and a half on understanding, crafting, and getting on one page with a culture that our team desired," Kelley says. "We then began training on what all of this would mean and how it would be woven into the fabric of our new processes."

There were some challenges along the way, however. One involved having to design and redesign the finishing processes to help create the most environmentally friendly facility possible. Another was getting all of the equipment and processes sized and executed properly in order to work together efficiently. "A third was learning how to let go of the old ways in order to be more effective with the new ways," Kelley says.

—William Atkinson 

Gage Brothers Concrete Products of Sioux Falls, S.Dak., has a new \$40 million, state-of-the-art plant with automated concrete placement technology. Courtesy of Gage Brothers.



Employees show off the new Gage Brothers plant in Sioux Falls, S.Dak. Courtesy of Gage Brothers.